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El Dorado County Water Agency - Water Resources Development and Management Plan

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ACRONYMS AND ABBREVIATIONS

ac-ft	acre-feet
ac-ft/yr	acre-feet per year
BLM	U.S. Bureau of Land Management
BLWTP	Bass Lake Water Treatment Plant
CaSIL	California Spatial Information Library
CEQA	California Environmental Quality Act
CDFG	California Department of Fish and Game
CE	State of California endangered
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
Corps	U.S. Army Corps of Engineers
County	El Dorado County
CR	State of California rare
CSC	State of California special concern
CSD	Community Services District
CT	State of California threatened
CVP	Central Valley Project
DWR	Department of Water Resources
EDCWA	El Dorado County Water Agency
EID	El Dorado Irrigation District
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPS	Economic and Planning Systems, Inc.
ESA	Endangered Species Act
FC	federal candidate species for listing
FE	federally listed as endangered
FSC	federal species of special concern
FT	federally listed as threatened
GDPUD	Georgetown Divide Public Utility District
GFCSD	Grizzly Flats Community Services District
GIS	Geographic Information System
gpm	gallons per minute
M&I	Municipal and Industrial
mgd	million gallons per day
MOU	Memorandum of Understanding
MTBE	methyl tertiary butyl ether
NEPA	National Environmental Policy Act
NRCS	Natural Resource Conservation Service
OCA	Other County Areas
PCWA	Placer County Water Agency
PG&E	Pacific Gas & Electric

PL	Public Law
Plan	Water Resources Development and Management Plan
PUD	Public Utility District
RWQCB	Regional Water Quality Control Board
RWQCB	Regional Water Quality Control Board
SMUD	Sacramento Municipal Utility District
STPUFD	South Tahoe Public Utility District
SWRCB	California State Water Resources Control Board
TRPA	Tahoe Regional Planning Asscіation
USBR	U.S. Bureau of Reclamation
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WHR	Wildlife Habitat Relationship

CHAPTER 1

Introduction

1.1 THE PLAN

The El Dorado County Water Agency (Water Agency) directed that a Water Resources Development and Management Plan (Plan) be prepared for El Dorado County (County) consistent with the proposed General Plan land use development alternatives. The Plan is designed to coordinate water resource planning activities within the County and to identify actions and water resource alternatives to meet the water needs in El Dorado County. The Plan records in one document the water supply needs of the entire county including the five water purveyors and those areas presently un-served by a purveyor, and identifies potential technical, environmental, and institutional constraints for each water resource alternative.

The Plan as developed relies on available information provided by various County departments, the five water purveyors operating within El Dorado County, and is designed to reflect the population and land development projections in the concurrently developed proposed County General Plan. For each purveyor's service area and for the currently un-served areas, water demand projection are estimated, water supply shortages identified, water supply sources and infrastructure options evaluated, and actions and infrastructure improvements recommended. Projected needs and improvements are estimated to 2025 and a range of possible needs and improvements are estimated to accommodate build-out of the County General Plan.

The primary goals of the Plan are to:

- Coordinate various water resource planning efforts within El Dorado County
- Be consistent with proposed General Plan land use development alternatives
- Document the projected water needs of the county through 2025 and beyond
- Identify actions and water resource alternatives to meet water needs of El Dorado County
- Identify potential technical, environmental, and institutional constraints for each water resource alternative

- Develop water resource alternatives that have general local support
- Develop a phasing and implementation plan to the year 2025

This Plan is not an immutable approach to meeting the county's water needs in the future. As presented, the Plan is based on current information. Current activities, such as discussions with the Sacramento Municipal Utility District (SMUD) and other parties, and future studies and decisions by the County and the individual purveyors may require the revision of recommendations coming out of this report. This Plan was prepared in three phases: Phase I consisted of data gathering, Phase II consisted of plan development, and Phase III is the action plan where the phasing and implementation recommendations will be presented. The Plan report is based on currently available information. The Plan should be reviewed at least every five years and be updated as necessary with information developed or actions taken during the intervening period.

1.2 COORDINATING COMMITTEE

A coordinating committee was established by the Water Agency to provide the benefit of local knowledge and expertise to development of the Plan. The committee consisted of representatives of the five water purveyors, the Water Agency, and affected County departments (Planning, Agriculture Commissioner, County Surveyor, Transportation). A series of six meetings were held to review project status and work product and to receive comments from the committee. The members of the Coordinating Committee were all knowledgeable of the issues involved in water planning in El Dorado County and, because of their local knowledge, provided a valuable resource in helping guide the direction of the Plan. Members participating in the Coordinating Committee are listed in Appendix B.

1.3 COORDINATION WITH GENERAL PLAN

Concurrent with development of this Plan, El Dorado County is preparing a full environmental review of the proposed General Plan pursuant to the California Environmental Quality Act (CEQA) and prior to adoption of the General Plan. Analysis of future water use and water supply needs is part of the environmental review; therefore, it was necessary to coordinate closely with the preparers of the Environmental Impact Report (EIR) to assure the consistency of water-related data used in the two planning efforts. Coordination with the EIR process is described in Section 4, which deals with future water demands.

1.4 PUBLIC OUTREACH

A public involvement program was designed to involve the community in the development of the Plan. Stakeholder lists were developed and informational flyers were mailed; in addition, press releases and meeting notices were published in local newspapers. An evening public forum workshop was held in Placerville to present the planning process and to elicit comments from the public on issues of concern. An additional outreach effort was developed in connection with release of the draft plan and its presentation to the Board of Directors. The Public Outreach process is described in Chapter 7.

1.5 PARTICIPATING AGENCIES

The five major water providers operating within El Dorado County and briefly described below are:

- El Dorado Irrigation District
- Georgetown Divide Public Utility District
- Grizzly Flats Community Services District
- South Tahoe Public Utility District
- Tahoe City Public Utility District

In addition, there are several small mutual water companies and over 150 small self supplied users that have not provided data for this report. **Figure 1-1** is a map of El Dorado County showing the locations of the major purveyors.

1.5.1 EL DORADO IRRIGATION DISTRICT

The El Dorado Irrigation District (EID) was formed on October 5, 1925 to provide irrigation water to farmers in the area, and domestic water to the City of Placerville. Upon formation, the District assumed ownership of many old mining ditches, the primary conveyance facilities.

Construction of the Sly Park Unit of the Central Valley Project (CVP) was completed in 1955, and EID then assumed the responsibility for operation and maintenance of the project, pursuant to a contract with the U.S. Bureau of Reclamation (USBR). The principal water supply source for EID is still Sly Park Reservoir. With the addition of new water contracts with the USBR from Folsom Reservoir in the early 1960s, the District has grown to its current size of 136,857 acres, reflecting the growth in western El Dorado County.

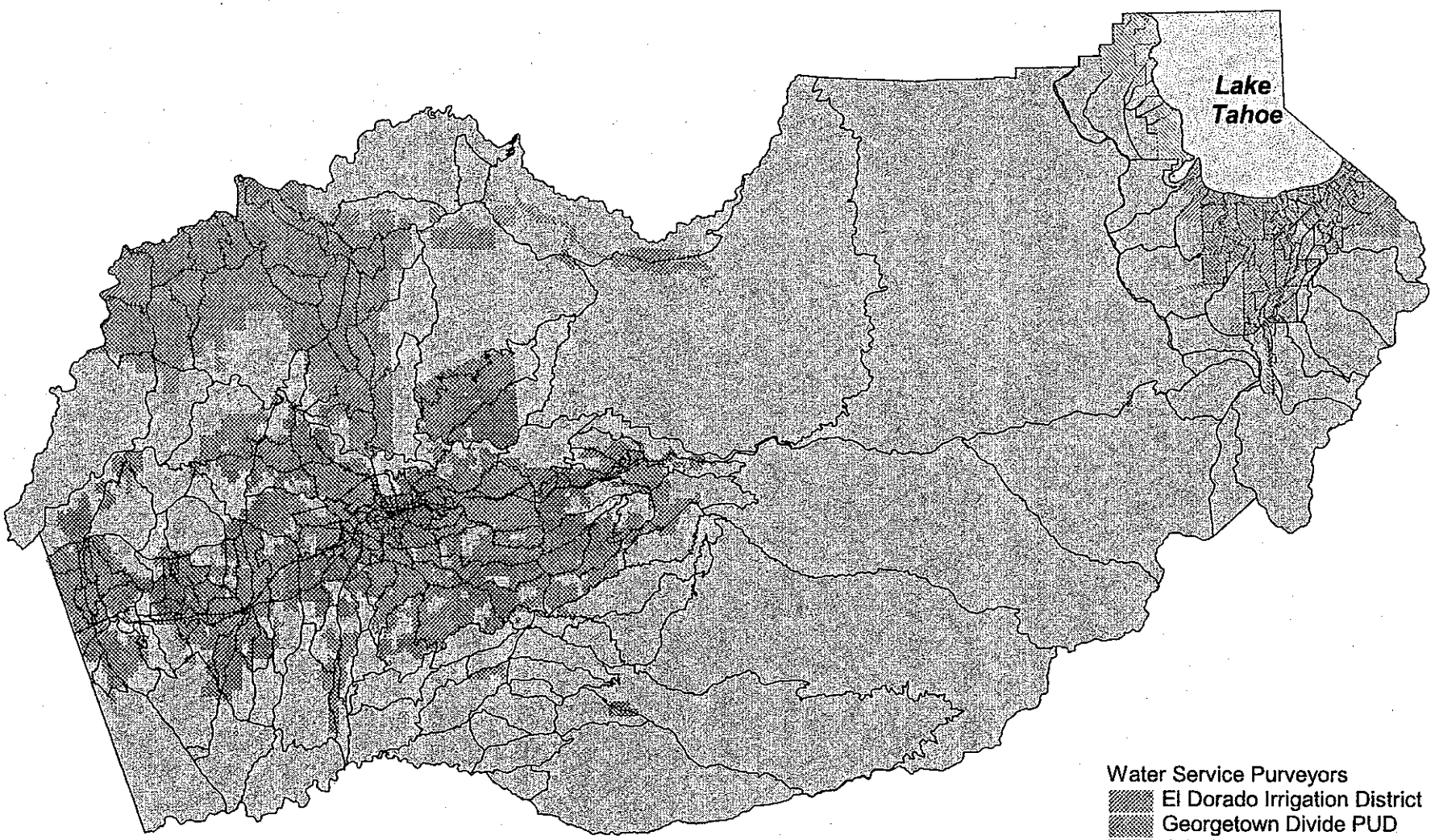


Figure 1-1
County Water Service Purveyors

Over the years, EID has changed from serving mainly agriculture to one that equally serves rapidly growing residential, commercial, and industrial sectors. EID has also added to its mission by purchasing a hydroelectric generating project, providing sewer service to portions of the District, as well as operating and maintaining recreational facilities at Sly Park. Virtually all the water used in the District is from surface water sources.

1.5.2 GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT

GDPUD is located east of Auburn and northwest of Placerville comprising 75,000 acres along the northerly boundary of El Dorado County. The water system serving the Georgetown Divide was initiated in the 1850s. It involved miles of flumes and canals bringing water from high mountain basins down rugged canyon walls to the gold fields of Georgetown, Greenwood, Cool, Garden Valley, and Kelsey. When hydraulic mining was outlawed in the 1880s, water use changed to agriculture. Without gold mining, the private companies which owned the ditches could not generate enough revenue to maintain the extensive system and the communities on the Divide were often without water for weeks at a time. Finally, in 1946 the residents of the Divide created GDPUD to ensure a reliable water supply.

Stumpy Meadows Reservoir was built in 1962 to provide a more reliable supply of water to the homes and ranches on the Divide. Construction of the reservoir eliminated the need for 20 miles of high country flume on steep mountain slopes.

1.5.3 GRIZZLY FLAT COMMUNITY SERVICES DISTRICT

The El Dorado County Board of Supervisors established GFCSD on October 27, 1987, pursuant to Resolution 387-87. The formation of GFCSD involved taking over the water rights and facilities from the privately-owned Grizzly Park Water Company. GFCSD is authorized to supply its inhabitants with water for domestic, irrigation, sanitary, industrial, fire protection, and recreational purposes. The District diverts surface water from several sources under pre-1914 water rights and appropriative water rights permits to a raw water storage reservoir from whence it is treated and distributed. The District's service area includes the Grizzly Park subdivision and a few adjacent large perimeter parcels.

1.5.4 SOUTH TAHOE PUBLIC UTILITY DISTRICT

STPUD was formed on September 28, 1950, and supplies drinking water and provides sewage collection, treatment, and export to protect Lake Tahoe's delicate ecosystem. The District's water system consists of groundwater wells, distribution pipelines, storage tanks, and booster pump stations;

the wastewater system includes the collection system, treatment plant, 26 miles of recycled water export pipeline.

1.5.5 TAHOE CITY PUBLIC UTILITY DISTRICT

TCPUD was formed in 1938 and provides water, sewer, and recreational facilities to a portion of the west and north shore areas of Lake Tahoe. Up until the late 1980s, most of the water for the District was diverted from the lake. Because of new regulations for surface water treatment, the District opted to convert its supply to groundwater and springs. The District now relies entirely on groundwater to meet normal demands, with diversions from Lake Tahoe remaining available for emergency use. Of the District's five discrete water supply systems, only the Rubicon System lies within El Dorado County.

1.5.6 EL DORADO COUNTY WATER AGENCY

EDCWA, not presently a water provider, was formed by special act of the state legislature in 1959. Its boundaries are coterminous with those of El Dorado County and County officers and employees are ex-officio officers and employees of the agency. Among EDCWA's authorities are the power to contract for water and to finance and construct, operate, and maintain works for the storage and transmission of water; the Agency may contract for the sale of water to water purveyors, but is not permitted to retail water directly to customers. The Agency has undertaken the role of overall county water planning. It is the contracting agency for 15,000 acre-feet of PL-101-514 water (so called "Fazio" water) from the USBR and is in the process of preparing the Environmental Impact Report/ Environmental Impact Statement (EIR/EIS) for the water contract. The Agency will then enter into contracts with water purveyors, principally EID and GDPUD, for use of this water.

1.6 REPORT OUTLINE

Water use, water supply, projected water demands, future infrastructure improvements and other water related issues associated with individual water purveyors and with El Dorado County in general will be discussed in the appropriate sections of this report.

A Conclusions and Recommendations section will precede the body of the report in the Final Report. The conclusions and recommendations will be derived from ~~the~~ information developed in the body of the report and from comments received after review of this Draft Report. The findings, conclusions, and recommendations of the report will be summarized in a separate Executive Summary.

This draft report is presented in seven sections and is intended to provide an understanding of the assumptions and methodology used in arriving at Plan recommendations. Following this introductory Chapter 1, the contents of the remaining report sections are briefly described below:

Chapter 2 – Historic Water Use: Current water use of the participating water purveyors, agriculture and self supplied users, reclaimed water use, and conservation practices.

Chapter 3 – Existing Water Supply: Existing water supplies, rights, and contracts available to the water purveyors.

Chapter 4 – Projected Water Demands: Water demands to meet the needs of the new proposed County General Plan alternative and the process for arriving at the estimates.

Chapter 5 – Projected Water Supply Needs: Water supplies and projects needed to meet future water demands and associated institutional issues.

Chapter 6 – Environmental Constraints: Environment constraints affecting the selected water supply alternatives.

Chapter 7 – Public Outreach: The public involvement process.

Appendices:

Appendix A	Bibliography
Appendix B	Coordinating Committee Participants
Appendix C	Small Water Systems
Appendix D	El Dorado County Water Demand Forecasts (Economic and Planning Systems, Inc. Memorandum)
Appendix E	Water Supply Alternatives and Estimates
Appendix F	Master Memorandum of Understanding
Appendix G	David Jones' Drought Analysis
Appendix H	Public Outreach

Appendix I Environmental Constraints

Throughout the report, superscripts refer to the bibliography in Appendix A used as sources for the report.

CHAPTER 2

Historic Water Use

2.1 INTRODUCTION

Historic water use figures were obtained from reports and summaries provided by the five water purveyors participating in development of the plan. These agencies are: El Dorado Irrigation District (EID), Georgetown Divide Public Utilities District (GDPUD), Grizzly Flat Community Services District (GFCSD), South Tahoe Public Utilities District (STPUD), and Tahoe City Public Utilities District (TCPUD). Historic water use data provide the basis for forecasting future demand. The following subsections present the unit water demands for various categories of use, as determined by the water purveyors, which are then applied to projected land use in the General Plan to estimate future water demand.

Note: The historic use figures in this chapter vary slightly in some cases from the base year figures presented in Chapter 4. In this chapter, water use averages over a number of years are reported; in Chapter 4, base year water demands are completed from using land use and water demand factors developed in the water demand projection study. The variations do not affect the future demand projections.

2.2 EL DORADO IRRIGATION DISTRICT

EID issued an administrative draft of its *Water Supply Master Plan, December 2001*[1] and adopted its *2002 Update to the Water Supply and Demand Report, May 2002*[2]. The data presented in this chapter are derived from these reports.

2.2.1 POTABLE WATER USE

Around April of each year, EID staff prepares an annual update to the Annual Supply and Demand Report originally published in 1991. Tables 2-1, 2-2, and 2-3, taken from the 2002 Update, respectively summarize water deliveries and consumption by years, and number of metered accounts and consumption by metered user categories. Raw water deliveries were 38,847 acre-feet in 2002 with

1 See Appendix A (Bibliography), No. 1
2 See Appendix A (Bibliography), No. 2

metered consumption of 32,231 acre-feet; the difference is due to water used for various beneficial uses and to unaccounted for water.

Beneficial uses are defined as water used for operational flushing, sewage lift station and collection system flushing, private fire service, construction meters, and aesthetic maintenance.

Unaccounted for water is defined as water that is taken into the system from all of EID's main sources, but which is not delivered to the consumers, put to beneficial use, or otherwise accounted for. EID has reduced its unaccounted for water percentage over the past 10 years from over 21 percent in 1992, to 13 percent in 2001, surpassing the state goal of 15 percent or less for rural water districts such as EID.

2.2.2 Recycled Water Use

EID has delivered recycled water for industrial use and golf course irrigation for over 20 years. In the past 10 years, the use of recycled water has been expanded to include median and park irrigation, and more recently construction water and residential landscaping. Recycled water use for residential landscaping will have a significant impact on the drinking water supplies. Approximately 60 percent of the water demand for single-family dwellings is used for outside landscaping.

Table 2-4 and 2-5, taken from the 2002 Update, present the projected recycled water supply availability and recycled water demands.

2.2.3 Water Conservation

EID has long pursued an active water conservation program including public information and educational elements promoting efficient water use to the general public. The District also has implemented programs with quantifiable water savings; these include residential water audits, toilet rebates, irrigation management services, plumbing retrofits, leak detection and repair, landscape water audits, and commercial/industrial water audits.

2.2.4 Agricultural Water Use

Agricultural water use within EID is discussed in Section 2.7 of this chapter.

TABLE 2-1
WATER DELIVERY SUMMARY - EL DORADO IRRIGATION DISTRICT

Calendar Year	Raw Water Deliveries in Acre-Feet[a]	Metered Consumption in Acre-Feet[b]	Beneficial Uses in Acre-Feet[c]	Unaccounted-for Water in Acre-Feet[d]	Unaccounted-for Water as a Percentage[e]
2001	38,847	32,231	1,398	5,218	13.4%
2000[f]	34,882	29,488	870	4,524	13.0%
1999	35,496	30,262	405	4,829	13.6%
1998	30,027	24,638	560	4,829	16.1%
1997	35,748	30,263	---	5,485	15.3%
1996	34,199	28,846	---	5,353	15.7%
1995	30,062	25,373	---	4,689	15.6%
1994	33,970	26,307	---	7,663	22.6%
1993	30,324	23,897	---	6,427	21.2%
1992	32,220	25,273	---	6,947	21.6%

Source: 2002 Update to the Water Supply and Demand Report.

a Raw water diverted from all District water sources, and includes metered consumption, beneficial uses and unaccounted for water.
b Potable or raw water metered or measured and billed to District customers in the contiguous service area.
c Water utilized for operational flushing, sewage lift station and collection system flushing, private fire services, construction meters and aesthetics maintenance.
d Any water diverted into the piped or ditch systems that was not measured and billed to customers or otherwise accounted-for.
e The unaccounted-for water percentage of the combined pipe and ditch systems in the contiguous service area.
f A meter malfunction was found to have over-billed 527 acre-feet of consumption, which has been adjusted and moved accordingly to unaccounted-for water.

TABLE 2-2
ACCOUNTS SUMMARY - EL DORADO IRRIGATION DISTRICT

User Categories	Number of Active Accounts(as of December 31)									
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Single-Family Residential	20,937	21,071	21,530	21,765	22,575	23,193	24,978	25,138	25,802	26,653
Single-Family Dual Potable[a]	---	---	---	---	---	---	---	29	399	804
Multi-Family Residential (# of units served)[b]	203 (3,869)	477 (4,459)	484 (4,467)	482 (4,469)	489 (4,558)	511 (5,020)	523 (5,179)	946 (5,721)	1,002 (6,013)	1,024 (6,033)
Multi-Family Dual Potable (# of units served)[c]	---	---	---	---	---	---	---	---	---	4 (4)
Domestic Irrigation	2,704	2,686	2,743	2,786	2,799	2,709	1,848	1,815	1,731	1,657
Small Farm Irrigation[d]	---	---	---	---	---	---	---	19	82	144
Agricultural Metered Irrigation (AMI)[e]	230	234	236	221	229	236	244	248	203	198
Recreational Turf Services	---	---	---	83	83	88	92	93	97	99
Commercial/Industrial[f]	821	827	869	894	968	1,003	1,035	1,067	1,099	1,125
Municipal-Placerville (# of City Accounts)	8 (2,416)	8 (2,435)	9 (2,467)	9 (2,476)	9 (2,564)	9 (2,643)	9 (2,602)	9 (2,693)	10 (2,786)	11 (2,867)
Ditches	131	133	122	102	102	101	87	89	87	94
Construction Meters[g]	65	65	65	65	65	65	---	---	---	---
Contiguous Totals	**25,099**	**25,501**	**26,058**	**26,407**	**27,319**	**27,915**	**28,881**	**29,453**	**30,512**	**31,813**

Source: 2002 Water Demand Update

Notes:

a The single-family residential, dual plumbed (potable and recycled) user categories were established in 1999. These dwellings receive both potable water for indoor use and recycled water for front and backyard irrigation.

b The increase in multi-family accounts and units in 1999 is due to a shift in town homes and condos from the single-family category. A new billing system began accurately identifying these as multi-family dwellings.

c The multi-family residential, dual plumbed (potable and recycled) user categories were established in 2001. These dwellings receive both potable water for indoor use and recycled water for front and backyard irrigation.

d The small farm user category was established in 1999. This rate allows small growers to utilize their land and produce agricultural crops competitive with larger growers that qualify for the AMI rate.

e The number of AMI accounts dropped in 2000. As a result of non-replies to a mail survey and onsite field surveys, several accounts no longer qualified for the AMI rate and were changed to a different rate category.

f The industrial user category was eliminated in 1999. The industrial accounts are now included in the commercial/industrial user category.

g Beginning with 1998, construction meters have been moved to the beneficial uses category. The demands are system-wide and are thus distributed to the water supply regions.

TABLE 2-3
CONSUMPTION SUMMARY - EL DORADO IRRIGATION DISTRICT

User Categories	Annual Metered Consumption(in acre-feet)									
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Single-Family Residential	8,575	8,620	9,522	9,425	10,550	11,468	10,405	12,979	13,090	14,502
Single-Family Dual Potable[a]	---	---	---	---	---	---	---	1	21	73
Multi-Family Residential (# of units served)[b]	991	1,153	1,280	1,239	1,384	1,485	1,400	1,549	1,625	1,700
Multi-Family Dual Potable (# of units served)[c]	---	---	---	---	---	---	---	---	---	0
Domestic Irrigation	4,132	3,818	4,316	4,305	4,779	4,758	2,868	3,530	3,295	3,149
Small Farm Irrigation[d]	---	---	---	---	---	---	---	33	278	521
Agricultural Metered Irrigation (AMI)[e]	6,340	5,348	5,798	3,882	4,895	5,118	4,062	5,094	4,556	5,221
Recreational Turf Services	---	---	---	1,443	1,977	1,884	1,270	2,028	1,517	1,383
Commercial/Industrial[f]	1,904	1,899	2,174	1,780	2,099	2,379	1,976	2,447	2,353	2,599
Municipal-Placerville (# of City Accounts)	1,325	1,337	1,431	1,440	1,467	1,548	1,464	1,575	1,637	1,669
Ditches	1,909	1,655	1,702	1,752	1,597	1,477	1,193	1,026	1,116	1,414
Construction Meters[g]	97	67	84	108	98	146	---	---	---	---
Contiguous Totals	**25,273**	**23,897**	**26,307**	**25,373**	**28,846**	**30,263**	**24,638**	**30,262**	**29,488**	**32,231**

Source: 2002 Update to the Water Supply & Demand Report.

Notes:

a The single-family residential, dual plumbed (potable and recycled) user categories were established in 1999. These dwellings receive both potable water for indoor use and recycled water for front and back yard irrigation.

b The increase in multi-family accounts and units in 1999 is due to a shift in town homes and condos from the single-family category. A new billing system began accurately identifying these as multi-family dwellings.

c The multi-family residential, dual plumbed (potable and recycled) user categories were established in 2001. These dwellings receive both potable water for indoor use and recycled water for front and back yard irrigation.

d The small farm user category was established in 1999. This rate allows small growers to utilize their land and produce agricultural crops competitive with larger growers that qualify for the AMI rate.

e The number of AMI accounts dropped in 2000. As a result of non-replies to a mail survey and onsite field surveys, several accounts no longer qualified for the AMI rate and were changed to a different rate category.

f The industrial user category was eliminated in 1999. The industrial accounts are now included in the commercial/industrial user category.

g Beginning with 1998, construction meters have been moved to the beneficial uses category. The demands are system-wide and are thus distributed to the water supply regions.

TABLE 2-4
SUMMARY OF 2001 RECYCLED SUPPLY AND DEMAND - EL DORADO IRRIGATION DISTRICT

	Influent to WWTP[a] in Acre-Feet		Storage Supply[c] in Acre-Feet		Total in Acre-Feet
	El Dorado Hills WWTP	Deer Creek WWTP	El Dorado Hills WWTP	Base Lake[b]	
2001 Recycled Supply	1,571	550	202[a]	279	2,400
2001 Recycled Demand					1,601
Unmetered Supply for 2001					**799**

a EDHWWTP storage is not included in the total for 2001 as the flow is measured in the EDHWWTP influent flow supply for 2001.

b Base Lake supplemental water suppl6y meets demand in recycled system that cannot bemet from recycled sources.

TABLE 2-5
2001 DETAILED OF RECYCLED DEMANDS - EL DORADO IRRIGATION DISTRICT

User Category	Number of Active Meters	Number of Acres	2001 Demand in Acre-Feet	Acre-Feet per Dwelling Unit	Acre-Feet per Acre
Single-Family Dual Recycled[a]	807		154.6	0.19	
Multi-Family Dual Recycled[b]	4		0.0	0.00	
Commercial/Industrial					
Landscape[c]	70	200	469.1		2.35
Recreational Turf[d]	3	280	886.3		3.17
Construction Meters	22		90.5		
Totals	**906**	**480**	**1,601**		

a Not all Single-Family Dual accounts have a full year of usage.
b Multi-Family Dual Recycled accounts are new as of 2001.
c Commercial/Industrial – Landscape accounts include parks, street medians, and commercial landscapes.
d Commercial/Industrial – Recreational Turf accounts include the Serrano Golf Course (120110), Executive Golf Course (120182), and Bass Lake Soccer Fields (119778).

2.3 GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT

Historic demands for GDPUD were supplied by the District in summary form. Existing water demand is made up of current water sales plus latent demand. Latent demand is defined as current inactive meters plus non-metered parcels within assessment districts plus preseason (April) agricultural requirements when needed. Water demand figures for the District are shown in Table 2-6.

TABLE 2-6
GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT WATER DEMAND SUMMARY

Type of Use	Number of Accounts	Average Units Use (Acre-Feet)	Total Use (Acre-Feet)
Treated Water[a]			
Residential	2985	0.484	1,445
Commercial	126	1.167	147
Property Owners Association			123
Untreated Water			
Irrigation	366		4,463
Operational Losses			
Treated Water[b]			257
Other[c]			3,000
Subtotal			**9,435**
Latent Demand			
Treated Water			
Inactive meters	189	0.6[d]	113
Existing unserved parcels	1315	0.6[d]	789
Untreated Water			450
Subtotal			**1,352**
Total Existing Demand			**10,787**

a Five-year average use, except commercial which is actual use for 2000
b Includes treatment and conveyance losses
c Includes ditch system conveyance and carriage losses, ditch and distribution reservoir leakage and evaporation, and other system losses (five year average)
d Potential demand allocated by Georgetown Divide PUD.

The District actively promotes water conservation through encouraging use of water conserving plumbing fixtures, drought tolerant landscaping, and proper irrigation techniques. GDPUD and the El Dorado County Resource Conservation Districts have a joint project to help educate water users in wise water use practices, and GDPUD staff is available to advise customers.

2.4 GRIZZLY FLAT COMMUNITY SERVICES DISTRICT

Historic water use figures for GFCSD are taken from a draft review report for the District entitled *Reconnaissance Investigation of Off-Stream Storage, March 1998*[3] prepared by Borcalli and Associates. Borcalli and Associates also prepared a *Water Supply Reconnaissance-Level Study*[4] for the District in March 1994. Table 2-7 is a reproduction of Table 2 of the Borcalli report and displays treated water production data as well as unit water demands for full-time occupancy and part-time occupancy units. Based on those unit water demands, the following water use for 1997 was calculated in the 1998 report:

TABLE 2-7
1997 WATER USE DEMANDS - GRIZZLY FLAT COMMUNITY SERVICES DISTRICT

	Full Time	Part Time
Number of Customers	290	163
Unit Demand, ac-ft/customer	0.420	0.087
Total Water Use, acre-feet[a]	**122**	**14**

a Water production records for 2001 show that these water use figures are still valid, 132 acre-feet having been produced that year.

System losses from seepage from the raw water storage reservoir were estimated in the Borcalli report to be 35 acre-feet per year.

2.5 SOUTH TAHOE PUBLIC UTILITY DISTRICT

The data for STPUD is extracted from a report prepared for the District by Boyle Engineering entitled *MTBE Water System Impacts and Mitigation Evaluation, September 2000*[5] and the District's draft *Urban Water Management Plan, June 2002*[6]. The District prepared a Reliable System Capacity Plan in 1994 as a requirement of the California Department of Health Services (DHS). This plan was developed using historical maximum day flow and storage data from 1983 through 1994. From this report Boyle extracted the number of units, and the average day demand per unit presented in Table 2-8. The last two columns were added to convert the average day demand to acre-feet. This table is included to provide a comparison with current water use, and the total compares closely with water use reported in 2000 and summarized in Table 2-9.

3 See Appendix A (Bibliography), No. 3
4 See Appendix A (Bibliography), No. 4
5 See Appendix A (Bibliography), No. 5
6 See Appendix A (Bibliography), No. 6

TABLE 2-8
SOUTH TAHOE PUBLIC UTILITY DISTRICT WATER USE AND UNIT WATER DEMANDS

Zone No.	Zone	Residential	Commercial	Average Day/ Unit (gal/day)	Unit Use (ac-ft/year)	Total Use (ac-ft/year)
9,10,11	Country Club, Susquehanna, Pine Valley	382	2	344	.385	154
12,13	Iroquois & Apache North	1,171	0	312	.349	409
15	Christmas Valley	551	7	312	.349	214
16	Flagpole	671	2	312	.349	240
14	Arrowhead	517	29	312	.349	272
				Subtotal		**1,289**
19	Angora Highlands	87	0	377	.422	37
18	Forest Mountain	41	0	377	.422	17
17	Twin Peaks	372	18	377	.422	225
				Subtotal		**279**
20	Gardner Mountain	665	43	312	.349	367
				Subtotal		**367**
4	Keller	44	0	344	.385	17
5	Heavenly Valley	491	25	344	.385	276
6	Ralph	83	0	344	.385	32
8	Upper Montgomery Estates	16	0	344	.385	2,606
7	Montgomery Estates	648	3	344	.385	260
1,2,3	Stateline, Airport, and H Street	5,928	868	344*	.385*	5,290
				Subtotal		**5,881**
				Total		**7,816**

* No figure was provided in the 1994 report; 344 gpd was assumed for these zones.

TABLE 2-9
SOUTH TAHOE PUBLIC UTILITY DISTRICT WATER USE FOR 2000 BY WATER USE CLASS

Water Use Class	Water Use (Year 2000) mg	Water Use (2000 acre-feet)
Single Family Residential	1,194.74 mg	3,666
Multi-family Residential	340.43 mg	1,044
Commercial	652.31 mg	2,002
Industrial	0	0
Other Water Systems	3.30 mg	10
System Losses	328.61 mg	1,008
Total, million gallons	2,519.39 mg	
Total, acre-feet		7,730

2.6 TAHOE CITY PUBLIC UTILITY DISTRICT

A Draft Water Master Plan6 dated April 2002 was prepared for TCPUD by West Yost & Associates. Only the Rubicon System of the District is located within El Dorado County and water use data relevant to that system were extracted from the report. Recently, the Meeks Bay system's 124 services were added to the District and became part of the Rubicon System, increasing the total connections from 450 to 574.

The average daily demand for the 450 services in the Rubicon system is 431 gallons per day per unit or 0.431 acre-feet per unit per year. The total demand for the system is 343,000 gallons per day or 272 acre-feet per year. The Meeks Bay system's 124 services will add approximately 53 acre-feet of demand, for a total of 325 ac-ft per year.

2.7 AGRICULTURE

Agriculture within the Sierra Foothills is substantially different than agriculture within the Central Valley. In the Sierra Foothills, agriculture is confined to relatively small areas where land slopes are amendable to growing crops. In the Central Valley, agriculture is defined by the broad scale of industrial and corporate farming on large fairly level tracts of land. Unfortunately, there is not sufficient reliable data for documenting agricultural land and water use, as it exists today and how it has changed over time. This is complicated even more by conflicts in the data and differences reported by various sources. Nevertheless, agriculture in El Dorado County is an important sector from the standpoint of economics, open space, and recreation. The growing metropolitan population in the Sacramento Region will fuel the demand for greater access to an agro-recreational-type setting. El Dorado County is favorably situated geographically to accommodate this demand.

Virtually all of the agricultural water use within El Dorado County occurs on the western slope, and most of that water is supplied by EID and GDPUD and is included in those purveyors' water use figures. Agricultural water use outside of the purveyor service areas is generally supplied from individually owned wells and ponds; water from these sources is highly weather-dependent and water production and use figures are not readily available. Agricultural land use is primarily in vineyards, Christmas trees, olive and citrus trees, berries, deciduous orchards, and pasture.

Data on the total land devoted to agriculture in El Dorado County indicates a general reduction over the last 5 to 10 years. However, although the total land in agriculture is declining, there is an increase in area planted to higher value crops such as wine grapes, fruits, berries, Christmas trees, olives, and citrus, associated with more of "niche" type agriculture, one which supports an agro-recreation activity

mentioned above. The reduction in area devoted to agriculture is attributed largely to the displacement of pasture due to development and marginal economic viability of livestock grazing operations in foothill areas.

The data available to identify existing irrigated agriculture is available from the El Dorado County Agricultural Commissioner's Office, EID, and GDPUD. Information to identify agricultural land use in terms of crop, acreage, and physical location is available from Restricted Materials Permits managed by the Agricultural Commissioner's office. Restricted Materials Permits are required for the application specified pesticides/herbicides. This information is beneficial to document agriculture, however, it does not represent all crops. Information available from EID indicates the crops irrigated, however, the acreage is based upon the land irrigated. GDPUD only reports total irrigated acreage and no information on the crops.

As noted, the data compiled by the respective entities is not consistent or complete and conflicts in relation to land and water use for irrigated agriculture. Nevertheless, the data collectively provides a general picture of the geographic distribution of irrigated agriculture and is presented on Figure 4.1. It was used to establish an existing (2000) agricultural land use. For purposes of the water management plan, the crops were separated into three categories: Deciduous Orchards, Vineyard, Christmas Trees, Olive/Citrus, Berries, Etc., and Pasture and other. The results are presented on Table 2-10 with the respective sources of information and assumptions used are presented as footnotes on Table 2-10.

TABLE 2-10
EXISTING AGRICULTURAL LAND USE - 2001[a] (ACRES)

Agricultural Land Use	EID	GDPUD	Outside Purveyor's Boundaries[b]	Total	County[c]
Deciduous Orchards	1,013[b]	7[b]	224	1,244	1,789
Vineyard, Christmas Trees, Olive/Citrus, Berries, Etc.	819[b]	74[b]	1,022	1,915	1,612
Pasture and Other	539[d]	1,114[d]	14	1,667	1,450
TOTAL	**2,371**	**1,195**	**1,260**	**4,826**	**4,851**

a Acreage represents irrigated agriculture.

b Acreage is based upon Restricted Materials Permits, El Dorado County Agricultural Commissioner's Office.

c Total area reported by the El Dorado County Agricultural Commission, 2000 Crop Report; however, it does not include acreage for Christmas trees, truck gardens, berries, nectarines, oranges, chestnuts, avocados, pumpkins, tomatoes, and persimmons.

d Acreage calculated based upon remaining water use from total reported water use, using an assumed unit water use value of 1.3 acre-feet applied to vineyard, Christmas trees, olive/citrus, berries, etc. and a unit water use value of 2.8 acre-feet applied to applied to deciduous orchards.

Sources: El Dorado Irrigation District (2000 USBR Water Year Report); Georgetown Divide Public Utility District; and County of El Dorado Department of Agriculture, Weights, & Measures (El Dorado County 2000 Crop Report and 2002 Restricted Materials Permits).

2.8 OTHER USERS

There are three significant non-public water purveyors operating at South Tahoe: Tahoe Keys Association, Lukens Water Company, and Lakeside Park Association. The locations of these purveyors are shown on **Figure 2-1**. Historic water use figures were requested from each of these purveyors. Where information was not provided, earlier data extracted from the Tahoe Basin Water Use Update, May 1996, West Yost and Associates[7] is noted.

2.8.1 TAHOE KEYS ASSOCIATION

Type of Use	No. of Accounts	Total Use, MG	Unit Use, acre-feet per Account
Single-Family	1,530	Data not provided	
Multi-Family	4	Water production shown in Chapter 3	Data not provided
Commercial	2		

Total Water Use: 930 acre-feet per year

2.8.2 LUKENS WATER COMPANY

Lukens Water Company did not provide historic water use data. Total use reported in the West Yost report[7] was 147 acre-feet per year. Water production is shown in Chapter 3.

2.8.3 LAKESIDE PARK ASSOCIATION

Lakeside Park Association did not provide historic water use data. Total water use reported in the West Yost report[7] was 289 acre-feet per year.

In the West Tahoe area, there are two significant non-public water purveyors: Tahoe Cedars Water Company and Tahoe Swiss Village Utilities, Inc. operating the Glenridge Park system. Historic water use for these purveyors is shown in the following tabulation:

2.8.4 TAHOE CEDARS WATER COMPANY

Type of Use	No. of Accounts	Total Use, MG	Unit Use, acre-feet per Account
Single/Multi Family	1,018	169.1	0.51
Hotel/Motel	19	7.9	1.27

2.8.5 TAHOE SWISS VILLAGE UTILITY, INC. (GLENRIDGE PARK)

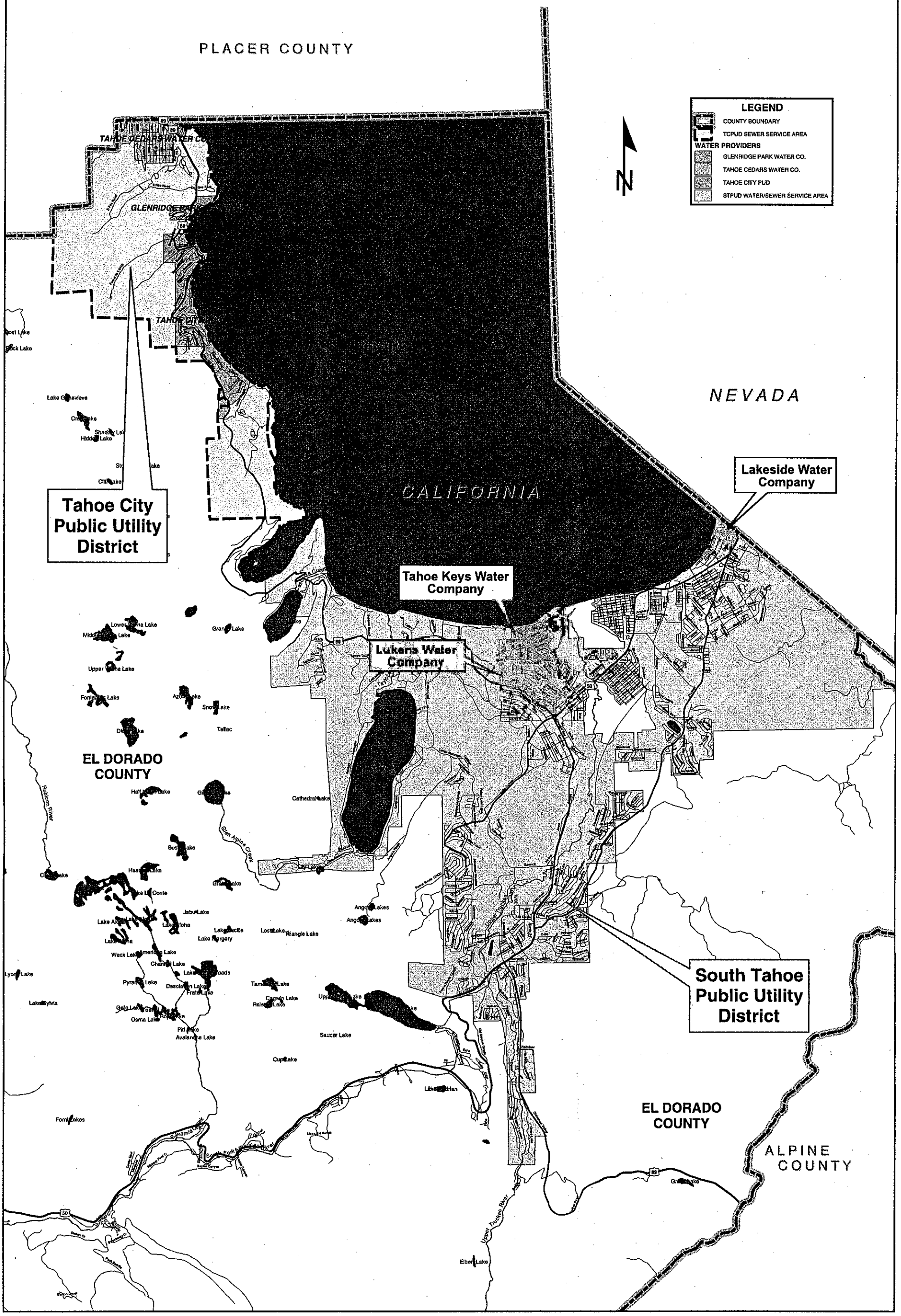
Type of Use	No. of Accounts	Total Use, MG	Unit Use, acre-feet per Account
Single Family	40	5.2	0.39

7 See Appendix A, Bibliography (No. 17)

The Meeks Bay Water Company has been absorbed into the Tahoe City PUD system and its water use is included in the TCPUD demands. Where water demand data are not available, unit water demands are assumed to be similar to adjoining areas.

In addition, there are numerous small mutual water companies, homeowners' associations, and individual water systems supplying campgrounds, vacation homes, motels, lodges, and various recreation facilities. The El Dorado County Environmental Health Division lists over 150 of these small systems; this list is included in Appendix C. These systems are supplied by springs and individual wells, and they are not required to report water production to the County. Water use figures for these users are, therefore, not available. In any case, the amount of use for these systems will not affect the future water needs of the County because their supplies would not supplement, to any significant degree, the water supply needs of the county in the future as discussed in Chapter 5.

Tahoe Basin



projects/El Dorado Water Agency/Phase II Water Plan/Graphics/Fig_02_01.ai 5/21/03

Figure 2-1
Location of Other Water Purveyors

CHAPTER 3

Existing Water Supply

3.1 INTRODUCTION

Details of existing water supplies, rights and permits, and contracts available to El Dorado County's water purveyors and others were obtained from available reports, and interviews with water purveyor and County personnel. Following is a description of water sources held or utilized by the purveyors and other users.

3.2 EL DORADO COUNTY WATER AGENCY

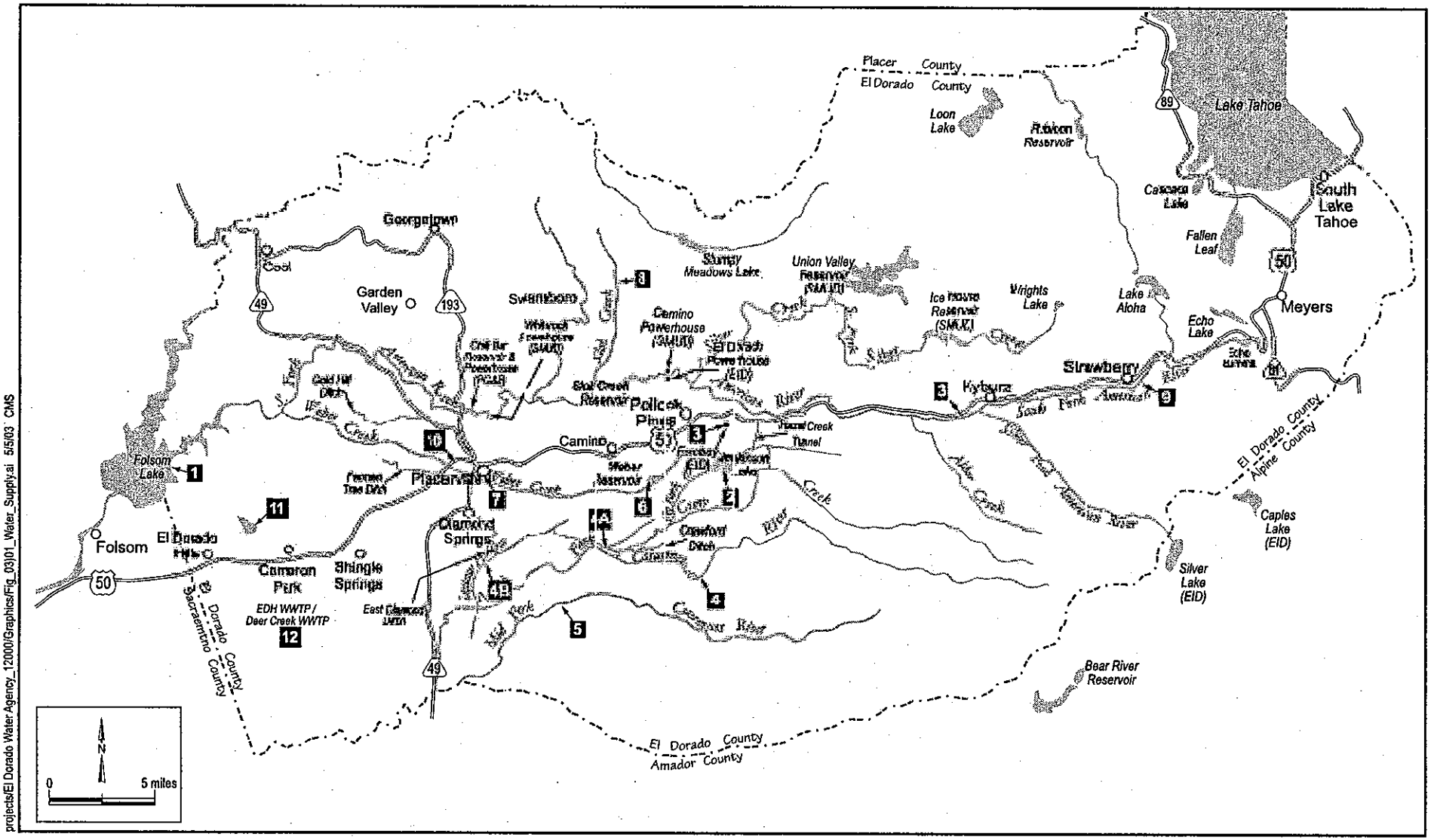
The Water Agency holds no water entitlements at this time. The Agency is working with the U.S. Bureau of Reclamation (USBR) to secure 15,000 acre-feet of water from Folsom Lake as authorized under Public Law (PL) 101-514 and then will transfer that water through contracts with El Dorado Irrigation District (EID) and Georgetown Divide Public Utility District (GDPUD). This supply will be discussed in more detail in Section 5.

3.3 EL DORADO IRRIGATION DISTRICT

The EID water supply is by far the most complex of the systems in El Dorado County and comes from a variety of sources. The following general descriptions of these sources and the accompanying figures and tables are taken from the District's draft *Water Supply Master Plan*[1]. The approximate location of each source is shown in Figure 3-1, and diversion rates, storage amounts, and other water rights information are summarized in **Table 3-1**.

- ***Folsom Lake*** - 1968 El Dorado Hills and 1958 Lake Hills Contractual Entitlements with USBR. EID and the USBR are in the final stages of negotiations to renew this contract for the purchase of water from Folsom Lake. Completion of negotiations is expected in the summer of 2003.

1 See Appendix A (Bibliography), No. 1



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1 Folsom Lake
2 Jenkinson Lake / Camp, Park, & Hazel Creeks
3 South Fork American River / Kyburz
4 North Fork Cosumnes River / North Fork Extension
5 Clear Creek / Crawford Ditch
6 Squaw Hollow Creek / East Diamond Ditch
7 Middle Fork Cosumnes River / Outingdale
8 Weber Reservoir / Weber Dam
9 Weber Creek / Farmer's Free Ditch
10 Slab Creek / Summerfield Ditch
11 South Fork American River / Strawberry
12 Hangtown Creek / Gold Hill Ditch
13 Bass Lake Reservoir
14 Recycled Water / EDH and Deer Creek WWTPs

Figure 3-1
Location of Existing Water Supply Sources

Georgetown Divide Public Utility District

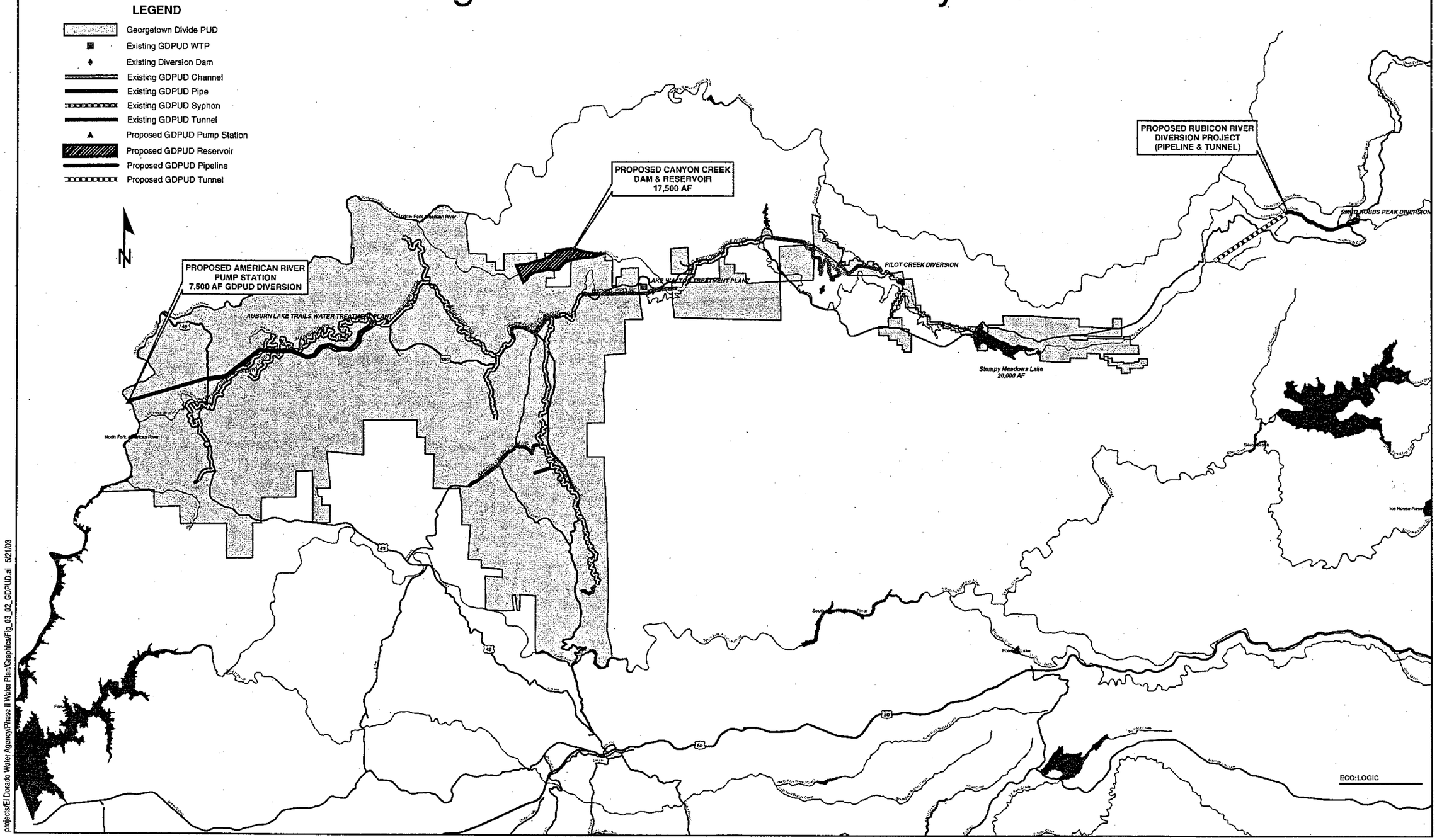

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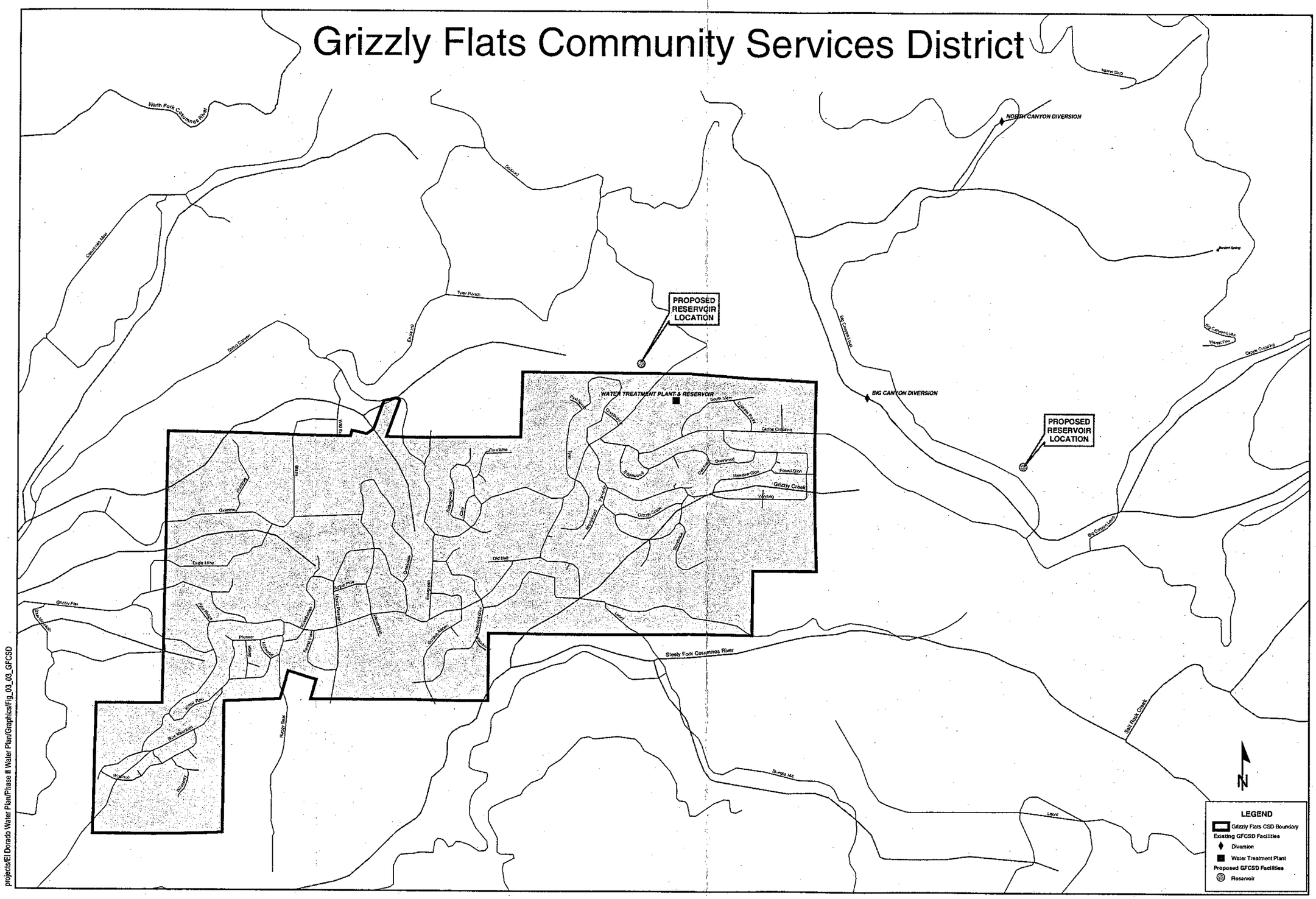
Figure 3-2

Georgetown Divide Public Utility District System

Grizzly Flats Community Services District



projects/El Dorado Water Plan/Phase II Water Plan/Graphics/Fig_03_03_GFCSD

Figure 3-3

Grizzly Flats Community Services District System

TABLE 3-1
EXISTING EID WATER SOURCES

Source No.	Water Source	Facility Name or Location	Contract / Agreement or Appropriator	Water Right Application Number	Water Right Permit Number	Water Right License Number	Maximum Diversion Rate	Entitlement or Storage	Notes
1	Folsom Lake	EID Raw Water Pump Station	USBR / EID Contract 14-06-200-1375A (El Dorado Hills)	13370, 13371 USBR	11315 & 6 USBR	USBR	14 mgd (21.7 cfs)	7,500 af/yr	a
1	Folsom Lake	EID Raw Water Pump Station	USBR / EID Contract 14-06-200-7312 IRI (Lakehills Estates)	Included above with El Dorado Hills	Included above with El Dorado Hills	USBR	Included above	50 af/yr	a
2	Jenkinson Lake (Camp Creek, Hazel Creek, Sly Park Creek)	Sly Park Reservoir and Dam	USBR/EID CONTRACT 14-06-200-949 IR3 (23,000 of average annual yield)	13707 & 8 5645A, 2270	10473 & 4 12258, 2631	USBR 11835 11836	500 cfs Inlet (Camp Creek and 125 cfs Outlet)	USBR water right of 33,400 af/yr	b, c
3	Camp Creek	Jenkinson Lake	EID	Pre-1914	N/A	N/A	12.5 cfs	None	c
3	South Fork American River at Kyburz	El Dorado Forebay	EID	Pre-1914	N/A	N/A	40 cfs	15,080 af/yr	d
4	North Fork Cosumnes River	North Fork Cosumnes Extension	EID	Pre-1914	N/A	N/A	15 cfs	5,000 af/yr	e
4	Clear Creek	Crawford Ditch	EID	Pre-1914	N/A	N/A	15 cfs	5,000 af/yr	f
4	Squaw Hollow Creek	East Diamond Ditch	EID	Pre-1914	N/A	N/A	Natural Flow	None	g
5	Middle Fork Cosumnes River	Outingdale Subdivision	EID	7478	4071	Pending	0.26 cfs	104 af/yr	
6	Weber Reservoir	Weber Dam	EID	1692	1053	2184	Natural Flow	(1,275 af/yr)	
7	Weber Creek	Farmer's Free Ditch	Missouri Flat Ditch Association & EID 1930 Agreement	Pre-1914	N/A	N/A	7 cfs	None	h
8	Slab Creek	Summerfield Ditch	EID	Pre-1914	N/A	N/A	10 cfs	None	i
9	South Fork American River	Strawberry	EID	Prescriptive Statement 10717	N/A	N/A	0.222 cfs	50 af/yr (200,000 gal storage tank)	j
9	Unnamed Spring	Strawberry	EID	15140	9467	11401	0.011 cfs	Included above with strawberry	j
9	Unnamed Stream	Strawberry	EID	11675	6999	11400	0.026 cfs	Included above with strawberry	j
10	Hangtown Creek	Gold Hill Ditch	EID	Pre-1914	N/A	N/A	Natural Flow	None	k

TABLE 3-1
EXISTING EID WATER SOURCES

Source No.	Water Source	Facility Name or Location	Contract / Agreement or Appropriator	Water Right Application Number	Water Right Permit Number	Water Right License Number	Maximum Diversion Rate	Entitlement or Storage	Notes
11	Bass Lake Watershed	Bass Lake Reservoir	EID	Statement 009304	N/A	N/A	Natural Flow	(760 af existing capacity)	l
12	Recycled Water	El Dorado Hills and Deer Creek Reclamation Plants	EID	N/A	N/A	N/A	N/A	EDH Plant: 3.0 mgd DC Plant: 2.5 mgd	

N/A Not Applicable

a The combined supply of 7,550 acre-feet per year is diverted by pump from Folsom Lake to the El Dorado Hills water treatment plant with a current capacity of 14 mgd. This water is then treated and distributed in the El Dorado Hills service area.

b Reservoir capacity at full pool is 41,000 acre-feet, including dead storage of 480 acre-feet and an allowance of 1,000 acre-feet for sedimentation. The reservoir is operated as two years of storage, with water released through the Camino Conduit to Reservoirs 2 and 2A, and through the Pleasant Oak Main to Reservoir B.

c In addition to the 500 cfs USBR Camp Creek diversion, EID has rights to 12.5 cfs based upon pre-1914 water rights for diversions from Camp Creek at the Camp Creek segment of the Crawford Ditch. When Sly Park Dam was constructed, the point of diversion for these rights was moved upstream from the Camp Creek Ditch, to the diversion dam at the inlet to the Camp Creek tunnel to Jenkinson Lake.

d In October of 1999, the Pacific Gas & Electric Company transferred the water rights for both power generation and consumptive uses to EID for the FERC Project 184. This project includes reservoirs and associated dams, canals, a powerhouse and other facilities. The original water rights claim is dated 1856.

e Diversions are made between April and November each year to meet customer demands on the North Fork Extension and Camp Creek ditch segments. Flows are also used to supplement Clear Creek diversions when Crawford Ditch customer demands exceed the Clear Creek water supply.

f Diversions are made year round into the Crawford Ditch from Clear Creek when available. In late summer, supplemental water is released from Jenkinson Lake into Clear Creek for aesthetic flow purposes (by agreement with homeowners), which are recaptured at Clear Creek diversion dam to meet Crawford Ditch irrigation demands.

g Water is released into Squaw Hollow Creek from the end of the Crawford Ditch to supplement natural creek flows diverted to the East Diamond Ditch to serve irrigation customers.

h The water released from Weber Reservoir into Weber Creek to meet irrigation demands is recaptured approximately 6 miles downstream at the Weber Creek diversion dam located at the end of the Farmer's Free Ditch. Natural flows of Weber Creek are also diverted to supplement releases from the reservoir during the irrigation season pursuant to pre-1914 rights.

i EID has historically made direct diversions from Slab Creek to the Summerfield Ditch to supply a small number of irrigation customers. EID owns and maintains the ditch. At this time, EID well water is being released into the Summerfield Ditch near Finnon Lake to supply these customers.

j EID makes direct diversions from the South Fork American River by pump. Upgraded water treatment facilities and a 200,000-gallon water storage tank were installed in 1994 to improve water quality and supply reliability. Direct diversions are no longer made from the unnamed spring and stream because of the unreliability of the water supply.

k Direct diversions have historically been made from Hangtown Creek, in addition to recapturing water released from the El Dorado Forebay via EID's Main Ditch to Hangtown Creek, for re-diversion into the Gold Hill Ditch at the west end of Placerville.

l The Bass Lake Reservoir is maintained for aesthetic purposes at this time. The water treatment facility at Bass Lake is not currently used to treat or supply domestic water. Under agreement with the Serrano Partners, this water source can be made available to them in the event that recycled water system cannot provide enough supply or an emergency exists. Domestic water from EID's nearby contiguous system is used to replenish water lost in the lake by evaporation and seepage. Water is released from the domestic system when Jenkinson Lake is full and spilling.

- ***Jenkinson Lake (Sly Park Unit of the Central Valley Project)*** – 1953 USBR contractual entitlement (Water right application numbers 13707 and 13708). EID and the USBR are in the final states of negotiations to renew this contract for the purchase of water from Jenkinson Lake. Completion of negotiations is expected in July 2003. However, EID is also continuing negotiations to complete the transfer of the Sly Park Unit from the USBR to EID. Federal legislation authorizing the transfer was signed into law in October of 2000 by President Clinton. Once the transfer is complete, EID will no longer be bound by the USBR contractual limits on operation of the facility.

- ***South Fork American River and Tributaries*** – Existing FERC Project 184 Water. This supply serves the EID Main El Dorado Canal and Gold Hill Ditch facilities, and the Reservoir No. 1 water treatment plant. The water was formerly purchased under a contract with Pacific Gas & Electric (PG&E) and its predecessor Western States Gas and Electric Co. In 1999, PG&E transferred the water rights for both power generation and consumptive uses to EID.

- ***North Fork Consumnes River, Clear Creek and Squaw Hollow Creek*** – Pre-1914 water rights for direct diversion from North Fork Consumnes River, Clear Creek and Squaw Hollow Creek for serving the Crawford Ditch System.

- ***Middle Fork Consumnes River*** – 1933 appropriative water right for direct diversion from the Middle Fork Consumnes River serving the Outingdale Subdivision.

- ***Weber Reservoir*** – 1920 appropriative water right for storage in Weber Reservoir.

- ***Weber Creek*** – Pre-1914 water right for direct diversion from Weber Creek into the Farmer's Free Ditch.

- ***Slab Creek*** – Pre-1914 water right for direct diversion from Slab Creek into the Summerfield Ditch for use in Swansboro Subdivision.

- ***South Fork American River and Unnamed Spring and Stream*** – Prescriptive and riparian rights for direct diversion by pump from South Fork American River; 1947 appropriative water rights for direct diversions from an unnamed stream and an unnamed spring.

- ***Hangtown Creek (Gold Hill Ditch)*** – Pre-1914 water right for direct diversion, first used by a predecessor to EID during the 1850s.

- ***Bass Lake Reservoir*** – Pre-1914 water right for collection of surrounding water shed, tributary to Bass Lake. Water first used by a predecessor to EID in 1866.

- ***Recycled Water*** – Use of recycled water from the El Dorado Hills wastewater treatment plant for industrial use and golf course irrigation since 1979. Use of recycled water from the Deer Creek wastewater treatment plant for golf course, landscape and road median irrigation since 1994. A noteworthy accomplishment has been the use of recycled water for residential landscape irrigation in the Serrano development since 1998.

- ***Firm Yield*** – Firm yield for the District's water supply was established through modeling and is defined as the yield that the integrated supply system can reliably deliver in 95 percent of the years, while incurring shortages of no more than 20 percent annually in 5 percent of the years. EID has adopted a system firm yield of 43,280 acre-feet per year.

3.4 GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT

GDPUD's source of water is the Stumpy Meadows project. The reservoir, built in 1962, has a capacity of 20,000 acre-feet and a firm yield of 12,200 acre-feet. Components of the Stumpy Meadows project and the 12,200 acre-feet firm yield include:

- ***Pilot Creek*** – Pre-1914 water right to divert and store water from Pilot Creek

- ***Pilot Creek*** – Post 1914 appropriative water right to divert and store water from Pilot Creek.

- ***Mutton Canyon*** – Pre-1914 water right to divert and water and store water from Mutton Canyon.

- ***Bacon Canyon*** – Pre-1914 water right to divert and water and store water from Bacon Canyon

- ***Deep Canyon*** – Pre-1914 water right to divert and water and store water from Deep Canyon

- ***Structure 2*** – Pre-1914 water right to divert water and store water from an un-named tributary to Pilot Creek

- ***Structures 3-7*** – Post 1914 permit to divert water from five un-named tributaries to Pilot Creek

- ***Otter Creek*** – Post 1914 permit to divert water from Otter Creek

- ***Onion Creek*** – Post 1914 permit to divert water from Onion Creek

- ***Firm Yield*** – Firm yield for the District's water supply was established through modeling and is defined as the yield that the integrated supply system can reliably deliver in 95 percent of the years, while incurring shortages of no more than 10 percent annually for domestic service and 50 percent for untreated water in 5 percent of the years. GDPUD has adopted a system firm yield of 12,200 acre-feet per year.

3.5 GRIZZLY FLAT COMMUNITY SERVICES DISTRICT

GFCSD's current water supply comes from Big Canyon and North Canyon, which are surface water tributaries in the North Fork Cosumnes River Basin, under a pre-1914 water right for the direct diversion of available flows from these two streams, at two points of diversion, into the Eagle Ditch. The two streams are fed by seasonal rainfall and snowmelt and are also part of a spring-fed system.

At the head of the supply system, below the confluence of North Canyon and an unnamed tributary, a diversion conveys water into the upper reach of GFCSD's Eagle Ditch. At the tail end of the upper reach, flow from Big Canyon is diverted into the system and the combined flow is conveyed through the lower reach of the Eagle Ditch to the District's raw water storage reservoir. An adjacent water treatment plant treats the water and discharges it into the distribution system for the Grizzly Park subdivision.[2]

The firm yield of the direct diversions which could be conveyed to the water treatment plant was calculated by estimating the quantity of direct diversion through hydraulic analysis available to Grizzly Flats CSD, the reservoir seepage loss, the monthly water use distribution, and evaporation loss. Based on this analysis in the 1998 Boracalli report[3], the firm yield of direct diversions conveyed to the water treatment plant was calculated to 143.5 acre-feet per year

The District was issued two permits by the State Water Resources Control Board (SWRCB) on August 18, 1989: Permit 20357 and Permit 20358. Permit 20357 authorizes the District to divert water from an unnamed tributary to the Steely Fork of the Cosumnes River, the total not to exceed 3 acre-feet per year from November 1 through June 15. According to the Borcalli Report, this water flows from Grizzly Creek into Porters Pond for fire suppression purposes. Questions have been raised regarding contamination of this water from septic systems located near the pond. There are currently no facilities to treat this water.

2 See Appendix A (Bibliography), No. 3
3 See Appendix A (Bibliography)

Permit 20358 authorizes GFCSD to divert water to storage from North Canyon and Big Canyon. The water appropriated under this permit is not to exceed 31 acre-feet per year, to be collected between November 1 and June 15. This permit is understood to be for diversion to storage rather than for consumption and, therefore, is more than adequate to allow seasonal storage in the existing raw water reservoir with its active capacity of about 15 acre-feet.

3.6 SOUTH TAHOE PUBLIC UTILITY DISTRICT

STPUD relies solely on groundwater for its water supply. Starting in 1996, the District detected methyl tertiary butyl ether (MTBE) in one of its wells. Since then the District has removed 13 wells (as of September 2000) from service or drastically reduced their pumping rate because of numerous MTBE plumes. Litigation with various petroleum suppliers over the groundwater contamination issue was settled in the District's favor in 2002. The District currently operates 17 active wells with a nominal capacity of 13,742 gallons per minute (gpm) or 19.789 million gallons per day (mgd). The District's system includes 22 storage tanks with an operational storage capacity of 9 million gallons and 11 booster pump stations with a total maximum pumping capacity of 7,019 gpm.

3.7 TAHOE CITY PUBLIC UTILITY DISTRICT

Until 1989 approximately 60 percent of the District's needs were supplied from Lake Tahoe. The U.S. Environmental Protection Agency (USEPA) Surface Water Treatment Rule and other prospective surface water regulations, and the attendant costs of their implementation, prompted the District to convert their water supply to groundwater. The surface water intakes in the lake are maintained as a standby source in case of emergency.

The District is primarily located in Placer County with the Rubicon System serving the area between Meeks Bay and Bliss State Park in El Dorado County. The Rubicon System supply consists of three wells, a booster pump station, and three steel reservoirs. These facilities are reported to be generally in good condition[4] with some concern expressed for site security and potential fire danger from trees close to the facilities.

The District's Rubicon System facilities include three wells with a total operating capacity of 645 gpm (for two wells; the third is N/A), three storage tanks having a total capacity of 538,000 gallons, and two booster pumps with capacities of 185 gpm each.

4 See Appendix A (Bibliography)

3.8 AGRICULTURE

As stated in the previous chapter, virtually all of the agricultural water use within El Dorado County occurs on the western slope, and virtually all of the surface water for agricultural use is supplied by EID and GDPUD and is included in those purveyors' water use figures. Agricultural water use outside of the purveyor service areas is generally supplied from individually owned wells and ponds, and water production and use figures are not readily available.

3.9 OTHER USERS

Water for the non-public water purveyors operating in the portion of the Lake Tahoe area within El Dorado County is supplied by groundwater and all indications are that they will continue to do so in the future. Water production capability figures supplied by purveyors that provided information are as follows:

- **Lukens Water Company:** 2,000 gpm from three active wells
- **Tahoe Keys Homeowners Association:** 5,000 gpm from three active wells
- **Tahoe Swiss Village Utility, Inc.:** 150 gpm from one well

3.10 GROUNDWATER

As stated in the foregoing section, groundwater is the source of supply for the purveyors in the South and West Tahoe areas and indications are that groundwater will continue to provide an adequate supply of water to those areas. Settlement of litigation related to MTBE contamination in South Tahoe will likely provide sufficient funding to treat the contaminated groundwater supplies for domestic use.

On the western slope of El Dorado County, however, groundwater occurs primarily in hard rock. In the county as in other parts of the Sierra Nevada foothills, alluvium consisting of unconsolidated deposits of clay, silt, sand, and gravel laid down by flowing water occurs only in small areas too thin to provide a significant amount of storage. Thus the amount of usable groundwater is limited. A cooperative study entitled Georgetown Divide Water Management Study prepared by the Department of Water Resources[5] describes water supply alternatives available to the Georgetown Divide area and includes a discussion of the groundwater situation on the western slope. The following is an example for that study.

5 See Appendix A (Bibliography),No. 8

Many wells are drilled in hard crystalline rock that lies at or near the ground surface or under the thin layers of alluvium. In rock formations water moves through, and is stored in, fractures in the rock mass. The width of each fracture usually decreases with depth, causing diminished water flow and storage capacity. The amount of water that can be stored and transmitted in such fractures is generally small compared to the amount that can be held and conveyed in a porous alluvial aquifer.

During the drought of 1976 and 1977, El Dorado County Division of Environmental Health initiated a water well survey canvassing residents with wells in 15 county planning areas. **Table 3-2** lists median depth and estimated production rate for wells in 15 of the planning areas. The survey showed that while many residential wells produced 4 to 10 gallons per minute, many had flow rates less than 1 gpm and some had gone dry. Other reports[6,7] substantiate the limitation of groundwater as a dependable source of water for supplementing public water supply or augmenting surface water storage during droughts. In fact, the contrary may be true where users of groundwater may look to the Districts for service when their wells go dry during droughts. Surveys also indicate that groundwater quality, though satisfactory in most areas of the western slope, is often marginal. As future development occurs in areas beyond pipeline service, both quantity and quality of groundwater sources could be threatened.

TABLE 3-2
WELL CHARACTERISTICS IN EL DORADO COUNTY

County Planning Area	Number of Wells Surveyed	Median Depth (Feet)	Median Rate (gpm)
Camino-Fruitridge	57	100	5
Cool	29	200	5
El Dorado/Diamond Springs	19	150	4
Finnon	37	150	10
Garden Valley	70	150	10
Gold Hill	2	---	5-10
Kelsey	45	125	4
Latrobe	23	200	5
Lotus-Coloma	66	<100	10
Pilot Hill	21	150	7
Pleasant Valley	199	100	6
Rescue	120	125	10
Shingle Springs	42	125	4
Somerset/Fairplay/Mt. Aukum	---	---	10
Pollock Pines	10	---	8

Source: Calkins, Carla, *Water Well Survey Report*, June 1978

6 See Appendix A (Bibliography)
7 See Appendix A (Bibliography)

CHAPTER 4

Projected Water Demands

4.1 INTRODUCTION

The land use alternatives upon which the water demand projections are based were developed by Economic and Planning Systems, Inc. (EPS) for the Western Slope of El Dorado County as part of the concurrent County General Plan/Environmental Impact Report (EIR) process, and for the Tahoe Basin on the 2006 land use projections of the Tahoe Regional Planning Agency (TRPA). There are three basic components or steps used to construct the water demand forecast. They are:

1. Land use forecasts for the County of El Dorado.
2. Distribution of the land use forecasts between the five major water purveyors and the remaining county areas.
3. Application of water demand factors to the land use forecasts by purveyor or other county areas.

For the purposes of land use forecasts, El Dorado County was divided into two areas: the Western Slope and the Tahoe Basin.

Outside the service areas of the water purveyors, the water needs are supplied by small privately owned water providers and individual property owners from wells and springs. For the purposes of this study, the territory that is not serviced by the five major purveyors is cumulatively referred to as "Other County Areas" (OCA).

The land use projections are multiplied by a water demand factor to estimate the water demand for each of the purveyors and well as the remaining OCAs. The water demand factors are based on data provided by each of the purveyors.

Water demand projections were developed both for the Western Slope and the Tahoe Basin under various alternatives for three points in time: the base year (1999 for the Western Slope and 2001 for the Tahoe Basin), 2025, and Buildout. These alternatives are described later in this section and provide a range that allows estimating the annual countywide water demand. Water demand projections are summarized in Table 4-1.

Water Demand Forecasts were prepared by Economic and Planning Systems, Inc. (EPS) using the methodology summarized in this chapter and described in detail in Appendix D.

TABLE 4-1
EL DORADO COUNTY WATER DEMAND FORECAST WATER DEMAND SUMMARY[a]

Description	Acre-Feet Per Year				
	Base Year[b]	2025		Buildout	
	Estimated Demand	New Demand (1999-2025)	Total Demand	New Demand (1999-Buildout)	Total Demand
	A	B	C = A+B	D	E = A+D
Western Slope					
No Project Alternative	58,300	55,800	114,100	82,300	140,600
Roadway Constrained Alternative	58,300	58,900	117,200	91,000	149,300
Environmentally Constrained Alternative	58,300	63,400	121,700	94,200	152,500
1996 General Plan	58,300	64,000	122,300	113,100	171,400
Tahoe Basin					
Alternative 1	9,100	2,500	11,600	2,900	12,000
Alternative 2	9,100	3,300	12,400	3,400	12,500
Range of Demand for County					
Low Demand	67,400	58,300	125,700	85,200	152,600
High Demand	67,400	67,300	134,700	116,500	183,900

a Water demand projections reflect agricultural adjustment.
b 1999 for the Western Slope; 2001 for the Tahoe Basin.

4.2 WATER DEMAND FORECAST METHODOLOGY

4.2.1 LAND USE FORECASTS

The demand for water in El Dorado County over the next 25 years, in large part, will be related to growth in population and employment. Water demand in the Tahoe Basin will also be related to growth in recreational and tourism activity.

Housing and employment growth forecasts were developed for the Western Slope of the County, by Traffic Analysis Zone (TAZ), in conjunction with the concurrent General Plan/EIR process. These forecasts are used to maintain consistency with the General Plan process.

The land use forecasts for the Tahoe Basin are based on the 2006 Land Use projections developed by the Tahoe Regional Planning Agency (TRPA) and extended to 2025 by EPS for purposes of this analysis. The buildout number of households is determined by the growth limitations currently in place within the Tahoe Basin.

LEGEND

- GDPUD RAW WATER SUPPLY SYSTEM
- PROPOSED DUARTE VINEYARDS (275 ACRES)
- 2002 PARCELS WITH A RESTRICTED MATERIALS PERMIT (3,215 ACRES)
- GDPUD 2002 IRRIGATED PARCELS
- EID 2002 IRRIGATED PARCELS
- AGRICULTURAL DISTRICTS (53,048 ACRES)
- CHOICE SOILS, 15% OR LESS SLOPES (12,246 ACRES)
- CHOICE SOILS, 15% TO 50% SLOPES (14,017 ACRES)
- GDPUD SERVICE AREA (75,000 ACRES)
- EID SERVICE AREA (137,857 ACRES)
- EL DORADO COUNTY

149 — CHOICE SOILS ACREAGE, 15% OR LESS SLOPES
116 — CHOICE SOILS ACREAGE, 15% TO 50% SLOPES
265 — TOTAL POTENTIAL IRRIGABLE LAND ACREAGE

1	149	116	265
2	284	1,187	1,471
3	570	1,265	1,835
4	827	813	1,640
5	697	1,653	2,350
6	560	136	696
7	90	789	879
8	70	371	441
9	280	214	494
10	635	276	911
11	1,778	1,378	3,156
12	749	635	1,384
13	481	300	781
14	1,719	1,932	3,651

*Boundaries of the Agricultural Districts obtained from El Dorado County Planning Department (2001 Project Description), April 2002.

Sources: State of California Department of Conservation (Farmland Mapping and Monitoring Program - 2000); U.S. Department of Agriculture Natural Resources Conservation District (SSURGO - 2001); El Dorado County Planning Department; El Dorado County Surveyor; El Dorado Irrigation District; Georgetown Divide Public Utility District; KASL; and County of El Dorado Department of Agriculture, Weights, & Measures (2002 Restricted Materials Permits)

Figure 4-1
Existing and Potential Irrigable Land

N

EL DORADO COUNTY WATER AGENCY
EL DORADO COUNTY WATER MANAGEMENT PLAN
EXISTING AND POTENTIAL IRRIGABLE LAND

WOOD RODGERS, INC.
SACRAMENTO, CA

MAP 1

03/20/03 H:...\DOCS\PROJECTS\227 Boyle Engineering (El Dorado)\ArcView-County study\edc.apr

Agricultural land use (both existing and future) was also considered for purposes of estimating the water demand. Data were provided by Wood Rodgers, Inc. for the projected water demanded by agricultural users.

The Western Slope

The water demand forecast for the Western Slope was developed for the four alternatives analyzed in the Proposed General Plan:

- **The No Project Alternative:** The No Project Alternative is based on the 1996 General Plan, but assumes that the Writ governs land use decisions through 2025 and beyond. The Writ generally prohibits new discretionary approvals of residential development until the County adopts a new General Plan, with the exception of parcels for which a development agreement was entered into prior to the issuance of Writ.

- **The Roadway Constrained 6-Lane "Plus" Alternative:** This alternative assumes that Highway 50 is expanded to no more than six lanes and land parcels which currently do not have approved development agreements or tentative subdivision maps will be allowed to buildout at a maximum density of four units per parcel.

- **The Environmentally Constrained Alternative:** This alternative is based on a reduced overall buildout capacity of the County as determined by reassigned land use designations proposed by County planning staff on a parcel by parcel level. It also includes a mixed-use component for commercial properties, with 10 percent of commercial acres designated to have a residential component. Densities vary between land uses designated as a community region or a rural center. For all residential land uses, excluding the mixed-use component, it was assumed that parcels would buildout at maximum densities.

- **The 1996 General Plan Alternative:** This alternative is based on the 1996 General Plan Land Use designations. The main difference between this alternative and the No Project Alternative is that the Writ is not assumed to apply.

These land use alternatives are the four equal weight alternatives analyzed in the County General Plan EIR.

The land use forecast alternatives considered in this report project residential housing units (and households) and non-residential employment at 2025 and at buildout of the General Plan. Projected

single family and multi-family households and retail, service, and other employment are detailed at the TAZ level. The base year for the forecast is 1999.

The land use forecasts for these four alternatives are summarized in Figure 3 of Appendix D along with detailed growth projections for all categories under each alternative.

The Tahoe Basin

The growth projections for the Tahoe Basin are based on the information provided by the TRPA in 2002. The Tahoe Basin land use projections are also allocated to TAZs and contain the following categories:

- Residential Households
- Hotel/Motel Rooms
- Campground Sites
- Retail Employment
- Service Employment
- Recreational Employment
- Other Employment

For residential households, hotel/motel rooms, and campground sites, the TRPA provided both the total number of units and the number of units with full-time and seasonal occupancy.

The growth in the Tahoe Basin is regulated by the rules established by the TRPA that limit the number of units that can be built annually and specify the total number of remaining developable parcels. According to the TRPA, the total number of parcels available for development in 2001 in the STPUD service area was 3,300, with approximately 2,800 parcels in the STPUD service area, and approximately 50 parcels in the TCPUD service area. The remaining developable parcels were assigned to Other County Areas.

The TRPA land use forecasts go through 2006. EPS extended the forecasts through 2025 and buildout for compatibility with western slope forecasts. The base year for the forecast is 2001 as determined by the TRPA.

The Tahoe Basin has several important demographic and growth factors that need to be considered in developing land use forecasts. Currently, new development in the area is restricted to 116 residential units per year. However, an initiative is currently being considered by the TRPA staff that might reduce the allowable development to 87 units per year. Per the TRPA, the resolution of this issue may take place in early 2003, but the exact date is not finalized as of the writing of this report.

In addition, seasonal occupancy of the Tahoe Basin is an important consideration because a vast majority of the existing homes and future homes are projected to be second homes or tourist rentals. The TRPA estimates that over 44 percent of new households will be seasonally occupied in 2006.

The treatment of these seasonal homes is an important consideration in determining future water demand. As the Tahoe Basin gets closer to buildout and if the demand for tourist rental homes in the area increases, the seasonal occupancy may decrease over time, i.e., greater full time usage. As a result water demand will increase over time. This increase will result in higher maximum daily and hourly peaks and annual total demand.

In order to bracket the potential range of water demand in the Tahoe Basin, we have developed two alternative land use forecasts through 2025 and buildout. They are as follows:

- **Alternative 1: Low Growth/Seasonal Occupancy.** This alternative assumes that the current initiative seeking to further reduce the number of residences that can be built in South Tahoe area (not to exceed 87 units per year) is passed. It also assumes the continuing seasonal occupancy of a portion of units. Under this scenario the area is estimated to reach buildout in 2034.

- **Alternative 2: Moderate Growth/Full Occupancy.** The second alternative assumes the present level of allowable development in South Tahoe (116 residential units per year) and also projects that 50 percent of all residential units, hotel/motel rooms, and campground sites are currently not occupied full-time will have full-time occupancy. Under this scenario, the area is estimated to reach buildout in 2027.

The land use forecasts are summarized in Figure 4 of Appendix D along with detailed growth projections for all categories under each alternative. The buildout capacity was provided by the TRPA.

4.2.2 ALLOCATION OF GROWTH

In order to translate the land use forecasts into water demand for each of the five water purveyors as well as the Other County Areas, it is necessary to determine how much of the projected growth will occur in each of the purveyors boundaries.

To determine the growth to be allocated to each of the water purveyors, an acreage distribution factor was calculated based on the purveyor's existing service area boundaries. These service boundaries were overlaid on to the TAZs' boundaries using the software package ArcView GIS 3.2A. Based on this exercise, growth was allocated to purveyors and Other County Areas on a pro-rata acreage share basis.

The acreage allocation factors by TAZ for the Western Slope area and the acreage allocation factors by TAZ for the Tahoe Basin are shown in Appendix D. Any growth outside of the purveyor boundaries was allocated to the Other County Areas.

While this methodology worked for the majority of the water purveyors and TAZs, some exceptions did exist.

In the Western Slope area, the only modification had to do with Grizzly Flats CSD. The purveyor's service area is completely located within one TAZ and geographically constitutes a very small portion of the TAZ (See Figure 2 of Appendix D). However, the total number of projected households located in the TAZ (278 households) matches closely to the number of accounts serviced by the purveyor in 1999 (approximately 300 accounts). A simplifying assumption was made to allocate all projected growth within this TAZ to the purveyor boundary.

In the Tahoe Basin area, due to the specifics of land use and growth patterns (a large number of homes are located outside of the purveyor service areas), the pro-rated acreage percentage allocation method described in the beginning of this section did not yield reliable results in the allocation of residential growth to TCPUD and STPUD.

Therefore, the number of residential accounts indicated by the purveyors for the base year was used. The difference between the total number of households provided by the TRPA and the number of the residential accounts services by the purveyors was assigned to the Other County Areas. The households and businesses within OCA receive water from private wells and numerous smaller water companies. No attempt has been made to generate separate forecasts for these water companies beyond the general OCA estimate (due to the fact that the efforts to obtain the necessary information from the water

companies were unsuccessful and that in general these companies have on average relatively few accounts). This allocation became the basis for future growth projections.

The future growth allocation to purveyor boundaries was made based on the development constraints established by the TRPA, historic growth trends reported by the purveyors, and growth estimates generated by the TRPA for the years 2001 through 2006.

The results of growth allocation to purveyor boundaries for the Western Slope and the Tahoe Basin respectively are shown in Figures 5 and 7, respectively, of Appendix D, and Figure 6 contains the growth allocation detail for EID's three service regions.

4.3 WATER DEMAND FORECASTS

Once new growth is allocated either to a water purveyor or to the remaining county areas, a water demand factor is applied to the applicable land use to calculate the estimated water demand in acre-feet per year.

The water demand factors used in this analysis were based on data provided by each of the water purveyors. In some cases, simplifying assumptions were made for purposes of this analysis and are detailed in the section for each purveyor. The water demand factors are summarized in Figures 8 and 9 of Appendix D.

Purveyor-specific water demand factors were used because each service area exhibits unique water demand and growth trends, thus making universal water demand factors unreliable.

Agricultural water demand for the Western Slope was projected by Wood Rodgers, Inc. The assumptions used to determine agricultural water demand are detailed in Section 4.5

4.3.1 EL DORADO IRRIGATION DISTRICT

EID service area is subdivided into three smaller service areas – El Dorado Hills, Western Region, and Eastern Region. Because this analysis is a "big picture" look at water demand, the projections presented herein are for the aggregated EID service area. However, due to the different pace of growth within the EID Regions, EPS used region-specific demand factors to increase the accuracy of the forecast. The residential and commercial water demand calculations for each of the three regions are summarized in Figures 15 through 18 of Appendix D. A summary of the water demand forecast totals for the four alternatives for EID is presented in Table 4-2.

TABLE 4-2
WATER DEMAND FORECAST - EL DORADO IRRIGATION DISTRICT

Alternative Land Use Forecast	Total Water Demand (acre-feet/year)		
	1999	2025	Buildout
No Project	37,806	65,049	70,151
Roadway Constrained	37,806	97,188	74,948
Environmentally Constrained	37,806	70,637	78,158
1996 General Plan	37,806	70,837	88,768

- **Residential Demand:** The residential water demand factors for the EID three service areas are based on the EID Administrative Draft Water Supply Master Plan. See Figure 9 of Appendix D.

- **Commercial/Industrial/Office (CIO) Demand:** The CIO water demand factor is the total CIO water demand divided by the total number of employees in the EID service area. See Figure 9 of Appendix D.

- **Agricultural Demand:** The agricultural water demand projections were provided by Wood Rodgers and remain unchanged throughout the different land use alternatives.

- **Recreational Turf Services:** The Recreational Turf Services includes irrigation of golf courses and sports fields. Water demand for these uses was provided by EID (Administrative Draft Water Supply Master Plan) and reflects a historic average water demand for the past 11 years. Historical data does not suggest any growth trends in water use over time.

- **Ditches:** Water losses associated with the use of ditches for water delivery fluctuate significantly by the year. A conservative approach was taken in the preparation of this report projecting that the future water demand within this category will average approximately 1,500 acre feet annually. The base year shows only 1,000 acre-feet due to the fact that it was the actual demand for that year. However, the 1999 demand in this category is also considered to be unusually low.

- **Unaccounted For and Beneficial Uses:** The unaccounted for water is the water that is taken into the system from a purveyor's main sources, but not delivered to the consumers (put to beneficial use or otherwise unaccounted for). This category of water demand is projected to be reduced (as a percentage of active demand) over time based on historical patterns and goals established by EID. This assumption is in line with the EID strategy and performance geared towards reducing leakage and water losses.

- **Latent Demand:** Latent demand includes inactive accounts and uninstalled meters, which potentially can generate immediate water demand. Estimated to remain unchanged as a percentage of active demand based on historical data provided by EID that does not indicate any reduction or growth trends.

The water demand projections presented herein for EID do not coincide with those in the EID *Water Supply Master Plan Administrative Draft – December 2001* because of the difference in service area boundary used in the two projections. The December 2001 report based its projections on a service area somewhat larger than the district boundaries, including those parcels which, as the result of field inspections, were deemed likely to receive EID water in the future. These parcels were those near EID's existing and planned distribution facilities judged to have the physical and financial potential to extend these facilities to serve them. On the other hand parcels within EID's existing boundaries with no potential for service were excluded. The EPS water demand projections for EID were based on service within EID's existing boundaries; those areas outside EID's boundaries included in the December 2001 report in this report are included in Other County Areas. The county totals, therefore, are not affected.

4.3.2 GEORGETOWN DIVIDE PUD

- **Residential Demand:** The residential water demand factor was provided by GDPUD. No breakout of consumption by residential land uses is available. Therefore, the same factor was used for both single-family and multi-family residences, as shown in Figure 8 of Appendix D. A summary of the water demand forecast totals for the four alternatives for GDPUD is presented in Table 4-3.

TABLE 4-3
WATER DEMAND FORECAST - GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT

Alternative Land Use Forecast	Total Water Demand (acre-feet/year)		
	1999	2025	Buildout
No Project	10,956	15,277	18,270
Roadway Constrained	10,956	15,362	19,387
Environmentally Constrained	10,956	15,787	20,415
1996 General Plan	10,956	15,743	22,069

- **Commercial/Industrial/Office (CIO) Demand:** The CIO water demand factor was estimated based on the total CIO water demand divided by the total number of employees in the service area.

- **Irrigation Demand:** The agricultural / irrigation water demand projections were provided by Wood Rodgers and remain unchanged throughout the different land use alternatives.

- **Golf Course Demand:** A Property Owners Association is responsible for maintaining a golf course with a water demand that is projected to remain constant over the course of time.

- **Unaccounted For and Beneficial Uses Demand:** This water demand includes operational losses that average 3,000 acre feet per year (per GDPUD) and water system treatment and conveyance that constitutes 4.2 percent of active demand.

- **Latent Demand:** The water factor for latent demand was provided by GDPUD and is assumed to decrease (as a percentage of active demand) over time as additional customers become a part of active demand.

4.3.3 GRIZZLY FLATS COMMUNITY SERVICES DISTRICT

Only one universal per service demand factor was provided by GFSCD that included an allocation for all commercial, unaccounted for, and beneficial water uses. An adjustment was made for the 1999 water demand to account for units with seasonal occupancy. The seasonal occupancy is projected to decrease over time and by 2025 all residencies will have full-time occupancy. A summary of the water demand forecast totals for the four alternatives for GFCSD is presented in Table 4-4.

TABLE 4-4
WATER DEMAND FORECAST - GRIZZLY FLATS COMMUNITY SERVICES DISTRICT

Alternative Land Use Forecast	Total Water Demand (acre-feet/year)		
	1999	2025	Buildout
No Project	157	197	499
Roadway Constrained	157	204	848
Environmentally Constrained	157	241	800
1996 General Plan	157	205	1,066

4.3.4 SOUTH TAHOE PUBLIC UTILITY DISTRICT

- **Residential Demand:** Residential water demand factors were provided by STPUD and converted from gallons per day to acre-feet per year.

- **Commercial/Industrial/Office (CIO) Demand:** The CIO water demand factor is the total CIO water demand divided by the total number of employees in the service area.

- **Hotel/Motel Rooms and Campground Sites Demand:** The water demand factors for these uses was estimated based on data provided by the State Water Resources Control Board of the State of California (Policy for Implementing the State Revolving Fund for Construction of Wastewater Treatment Facilities, Table G-1).

- **Unaccounted For and Beneficial Uses Demand:** This water demand factor was provided by STPUD.

- **Latent Demand:** Not included as data is not available.

A summary of the water demand forecast totals for the two land use alternatives for both STPUD and TCPUD is presented in Table 4-5.

TABLE 4-5
WATER DEMAND FORECAST - SOUTH TAHOE PUBLIC UTILITY DISTRICT AND TAHOE CITY PUBLIC UTILITY DISTRICT

Purvey with Alternative	Total Water Demand (acre-feet/year)		
	1999	2025	Buildout
South Tahoe Public Utility District			
Alternative 1	7,698	9,893	10,328
Alternative 2	7,698	10,302	10,421
Tahoe City Public Utility District			
Alternative 1	288	312	319
Alternative 2	288	328	329

4.3.5 TAHOE CITY PUBLIC UTILITY DISTRICT

- **Residential Demand:** Residential water demand factors were provided by TCPUD and converted from gallons per day to acre-feet per year.

- **Commercial/Industrial/Office (CIO):** The CIO water demand factor was estimated based on the total CIO water demand divided by the total number of employees in the service area.

- **Hotel/Motel Rooms and Campground Sites Demand:** The water demand factors for these uses were estimated based on data provided by the State Water Resources Control Board of the State of California (Policy for Implementing the State Revolving Fund for Construction of Wastewater Treatment Facilities, Table G-1).

- **Unaccounted For and Beneficial Uses Demand:** This water demand factor was not included as no data is currently available.

- **Latent Demand:** Not included as data is not available.

4.3.6 OTHER COUNTY AREAS

- Separate calculations were made for the Western Slope and the Tahoe Basin areas due to differences in water demand trends discussed earlier.

- The calculated factors are a weighted average for demand in the areas serviced by purveyors.

- No unaccounted for, beneficial uses, and latent demand factors were calculated due to the fact that the water is supplied through private wells and by smaller water companies that do not have the capability to track these factors.

4.4 COUNTYWIDE WATER DEMAND FORECAST

Water demand forecasts were estimated based on the growth projections and demand factors described in the previous sections. For residential and employment growth, water demand was estimated by multiplying the projected number of units (households, jobs, etc.) by the appropriate water factor. For other categories (agricultural, latent demand, etc.), the water demand allocation was made according to the assumptions discussed in the water demand factors section above.

Water demand forecasts were developed for each alternative described above for three points in time: the base year (1999 for the Western Slope and 2001 for the Tahoe Basin), 2025, and Buildout. The results are summarized in Table 4-1. These alternatives provide a range for the annual countywide water demand.

It should be noted that the base year water demand was estimated based on the historic average water demand factors and variables (households, employment, etc.) calculated based on the methodology specified in this report. While it is not the actual demand recorded by the purveyors for the base year, it is very close to the actual numbers with a very insignificant variance.

For low growth forecast (No Project in the Western Slope area and Alternative 1 in the Tahoe Basin), the overall annual system water demand in El Dorado County is estimated to be 109,700 acre feet in 2025 and 129,600 acre feet at buildout.

For high growth forecast (1996 General Plan in the Western Slope area and Alternative 2 in the Tahoe Basin), the overall annual system water demand in El Dorado County is estimated to be 120,900 acre feet in 2025 and 162,800 acre feet at buildout.

The detailed water demand forecasts for each water purveyor under each alternative are summarized in Figures 11 through 20 of Appendix D.

4.5 AGRICULTURE

As noted previously, agriculture within the Sierra Foothills is substantially different from agriculture within the Central Valley differing in topography and the size and scale of agricultural objectives. Unfortunately, little reliable data is available for documenting agricultural land and water use, as it exists today and how it has changed over time. This is complicated even more by conflicts in the data and differences reported by various sources. Nevertheless, agriculture in El Dorado County is an important sector from the standpoint of economics, open space, and recreation. The growing metropolitan population in the Sacramento Region will fuel the demand for greater access to an agro-recreational-type setting. El Dorado County is favorably situated geographically to accommodate this demand. The success of Apple Hill is a testament to this activity.

The agricultural water demand forecast for the Western Slope used in this section was developed by Wood Rodgers, Inc. **Table 4-6** provides a comparison of the initial agricultural water demand estimated by EPS based on data provided by the water purveyors with the estimates provided by Wood Rodgers. Wood Rodgers estimates include the potential water demand that could be generated by the agricultural areas assuming that reliable, affordable water supplies were available.

The future of agriculture in El Dorado County will be influenced by policies related to land use, water supply, and water supply infrastructure. Certainly, the global economic situation will be a factor; however, the agricultural economy of the Sierra Foothill region is less impacted by factors affecting agriculture in the Central Valley except for the availability of reliable as well as affordable water supply. The agricultural water demand figures are contingent upon the facilities necessary to provide such a water supply being in place.

Future agriculture in El Dorado County will be comprised generally of permanent crops as compared to annual crops, which comprise a large part of the crop mix in the Central Valley. The investment in developing these crops is such that taking significant deficiencies in water supply or fallowing is not a feasible option. Similarly the use of groundwater in dry years is not an option. Accordingly, in the

TABLE 4-6
EL DORADO COUNTY WATER DEMAND FORECAST
AGRICULTURAL WATER DEMAND PROJECTIONS COMPARISON - WESTERN SLOPE

Description	Base Year (acre-feet/year)[c]			2025 (acre-feet/year)			Buildout (acre-feet/year)		
	Initial Estimate[a]	Wood Rodgers Estimate[b]	Difference	Initial Estimate[a]	Wood Rodgers Estimate[b]	Difference	Initial Estimate[a]	Wood Rodgers Estimate[b]	Difference
El Dorado Irrigation District	5,239	5,950	711	5,239	22,100	16,861	5,239	22,580	17,341
Georgetown Divide PUD	4,463	4,351	(112)	4,463	11,770	7,307	4,463	17,530	13,067
Grizzly Flat CSD	--	--	--	--	--	--	--	--	--
Other County Areas	--	2,005	2,005	--	4,865	4,865	--	13,865	13,865
Total	**9,702**	**12,306**	**2,604**	**9,702**	**38,735**	**29,033**	**9,702**	**53,975**	**44,273**

Sources: Economic and Planning Systems, Inc. (EPS); wood Rodgers, Inc.
a As shown in EPS Draft Technical Memorandum (El Dorado County Water Demand Forecast) dated December 19, 2002 (based on data provided by purveyors.
b Used in current project.
c Base year is 1999 for the Initial Estimate and 2000 for Wood Rodgers estimates.

future water supply for agriculture in El Dorado County will need to be evaluated from a "firm" yield perspective. For purposes of this work, the definition of "firm" yield is as follows:

> *"Firm Yield" is the maximum quantity of water that can continuously be made available from a water supply system without deficiency, each year, under hydrologic conditions similar to the most critical dry period of record.*

Since the critical dry period is usually taken as the period of lowest natural flow of record, the possibility remains, as evidenced from tree ring studies completed by the Department of Water Resources, that a period could occur which is more severe in terms of magnitude and duration. With this probability recognized, it is deemed appropriate to use the "firm yield" concept to evaluate water supply reliability for water use in El Dorado County.

4.5.1 LAND RESOURCES

A discussion of agriculture necessitates an evaluation of the land resources available for agriculture. Land suitable for agriculture but committed to irreversible land uses does not warrant attention in the context of a water plan for El Dorado County. Accordingly, for land to be considered suitable for agriculture in El Dorado County, it must meet certain criteria. For use in the evaluation, the land must include:

1. Parcel sizes of 20 acres or more.
2. Soils suitable for agricultural production.
3. Slopes of less than 45 percent.
4. Located at an elevation of 3,000 feet or less.

Land meeting the above criteria is regarded as "Choice Soils" within the agricultural community of El Dorado County. Land that is within the criteria of item 2. and item 4 above is identified as important farmland according to the State of California Department of Conservation (Farmland Mapping and Monitoring Program – 2000). Information related to the slope criteria was developed by the U. S. Department of Agriculture, Natural Resource Conservation District (SSURGO – 2001). With respect to the criteria of Item 1., relating to existing parcels sizes of 20 acres or more, the El Dorado County Planning Department (2001 Project Description) delineated Agricultural Districts that required parcels be consistent with the 20-acre or more criteria. Land falling within the criteria is presented on Figure 4-1. Additionally, the boundaries of the Agricultural Districts and the service areas of the El Dorado Irrigation District (EID) and the Georgetown Divide Public Utility District (GDPUD) are shown

on Figure 4-1. The Agricultural Districts were subdivided further with consideration given to grouping the land as potential service areas for irrigation infrastructure.

As reflected in Figure 4-1, there is a considerable amount of land meeting the criteria for "Choice Soils" located outside the Agricultural Districts, both within and outside the service areas of EID and GDPUD. This is particularly the case in the southeastern part of the county where "Choice Soils" exist in large contiguous units.

Presented in Table 4-7 is a breakdown of "Choice Soils" within the Agricultural Districts. The breakdown is further refined in terms of land within EID and GDPUD, as well as land outside either district. As noted in Table 4-7, a reduction 10 percent of the gross area was made to account for land that would not be available for crops due to roads, irregular fields, and unusable land.

TABLE 4-7
EL DORADO COUNTY POTENTIAL IRRIGABLE AGRICULTURAL LAND

Item	Agricultural District Subareas[a]	Irrigated Area (ac)
El Dorado Irrigation District		
Irrigated Land - 2000	-	2,371
Choice Soils With Slopes at 15% or Less	4	827
	5	697
	6	560
	7	90
	8	70
Areas Outside the Agricultural Districts With Slopes at 15% or Less	-	3,990
Choice Soils With Slopes at 15% to 50%	4	813
	5	1,653
	6	136
	7	789
	8	371
Areas Outside the Agricultural Districts With Slopes at 15% to 50%	-	3,809
Subtotal		**16,175**
Georgetown Divide Public Utility District		
Irrigated Land - 2000	-	1,195
Choice Soils With Slopes at 15% or Less	1	39
	2	284
	3	570
Areas Outside the Agricultural Districts With Slopes at 15% or Less	-	1,202
Choice Soils With Slopes at 15% to 50%	1	40
	2	1,187
		1,265
Areas Outside the Agricultural Districts With Slopes at 15% to 50%	-	4,596
Subtotal		**10,377**

TABLE 4-7
EL DORADO COUNTY POTENTIAL IRRIGABLE AGRICULTURAL LAND

Item	Agricultural District Subareas[a]	Irrigated Area (ac)
Other County Areas		
Choice Soils With Slopes at 15% or Less (Including Existing Crops)	1	110
	9	280
	10	635
	11	1,778
	12	749
	13	481
	14	1,719
Areas Outside the Agricultural Districts With Slopes at 15% or Less	-	15,325
Choice Soils With Slopes at 15% to 50% (Including Existing Crops)	1	76
	9	214
	10	276
	11	1,378
	12	635
	13	300
	14	1,932
Areas Outside the Agricultural Districts With Slopes at 15% to 50%	-	29,299
Subtotal		**55,186**
TOTAL		**81,738**

4.5.2 FUTURE IRRIGATED AGRICULTURE

As noted previously, future irrigated agriculture in El Dorado County will be influenced by policies of the County, EID, and GDPUD related to land use, water supply, and water supply infrastructure. Activity and inquiries of the water districts and Agricultural Commissioner's Office regarding vineyards and other permanent crops reflect a growing recognition of the desirability of the region from a geographic and production standpoint. The combination of available "Choice Soils," policies to support expansion of the agricultural sector, and proximity to a rapidly growing metropolitan population provide the foundation for a robust agricultural economy in El Dorado County. A projection in the future irrigated agriculture of El Dorado County was projected accordingly.

It is assumed for purposes of this study, the growth in agriculture would occur on "Choice Soils," the amounts and locations of which were presented on Table 4-7 and **Figure 4-1**. It is also assumed that growth in the earlier part of the planning period (2010-2025) would occur on "Choice Soils" within Agricultural Districts in the established water districts. In the later part (2025-2050), it is assumed the growth would occur largely on "Choice Soils" within Agricultural Districts south of EID. The irrigated

acreage shown in Table 4-7 reflects the total *potential* irrigable land on the western slope. Table 4-8 reflects the projected irrigated acreage through 2050 and the likelihood that water would be available to agricultural areas in and adjacent to EID and Georgetown Divide PUD through this period. The difference between the acreage in Tables 4-7 and 4-8 is acreage which could be put under irrigation in the more distant future.

Presented on Table 4-8 is the projected area of agriculture for the years 2010, 2025, and 2050. As shown, the projections are made according to the two water purveyors, EID and GDPUD, and to areas outside the boundaries of the two water purveyors. The growth rates used for the respective time periods are noted. In making the projection, the amount of land devoted to "Pasture and Other" was assumed to have no net change in acreage through the plan period. The overall increase in agricultural land as presented on Table 4-8 was distributed according to the other two categories and presented on Table 4-9.

TABLE 4-8
EL DORADO COUNTY AGRICULTURAL LAND USE - 2000, 2025, 2050[a,b]

Location	2000	2010	2025	2050
	Area (acre)	Area (acre)	Area (acre)	Area (acre)
El Dorado Irrigation District	2,371	4,664	9,695	15,905
Georgetown Divide Public Utility District	1,195	2,350	4,885	8,014
Outside Purveyor's Boundaries	1,260	2,478	5,151	8,450
Total (Rounded)	**4,800**	**9,500**	**19,700**	**32,000**

a Acreage represents irrigated agriculture.
b Assumed growth rate of 7 percent per year for periods 2000-2010; 5 percent per year for 2010-2025; and 2 percent per year for 2025-2050.

4.5.3 IRRIGATED AGRICULTURE WATER DEMAND

The irrigation water demand to support the projected growth in agriculture is based upon the application of an average unit water use value of 1.3 acre-feet/acre for the crop category of Vineyard, Christmas Trees, Olive/Citrus, Berries, and 2.8 acre-feet/acre for the crop category of Deciduous Orchards. These unit water use values all composite values based on California Department of Water Resources (DWR) data and local agriculture community experience. The agricultural water demand is estimated for growth within EID and GDPUD and for areas outside the established water districts and within the Agricultural Districts in the south part of El Dorado County. The land and water use projection for

TABLE 4-9
AGRICULTURAL LAND USE[a] - 2000, 2010, 2025, 2050

Agricultural Land Use	Location	2000	2010		2025		2050	
		Area (acre)	Approximate Growth Rate per year (%)	Area (acre)	Approximate Growth Rate per year (%)	Area (acre)	Approximate Growth Rate per year (%)	Area (acre)
Deciduous Orchards	El Dorado Irrigation District	1,013	9	2,400	5	4,700	1	5,200
	Grizzly Divide PUD	7	11	20	20	600	4	800
	Outside Purveyor's Boundaries	224	7	440	5.5	700	2	1,500
Vineyard, Christmas Trees, Olive/Citrus Berries	El Dorado Irrigation District	819	10	2,100	6	5,300	1	6,900
	Grizzly Divide PUD	74	35	1,500	8	4,500	2	8,500
	Outside Purveyor's Boundaries	1,022	3	1,340	5	2,200	5	7,400
Pasture and Other[a]	El Dorado County	1,667	0	1,700	0	1,700	0	1,700
Total		**4,830**	**7**	**9,500**	**5**	**19,700**	**2**	**32,000**

a Acreage represents irrigated agriculture.

TABLE 4-10
EL DORADO IRRIGATION DISTRICT IRRIGABLE LAND USE AND WATER USE - 2000, 2010, 2025, 2050

Agricultural Land Use	2000		2010		2025		2050	
	Area (acre)	Water Use (acre-feet)	Area (acre)	Water Use (acre-feet)	Area (acre)	Water Use (acre-feet)	Area (acre)	Water Use (acre-feet)
Deciduous Orchards	1,013	2,840	2,400	6,720	4,700	13,160	5,200	14,560
Vineyard, Christmas Trees, Olive/Citrus Berries	819	1,060	2,100	2,730	5,300	6,890	6,900	8,970
Pasture and Other[a]	539	2,050	540	2,050	540	2,050	540	2,050
Total	**2,371**	**5,950**	**5,040**	**11,500**	**10,540**	**22,100**	**12,640**	**22,580**

a Assumed no net change in total land use in this category.

TABLE 4-11
GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT IRRIGABLE AGRICULTURAL LAND USE AND WATER USE -2000, 2010, 2025, 2050

Agricultural Land Use	2000		2010		2025		2050	
	Area (acre)	Water Use (acre-feet)	Area (acre)	Water Use (acre-feet)	Area (acre)	Water Use (acre-feet)	Area (acre)	Water Use (acre-feet)
Deciduous Orchards	7	20	20	60	600	1,680	800	2,240
Vineyard, Christmas Trees, Olive/Citrus Berries	74	96	1,500	1,950	4,500	5,850	8,500	11,050
Pasture and Other[a]	1,114	4,235	1,110	4,240	1,110	4,240	1,110	4,240
Total	**1,195**	**4,351**	**2,630**	**6,250**	**6,210**	**11,770**	**10,410**	**17,530**

a Assumed no net change in total land use in this category.

Notes:
1. Assumed water supply available to support agriculture expanding equally on "Choice Soils" in Agricultural Districts 1, 2, and 3.
2. Assumed "Choice Soils" in Agricultural Districts are developed, as well as some land outside the Agricultural Districts.
3. Based upon unit water use value of 1.3 acre-feet/acre applied to vineyard, Christmas trees, olive/citrus, betties, etc., and unit water use value of 2.8 acre-feet/acre applied to deciduous orchards.

TABLE 4-12
OUTSIDE PURVEYOR'S BOUNDARIE IRRIGABLE AGRICULTURAL LAND USE AND WATER USE - 2000, 2010, 2025, 2050

Agricultural Land Use	2000		2010		2025		2050	
	Area (acre)	Water Use (acre-feet)	Area (acre)	Water Use (acre-feet)	Area (acre)	Water Use (acre-feet)	Area (acre)	Water Use (acre-feet)
Deciduous Orchards	224	630	440	1,230	700	1,960	1,500	4,200
Vineyard, Christmas Trees, Olive/Citrus Berries	1,022	1,330	1,340	1,740	2,200	2,860	7,400	9,620
Pasture and Other[a]	14	45	14	45	14	45	14	45
Total	**1,260**	**2,005**	**1,794**	**3,015**	**2,914**	**4,865**	**8,914**	**13,865**

a Assumed no net increase in this land use category.

Notes:
1. Based upon unit water use value of 1.3 acre-feet/acre applied to vineyard and Christmas trees, and unit water use value of 2.8 acre-feet/acre applied to deciduous orchards.
2. Assumed water supply available to support agriculture expanding equally on "Choice Soils" for Agricultural Districts 1, 9, 10, 11, 12, 13, and 14.

these areas are presented on Tables 4-10, 4-11, and 4-12, respectively. The projections assume that water would be conveyed through newly developed infrastructure to supply water to the land outside EID.

The water demand figures in Tables 4-10, 4-11, and 4-12 are based on the "firm yield" basis explained under Section 4.5. The water demand figures reflect the establishment of permanent crops for which water supply cutbacks or fallowing are not feasible options.

CHAPTER 5

Project Water Supply Needs

5.1 INTRODUCTION

El Dorado County, like the mountain counties in general, has limited water supply options. Publicly developed surface water is the primary water source for the western slope of El Dorado County while the Tahoe Basin portion of the County depends on groundwater for its supply. Groundwater on the western slope and into the Sierra Nevada is limited due to the fractured rock nature of the sub-surface geology; consequently, the opportunity for groundwater storage or conjunctive use projects within the County is very limited.

Population growth in the mountain counties region exceeds the statewide average because of the movement of people to the foothills areas. In El Dorado County this is particularly evident in El Dorado Hills. In addition, there has been an increased interest in agricultural development on the western slope, particularly in viticulture.

In this chapter the water supplies and sources needed to meet projected water demands will be presented along with suggested projects to meet those demands.

5.2 AVAILABLE SUPPLIES AND WATER DEMANDS

Existing water supplies for the various water purveyors are documented in Chapter 3, and projected water needs for the high and low water use alternatives from the General Plan are presented in Chapter 4. The existing supplies and projected water needs are summarized in Table 5-1. The following sections present detailed information on water supply needs for the primary water purveyors, including projected demands associated with development in Other County Areas, and potential agriculture irrigation requirements. Available information on water supply options is presented, together with updated cost estimates and implementation considerations.

TABLE 5-1
EXISTING WATER SUPPLIES / FUTURE WATER NEEDS (ACRE-FEET PER YEAR)

	Existing Supplies Firm Yield	Future Needs No Project*	Future Needs 1996 General Plan*	Additional Water Supply Needs
El Dorado Irrigation District	43,280	80,665	99,282	56,002 - 37,385
Georgetown Divide PUD	12,200	28,302	32,101	19,901 - 16,102
Grizzly Flat CSD	143	499	1,066	923 - 356
Other County Areas	7,406	17,263	25,053	17,647 - 9,857
Agriculture	2,005	13,865	13,865	11,860
Tahoe Basin	9,085	12,024	12,495	3,410 - 2,939
Total	**74,119**	**152,618**	**183,865**	**109,743 - 78,499**

* Amounts obtained from Figures 11, 14, 19, and 20 of 4/17/03 EPS Water Demand Forecast.

5.3 ADDITIONAL WATER SUPPLIES REQUIRED

Water demands and future water supply requirements are based on the existing service territory of each water purveyor. **Figure 5-1** presents the service territory of each purveyor within El Dorado County. In addition, potential water demands associated with Other County Areas are considered. These potential demands include water for residential and commercial development, as well as potential water requirements for expanded agricultural use.

5.3.1 EL DORADO IRRIGATION DISTRICT

EID has numerous sources of water, fully described in the District's *Draft Water Supply Master Plan* and summarized in Chapter 3 of this report. The primary sources of water include Jenkinson Lake and Folsom Lake pursuant to water service contracts with the United States Bureau of Reclamation (USBR) and the South Fork American River and its tributaries in accordance with water rights that Pacific Gas and Electric Company (PG&E) transferred to the District in 1999.

EID provides water service to an extensive area, encompassing approximately 220 square miles from Sacramento County to the west, the South Fork American River to the north, the El Dorado National Forest to the east, and the North Fork of the Cosumnes River and Latrobe to the south. The EID service area also includes a small area in Sacramento County, a portion of Coloma and Swansboro north of the South Fork American River, and the communities of Outingdale and Strawberry. As shown in **Figure 5-1**, the District is further divided into three water supply management areas, including the Eastern Region, the Western Region and the El Dorado Hills Region.

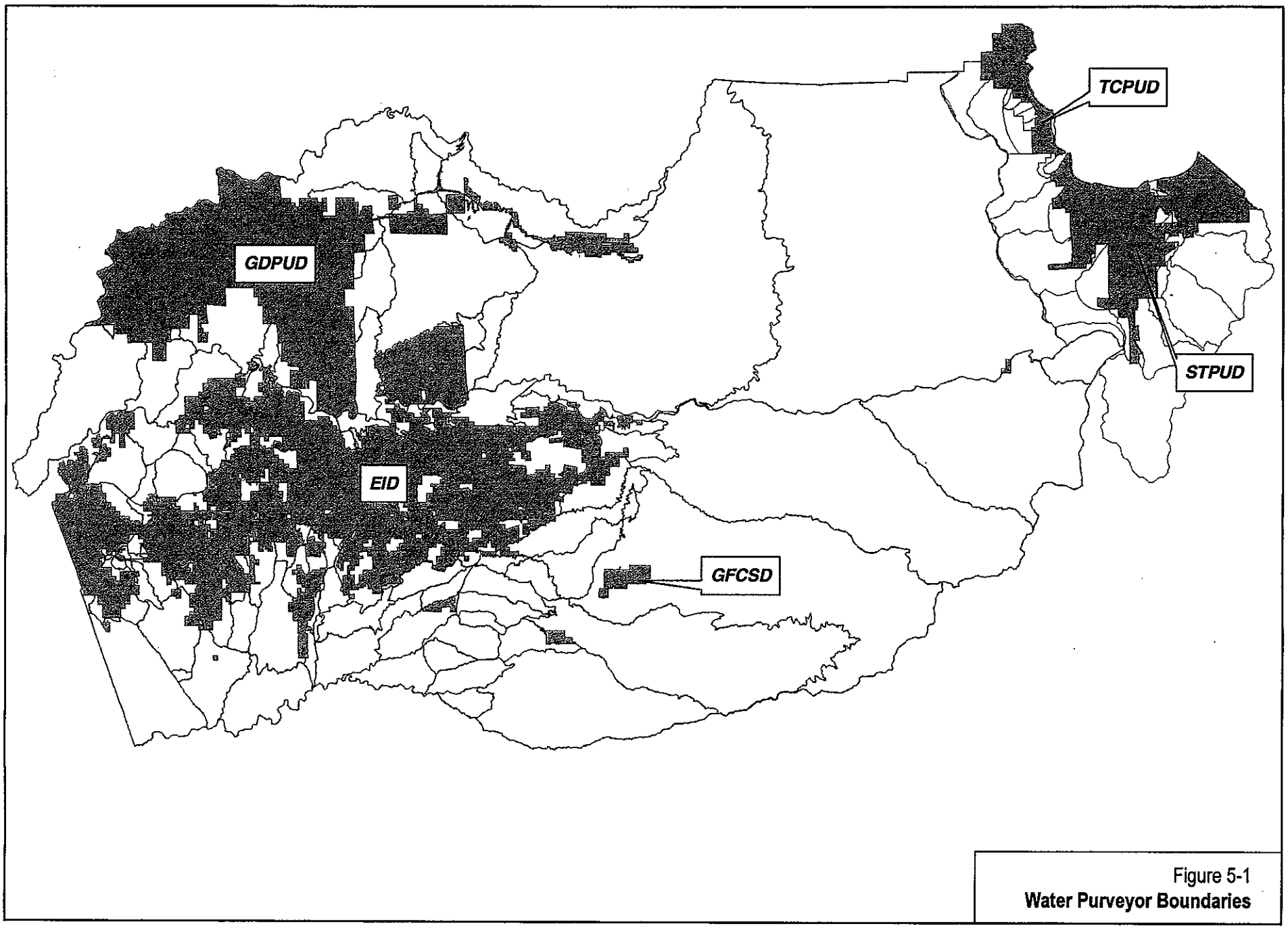


Figure 5-1
Water Purveyor Boundaries

EID has adopted a "system firm yield" of 43,280 acre-feet per year. The system firm yield is based upon the integrated management and use of all of the District's water supplies. EID's system firm yield is calculated using a sophisticated computer model (the Abraham Model), which takes into account the various water supply sources and their known hydrologic record, storage requirements, the system of reservoirs, canals, treatment plants and pipes, and monthly demand patterns. From this model, the system firm yield is distributed between the three water supply regions as shown in Table 5-2.

TABLE 5-2
EID SYSTEM FIRM YIELD BY REGION (ACRE-FEET PER YEAR)

Overall District	El Dorado Hills Region	Western Region	Eastern Region
43,280	9,300	13,500	20,480

Table 5-3 presents an example of the main water supply components that would normally be utilized from each water supply source to produce the system firm yield. These amounts vary from year to year depending on the actual water available from each source and the District's management and operation of their integrated water supply and delivery system.

TABLE 5-3
NORMAL WATER SUPPLY DELIVERIES (ACRE-FEET PER YEAR)

System Firm Yield	Folsom Lake	Forebay Reservoir	Jenkinson Lake	Crawford Ditch
43,280	7,550	15,080	20,450	200

Future Water Supply Requirements

Water demand forecasts for EID are presented in detail in Chapter 4 of this report. The demand forecasts that were used by EID for development of the *Draft Water Supply Master Plan*, the No Project and 1996 General Plan alternative, are comparable to those presented in Chapter 4. In addition to the primary residential, commercial and other demand categories, current demand projections include estimates of potential agricultural irrigation requirements.

This potential agricultural water demand is significant, and its water supply issues are addressed separately in Section 5.5.

As discussed in Section 4.3.1, there are differences between the demand projections utilized by EID in their draft Master Plan and those used in this report. Excluding the projected increase in agricultural demands, these differences are shown in Table 5-4. After review, although the two demand forecasts yielded different results for EID, the total water requirements for EID and the adjacent Other County

Areas were not affected. Therefore, the Coordinating Committee deemed the current EPS projections suitable for the purpose of this Water Management Plan.

TABLE 5-4
DEMAND FORECAST COMPARISON EXCLUDING INCREASE IN AGRICULTURE DEMAND (ACRE-FEET PER YEAR)

	EID 2025	EPS 2025	EID Buildout	EPS Build-out
No Project	57,200	59,092	72,100	64,035
1996 General Plan	72,600	64,880	85,100	82,652

EID demand projections from December 2001 *Draft Water Supply Master Plan.*
EPS demand projections from March 2003 El Dorado County Water Demand Forecast, less the projected increase in agricultural irrigation demands.

The 1999 Base year water demands for EID were 37,806 acre-feet, compared to the system firm yield of 43,280 acre-feet. The EPS 2025 Projected demands range from 59,092 to 64,880 acre-feet, based on the No Project and 1996 General Plan alternative, respectively. Similarly, projected build-out demands range from 64,035 to 82,652 acre-feet.

The demand forecasts can be broken down into two major components: "residential/commercial" demands, and "other" demands, including water for recreational turf services, ditches, latent demand, unaccounted-for water and other beneficial uses. Increases in agricultural water demands are addressed separately in Section 5.5. The projected increase in the residential/commercial demand component ranges from 14,783-19,528 acre-feet in 2025, to 20,415-36,060 acre-feet at build-out. The projected increase in "other" demands is due primarily to latent demand and unaccounted-for water.
A breakdown of projected water demands, including the residential/commercial and other demands components, is shown in **Figure 5-2**.

The demand forecasts can be further broken down into the water supply regions, which provide an estimate of where the future demand for water will likely occur. **Figure 5-3** presents the projected residential/commercial water demand by region, for the base year and both the No Project and 1996 General Plan alternative.

A large percentage of the projected residential/commercial increase in demand is expected to occur in the El Dorado Hills and Western Regions. Demands in the El Dorado Hills Region are projected to increase from 4,889 to 15,857-17,385 acre-feet by 2025, while demands in the Western region may increase from 9,239 to 11,844-14,426 acre-feet. These trends are expected to continue beyond 2025 into the future.

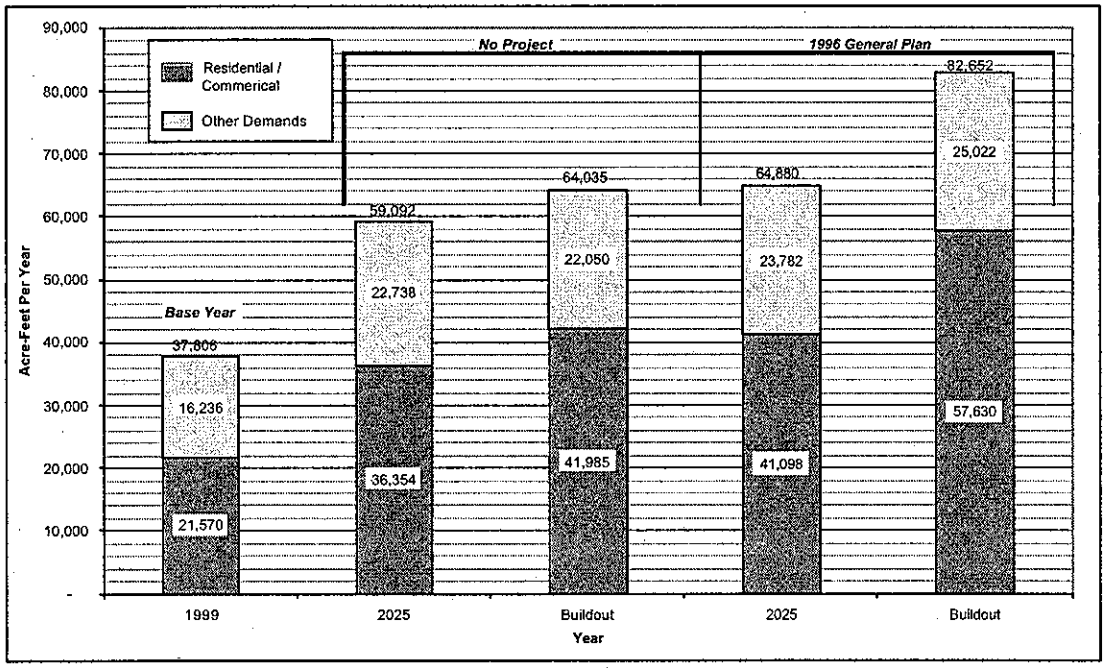


Figure 5-2
EID Projected Water Demands, Excluding Increase in Agricultural Demand (Acre-Feet Per Year)

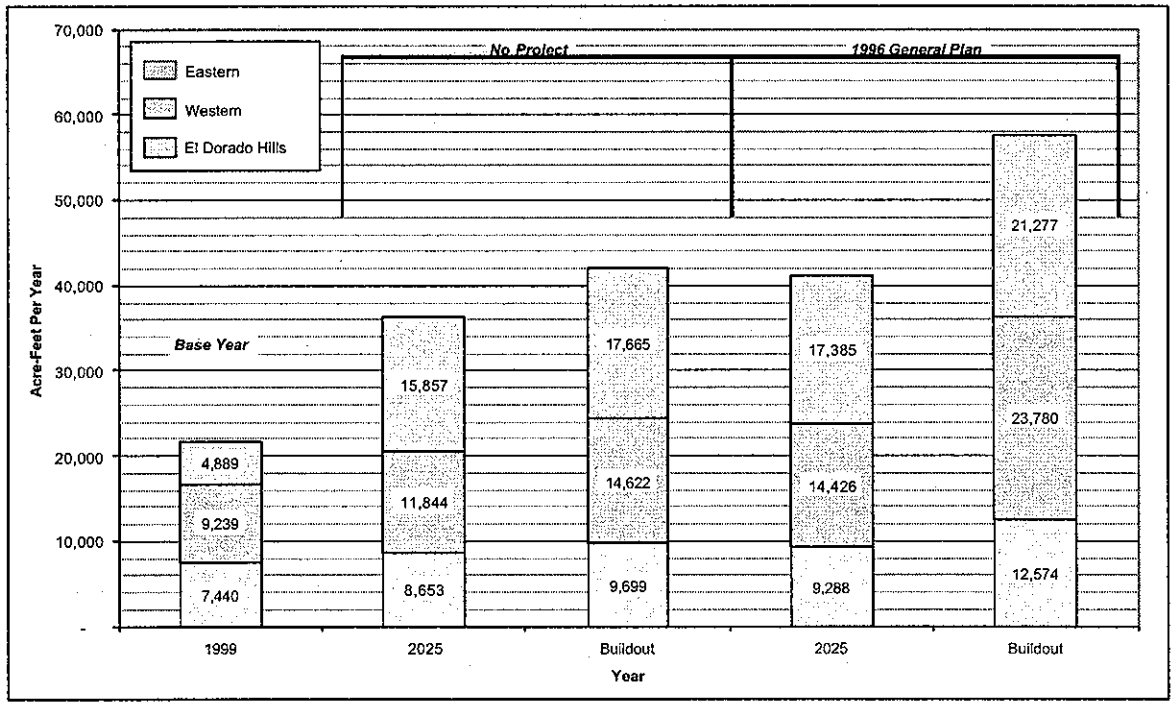


Figure 5-3
EID Residential/Commercial Water Demands By Water Service Region (Acre-Feet Per Year)

The challenge for EID will not only be to develop additional water supplies to meet projected demands, but to do so efficiently taking into consideration their water supply management and operational constraints. For instance, much of EID's current water supplies are located in the eastern portion of the service territory. Historically, this has allowed for efficient operation, since EID maintains a well-integrated system of water conveyance, treatment and transmission facilities, and has been able to take advantage of elevation, thereby keeping pumping costs to a minimum. The demand for water continues to increase in El Dorado Hills and Western Regions. This trend will affect EID's ability to make most efficient use of its water resources, while at the same time keeping operating costs to a minimum.

5.3.2 GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT

GDPUD's source of water is the Stumpy Meadows Reservoir, located on Pilot Creek. The firm yield of the reservoir is 12,200 acre-feet, which allows for critical dry year deficiencies in raw water and treated water deliveries. Raw water from Stumpy Meadows Reservoir is released down Pilot Creek, where it is diverted and conveyed through a series of transmission mains and ditches to the Lake Walton Water Treatment Plant. Both raw and treated water is provided to the eastern portion of the service area, including the communities of Georgetown, Greenwood, Garden Valley and Kelsey. A system of pipes and open ditches conveys water to the Auburn Lake Trails Water Treatment Plant and the western portion of the service area including Cool and Pilot Hill.

The GDPUD water system is linear in nature, relying on Stumpy Meadows Reservoir to the east, and the system of pipes and ditches, which conveys water down slope to the various places of use. The District operates several small regulating reservoirs; however, with a break or outage in the primary transmission system, the potential exists for water supply disruptions if the outage lasts for several days. Future water supply options should consider the ability to improve redundancy and the level of water service reliability, in addition to meeting projected water demands.

Future Water Supply Requirements

Base year water demands for GDPUD were 11,097 acre-feet, which includes water supplies for M&I uses, agricultural irrigation and system losses. This demand compares to the District's firm yield capability of 12,200 acre-feet

Current demand projections include estimates of potential agricultural irrigation requirements. Similar to EID, this potential agricultural water demand is significant, and its water supply issues are addressed separately in Section 5.5.

Excluding increases in agricultural demands, projected 2025 water demands within the District range from 11,918 to 12,384 acre-feet, an increase of up to 1,287 acre-feet. Projected build-out demands, which may occur well into the future, range from 13,507 to 17,306 acre-feet. This represents a potential increase in demand of 6,209 acre-feet. These demand projections are shown in **Figure 5-4**.

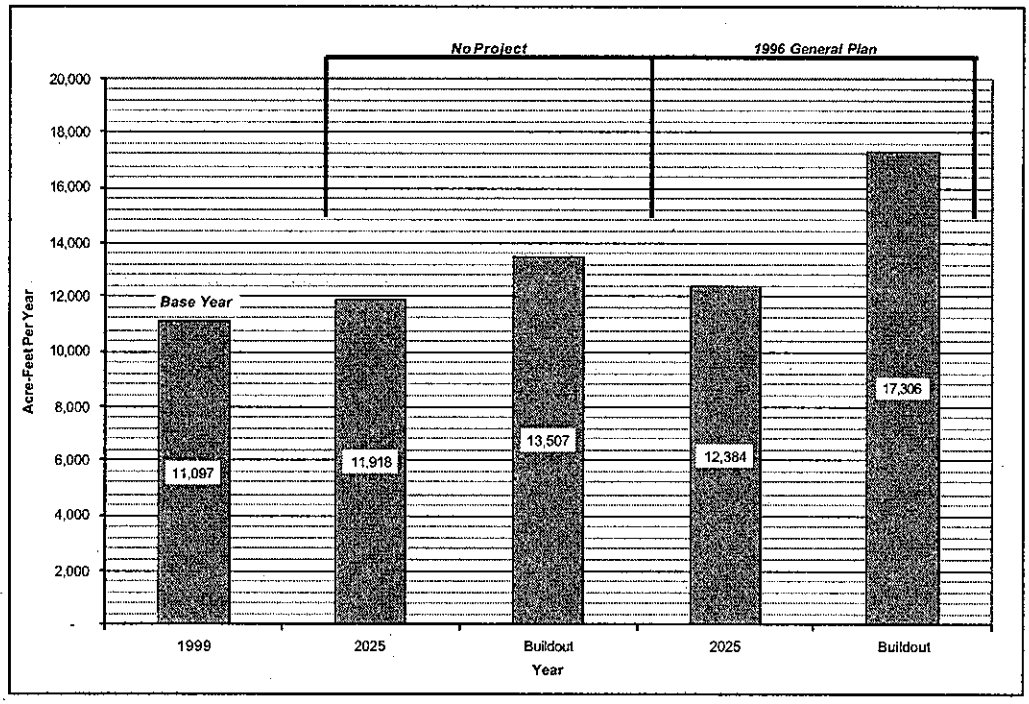


Figure 5-4
GDPUD Projected Water Demands Excluding Increase in Agricultural Demand (Acre-Feet Per Year)

In the relatively near future, if the District continues to grow and the demand for water increases, a supplemental water supply to the Stumpy Meadows Project will be necessary to meet District-wide demands. A supplemental water supply would also reduce the magnitude and frequency of projected water supply deficiencies during critical drought periods.

5.3.3 GRIZZLY FLATS CSD

Grizzly Flats Community Service District provides water service to the Grizzly Park subdivision and a few large perimeter lots. The water supply to GFCSD is provided by flows from North Canyon and Big Canyon Creeks. The water is diverted into Eagle Ditch, where it flows to the raw water storage reservoir and is treated prior to distribution. The surface water supply is supplemented by a small well, which together provide a safe yield of about 167 acre-feet.

Future Water Supply Requirements

The 1999 base year water demands for GFCSD were 157 acre-feet (reported water production in 2001 was 132 acre-feet). Projected 2025 demands range from 197-205 acre-feet per year, to up to 499-1,066 acre-feet at build-out. At present, GFCSD does not have sufficient water supplies to serve all lots within the service area through build-out. The system is vulnerable to water supply deficiencies during an extended summer drought that may last well into October or November.

5.3.4 TAHOE BASIN

South Tahoe Public Utility District (STPUD) and Tahoe City Public Utility District (TCPUD) are the two municipal water service providers within the El Dorado County portion of the Lake Tahoe Basin. Several private water companies operate relatively small water systems, including the Tahoe Keys Mutual Water Company, Lukens Brothers Water Company and Lakeside Park Mutual Water Company in the south Tahoe area, and the Tahoe Cedars Water Company, Tahoe Pines Water Company and Glenridge Park in the west Tahoe area.

Groundwater is the primary source of supply for both the South Tahoe and Tahoe City Public Utility District. STPUD operates a complex water system that provides service to 20 different pressure zones with 28 wells. In 1996, the fuel additive methyl tertiary butyl ether (MTBE) was detected in one of the District's wells. Since then, 13 previously active wells were shut down due to MTBE contamination or the threat of contamination. The District has conducted extensive evaluations of options to restore water supply capacity, including new surface water supplies, new wells, rehabilitation of existing wells, water conservation and wellhead treatment to remove MTBE. Results from these evaluations concluded that treatment is the only viable option.

In El Dorado County, TCPUD operates the Rubicon system, located between Bliss State Park and Meeks Bay. Water is provided by 3 wells, serving two different pressure zones.

Future Water Supply Requirements

In the El Dorado County portion of the Tahoe Basin, water demands are projected to increase from 9,085 to 11,566 - 12,362 acre-feet per year by 2025, and up to 12,024 - 12,495 acre-feet per year at build-out. **Figure 5-5** summarizes the potential water supply requirements for the Tahoe Basin, including STPUD, TCPUD and the other areas, which include the private water companies.

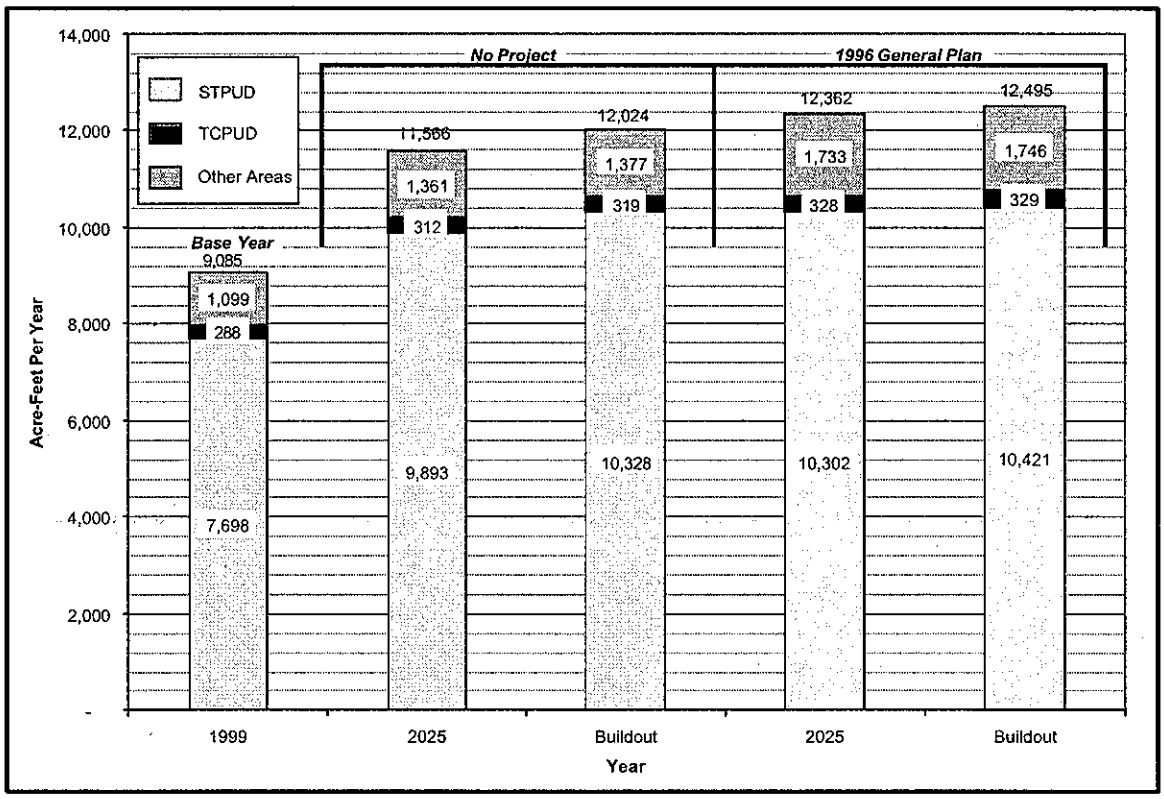


Figure 5-5
Water Demand Projections, Tahoe Basin (Acre-Feet Per Year)

The projected increase in demand is about 2,481 - 3,410 acre-feet per year. This potential increase is due to a combination of several factors, including new residential and commercial development, redevelopment projects, which are replacing old development with high-quality lodging and related guest facilities, and the potential for higher annual occupancy rates.

5.4 ADDITIONAL WATER SUPPLIES REQUIRED FOR OTHER COUNTY AREAS

"Other County Areas" represent large areas throughout El Dorado County that are not currently provided municipal water service by one of the five purveyors. Individual domestic wells and small community water systems or private water companies generally provide water service to these areas. In the future, water service will likely be provided in the same manner; however, some of these Other County Areas may potentially be supplied from an extension of service from one of the existing purveyors.

5.4.1 OTHER COUNTY AREAS - WESTERN SLOPE

Figure 5-6 presents the potential water supply requirements for the Other County Areas - Western Slope. The projected increase in water demand represents potential residential/commercial development. Potential agriculture irrigation requirements for areas located outside of the current purveyor boundaries are discussed in Section 5.5.

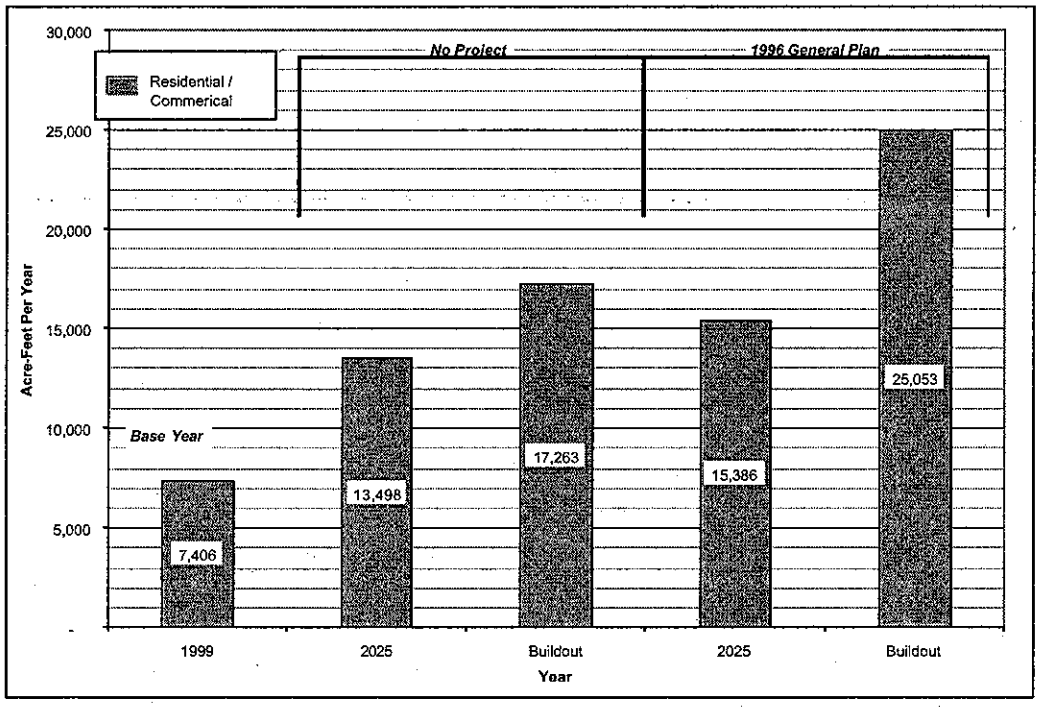


Figure 5-6
Residential/Commercial Water Demand Projections, Other County Areas – Western Slope (Acre-Feet Per Year)

For the Western Slope, the potential increase in residential/commercial demand ranges from 9,857-17,647 acre-feet per year at build-out.

Due to the rural nature and relative low density of potential residential and commercial development in many parts of the County's western slope, a significant amount of the new Other County Area water supply requirements will be satisfied by individual domestic wells and small community or private water systems. However, it is reasonable to assume that certain areas in close proximity to EID, GDPUD and GFCSD, where the planned land use allows for a higher density development, may eventually be provided water service.

A reasonable approach for estimating the amount of additional water that EID, GDPUD and GFCSD may eventually need to supply for the residential and commercial needs in the Other County Areas is presented below. This approach is one of many different ways to evaluate this issue, and the specific water supply requirements will vary depending on the approach utilized. However, the results are informative and should be taken into consideration when planning for the future water supply requirements for the County.

Projected water demands are calculated by individual Traffic Analysis Zones. These water demands are either associated with a water purveyor, or for the areas outside of existing service territory boundaries, the demands were aggregated into the category of Other County Areas. **Figures 5-7** and **5-8** depict the spatial distribution of the Other County Area build-out demands for the No Project and 1996 General Plan Alternatives.

Many factors will determine whether or not municipal water service will be provided to portions of the Other County Areas that have appropriate land use or zoning designations that allow for development. From a water utility perspective, these factors include water supply availability, proximity to and physical conditions to connect to an existing system, facility requirements to extend service, required improvements to the existing system to accommodate the added demand, and the cost of providing service, including both capital and operating expenses.

Taking these factors into consideration, specific TAZ areas outside of existing service territory boundaries were either "assigned" to EID, GDPUD or GFCSD, or left in Other County Areas. The basic assumption is that the service territory of each water purveyor would be expanded in the future to allow the provision of municipal water service to these areas. This information, together with the existing service area boundary for each purveyor, is shown in **Figure 5-9**. Based upon this assignment of TAZ areas, the additional water supply requirement for each purveyor is shown in Table 5-5.

TABLE 5-5
ADDITIONAL WATER SUPPLY REQUIREMENTS, BUILD-OUT OF OTHER COUNTY AREAS
RESIDMENTA / COMMERCIAL DEMANDS (ACRE-FEET PER YEAR)

	Expanded EID Service Territory	Expanded GDPUD Service Territory	Expanded GFCSD Service Territory	OCA
No Project	8,711	960	0	190
1996 General Plan	15,094	2,190	0	366

Of these amounts, it is unlikely that the entire demand will be provided municipal water service due to the factors discussed previously. Review of the spatial distribution of the Other County Area demands presented in Figures 5-7 and 5-8 show areas where the density of potential development and proximity to the existing systems may be "favorable" to providing water service in the future. These areas are designated by different colors (green, purple and blue) representing areas with potential demands ranging from 250-600, 600-1,000 and 1,000-1,350 acre-feet per year, respectively.

For EID, these favorable areas are generally located in the vicinity of El Dorado Hills and south along Latrobe Road, along Green Valley and Deer Valley Road, east of Swansboro Country, areas near Hwy 49 south of Placerville and south of Outingdale. In addition, all of the "island" areas within EID's existing service territory boundary are considered favorable areas. The allocation of demand between island areas and perimeter areas is an approximation based on limitations of the GIS database. For GDPUD, the areas are located south and west of the current District service territory, near the communities of Pilot Hill and Cool, and bounded by the North and South Fork American River. Using this approach, no favorable areas are identified near GFCSD or within the Other County Areas not assigned to a purveyor. The projected water supply requirements for these favorable areas are summarized in Table 5-6.

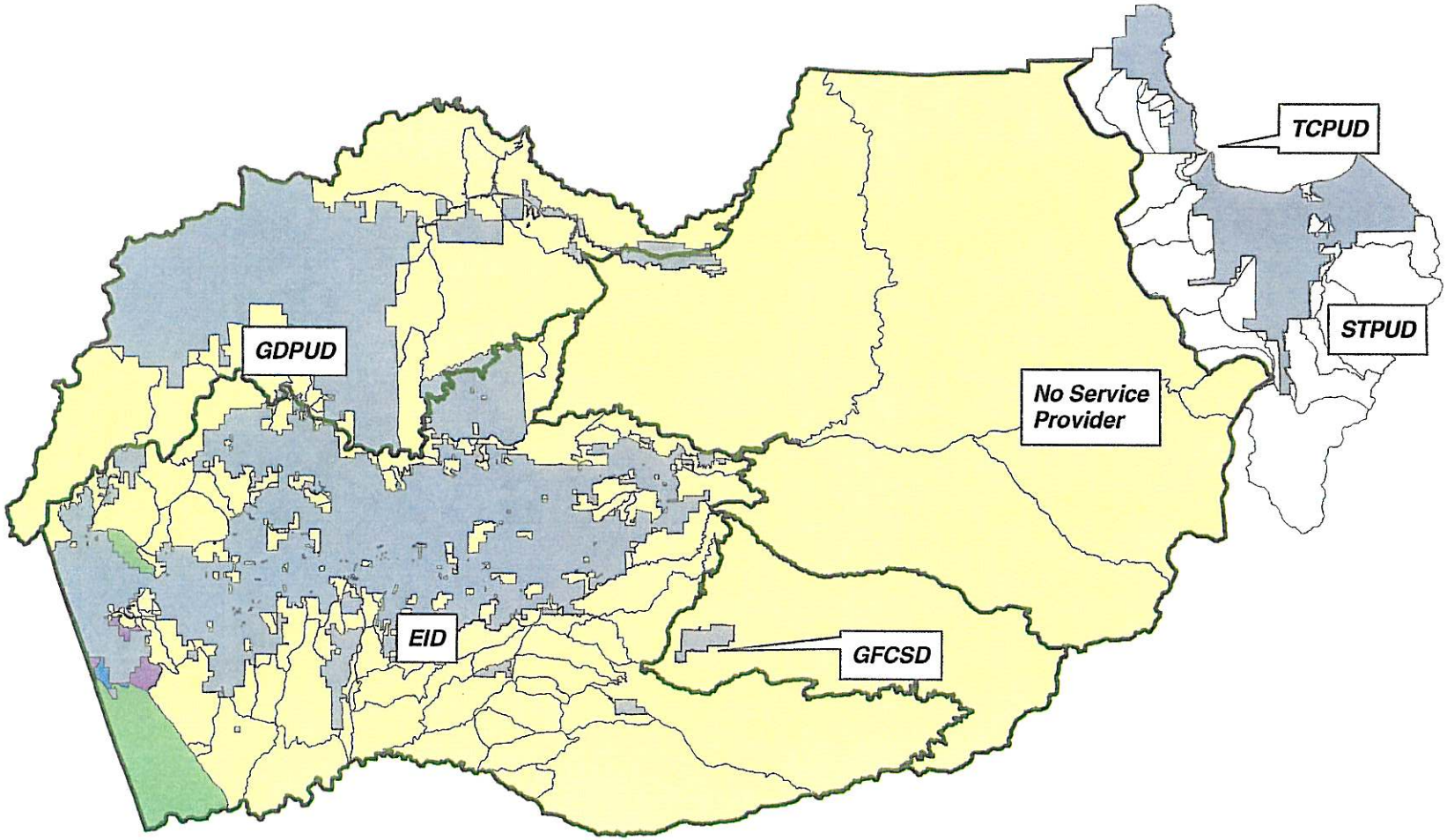
TABLE 5-6
ADDITIONAL WATER SUPPLY REQUIREMENTS, BUILD-OUT FAVORABLE AREAS RESIDENTIAL / COMMERCIAL DEMANDS (ACRE-FEET PER YEAR)

	Expanded EID Service Territory		Expanded GDPUD Service Territory
	Islands	Perimeter	
No Project	1,510	3,080	0
1996 General Plan	3,100	7,940	1,318

The total potential residential/commercial water demands for the Other County Areas - Western Slope is summarized in Table 5-7. The range in demand is the difference between the build-out of the favorable areas and the total demand projected for the Other County Areas within each District's Expanded Service Territory. Individual domestic wells and small community or private water systems will most likely service the remaining Other County Areas.

TABLE 5-7
WESTERN SLOPE ADDITIONAL RESIDENTIAL / COMMERCIAL DEMANDS, BUILD-OUT OF OTHER COUNTY AREAS (ACRE-FEET PER YEAR)

	Expanded EID Service Territory	Expanded GDPUD Service Territory	Other County Areas
No Project	4,590 - 8,711	960	190
1996 General Plan	11,040 - 15,094	1,318 - 2,190	366



Build-out Increase in Demand (AFA) for Other County Areas

- 50 - 250
- 250 - 650
- 650 - 850
- 850 - 1350
- Boundary for Potential Service to Other County Areas by TAZ

Figure 5-7
No Project - Other County Areas
Distribution of Increase in Water Demands: Build-Out

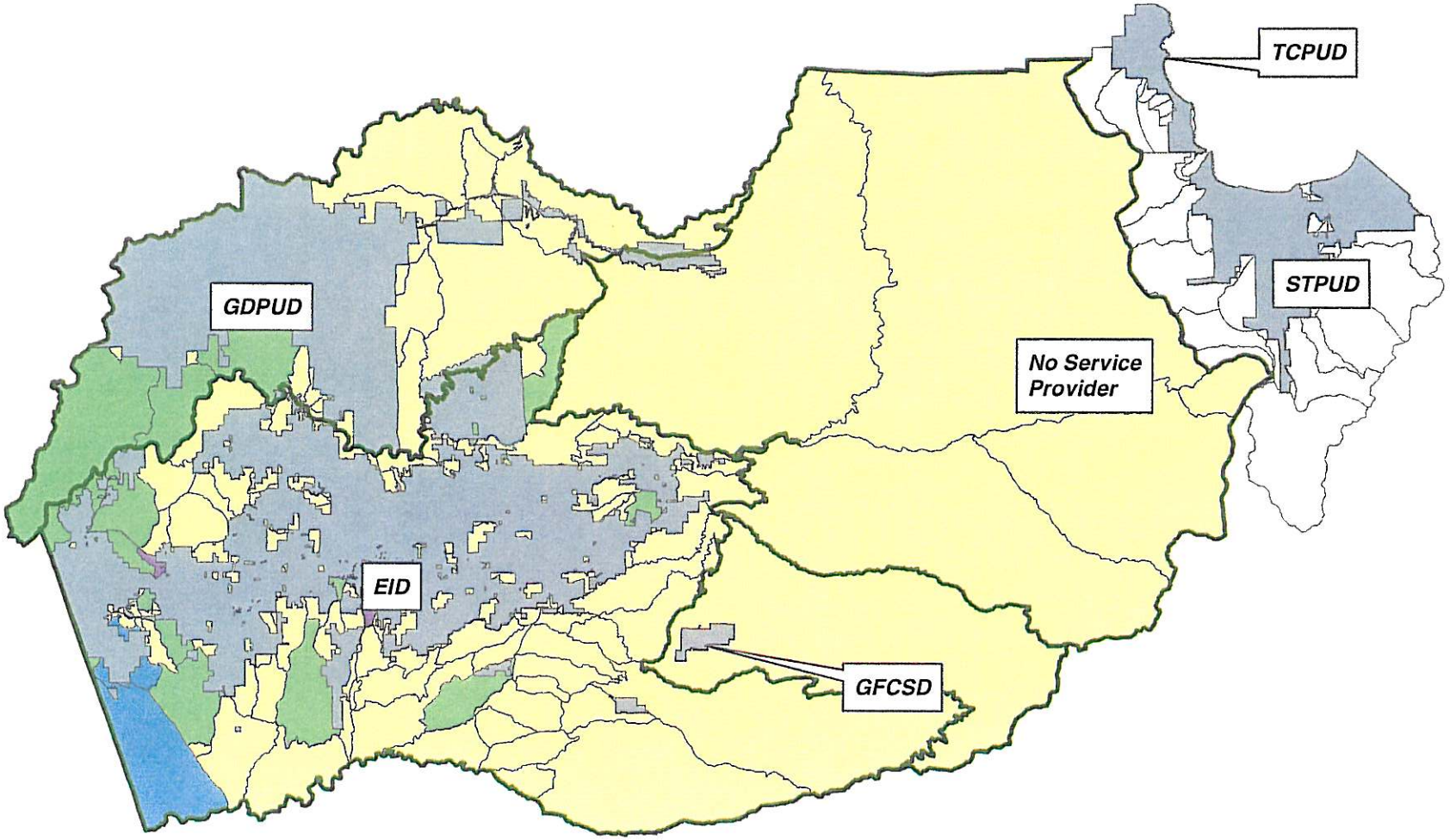


Figure 5-8
1996 General Plan - Other County Areas
Distribution of Increase in Water Demands: Build-Out

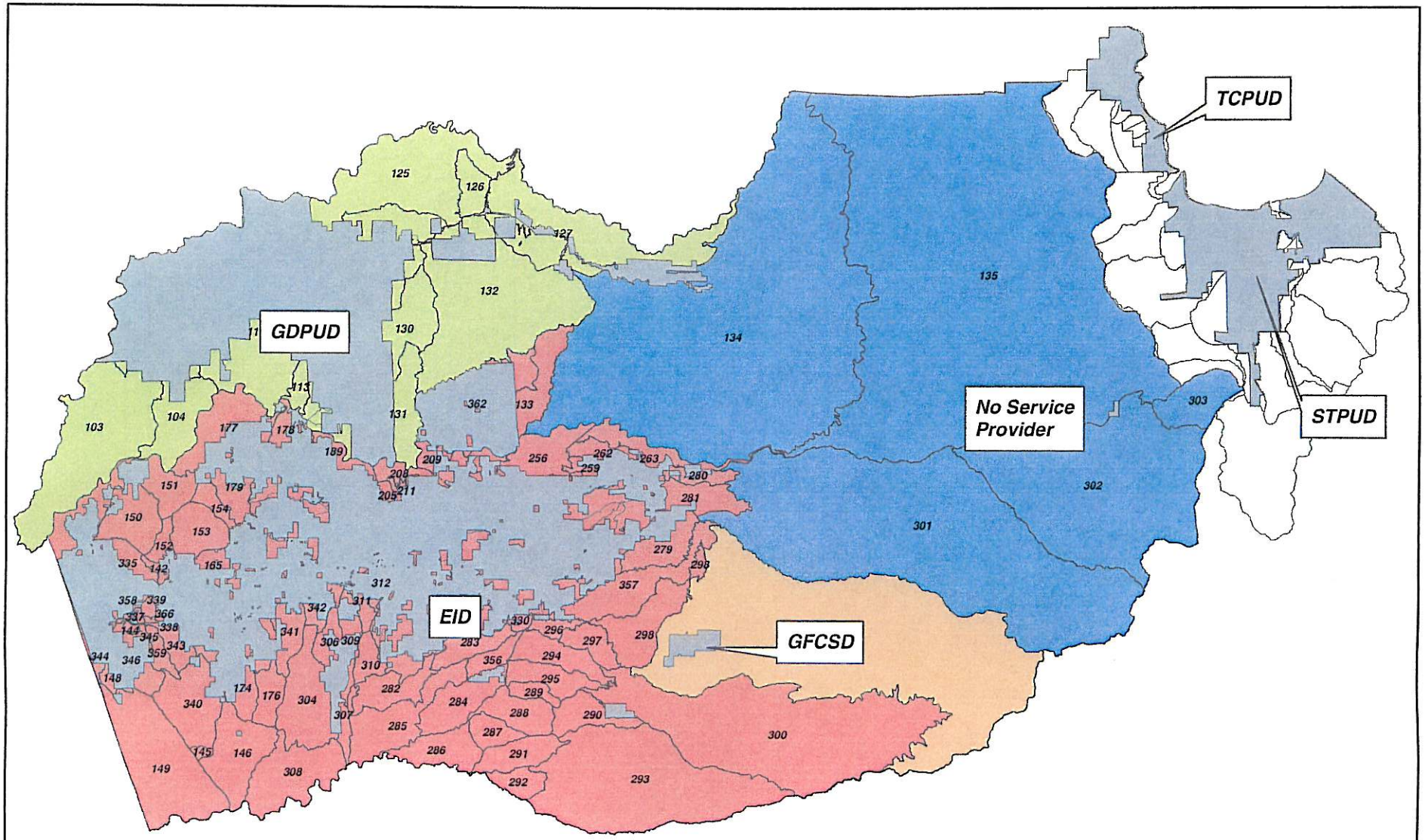


Figure 5-9
Identification of Potential Service Providers to Other County Areas

5.5 POTENTIAL AGRICULTURE IRRIGATION REQUIREMENTS

Sections 5.3 and 5.4 presented the projected increase in water demands, excluding the potential for increased agriculture irrigation throughout the Western Slope of El Dorado County.

Table 5-8 summarizes the projected additional water supply required for agriculture irrigation from the information presented in Chapter 4. For the potential irrigation demands in Other County Areas, the same methodology used to assign residential and commercial demands to either EID or GDPUD was used to assign the potential irrigation demands. Following this approach, the demands from Agricultural District 1 were assigned to GDPUD and Agricultural Districts 9-14 were assigned to EID.

The potential agriculture irrigation requirements are substantial, totaling more than 43,000 acre-feet per year of new demand. Infrastructure options (water storage, pumping, and conveyance facilities) needed to supply surface water to the potential irrigable areas are described in Section 5.6.7.

TABLE 5-8
ADDITIONAL WATER SUPPLY REQUIREMENTS, POTENTIAL AGRICULTURAL IRRIGATION (ACRE-FEET PER YEAR)

	Existing Demand	Build-Out Demand	Assigned Other County Areas	Additional Irrigation Supply Needs
EID	5,950	22,580	13,623	30,253
GDPUD	4,351	17,530	242	13,421
Total	**12,306**	**40,110**	**13,865**	**43,674**

5.6 ALTERNATIVES TO OBTAIN WATER SUPPLIES

Over the years, numerous water supply alternatives have been investigated throughout El Dorado County. Relying on available information from the County and water purveyors, the following sections present several of the most promising water supply options for the future.

5.6.1 EID WATER SUPPLY OPTIONS – EXISTING SERVICE TERRITORY

EID has performed extensive evaluations of their water supply options, and continues to refine and further evaluate alternatives as additional information becomes available. The water supply options presented are based upon the findings from EID's *Draft Water Supply Master Plan*[1], together with

1 See Appendix A (Bibliography), No. 1

supporting documents such as the Charles Abraham reports, El Dorado Irrigation District Water Supply Study Part II[2] and Part III Water Supply Study, EPS Growth Projection[3].

The primary water supply alternatives identified by EID and considered in this Water Management Plan include the following:

Folsom Lake Water Supplies – El Dorado Hills and Western Region

- 17,000 acre-feet of supplemental consumptive water rights associated with FERC Project No. 184. Historically, FERC Project 184 water was used for power generation and other non-consumptive uses. In 1991, EID and the County Water Agency jointly submitted an application for diversion and consumptive use of 17,000 acre-feet from FERC Project 184. In 2001, EID and the County Water Agency obtained this water right, subject to certain terms and conditions. It is estimated that EID will be able to begin making use of this supply by 2005.

- 7,500 acre-feet from a proposed Water Service Contract with USBR for unallocated Central Valley Project water authorized by legislation, Public Law 101-514 (Fazio Water). Under this law, El Dorado County was allocated 15,000 acre-feet from Folsom Lake to serve the future municipal and industrial (M&I) needs of both EID and Georgetown Divide Public Utility District.

- Up to 4,560 acre-feet from re-diversion of existing pre-1914 ditch irrigation water rights and Weber Reservoir Storage Rights. EID has several existing water rights that could be rediverted to provide additional water supplies. Evaluations conducted by EID consider two diversion locations: the existing diversion at Folsom Lake, and the proposed Bray Reservoir site. The Bray site has been identified as a central location for a small regulating reservoir and water treatment plant that could deliver water to the Cameron Park and Shingle Springs areas.

New Reservoir Water Supplies – Eastern and Western Regions

- 5,950 acre-feet from Stage 1 of the Texas Hill Dam and Reservoir, and a total of 10,050 acre-feet from Stage 2. Located about 1-1/2 miles south of Placerville, on Weber Creek. The water would supply the proposed Bray Reservoir and Treatment Plant. Currently, EID owns about 75 percent of the land required for the Texas Hill Reservoir.

2 See Appendix A (Bibliography), No. 10
3 See Appendix A (Bibliography), No. 11

- 11,250 acre-feet from the Alder Dam and Reservoir. Located in the El Dorado National Forest near White Hall, the reservoir also has the potential for power generation. Two alternative conveyance routes have been identified to convey the water to Jenkinson Lake and/or Weber Creek, for treatment at the District's existing Reservoir A water treatment plant or the proposed Bray treatment facility.

In addition to these main sources, a number of additional water supply options have been identified by EID, including Squaw Hollow Dam and Reservoir, expanded Weber Reservoir, lining the Main Canal, Jenkinson Lake flashboards, leak detection program, Capp's Crossing Dam and Reservoir and supplemental recycled water supplies. Detailed information on these water supply options may be found in the District's *Draft Water Supply Master Plan*.

EID studied three primary water supply alternatives and two demand projections, and determined the associated treatment and conveyance facilities necessary to utilize the proposed water supplies. The three alternative project configurations were developed based on different modes of operation. The three project configurations include the Pumped Supply (Alternatives 1 and 1A), the Gravity Supply (Alternatives 2 and 2A), and a composite of the best aspects of Alternatives 1 and 2, referred to as the Gravity/Pumped Supply (Alternatives 3 and 3A). EID performed thorough analyses that utilized the Abraham Model, demand projections by water supply region, and the District's hydraulic model of their treatment, storage and transmission system to determine necessary infrastructure improvements and system firm yield associated with each of the primary alternatives.

Based on the estimated cost of improvements, construction phasing and economic analyses that consider both estimated capital and operating costs, EID identified Alternative 3 or 3A as the recommended water supply and conveyance alternative, depending on which demand forecast is realized. Formal action by the EID board to adopt Alternative 3 or 3A has not been taken as of this date. EID is continuing to investigate new information and water management strategies including integrated water and wastewater resource planning to make the most efficient use of the region's limited water resources.

For the purpose of this Water Management Plan, it is assumed that EID will move forward with implementation of the first phases of the water supply recommendations and facility improvements, which are common to both Alternatives 3 and 3A. **Figures 5-10** and **5-11** depict the current No Project and 1996 General Plan water demand forecasts, excluding increases in agricultural irrigation, compared to the system firm yield that would be provided by implementation of the primary water supply alternatives identified in the EID *Draft Water Supply Master Plan*. Schematics of the two water supply

alternatives and their associated treatment and conveyance facilities are shown in **Figures 5-12** and **5-13**.

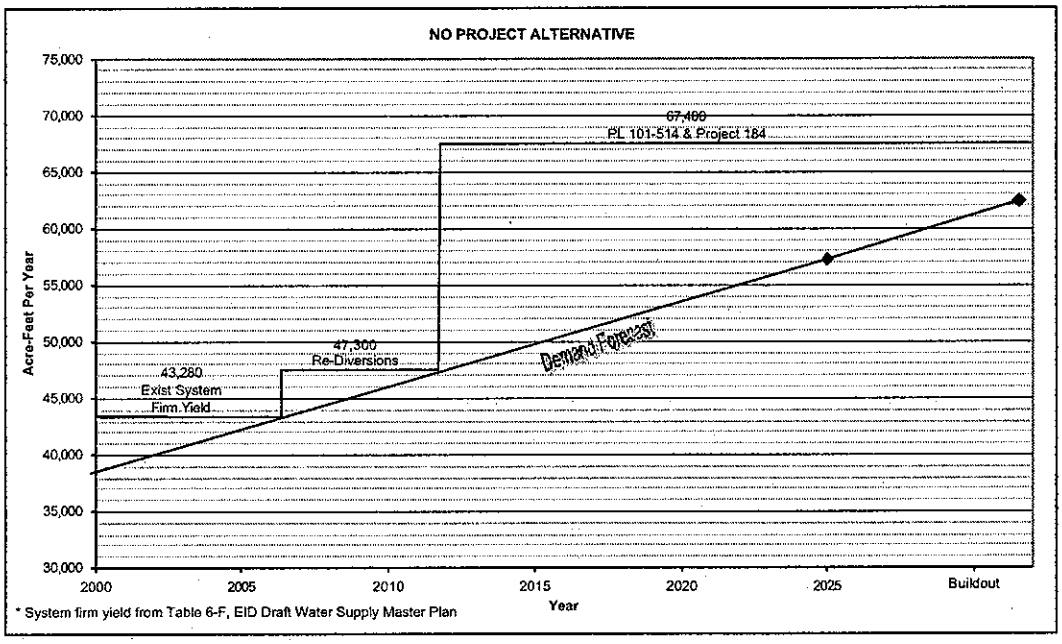


Figure 5-10
System Firm Yield Versus No Project Demand Forecast, Excluding Increase In Agricultural Demand (Acre-Feet Per Year)

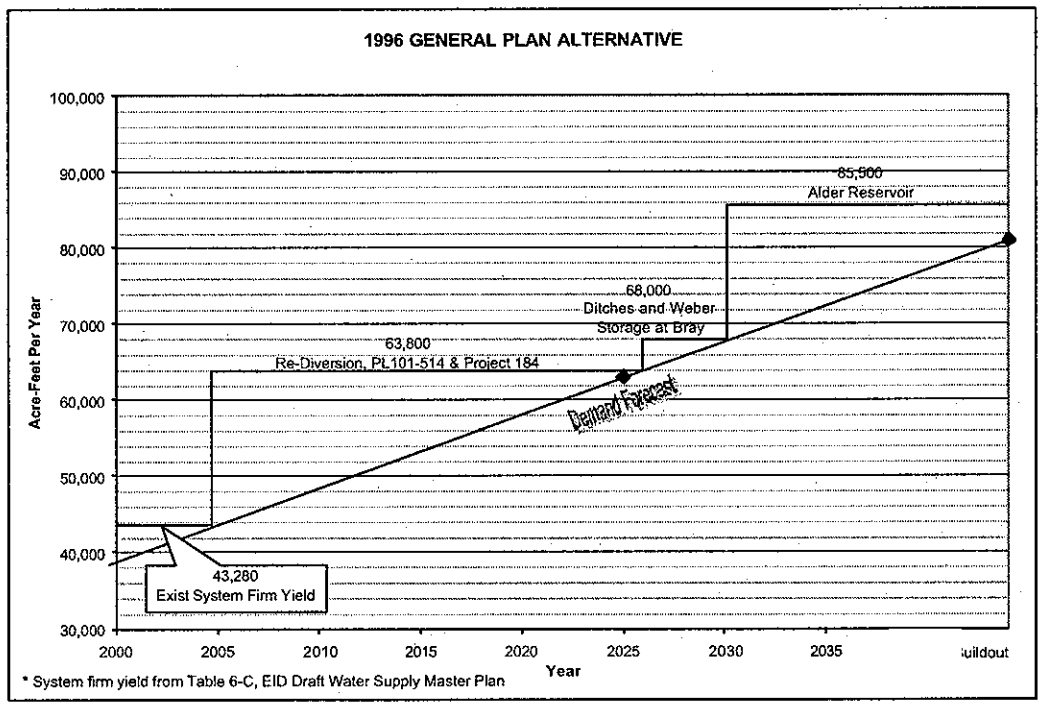


Figure 5-11
System Firm Yield Versus 1996 General Plan Demand Forecast, Excluding Increase in Agricultural Demand (Acre-Feet Per Year)

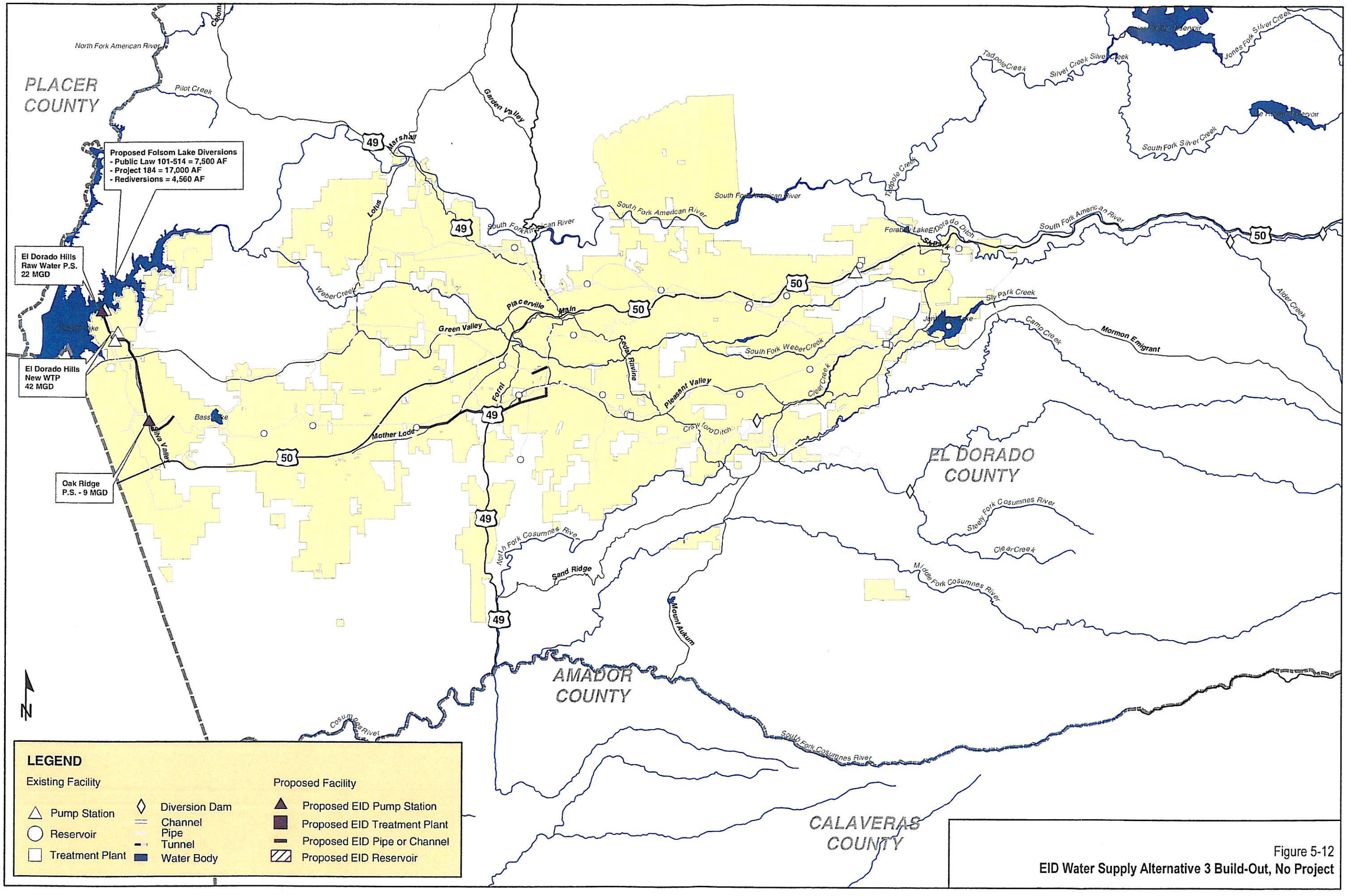


Figure 5-12
EID Water Supply Alternative 3 Build-Out, No Project

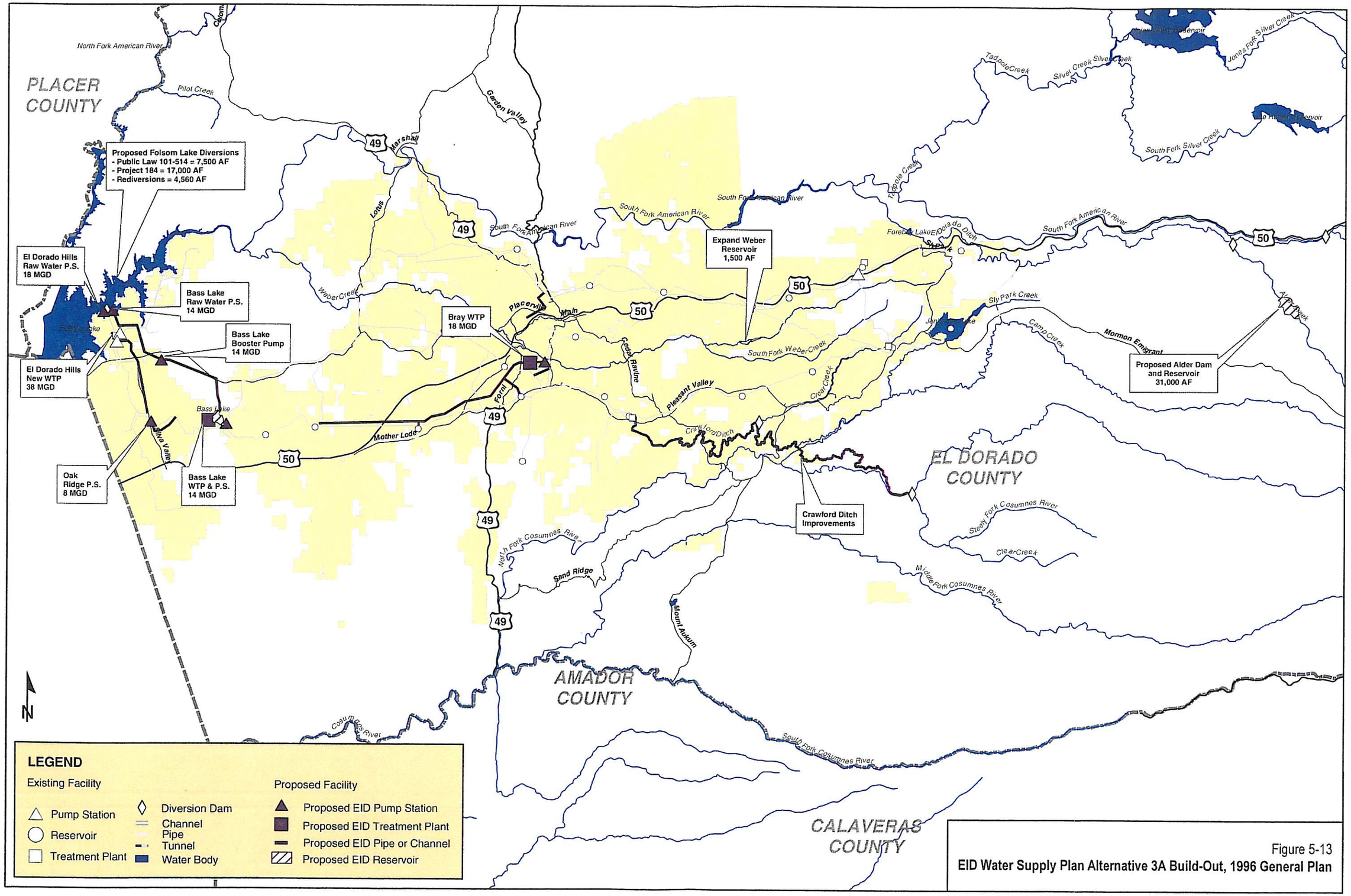


Figure 5-13
EID Water Supply Plan Alternative 3A Build-Out, 1996 General Plan

Conclusions

As stated previously, the current EPS demand forecast is different than the projections utilized by EID to determine the magnitude and timing of required water supply and facility improvements. Performing updated model runs (Abraham, hydraulic and economic models) to make the recommended water supply improvements consistent with the current demand projections was beyond the scope of this Plan. However, comparing the proposed water supply and facility improvements from Alternatives 3 and 3A to the current demand projections allows one to draw several important conclusions from **Figures 5-10** and 5-11, summarized as follows:

- The additional Folsom Lake supplies, including the 17,000 acre-feet of associated with FERC Project No. 184, the 7,500 acre-feet from Public Law 101-514, and up to 4,560 acre-feet from re-diversion of existing pre-1914 ditch irrigation water rights and Weber Reservoir Storage Rights, should allow EID to continue to provide service though 2025.

- Implementation of either Alternative 3 or 3A should provide sufficient water supplies to the existing EID service area through build-out, based on both the No Project and 1996 General Plan demand forecasts.

- As presently configured, either alternative is sufficient to provide the water supplies required to meet projected build-out demands within the existing service territory. However, insufficient water supplies are available to provide service to Other County Areas and meet potential increases in agriculture irrigation demands.

5.6.2 EID Water Supply Options – Other County Areas

The analysis presented in Sections 5.4 and 5.5 estimated potential residential/commercial development and agriculture irrigation needs for Other County Areas. Providing water service to these areas is subject to much uncertainty, but it is prudent to plan for these future water needs and consider what changes to current water supply plans may be justified. The additional water supplies required to provide for all of the demands associated with the existing service territory, plus additional residential, commercial and irrigation requirements within the Other County Areas, is substantial.

To quantify the potential long-term water supply deficiency, **Figures 5-14** and **5-15** present a comparison of the primary water supply alternatives evaluated by EID, compared with potential demands associated with both the 1996 General Plan and No Project demand forecasts, together with the Other County Area residential/commercial and agricultural demands that could potentially be served by EID.

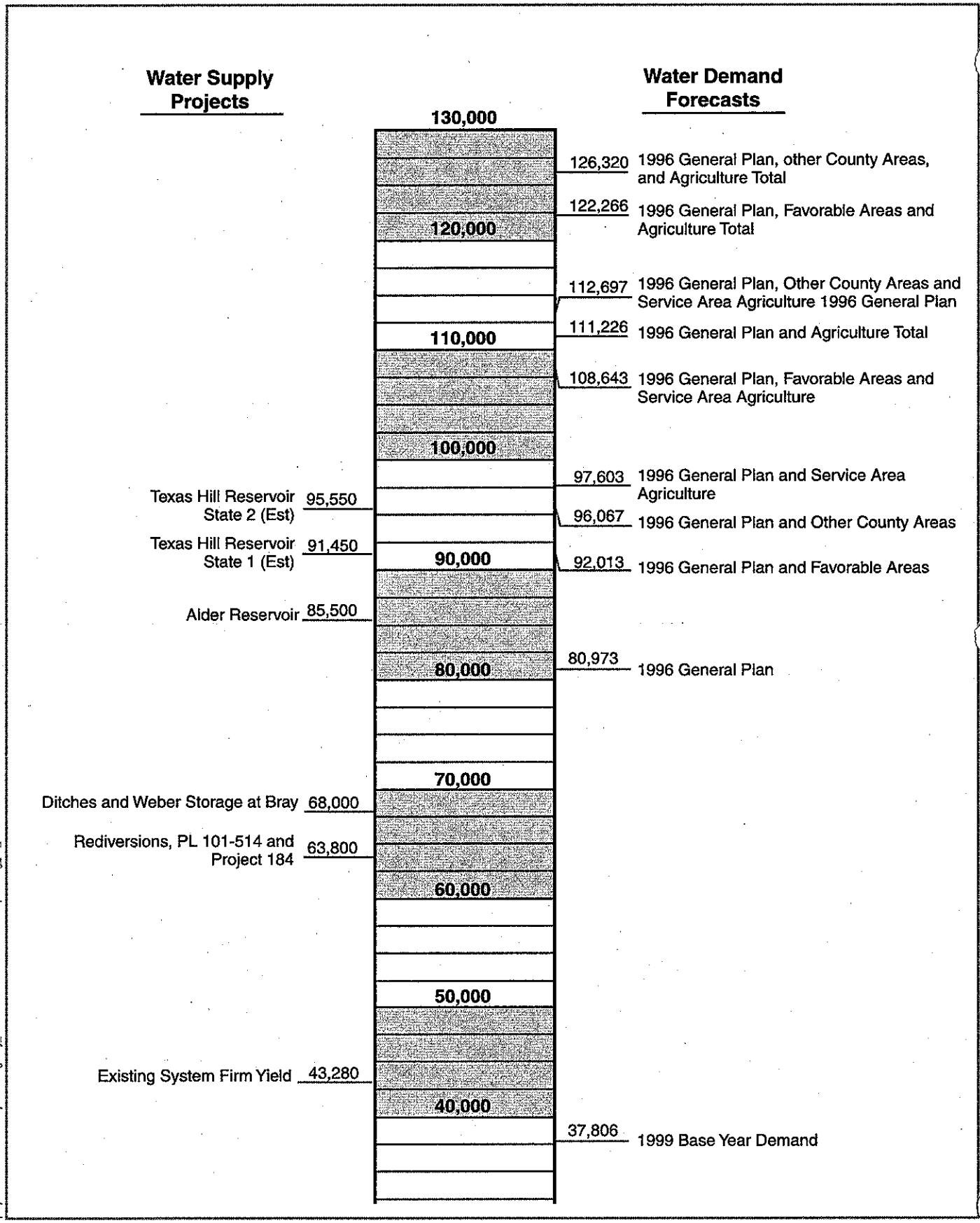


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Figure 5-14

EID - 1996 General Plan Potential Build-Out Water Supplies and Demands (Annual Acre-Feet)

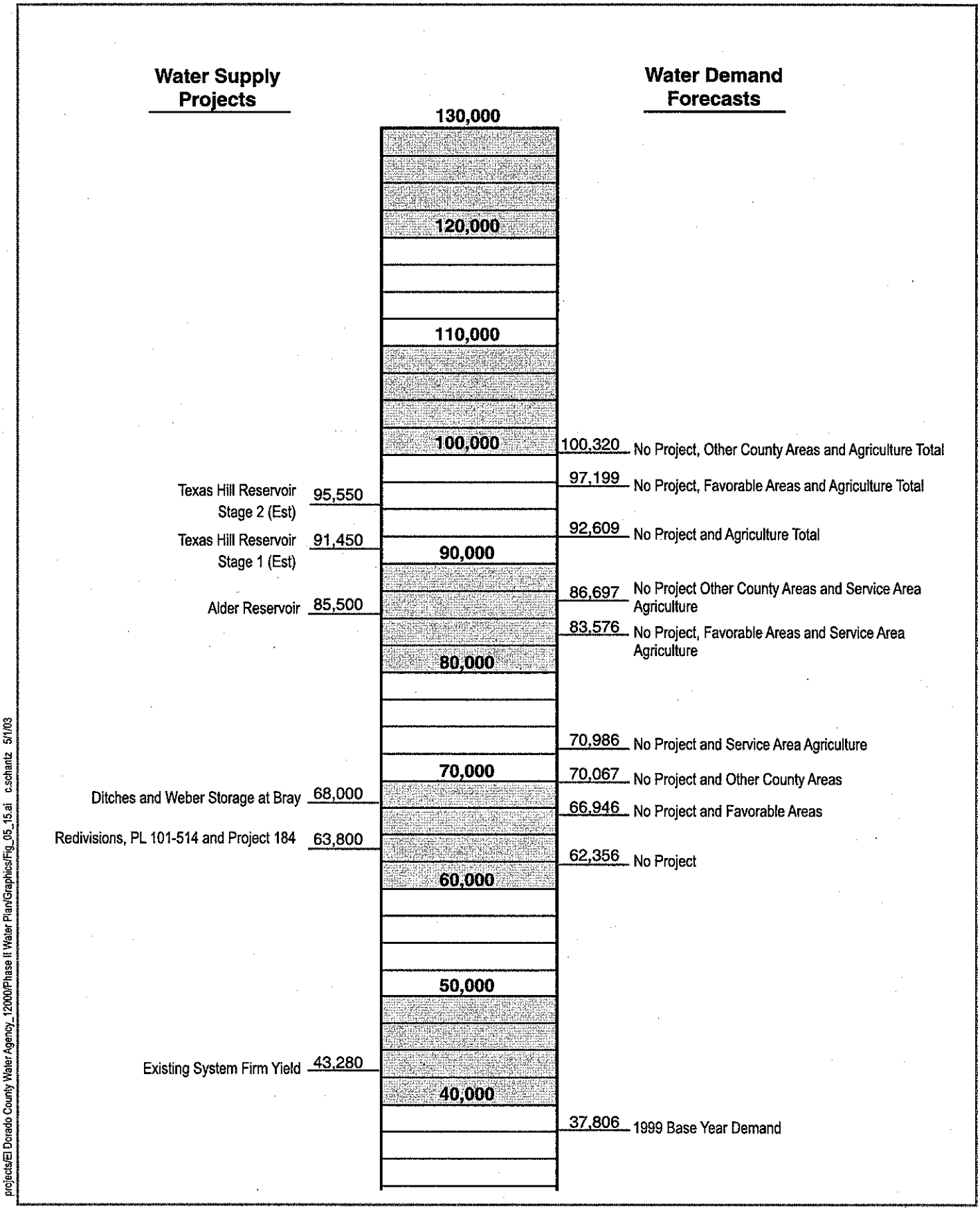

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Figure 5-15
EID - No Project Potential Build-Out Water Supplies and Demands (Annual Acre-Feet)

From **Figures 5-14** and **5-15**, it is clear that the water supply projects presently being evaluated by EID do not provide a firm yield sufficient to meet all of the potential demands identified in this Water Management Plan. Even with the addition of both the Texas Hill and Alder Reservoirs, the estimated firm yield of about 95,550 acre-feet is only sufficient to meet build-out of the 1996 General Plan alternative within EID's existing service territory, plus either a portion of the Other County Areas or potential agricultural demands. Under the 1996 General Plan alternative, about 31,000 acre-feet of potential demand associated with service to Other County Areas and agricultural areas cannot be satisfied from this combination of water supply projects.

A firm yield of 95,550 acre-feet could potentially supply build-out of the No Project alternative, plus large portions of the Other County Areas and potential agricultural demands. With the No Project alternative, about 5,000 acre-feet of potential demand associated with service to Other County Areas and agricultural areas cannot be satisfied.

At a minimum, EID should consider the water supply, treatment and distribution system implications of providing water service to the identified Favorable Areas in their future planning. These areas are located in the vicinity of El Dorado Hills and south along Latrobe Road, along Green Valley and Deer Valley Road, east of Swansboro Country, areas near Hwy 49 south of Placerville and south of Outingdale, and all of the island areas within EID's existing service territory. The potential demand associated with these Favorable Areas ranges from 4,590-11,040 acre-feet per year, and would be located primarily in the El Dorado Hills and Western Regions. These additional demands may have impacts to the phasing of EID's planned improvements, such as the El Dorado Hills Raw Water Pump Station and Treatment Plant, and the Bray Treatment Plant.

5.6.3 GDPUD WATER SUPPLY OPTIONS – EXISTING SERVICE TERRITORY

Over the years, GDPUD has investigated numerous water supply alternatives. The 1992 Department of Water Resources (DWR) report, "Georgetown Divide Water Management Study" evaluated a number of storage reservoir projects, pumping from the American River and diversion from the Rubicon River Project. More recent evaluations conducted by the District refined the various project configurations and cost estimates. A schematic of the existing GDPUD water system along with several of the most viable water supply options for the future are shown in **Figure 5-16**.

Canyon Creek Dam Project

Of the major storage projects considered by GDPUD, Canyon Creek Dam is identified as one of the most promising. The Georgetown Divide Water Management Study describes the proposed facility as

"centrally located in the service area, and it has a relatively high elevation, large tributary area and potential to store GDPUD water from other sources." DWR performed an updated evaluation of the cost, yield and potential environmental impacts associated with the project. The proposed dam, with a crest length of 980 feet and a height of 216 feet, would be located on Canyon Creek below the confluence with Dark Canyon Creek, and would provide storage capacity of 17,500 acre-feet. Water would be conveyed from Canyon Creek Dam to the existing GDPUD system through 2.6 miles of pipeline and tunnel to a site north of Greenwood.

Stumpy Meadows would continue to serve by gravity most of the eastern portion of the District's service area, while the Canyon Creek gravity supply would be limited to the western and southwestern portions of the service area below 2,000 feet in elevation.

Surplus water from Stumpy Meadows Reservoir could be conveyed in the existing GDPUD system and stored in Canyon Creek. Operated in conjunction with Stumpy

Meadows, Canyon Creek could add about 6,100 acre-feet of safe yield, or with conservation measures, could increase the firm yield of the system by about 6,780 acre-feet.

Supplemental Water Supply from Rubicon River

The Rubicon River project involves a gravity diversion from the South Fork of the Rubicon River between Sacramento Municipal Utility District's (SMUD) Gerle Creek Reservoir and Robb's Forebay. This proposed diversion would serve as a drought supply, and would supplement the water supply provided by GDPUD's Stumpy Meadows Reservoir. Water would be diverted through approximately 2.6 miles of pipeline, which would follow the historical diversion route. Then the flow would be conveyed to the headwaters of Pilot Creek through a new 2.6 mile tunnel, rather than follow the historical ditch and flume route along the south face of the Rubicon River canyon. The pipeline and tunnel would be sized to provide a diversion capacity of 25 to 30 cubic feet per second (cfs).

Once the water is placed into Pilot Creek, it would flow down the existing drainage where it would enter Stumpy Meadows Reservoir. The proposed diversions would occur on an "as-needed" basis, and would increase the yield of GDPUD's existing storage reservoir by supplementing the natural Pilot Creek flows when the reservoir is not expected to fill and spill. The District would then be able to draw down the reservoir level more than their current operating practice allows, and could use more of the existing storage pool rather than just during critical drought periods.

The District has performed conceptual level hydrologic analyses to evaluate the potential diversion requirements and feasibility of this option. Based on a demand level of 10,460 acre-feet, which represents 94 percent of GDPUD's existing demand, the supplemental water supply would only be needed 2 percent of the time. When demands increase to 15,930 acre-feet, a demand level beyond the projected 2025 time frame, the water supply would be utilized approximately 33 percent of the time.

Negotiation of an agreement for diverting water from the SMUD system is an important element of this proposed project.

GDPUD is also considering improvements to their surface water treatment facilities that would integrate well with this project. A new water treatment plant near Greenwood would replace the existing Auburn Lake Trails treatment plant, which would be abandoned. The new treatment plant would have more capacity, initially about 5 mgd, and would be located in the distribution system at a point which would also reduce demand on the existing Walton Lake Water Treatment Plant. The capacity in the Walton plant would then be available to serve additional demands in the growing areas around Georgetown.

Folsom North Pumping Project

The Folsom North Pumping Project is a potential project that would help meet the District's water needs in the western portion of the service area, including Cool and Pilot Hill. The proposed water source for this project would develop a water supply from PL101-514 ("Fazio Water"), which enables GDPUD to develop up to 7,500 AFA of M&I water from the North Fork American River. Operated in conjunction with Stumpy Meadows, the project could provide a supplemental supply to help meet projected water demands beyond 2025.

The proposed project would share an intake structure and pump station site on the North Fork American River with the Placer County Water Agency near the Auburn Dam site. A pipeline would be constructed across the river, follow a ridge line up to a small regulating reservoir, and then be pumped again to a water treatment plant site in the Cool vicinity. As conceived, a 21-inch diameter pipeline about 16,000 feet in length would be required, with a capacity of about 25 cfs. The static lift from the North Fork American River to the treatment plant site is approximately 1,080 feet. The complete project would require a regulating reservoir approximately 100 acre-feet in size, water treatment plant and related piping to integrate with the existing water distribution system.

A number of potential operating strategies can be considered. For example, one strategy would be to operate the Stumpy Meadows Project to provide the safe yield to the eastern service area, with no water

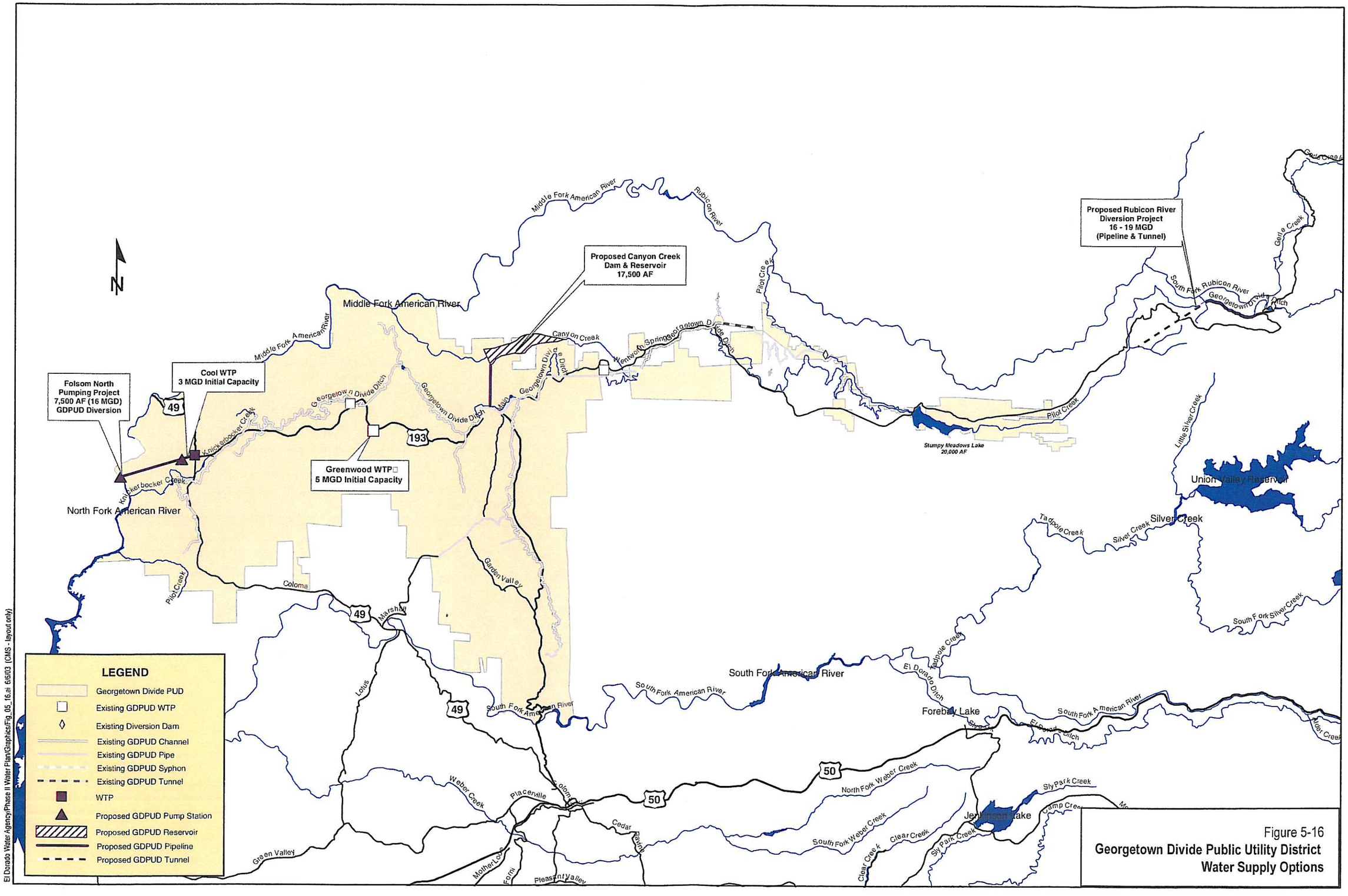

Figure 5-16
Georgetown Divide Public Utility District
Water Supply Options

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supply deficiencies. Water would then be supplemented from the Folsom North Pumping Project when the Stumpy Meadows supplies are insufficient to meet the western service area needs. Water supply deficiencies would not be required until the supply from both the Stumpy Meadows and Folsom North Projects are insufficient to meet District-wide needs.

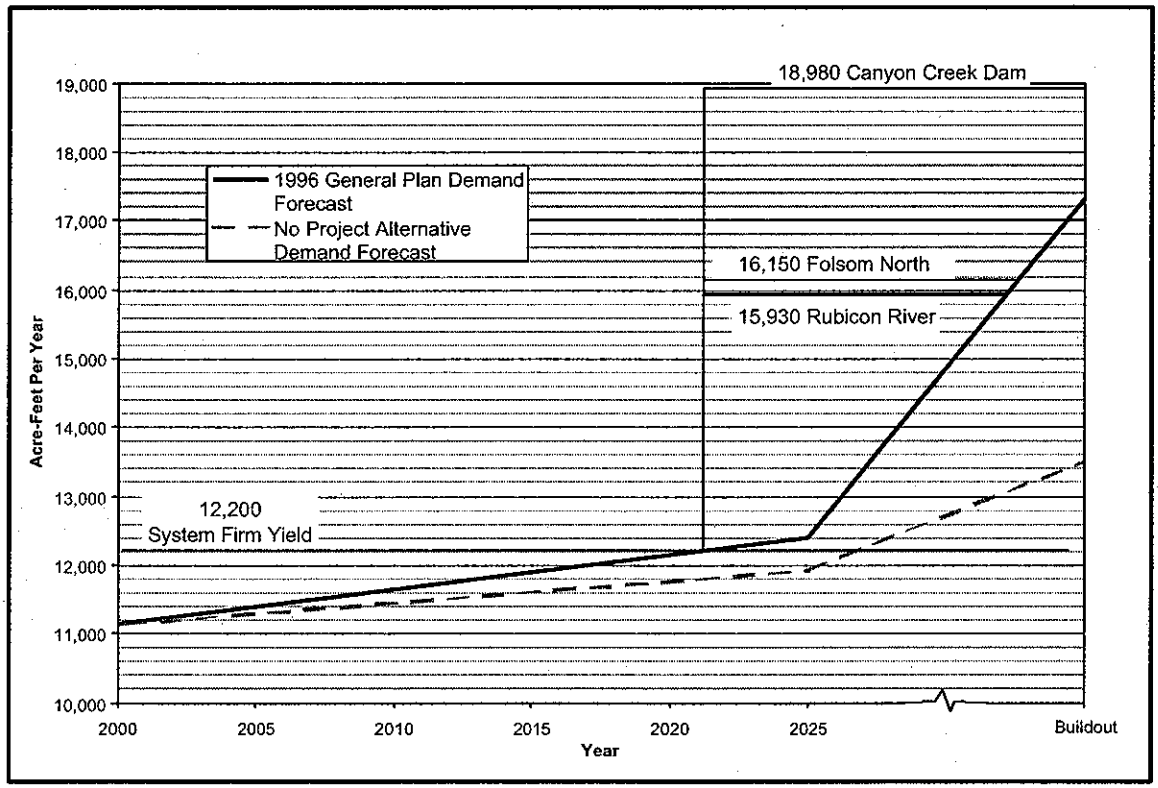
Based on existing demand levels of about 11,000 acre-feet per year, this operating strategy would require supplemental water supplies from the Folsom North Project about 1 percent of the time. Average annual pumping would be minimal, with the maximum annual pumping estimated to be about 2,174 acre-feet during critical dry years. When demands increase to 16,150 acre-feet, a demand level beyond the projected 2025 time frame, the water supply would be utilized 100 percent of the time. Average annual pumping would be 3,500 to 4,800 acre-feet per year, with the maximum annual pumping estimated to be about 5,678 acre-feet during critical dry years.

Water Conservation

The District's ongoing management practices and conservation programs to reduce losses in the water conveyance system by lining ditches with gunite, replacing ditches with pipelines, and improving operations that affect losses, will have a value in increasing the life of the present water supply. GDPUD estimates that operational losses account for up to 3,000 acre-feet of water per year. Improved water supply efficiency will decrease the amount of water required from any of the water supply projects under consideration. However, conservation alone will not be sufficient to meet the projected demands within the GDPUD service area, and eventually, implementation of an additional water supply supplemental to the Stumpy Meadows Project will be necessary.

Conclusions

Each of the water supply options presented have not been subjected to a rigorous evaluation to determine the respective increase in system firm yield that would result from their implementation. The operation of the GDPUD system would be coordinated to maximize the combined yield of Stumpy Meadows Reservoir together with the water supply alternative implemented. For comparison, **Figure 5-17** presents preliminary system firm yield estimates based on reported information associated with each of the main water supply options considered, compared to both the No Project and 1996 General Plan demand forecasts. Note that the demand forecasts presented do not include potential residential/commercial demands from Other County Areas, or projected increases in agriculture irrigation.



* Demand forecasts exclude Other County Areas and projected increases in agriculture irrigation.

Figure 5-17
System Firm Yield Estimates Versus Demand Forecasts, Excluding Increase in Agricultural Demand (Acre-Feet Per Year)

Several conclusions may be drawn by comparing the identified water supply improvements to the projected increases in water demand.

- Without implementation of a new water supply project or additional management practices and conservation programs to reduce losses in the water conveyance system, demands equal to the existing system firm yield may be reached by 2020 or earlier under the 1996 General Plan demand forecast.

- Implementation of any one of the water supply options should provide sufficient water supplies to the GDPUD service area through the year 2025, based on both the No Project and 1996 General Plan demand forecasts.

Implementation of any one of the water supply options should provide sufficient water supplies through build-out of the existing GDPUD service area based on the No Project demand forecast.

5.6.4 GDPUD WATER SUPPLY OPTIONS – OTHER COUNTY AREAS

Additional water supplies to meet the residential/commercial build-out demands of the Other County Areas within the Expanded GDPUD Service Territory range up to 2,433 acre-feet per year. This does not include projected increases in irrigation demands. Implementation of any one of the water supply options should provide sufficient water supplies through build-out based on the No Project Demand Forecast. Implementation of highly sufficient water management practices and conservation programs will also be needed to supply the 1996 General Plan Demand Forecast.

5.6.5 GRIZZLY FLATS CSD WATER SUPPLY OPTIONS

Grizzly Flats has investigated a number of water supply alternatives. The March 1994 Water Supply Reconnaissance-Level Study[4] and the May 1988 Reconnaissance Investigation of Off-Stream Storage[5], both by Borcalli and Associates, Inc., provide detailed information about the alternatives considered. Construction of an off-stream storage reservoir is the recommended water supply improvement to increase the system's safe yield.

Seven different reservoir sites were investigated. Based upon the findings from the evaluation of the alternative off-stream storage sites, the latest report recommends that GFCSD pursue funding for the design and construction of the Spring Flat Reservoir site. The Spring Flat Reservoir would provide a storage capacity of 350 acre-feet, and would increase the safe yield to approximately 500 acre-feet. This water supply project would provide sufficient water to meet demands beyond the 2025 timeframe, but may be insufficient to meet the projected build-out needs for the area.

Future improvements are also under consideration. Lining the upper portions of the side slopes of the existing raw water reservoir would reduce leakage, and increase the safe yield of the existing system. GFCSD is also considering reserving the option to purchase the land encompassing the Potts reservoir site. The Potts site has limited storage capacity, but it could potentially be supplied water from the Steely Fork Cosumnes River, thereby providing a second water supply source for the District.

5.6.6 TAHOE BASIN WATER SUPPLY OPTIONS

In 1968, the joint California – Nevada Interstate Compact Commission adopted the "California – Nevada Interstate Compact", allocating water in the Lake Tahoe, Truckee River, Carson River and Walker River Basins. Ratification of the Compact by the U.S. Congress is pending; however, it has been accepted in both states as the only comprehensive basis available for allocating water rights. The

4 See Appendix A (Bibliography), No. 3
5 See Appendix A (Bibliography), No. 4

Interstate Water Compact sets the total amount of water that may be diverted for use in the Lake Tahoe basin at 34,000 acre-feet per year. Of this total, 23,000 acre-feet per year is allocated to California, and 11,000 acre-feet per year to Nevada. This water allocation includes all sources, such as groundwater, springs and surface water from tributary streams and Lake Tahoe.

In July 1994, the California State Water Resources Control Board issued a Draft Policy for water allocation in the Lake Tahoe Basin. To date the policy has not been finalized. The Draft Policy suggested that the 23,000 acre-feet per year allocated to California be further divided between public and private lands in three zones, A, B and C as shown in **Figure 5-18**. Zone C roughly corresponds to the boundary of STPUD, and was proposed an allocation of 12,493 acre-feet per year. The proposed allocation includes water use for municipal water systems, domestic and recreational systems, private well users and golf courses. An estimated 884 acre-feet per year is also allocated in Zone B to the TCPUD and the private water systems within El Dorado County.

The Draft Policy allocation of water within El Dorado County, which corresponds to an estimated 13,377 acre-feet per year, represents a water resource constraint in the Lake Tahoe Basin. The allocation appears to be sufficient to provide for projected water demands through 2025, and build-out under either alternative considered.

The draft policy allocation is an important issue that should be closely monitored in the future, as there are no other sources of water supply available within the Lake Tahoe Basin. Trends of increased occupancy and landscape irrigation will place additional demands on the resource from existing customers. Additional water conservation measures and more thorough monitoring of all water uses within the basin may be necessary to ensure that the allocated water resources are sufficient to meet the future needs of the Tahoe Basin.

5.6.7 WATER SUPPLY OPTIONS FOR AGRICULTURE

Potential water supply requirements for agriculture on the western slope are about 43,000 acre-feet per year of new demand. When agriculture demands are added together with other forecasted M&I water demands, the total demand exceeds the identified firm yield of the water supply options evaluated.

To encourage and promote continued agriculture development, their demands must be integrated and balanced with other needs for water throughout the County. Presently, both GDPUD and EID supply over 10,000 acre-feet of water per year for agriculture, which does not include existing agriculture water use in the Other County Areas. The south County, for example, has developed a good agricultural base

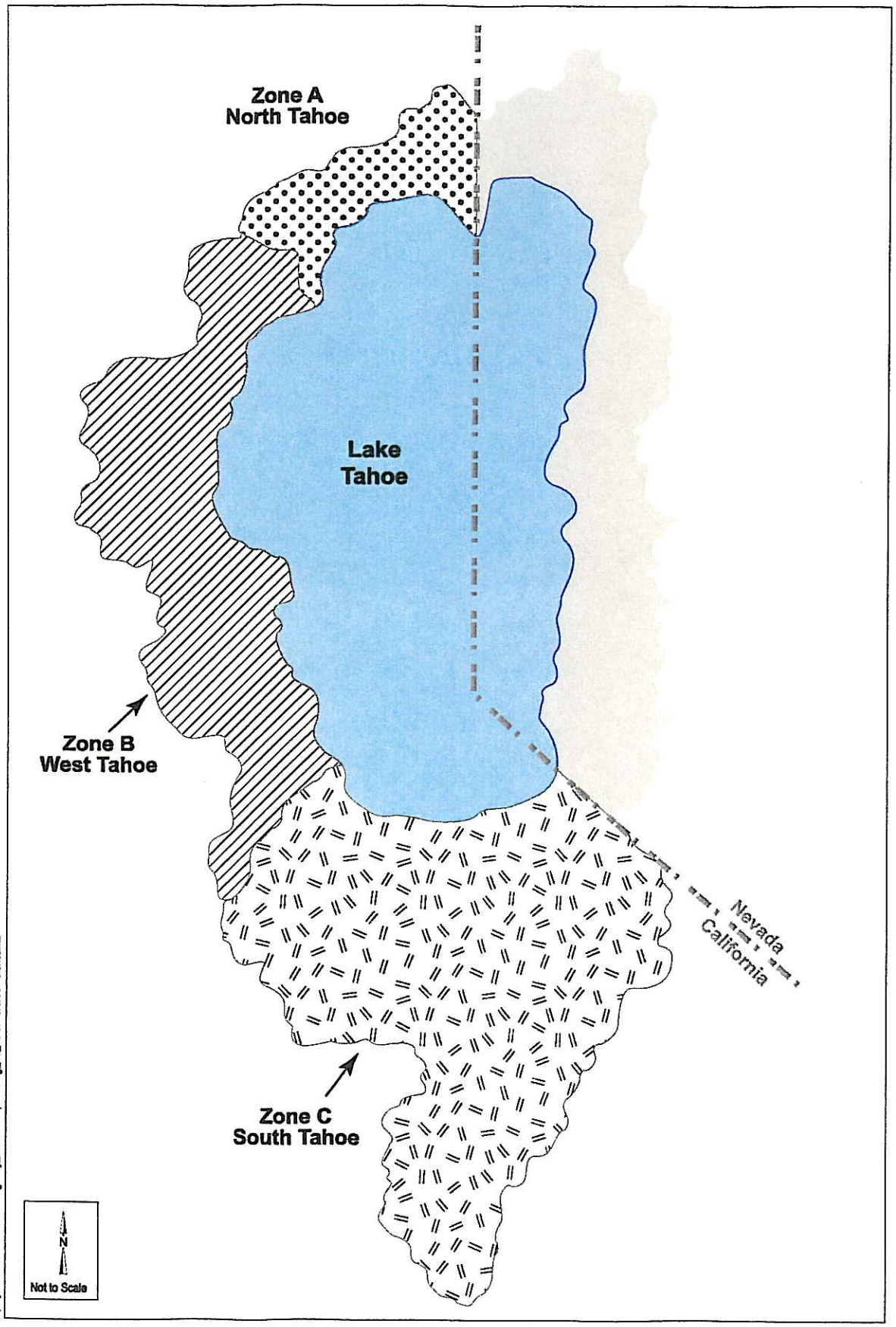


Figure 5-18
California Water Use Zones

without the benefit of a water supply system, relying instead on individual wells and stock water ponds. A substantial amount of additional agriculture could be supported if a regional water supply were developed.

Developing an expanded water supply for agriculture has its own opportunities and challenges. An agriculture demand distribution is different than a M&I demand, with irrigation generally occurring over an 8- to 9-month season, rather than year round usage. Agricultural use does not necessarily require a potable water supply, so raw water and highly treated wastewater effluent may be a viable alternative in certain locations. There is some flexibility in reducing agricultural demands during drought, potentially extending limited water supplies for M&I customers. In return, existing and new M&I customers may respond more favorably to long-term water conservation measures if the conserved water is used to increase their drought reserves and provide a water supply for agricultural development. Lastly, a broad financial base must be developed to support a multi-use water supply project that includes agricultural needs.

Several multi-use water supply development projects have been investigated in the past. For example, the Cosumnes River Division, Initial Phase, Central Valley Project, investigated the feasibility of developing a water supply for both El Dorado and Amador County in 1968. This feasibility report considered a number of reservoirs on the Cosumnes watershed, including Nashville, Aukum and Pi-Pi Reservoirs. At that time, the estimated construction cost for the initial phase of development was approximately $174 million. Today, the cost of a similar project would approach $1 billion, and there are many more constraints that would need to be satisfied. New water supply projects will need to be creative and flexible, and be configured to satisfy multiple benefits, including power supply, environmental and recreation needs, in addition to supplies for M&I uses, long-term drought reserves and agricultural requirements.

One example of a project that could potentially benefit both M&I and agricultural needs is presented below. The projected demand associated with Agriculture Districts 9-14, located in the southern portion of the County, is 12,650 acre-feet. Some portion of this demand could potentially be served through EID's existing reservoir system and/or Crawford Ditch. This option might include releases from the proposed Alder Reservoir to Jenkinson Lake into Sly Park Creek, which could then be diverted from the creek into a new pipeline near the crossing with Crawford Ditch. Winter diversions from the Cosumnes River using the Crawford Ditch, which is generally not in use for M&I needs at that time, could also be considered to provide an agricultural water supply.

A pipeline could be constructed generally following the alignment of County Route E16 through Somerset, past D'Agostini Ranch to Mt. Aukum. This pipeline alignment would be approximately 9.5 miles in length, but could serve as a backbone transmission main that could supply water to existing and/or new stock water ponds. If a suitable site could be developed, a new off-stream reservoir could also be supplied by this transmission main and provide added capacity for local irrigation water storage.

In any case, an agricultural water supply that proposes to use existing or planned M&I storage or conveyance facilities will need to be thoroughly evaluated to determine potential benefits or impacts to the firm yield of the municipal water system.

Conclusions

Additional water supply requirements for agriculture are comparable to that required for future M&I needs. When evaluating new water supply projects, such as Alder Reservoir in EID or the Rubicon Diversion in GDPUD, the needs of agriculture and other beneficial uses should be considered and evaluated as an integrated system. In addition to integrating agriculture needs with planned M&I improvements, the County should continue to investigate the following options:

1. Wastewater "scalping" facilities on major sewer interceptors that could provide treated effluent seasonally to local agricultural areas. Scalping facilities are typically small package treatment plants that divert a portion of the flow from a sewer interceptor, treat and disinfect the wastewater to reuse standards, and discharge any solids from the process back into the interceptor for treatment and handling at the main treatment facility. The treated effluent is locally available for irrigation and/or industrial processes that do not require potable water.

2. Development of off-stream storage reservoirs and additional stock water ponds that could be supplied by seasonal direct diversions. It has been reported that approximately 500 stock water ponds are currently in use within the County.

Districts 9-14 could potentially be served from EID's existing reservoir system and/or Crawford Ditch. This option might include releases from Jenkinson Lake into Sly Park Creek, which could be diverted from the creek into a new pipeline near the crossing with Crawford Ditch. Winter diversions from Crawford Ditch could also be used to provide a portion of the water supply required. From that location, a pipeline could be constructed generally following the alignment of County Route E16 through Somerset, past D'Agostini Ranch to Mt. Aukum. This pipeline alignment would be approximately 9.5 miles in length, but could serve as a backbone transmission main that could supply

water to existing ranch reservoirs. New off-stream reservoirs could also be supplied by this transmission main and provide added capacity for local irrigation water storage.

5.7 COSTS OF ALTERNATIVES

A number of different water supply alternatives for El Dorado County have been presented. The alternatives include new or expanded storage reservoir projects, direct diversion projects, and major water treatment and conveyance improvements required to deliver the water from the source to the place of use. A summary of the water supply alternatives considered in this Management Plan is presented in **Figure 5-19**.

The timing and capacity of new water supply improvements will be subject to many factors, including actual demands, the provision of water service to Other County Areas and additional irrigation demands. Other factors that will also affect implementation of any water supply project are institutional and regulatory requirements, environmental considerations and cost. Following is a summary of the estimated cost for each of the water supply alternatives considered. Institutional and environmental considerations are presented in subsequent sections of this report.

Table 5-9 summarizes the estimated build-out capacity costs for the water supply alternatives considered in this Water Management Plan. Conclusions and Recommendations, including cost estimates where appropriate, will be developed in the Final Report. The cost estimates were derived from existing studies and reports, and are based upon varying levels of investigation and analysis. More detailed information on the original cost estimates for each option is included in Appendix E. The cost estimates should be considered preliminary, but they serve to compare the magnitude and relative costs of the water supply alternatives considered.

For EID, significant costs will be expended in the future to make use of the additional water supplies available from Folsom Lake. Expansion to the El Dorado Hills Water Treatment Plant and construction of new transmission mains will be required to serve the growing demands in the El Dorado Hills and Western Regions. The actual demands to be supplied by EID within their existing service territory, to Other County Areas, agriculture or for other beneficial uses will determine when additional improvements and a reservoir project, such as Alder or Texas Hill Reservoir, will be required. Build-out capacity cost estimates are provided for EID's water supply alternatives 3 and 3A, as well as other potential options.

TABLE 5-9
COST ESTIMATES - BUILD-OUT CAPACITY WATER SUPPLY ALTERNATIVES

Service Provider	Original Cost Estimate	45% (25% Contingency, 20% Engineering and Administration)	Original Cost Estimate (Includes Contingency, Engineering and Administration)	Cost Estimate Projected to 2003[d]
EL DORADO IRRIGATION DISTRICT				
Water Supply Alternative 3[a]				
Treatment Capacity				
El Dorado Hills WWTP	$12,700,000	$5,715,000	$18,415,000	$19,038,000
Bray WTP	$17,000,000	$7,650,000	$24,650,000	$25,484,000
Bass Lake WTP	$15,000,000	$6,750,000	$21,750,000	$22,486,000
Subtotal Treatment Capacity	***$44,700,000***	***$20,115,000***	***$64,815,000***	***$67,008,000***
Reservoir Improvements				
Reconstruct Reservoir 10	$800,000	$360,000	$1,160,000	$1,199,000
Expand Weber Reservoir	$410,000	$185,000	$595,000	$615,000
Expand Bass Lake	$1,800,000	$810,000	$2,610,000	$2,698,000
Alder Dam and Reservoir	$42,000,000	$18,900,000	$60,900,000	$62,962,000
Subtotal Reservoir Improvements	***$45,010,000***	***$20,255,000***	***$65,265,000***	***$67,474,000***
Transmission and Distribution System	*$49,067,000*	*$22,080,000*	*$71,147,000*	*$73,556,000*
Total for Alternative 3	**$138,777,000**	**$62,450,000**	**$201,227,000**	**$208,038,000**
Water Supply Alternative 3A[a]				
Treatment Capacity				
El Dorado Hills WTP	$16,000,000	$7,200,000	$23,200,000	$23,985,000
Subtotal Treatment Capacity	***$16,000,000***	***$7,200,000***	***$23,200,000***	***$23,985,000***
Reservoir Improvements				
Reconstruct Reservoir 10	$800,000	$360,000	$1,160,000	$1,199,000
Subtotal Reservoir Improvements	***$800,000***	***$360,000***	***$1,160,000***	***$1,199,000***
Transmission and Distribution System	*$18,753,000*	*$8,439,000*	*$27,192,000*	*$28,113,000*
Total for Alternative 3A	***$35,553,000***	***$15,999,000***	***$51,552,000***	***$53,297,000***
ADDITIONAL PROJECTS				
Texas Hill Dam and Reservoir	$36,000,000	$16,200,000	$52,200,000	$53,967,000
Mt. Aukum Agriculture Supply[h]			$15,600,000	$15,600,000

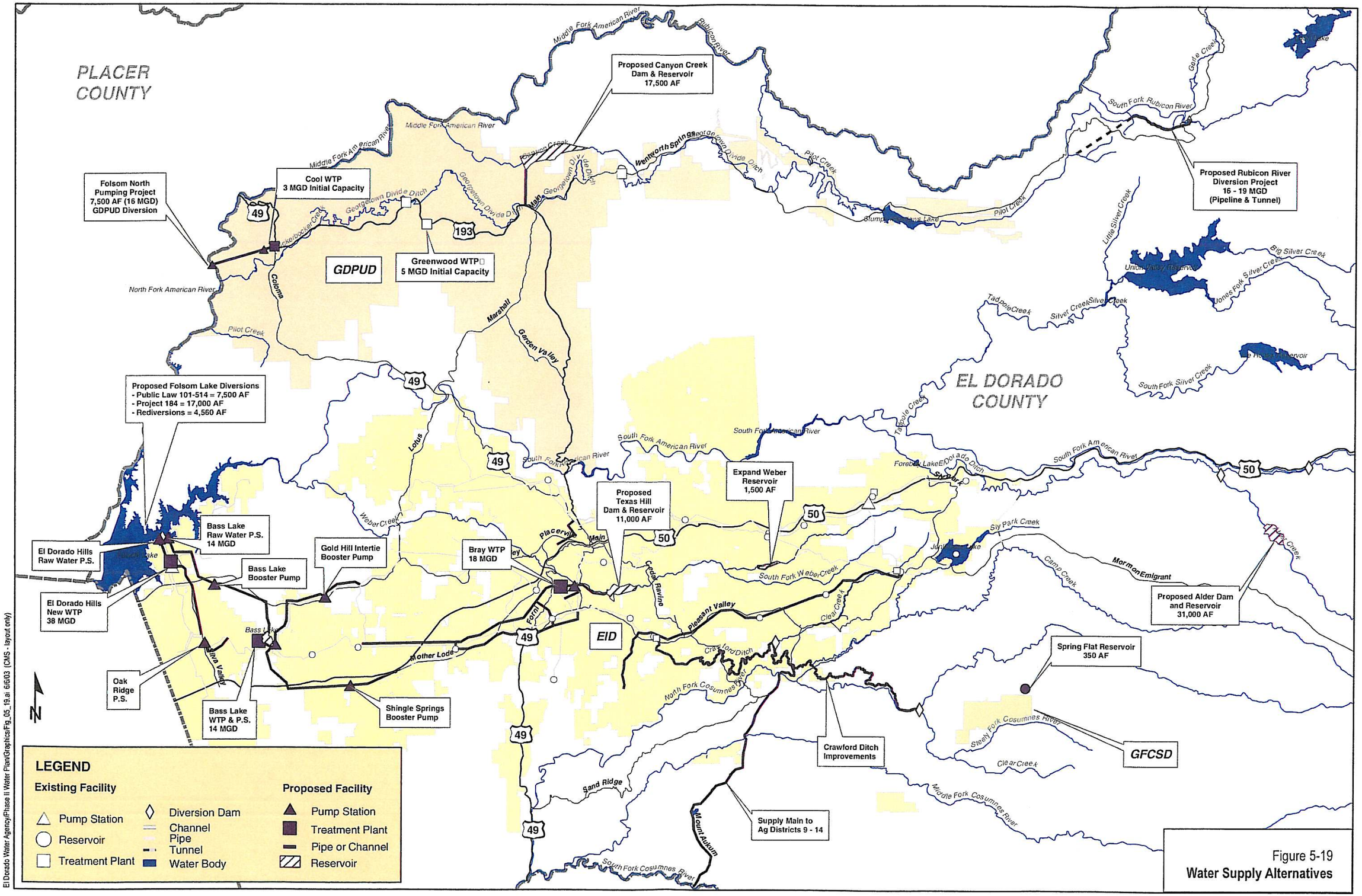


Figure 5-19
Water Supply Alternatives

El Dorado Water Agency/Phase II Water Plan/Graphics/Fig_05_19.ai 6/6/03 (CMS - layout only)

TABLE 5-9
COST ESTIMATES - BUILD-OUT CAPACITY WATER SUPPLY ALTERNATIVES

Service Provider	Original Cost Estimate	45% (25% Contingency, 20% Engineering and Administration)	Original Cost Estimate (Includes Contingency, Engineering and Administration)	Cost Estimate Projected to 2003[d]
GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT				
Treatment Capacity Options[b]				
Cool Water Treatment Plant (3 mgd)	$3,000,000	$1,350,000	$4,350,000	$4,927,000
Greenwood Water Treatment Plant (5 mgd)	--	--	$10,000,000	$10,000,000
Reservoir Improvements - Project Options				
Canyon Creek Dam Project[c]	$34,000,000	$15,300,000	$49,300,000	$75,418,000
Folsom North Project[b]	$1,000,000	$450,000	$1,450,000	$1,642,000
Transmission and Distribution System - Project Options				
Rubican River Project[f]	--	--	$25,800,000	$25,800,000
Canyon Creek Dam Project[c]	$11,400,000	$5,130,000	$16,530,000	$25,287,000
Folsom North Project[b]	$4,440,000	$1,998,000	$6,438,000	$7,292,000
GRIZZLY FLATS COMMUNITY SERVICES DISTRICT				
Spring Flat Reservoir Project[e]	$3,504,000	$1,577,000	$5,081,000	$5,726,000
Total Grizzly Flats Community Services District	**$3,504,000**	**$1,577,000**	**$5,081,000**	**$5,726,000**
SOUTH TAHOE/TAHOE CITY PUBLIC UTILITY DISTRICT				
New / Replacement Groundwater Production Wells[g]	--	--	$4,750,000	$4,750,000
Total STPUD / TCPUD				

a EID Water Supply Master Plan, December 2001 (ENRCCI: 6401, 11/2001)
b Preliminary Report - Folsom North Pumping Project, Sierra Hydrotech, September 1997 (ENRCCI: 5851, 09/1997)
c Georgetown Divide Water Management Study pg. 50. Estimate as of July 1986 (ENRCCI: 4332, 07/1986)
d March 2003 (ENRCCI: 6627)
e GFCSD Reconnaissance Investigation of Off-Stream Storage, Borcalli & Associates, May 1998 (ENRCCI: 5881, 05/1998)
f GDPUD Supplemental Water Supply from Rubicon River, Sierra Hydrotech, August 1988, cost estimate updated June 2003.
g STPUD Draft 10-Year CIP Budget, 2003
h Pipeline cost only; no storage or supply component.

The cost of the next acre-foot of incremental water supply for both the Georgetown and Grizzly Flats areas will be high. Several water supply options are available, but neither GDPUD nor GFCSD has a broad financial base to fund a major water supply project that could cost $5 to $10 million or more. To provide for managed growth within the Districts, creative funding options that support implementation of a new water supply project will need to be investigated.

5.8 INSTITUTIONAL ISSUES

Institutional issues anticipated to affect the various water supply alternatives are discussed below:

5.8.1 SACRAMENTO WATER FORUM10

The Water Forum is a diverse group of business and agricultural leaders, citizens groups, environmentalists, and water managers and local governments in Sacramento County and water managers in Placer and El Dorado counties. Its objective was to a) provide a reliable and safe water supply for the region's economic health and planned development through 2030, and b) preserve the fishery, wildlife, recreational, and aesthetic values of the lower American River. The group negotiated the Water Forum Agreement, which sets forth detail understandings on how the region will deal with key issues such as groundwater management, water diversions, dry year supplies, water conservation, and protection of the lower American River. EDCWA, EID and GDPUD have not been included in the Water Forum Agreement, having issues that were not resolved as part of the Agreement; however, EID and GDPUD have executed procedural agreements with the goal of negotiating acceptable agreements specific to these two agencies to resolve remaining issues.

5.8.2 FAZIO WATER

The El Dorado County Water Agency (EDCWA) is the contracting agency for 15,000 acre-feet of water for municipal and industrial (M&I) use allocated to El Dorado County from the American River by the federal government under PL-101-514, the so-called "Fazio Water". This water would be provided to EDCWA for diversion from Folsom Lake or for exchange on the American River upstream from Folsom Lake for other Central Valley Project (CVP) water. The contracting agency for the federal government is the Bureau of Reclamation (USBR). EDCWA is in the process of preparing the EIR/EIS for the water supply contract, and EDCWA will then enter into contracts with EID and GDPUD for use of this water. EID would divert its share of this water from Folsom Lake, but GDPUD would have to affect an exchange with Placer County Water Agency (PCWA) to divert GDPUD's share at PCWA's planned pumping plant just upstream from Folsom Lake. This water could be exchanged only for other

CVP water and would not be available for exchanges involving water further upstream in the American River system not allocated to the CVP.

5.8.3 SACRAMENTO MUNICIPAL UTILITY DISTRICT

SMUD is negotiating with the Federal Energy Regulatory Commission in connection with re-licensing of SMUD's Upper American River Project, which provides water for SMUD's hydroelectric power generation. El Dorado County water interests are among those participating in discussions with SMUD. The re-licensing deals with power generation only; it does not deal with water allocation. The water involved in the SMUD project has been assigned to the City of Sacramento (City), and obtaining water from the UARP would involve increasing storage in the UARP and negotiating with the City for the water. Any assignment of water to GDPUD from the SMUD project would require payment to SMUD for cost of power foregone or exchange for that water from another source.

A Master Memorandum of Understanding11 was executed in 2002 between SMUD, EDCWA and EID establishing the general governing principles and framework within which to develop and implement a Joint Benefit Investigation Plan and other actions of mutual benefit to the parties parallel to the relicensing of the UARP.

5.8.4 CITY OF SACRAMENTO

The City has extensive rights to American River water through a contract with the USBR covering 245,000 acre-feet of water from Folsom Lake; this water includes water assigned to the City from SMUD's UARP. A Memorandum of Understanding (MOU), initially between SMUD and EID and later joined by the City, provides that studies be undertaken to develop options for use of SMUD/City water by El Dorado County and that the options developed by presented to the City for review. As part of this MOU process, the possibility of exchanging Fazio water for City water to divert upstream from Folsom Lake should be explored.

5.8.5 COSUMNES RIVER

The Cosumnes River is an unregulated stream and often dries up in the summer in its lower reaches. An option for water supply to the south area of El Dorado County could be to divert water to offstream storage on a seasonal basis through a permit from the California State Resources Control Board. Informal contact with Board staff indicates that water is available for appropriation during winter months and that filings could be made directly or for appropriation of a portion of the state filings on the old Nashville Dam project.

5.9 DROUGHT CONSIDERATIONS (WESTERN SLOPE)

The water needs for the western slope of El Dorado County are for the most part supplied from surface water sources; groundwater supplies a small fraction of the western slope's needs and is not a reliable supply for supplementing water demands during drought periods. There are several alternatives or combination of alternatives the County might consider that could provide backup supplies in drought periods. Each of these alternatives or combinations would require extensive study to determine their feasibility in terms of hydrology, available water supplies, cost, and public acceptance, and then to determine the level of drought risk acceptable to the community.

5.9.1 OFFSTREAM STORAGE

Reservoir sites off main watercourses would be located so that they could provide supplementary water supply to treatment plants and to raw water customers. Rights to divert water from a stream or river to storage during high water flow periods would have to be obtained from the State Water Resources Control Board. Water would then be diverted to storage over a period of time to these reservoirs as water was available and in conformance with the water right permit. These reservoirs would then carry over storage from year to year and would be drawn down to provide a backup supply as needed during periods of water shortage.

5.9.2 RESERVOIR ENLARGEMENT

Existing and planned reservoirs that have the physical feasibility to be enlarged by raising dams and embankments could be operated to reserve the additional water impounded to supply drought needs. The same need to obtain water rights and to divert water in conformance with the water right permit as described above would apply.

5.9.3 Groundwater Banking

Groundwater banking is a concept whereby water is stored in a groundwater basin and then pumped out when needed. An entity that wishes to bank water for later use (storing entity) must enter into an agreement with the agency overlying (overlying agency) the groundwater basin and pay the overlying agency to store water in the basin either by injection, infiltration, or in-lieu recharge. The latter method is accomplished by the overlying agency foregoing pumping groundwater and substituting surface water use to allow the basin to recharge naturally. When the storing entity wishes to call for the stored water subject to the conditions of the agreement, including payment, the overlying agency would pump groundwater and forgo its surface water use, leaving the surface water in the stream system for benefit of the storing entity. Such a process is not possible in El Dorado County because of the absence of a

groundwater basin capable of storing sufficient water. Following are a couple of examples of agencies that could provide water banking and exchange for El Dorado County.

- **Sacramento County Groundwater Basin** - The north area of Sacramento County has formed the Sacramento Groundwater Authority for the purpose of managing the groundwater basin in that area. The Authority has conducted two successful pilot projects to test the banking and exchange concept in that basin. Interest has been expressed by Authority management in exploring the potential for a banking and exchange project with El Dorado County.

- **Central Valley Groundwater Basin** - A banking and exchange program is being operated by the Semitropic Water Storage District in Kern County. A similar type of arrangement as described above with the Sacramento Groundwater Authority could be investigated with Semitropic

Drought Cycles

Dr. David Jones, professor emeritus, Department of Geology and Geophysics, University of California at Berkeley, working with the Citizens for Water group in El Dorado County has investigated hydrologic cycles affecting the American River during the past century and compared this historic record with information form past centuries derived from tree ring studies. This comparison shows that droughts in past centuries were more severe and of longer duration than any drought experienced during the last century. The historic data show a period of declining rainfall followed by 30 years of normal rainfall, with the remaining part of the century characterized by highly variable conditions. Tree ring data substantiate a similar cyclical pattern extending back to 1600, but with longer periods of drought. These data show that long-term drought is part of the normal climate pattern and suggest the need to plan for drought emergencies by providing additional storage for drought protection. A copy of Dr. Jones' paper is included in Appendix G.

CHAPTER 6

Environmental Constraints

6.1 INTRODUCTION

Alternative water supplies and facility infrastructure have been identified and discussed in previous chapters. Each alternative and their individual components have been developed as a potential means of meeting water demands in El Dorado County (County) through the year 2025. The key water purveyors include the El Dorado Irrigation District (EID), Georgetown Divide Public Utility District (GDPUD), and Grizzly Flats Community Service District (GFCSD) in the Western Slope area and the South Tahoe Public Utility District (STPUD) and the Tahoe City Public Utility District (TCPUD) in the Tahoe Basin area. It is recognized, however, that smaller water companies and private wells also supply water to "Other County Areas" (OCA), which are not serviced by the five major purveyors.

According to preliminary investigations, GFCSD, STPUD, and TCPUD have sufficient water resources to meet projected service demands through 2025 and, therefore, have no need of securing additional water supplies at this time. As discussed previously, several alternatives have been proposed for EID and GDPUD to meet projected water demands through 2025. These alternatives are described fully in previous chapters.

6.2 OBJECTIVE OF THIS CHAPTER

As part of the overall water development master planning process, the identification of relevant and key environmental issues represents a significant objective of this effort. By providing a generalized review of the likely environmental issues and associated regulatory processes that would be applicable for each alternative, each water purveyor would be better prepared to proceed with these actions when, and if, they choose to do so. This effort is intended in its scope to identify broadly the key environmental issues of each alternative or alternative component.

Much of the initial focus concentrated on key biological issues and associated environmental regulatory processes, which are known to date. With the current status of the El Dorado County General Plan, the application of other key environmental issues such as traffic, growth, and land use to the identified alternatives may be premature, at this point.

6.3 METHODS OF ANALYSIS

Various methods of analysis were used along with a variety of sources. Primarily, the information and databases were obtained and reviewed from archival sources. No fieldwork or independent field verification was performed for this analysis. The various information sources are provided below.

6.3.1 LITERATURE REVIEW

A literature review of information relevant to the project and project area was conducted and included review of the following documents: California Natural Diversity Database (CNDDB; California Department of Fish and Game [CDFG] 2002a); and California Native Plant Society's (CNPS) Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPS 2001). Relevant technical information from these documents is incorporated into this section and referenced as appropriate. Vegetation community classification is based primarily on the Preliminary Descriptions of Terrestrial Natural Communities of California (Holland 1986) and cross-referenced to the series A Manual of California Vegetation (Sawyer and Keeler-Wolf 1995). Habitat for common and special-status wildlife species within these vegetation communities was determined based on a review of A Guide to Wildlife Habitats of California (Mayer and Laudenslayer 1988).

Where possible, existing environmental documents prepared for projects within the project areas were consulted. This included the ongoing El Dorado County Water Agency (EDCWA)/U.S. Bureau of Reclamation (USBR) Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the new Central Valley Project (CVP) water service contracts under Public law (PL)101-514 (Section 206); the Placer County Water Agency (PCWA)/USBR Pump Station Project EIS/EIR; and the related American River Basin Cumulative Impact Report (prepared as part of the National Environmental Policy Act [NEPA]/Endangered Species Act [ESA] documentation requirements for the PCWA/USBR Pump Station Project. In addition, several documents associated with projects in the study area were reviewed. This included the El Dorado Villages Shopping Center Project (California red-legged frog [CRLF] site assessment and surveys and wetland permits), the El Dorado County Juvenile Justice Center EIR, the El Dorado Materials Recovery Facility EIR, the El Dorado County General Plan EIR, and the Missouri Flat Road widening EIR/EIS.

6.3.2 BASELINE DATA ASSESSED

Geographic Information System (GIS) data layers were obtained from U.S Fish and Wildlife Service (USFWS), CDFG, Natural Resource Conservation Service (NRCS), California Spatial Information Library (CaSIL), and El Dorado County. GIS layers obtained include the following:

- USFWS California Red-legged Frog Critical Habitat
- CDFG California Natural Diversity Database
- NRCS Soil Survey
- CDFG Wildlife Habitat Relationship System (CDFG 2002b)
- El Dorado County Rare Plant Preserves

Data included within these layers were compared with the location of the proposed alternatives to determine potential biological constraints of each alternative, or each component of the alternatives.

6.4 GENERAL BIOLOGICAL RESOURCES

Ten wildlife habitats, including blue oak woodland, chamise-redshank chaparral, mixed chaparral, montane chaparral, annual grass, montane hardwood, Sierran mixed conifer, agriculture, and urban, are present within the proposed water supply and conveyance alternatives areas. Illustrations of the location and extent of each of these wildlife habitats are provided in **Figure 6-1**. The diversity of species found within each habitat is dependent on the vegetation present. For each wildlife habitat, there are one or more corresponding vegetation community classifications. A detailed discussion of the wildlife habitats/vegetation communities that is present in the alternatives areas are provided in Appendix I (Environmental Constraints).

6.5 KEY ENVIRONMENTAL CONSTRAINTS

Through review of the biological resources known or expected to occur in the vicinity of proposed EID and GDPUD water supply and conveyance alternatives, several key environmental constraints were identified. These include Waters of the U.S. (including wetlands and riparian), special-status plant species (some endemic to El Dorado County), and special-status wildlife species (including critical habitat for federally listed species as designated by USFWS). Implementation of alternatives that could affect these resources would result in the need to obtain one or more environmental permits from the U.S. Army Corps of Engineers (Corps), Regional Water Quality Control Board (RWQCB), CDFG, and/or USFWS. Refer to Appendix I for a brief description of relevant regulations and permit processes potentially required.

Special-status species as defined in this document include species federally listed as endangered (FE) or threatened (FT), federal candidate species for listing (FC), federal species of special concern (FSC), species protected by the State of California as endangered (CE), threatened (CT) or rare (CR), state species of special concern (CSC), and species identified by the CNPS as rare or of limited distribution.

6.5.1 WATERS OF THE UNITED STATES AND RIPARIAN

Waters of the United States, including wetlands, are subject to Section 404 of the Clean Water Act and are regulated by the Corps. They include "navigable" waters of the United States, interstate waters, all other waters where the use or degradation or destruction of the waters could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries. Waters of the U.S. are also protected under Sections 1601 through 1603 of the California Fish and Game Code. Wetlands are defined as:

> "*... those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions*" (Corps 1987).

The majority of wetlands considered "jurisdictional" meet three wetland criteria: hydrophytic vegetation, hydric soils, and wetland hydrology. Waters of the U.S. identified in the vicinity of proposed alternatives, based on a search of the CNDDB, include: rivers, lakes, reservoirs, sphagnum bogs, northern hardpan vernal pools, central valley drainage springs, central valley drainage hardhead/squawfish streams, and central valley resident rainbow trout streams.

6.5.2 SPECIAL-STATUS PLANTS

There are several species of special-status plants that are known to occur or could potentially occur in the project area, including five state or federally listed endangered, threatened, or candidate species; nine species of special concern; and one CNPS-listed species. Several of these special-status species are known to occur in the vicinity of the alternatives and are presented in **Table 6-1**. Refer to **Figure 6-2**, (Index Map) and **Figures 6-3a** through **6-3d** for the location of recorded special-status plant populations. Detailed descriptions of special-status species that are known to occur within 5 miles of any of the alternatives are provided in Appendix I. Species that are known or expected to occur within 5 miles of the alternatives are discussed by component below.

Several special-status plant species are endemic to serpentine and Rescue soils in El Dorado County. These include: Layne's ragwort (*Senecio layneae*), Pine Hill ceanothus (*Ceanothus roderickii*), Pine Hill Flannelbush (*Fremontodendron decumbens*), Stebbin's morning-glory (*Calystegia stebbinsii*), El Dorado County mule ears (*Wyethia reticulata*), Bisbee peak rush-rose (*Helianthemum suffrutescens*), Red Hills soaproot (*Chlorogalum grandiflorum*), and El Dorado bedstraw (*Galium californicum* ssp.

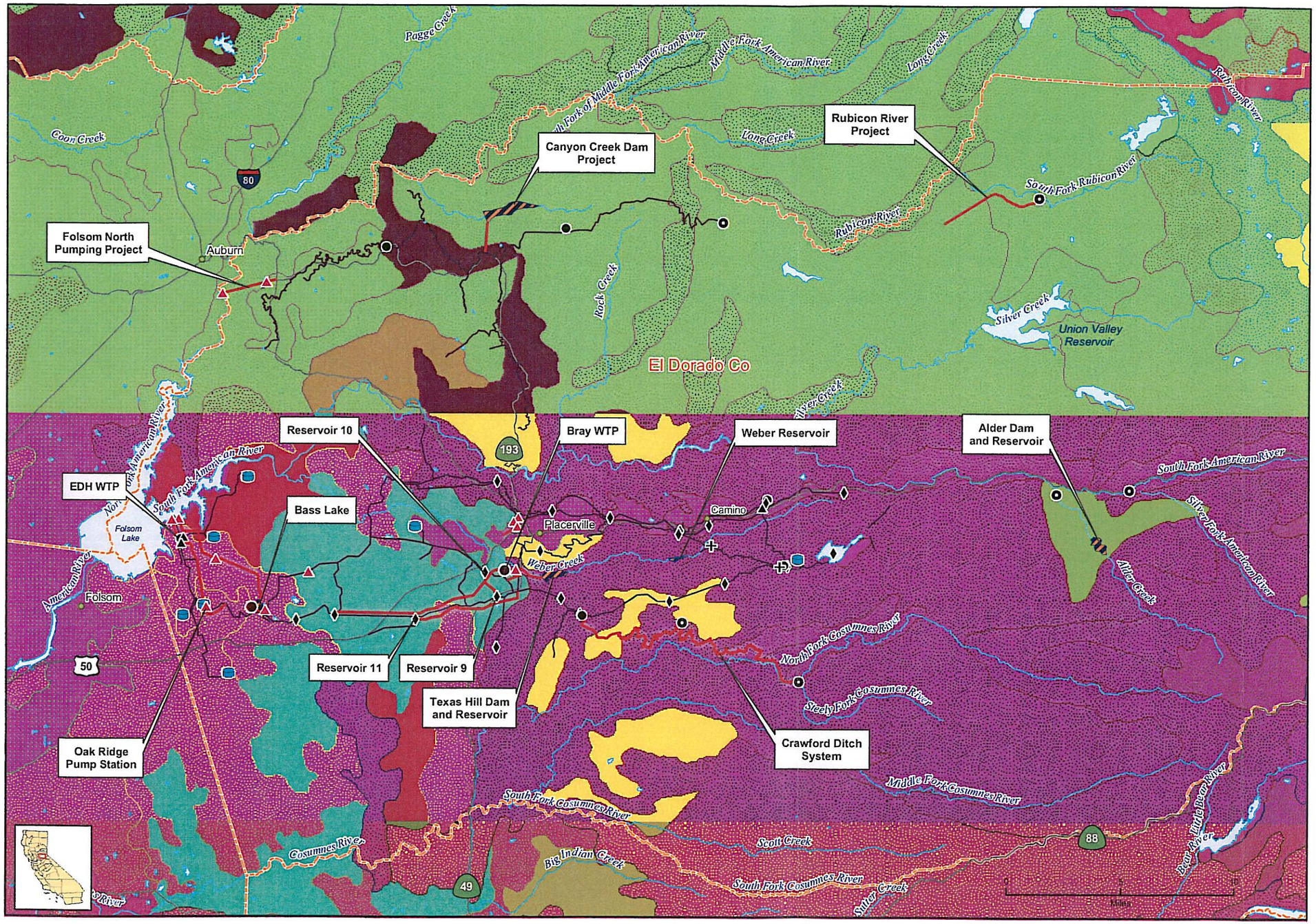


Figure 6-1

Wildlife Habitats
El Dorado Irrigation District and Georgetown Public Utility District
Proposed Alternatives

Source: CDFG WHR, CaSIL

TABLE 6-1
SPECIAL-STATUS PLANT AND WILDLIFE SPECIES POTENTIALLY OCCURRING IN THE VICINITY OF PROPOSED ALTERNATIVES

Common Name	Scientific Name	Status[a]	Habitat	Potential for Occurrence
Plants				
Nissenan manzanita	*Arctostaphylos nissenana*	FSC CNPS 1B	Open rocky ridges in chaparral and closed-cone coniferous forests. 1,476-3,600 feet in elevation. Blooms February-March.	Known to occur. Species is recorded within chaparral habitats in the vicinity of all alternatives, with the exception of the Rubicon River Project. Species is reported within 5 miles of the BWTP and Placerville Ridge Conduit, Weber Reservoir, the Crawford Ditch System, and Ringold Creek Pipeline, Placerville and 49'er extensions, Reservoir 10, Texas Hill Reservoir, Reservoir 9 Pipeline, Reservoir 11 Pipeline, and Canyon Creek Dam.
San Joaquin saltbush	*Atriplex joaqiniana*	FSC CNPS 1B	Chenopod scrub, meadows and seeps, valley and foothill grassland with alkaline soils. 3 to 1,050 feet in elevation. Blooms April-October.	May occur. Species is recorded in the Clarksville Quad within Sacramento County. Appropriate habitats present near the EDHWTP and Folsom Lake Facilities.
Big scale balsamroot	*Balsamorhiza macrolepis var. macrolepis*	FSC CNPS 1B	Chaparral, cismontane woodland, valley and foothill grassland; sometimes serpentine substrate. 295-5,000 feet in elevation. Blooms March-June.	Known to occur. Species is recorded within 5 miles of the Folsom North Pumping Project.
Pleasant Valley Mariposa lily	*Calochortus clavatus var. avius*	FSC CNPS 1B	Lower coniferous forests with Josephine silt loam and volcanic soils. 1,000-5,900 feet in elevation. Blooms May-July.	Known to occur. Species is recorded within 5 miles of Weber Reservoir, Crawford Ditch and Ringold Creek Pipeline, and Alder Creek Dam and Conveyance Routes.
Stebbins's morning-glory	*Calystegia stebbinsii*	FE CE CNPS 1B	Chaparral (openings), cismontane woodland, serpentine or gabbro soils. 600-2,400 feet in elevation. Blooms April-July.	Known to occur. Species is recorded in serpentine and gabbro soils within 5 miles of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, BWTP and PRC, and the Reservoir 11 Pipeline.
Shore sedge	*Carex limosa*	CNPS 2	Bogs and fens, montane coniferous forest, meadows and seeps, marshes and swamps. 3,900-8,900 feet in elevation. Blooms June-August.	May occur. Suitable habitat is present near the Rubicon River Project. The species has been recorded approximately 9 miles southeast of the Rubicon River Project.
Brandegee's Clarkia	*Clarkia biloba var. brandegeae*	CNPS 1B	Chaparral, cismontane woodland, often roadcuts. 900-3,000 feet in elevation. Blooms May-July.	May occur. Suitable habitat present in the vicinity of the Bass Lake Conduit, Placerville Ridge Conduit, BWTP, Alder Dam, Crawford Ditch System, and Folsom North Pumping Project. The species is reported from Pilot Hill-Salmon Falls Road at Sweetwater Creek, about 2.5 miles south of the South Fork American River confluence.

TABLE 6-1
SPECIAL-STATUS PLANT AND WILDLIFE SPECIES POTENTIALLY OCCURRING IN THE VICINITY OF PROPOSED ALTERNATIVES

Common Name	Scientific Name	Status*	Habitat	Potential for Occurrence
Plants (con't)				
Pine Hill ceanothus	*Ceanothus roderickii*	FE CNPS 1B	Chaparral, cismontane woodland, serpentine or gabbro soils. 850-2,070 feet in elevation. Blooms May-June.	Known to occur. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, BWTP and PRC, and the Reservoir 11 Pipeline.
Red Hills soaproot	*Chlorogalum grandiflorum*	FSC CNPS 1B	Cismontane woodland, chaparral, serpentine or gabbro soils. 800-3,300 feet in elevation. Blooms May-June.	Known to occur. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, BWTP and PRC, and the Reservoir 11 Pipeline.
Tuolumne button-celery	*Eryngium pinnatisectum*	CNPS 1B	Cismontane woodland, lower montane coniferous forest, and vernal pools. Mesic soils. 230-3,000 feet in elevation. Blooms June-August.	May occur. Suitable habitat is present near EID and GDPUD alternatives. The species is recorded from the Folsom SE quadrangle in Amador County. The exact location is unavailable.
Pine Hill flannelbush	*Fremontodendron decumbens*	FE CR CNPS 1B	Chaparral, cismontane woodland, and lower montane coniferous forest (openings), sometimes serpentine. 100-4,500 feet in elevation. Blooms April-July.	Known to occur. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, BWTP and PRC, and the Reservoir 11 Pipeline.
El Dorado bedstraw	*Galium californicum ssp. sierrae*	FE CR CNPS 1B	Chaparral, serpentine or gabbro soils. 328-1,918 feet in elevation. Blooms May-June.	Known to occur. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, BWTP and PRC, and the Reservoir 11 Pipeline.
Bisbee Peak rush-rose	*Helianthemum suffrutescens*	FSC CNPS 3	Chaparral. Often on serpentine, lone, or gabbro soils. 148-2,755 feet in elevation. Blooms April-June.	Known to occur. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, BWTP and PRC, and the Reservoir 11 Pipeline.
Parry's horkelia	*Horkelia parryi*	FSC CNPS 1B	Chaparral, cismontane woodland. 260-3,395 feet in elevation. Blooms April-June.	Known to occur. The species is recorded within 5 miles of Weber Creek Reservoir, Crawford Ditch System, and Ringold Creek Pipeline.
Saw-toothed lewisia	*Lewisia serrata*	FSC CNPS 1B	Broad-leaved upland forest, lower montane coniferous forest, riparian scrub. 2,952-4,707 feet in elevation. Blooms May-June.	May occur. Suitable habitat is in Sierran mixed conifer forest between 2,950 and 4,700 feet.
Stebbin's phacelia	*Phacelia stebbinsii*	FSC CNPS 1B	Cismontane woodland, lower montane coniferous forest, meadows, and seeps. 2,000-6,590 feet in elevation. Blooms June-July.	Known to occur. The species is recorded within 5 miles of the Rubicon River Project.

TABLE 6-1
SPECIAL-STATUS PLANT AND WILDLIFE SPECIES POTENTIALLY OCCURRING IN THE VICINITY OF PROPOSED ALTERNATIVES

Common Name	Scientific Name	Status[a]	Habitat	Potential for Occurrence
Plants (con't)				
Layne's ragwort	*Senecio layneae*	FT CNPS 1B	Chaparral, cismontane woodland, serpentine or gabbro soils. 650-3,280 feet in elevation. Blooms April-July.	Known to occur. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, BWTP and PRC, Weber Reservoir, Crawford Ditch and Ringold Creek Pipeline, Placerville and 49'er extensions, Texas Hill Reservoir, the Reservoir 9 Pipeline, and the Reservoir 11 Pipeline.
Oval-leaved viburnum	*Viburnum ellipticum*	CNPS 2	Chaparral, cismontane woodland, and lower montane coniferous forest. 705-4,593 feet in elevation. Blooms May-June.	May occur. Suitable habitat is present in chaparral and Sierran mixed conifer forest. The species is recorded in El Dorado County within the Placerville Quadrangle. The exact location is unavailable.
El Dorado County mule ears	*Wyethia reticulata*	FSC CNPS 1B	Chaparral, cismontane woodland, lower montane coniferous forest, clay or gabbro soils. 600-2,070 feet in elevation. Blooms May-July.	Known to occur. The species is reported within 5 miles of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, BWTP and PRC, and the Reservoir 11 Pipeline.
Invertebrates				
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	FT	Elderberry shrubs throughout the Central Valley and foothills below 3,000 feet elevation.	Known to occur. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF, and BLWTP and facilities.
Vernal pool tadpole shrimp	*Lepidurus packardi*	FE	Vernal pools with clear to turbid water and grass-bottomed swales in grasslands with old alluvial soils	Known to occur. The species has been recorded approximately 7.5 miles southwest of the Oak Ridge Pump Station south of Highway 50 in Sacramento County.
Vernal pool fairy shrimp	*Branchinecta lynchi*	FT	Vernal pools throughout California west of the Sierra.	Known to occur. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF and BLWTP and facilities.
Amphibians and Reptiles				
California tiger salamander	*Ambystoma californiense*	CSC FC	Vernal pools, annual grassland, and the grassy understory of valley-foothill oak woodland habitats below 4,500 feet. Requires seasonal wetlands or slow moving stream courses for reproduction.	May occur. May be present in vernal pool and annual grassland habitats in the vicinity of EDHWTP and Folsom Lake RWPF and BLWTP and facilities.

TABLE 6-1
SPECIAL-STATUS PLANT AND WILDLIFE SPECIES POTENTIALLY OCCURRING IN THE VICINITY OF PROPOSED ALTERNATIVES

Common Name	Scientific Name	Status[a]	Habitat	Potential for Occurrence
Amphibians and Reptiles (con't)				
Mount Lyell salamander	*Hydromantes platycephalus*	FSC CSC	High elevation rock outcrops associated with free surface water (permanent streams, waterfalls, and seeps) from 4,800 to 12,000 feet.	Unlikely to occur. Alternatives are outside of the species' known elevation range.
Western spade-foot toad	*Spea hammondii*	FCS, CSC	Requires vernal pools and seasonal wetlands below 4,500 feet (that lack predators) for breeding. Also occurs in grassland habitat and occasionally in valley-foothill oak woodlands and orchards.	May occur. Suitable habitat present in the vicinity of the EDHWTP, BLWTP and facilities, and Placerville Ridge Conduit. The species is recorded from a site approximately 10 miles west of the Oak Ridge Pump Station.
Foothill yellow-legged frog	*Rana boylii*	FSC CSC	Inhabits valley and foothill oak woodland, riparian forest, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral, and wet meadows. Breeds in rocky streams with cool, clear water from 0 to 4,500 feet.	Known to occur. The species is recorded within 5 miles of the Crawford Ditch System and Ringold Creek Pipeline.
Mountain yellow-legged frog	*Rana muscosa*	FC CSC	Occurs in the Sierras at elevations ranging from 4,500 to 12,000 feet; associated with streams, lakes, and ponds in montane riparian, lodgepole pine, subalpine conifer, and wet meadow habitats; breeds in shallow water in low gradient perennial streams and lakes.	Known to occur. Suitable habitats above 4,500 feet. The species is recorded within 5 miles of the Rubicon River Project and the Alder Creek Dam and its conveyance routes.
California red-legged frog	*Rana aurora draytonii*	FT CSC	Breeds in quiet streams and permanent, deep, cool ponds with overhanging and emergent vegetation below 4,000 feet elevation. Known to occur adjacent to breeding habitats in riparian areas and heavily vegetated streamside shorelines, and non-native grasslands.	May occur. Suitable habitat present in the vicinity of the Texas Hill Reservoir and Weber Reservoir projects. The nearest known occurrence is approximately 2.5 miles north of the confluence of North Fork of Middle Fork American River and Middle Fork American River. Federally-designated California red-legged frog critical habitat is present along Weber Creek.
Northwestern pond turtle	*Clemmys marmorata marmorata*	FSC CSC	Perennial wetlands and slow-moving creeks and ponds with overhanging vegetation up to 6,000 feet; suitable basking sites such as logs and rocks above the waterline.	Known to occur. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, BWTP and PRC, Crawford Ditch and Ringold Creek Pipeline, Placerville and 49'er extensions, Reservoir 10, Texas Hill Reservoir, Canyon Creek Dam, and Folsom North Pumping Project.

TABLE 6-1
SPECIAL-STATUS PLANT AND WILDLIFE SPECIES POTENTIALLY OCCURRING IN THE VICINITY OF PROPOSED ALTERNATIVES

Common Name	Scientific Name	Status[a]	Habitat	Potential for Occurrence
Amphibians and Reptiles (con't)				
Giant garter snake	*Thamnophis gigas*	FT, CT	Primarily associated with marshes and sloughs, less with slow-moving creeks, and absent from larger rivers. Active from mid-March until October. Extremely aquatic, rarely found away from water, and forages in the water for food.	Unlikely to occur. The alternatives are outside of the known range for the species and suitable habitat is not present in the vicinity of the alternatives.
California horned lizard	*Phrynosoma coronatum frontale*	FSC CSC	Exposed sandy-gravelly substrate with scattered shrubs, clearings in riparian woodlands, and annual grasslands. Occur at elevations ranging from sea level to 4,000 feet in the Sierra foothills.	Known to occur. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, BWTP and PRC.
Birds				
Great egret	*Egretta alba*	CSC	Common yearlong resident throughout California, except for high mountains and deserts. Feeds and rests in fresh and saline emergent wetlands, along the margins of estuaries, lakes, and slow-moving streams, on mudflats and salt ponds, and in irrigated croplands and pastures.	Known to occur. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF and BLWTP and facilities.
Snowy egret	*Egretta thula*	FSC	Widespread in California along shores of coastal estuaries, fresh and saline emergent wetlands, ponds, slow-moving rivers, irrigation ditches, and wet fields. Locally common in the Central Valley all year.	Unlikely to occur. The alternatives are located outside of the species' known distribution.
Black-crowned night heron	*Nycticorax nycticorax*	CSC	Fairly common, yearlong resident in lowlands and foothills throughout most of California. Feeds along the margins of lacustrine, large riverine, and fresh and saline emergent wetland habitats.	May occur. Suitable habitat may be present in the vicinity of the lower elevation alternatives.

TABLE 6-1
SPECIAL-STATUS PLANT AND WILDLIFE SPECIES POTENTIALLY OCCURRING IN THE VICINITY OF PROPOSED ALTERNATIVES

Common Name	Scientific Name	Status[1]	Habitat	Potential for Occurrence
Birds (con't)				
Great blue heron	*Ardea herodias*	FSC, CSC	Fairly common all year throughout most of California, in shallow estuaries and fresh and saline emergent wetlands. Less common along riverine and rocky marine shores, in croplands, pastures, and in mountains above foothills. For nesting, prefers secluded groves of tall trees near shallow-water feeding areas.	Known to occur. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF and BLWTP and facilities.
White-faced Ibis	*Plegadis chihi*	FSC	Found in fresh emergent wetland, shallow lacustrine waters, and muddy ground of wet meadows and irrigated, or flooded, pastures and croplands.	Unlikely to occur. The proposed alternatives are not in the species' range and suitable habitat is not present.
Aleutian Canada goose	*Branta canadensis leucopareia*	FD 3/20/2001	Preferred habitats include lacustrine, fresh emergent wetlands, and moist grasslands, croplands, pastures, and meadows. In California, breeds on northeastern plateau, but also in lakes of northern Sierra Nevada and Cascades.	Unlikely to occur. The proposed alternatives are not in the species' range.
Harlequin duck	*Histrionicus histrionicus*	FSC CSC	Rare to very common from October to April in marine waters along rocky coastline from San Luis Obispo County north. Breeds rarely along swift, shallow rivers. Formerly nested from May to August along large, turbulent Sierrran rivers from Madera to Tuolumne counties.	Unlikely to occur. Extremely limited summer range was recorded in the 1970's on the upper Mokelumne River in Amador and Calaveras counties. This location is approximately 10 miles south of the proposed Alder Creek dam site.
White-tailed kite	*Elanus leucurus*	FSC, CFP	Herbaceous and open stages of most habitats; grasslands and agricultural areas are used for foraging; typically nests in tops of dense oak, willow, or other tree stands adjacent to open areas and agricultural fields. Rarely found away from agricultural areas.	May occur. The species has been recorded approximately 10 miles west of EDHWTP and Folsom Lake RWPF and BLWTP and facilities.

TABLE 6-1
SPECIAL-STATUS PLANT AND WILDLIFE SPECIES POTENTIALLY OCCURRING IN THE VICINITY OF PROPOSED ALTERNATIVES

Common Name	Scientific Name	Status[a]	Habitat	Potential for Occurrence
Birds (con't)				
Golden eagle	*Aquila chrysaetos*	CSC, CFP (nesting and wintering)	Inhabits grasslands and early successional stages of forest and shrub habitats for foraging up to 11,500 feet. Nests in secluded cliffs with overhanging ledges or large trees in open areas with unobstructed views.	May occur. The species is recorded approximately 10 miles west of EDHWTP and Folsom Lake RWPF and BLWTP and facilities
Bald eagle	*Haliaeetus leucocephalus*	FT (Proposed delisting on 7/6/99) CE, CFP (nesting and wintering)	Local winter migrant to various California lakes. Most of the breeding population is restricted to more northern counties. Regular winter migrants to the region.	Known to occur. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, BWTP and PRC, and the Rubicon River Project.
Osprey	*Pandion haliaetus*	CSC (nesting)	Breeds in northern California, associated strictly with large fish-bearing waters, primarily in ponderosa pine and mixed conifer habitats.	May occur. Suitable habitat consists of large lakes and reservoirs (such as Weber Reservoir, Texas Hill Dam and Reservoir, Alder Creel Dam, and Canyon Creek Dam) in Sierran mixed conifer forest.
Cooper's hawk	*Accipiter cooperi*	CSC (nesting)	Breeding resident throughout most of the wooded portion of the state. Breeds in Sierra Nevada foothills, New York Mountains, Owens Valley, and other local areas in southern California. Dense stands of oak and riparian woodland for nesting and grassland for foraging up to 9,000 feet	May occur. Suitable habitat is present in blue oak woodland in the vicinity of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, and BWTP and PRC. The species has been reported approximately 10 miles west of these alternatives.
Northern goshawk	*Accipiter gentilis*	FSS, FSC CSC (nesting)	Occurs in mature and dense conifer forests for foraging and nesting. Casual in foothills during winter, northern deserts in pinyon-juniper woodland, and low elevation riparian habitats. Occupies mid to high elevations.	Known to occur. The species is recorded within 5 miles of Alder Creek Dam and its conveyance route.
Sharp-shinned hawk	*Accipiter striatus*	CSC	Riparian woodland for nesting, grasslands for foraging.	May occur. Suitable habitat present in the vicinity of EID and GDPUD facilities.

TABLE 6-1
SPECIAL-STATUS PLANT AND WILDLIFE SPECIES POTENTIALLY OCCURRING IN THE VICINITY OF PROPOSED ALTERNATIVES

Common Name	Scientific Name	Status[a]	Habitat	Potential for Occurrence
Birds (con't)				
Swainson's hawk	*Buteo swainsonii*	FSC, CT (nesting)	Uncommon breeding resident and migrant in the Central Valley, Klamath Basin, Northeastern Plateau, Lassen County, and Mojave Desert. Riparian woodlands, juniper-sage flats, and oak woodlands for nesting. Grasslands and agricultural areas for foraging.	Known to occur. Suitable habitat is at the extreme western edge of El Dorado County. The species is reported within 5 miles of EDHWTP and Folsom Lake RWPF.
Ferruginous hawk	*Buteo regalis*	FSC, CSC (wintering)	Uncommon winter resident and migrant at lower elevations and open grasslands in the Modoc Plateau, Central Valley, and Coast Ranges. Fairly common winter resident of grasslands and agricultural areas in southwestern California. Casual in northeast California in summer. Frequents open grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys, and fringes of pinyon-juniper habitats.	Unlikely to occur. The alternatives are not within the species' known range.
American peregrine falcon	*Falco peregrinus anatum*	FD 8/25/1999, CE (nesting)	Breeds in woodlands, forests, coastal habitats, and riparian areas near wetlands, lakes, rivers, or other water on high cliffs, banks, dunes, or mounds.	May occur. Suitable habitat is likely present in the vicinity of all alternatives.
Greater sandhill crane	*Grus canadensis tabida*	CT	Occurs in and near wet meadow, shallow lacustrine, and fresh emergent wetland habitats. Frequents annual and perennial grassland habitats, moist croplands with rice or corn stubble, and open, emergent wetlands.	Unlikely to occur. The alternatives are outside of the known winter and summer ranges of the species.
Long-billed curlew	*Numenius americanus*	FSC, CSC. (nesting)	Uncommon to common breeder from April to September in wet meadow habitat in northeastern California. Uncommon to locally very common as a winter visitor from July to April along the coast and in the Central and Imperial valleys.	Unlikely to occur. The alternatives are outside of the species' known range.

TABLE 6-1
SPECIAL-STATUS PLANT AND WILDLIFE SPECIES POTENTIALLY OCCURRING IN THE VICINITY OF PROPOSED ALTERNATIVES

Common Name	Scientific Name	Status*	Habitat	Potential for Occurrence
Birds (con't)				
Black tern	*Chlidonias niger*	FSC, CSC (nesting colony)	Fairly common migrant and breeder on wetlands of the northeastern plateau. Fairly common in spring and summer in the Salton Sea. Can be common on bays, salt ponds, river mouths, and pelagic waters in spring and fall migration. Breeds in freshwater habitat.	Unlikely to occur. The alternatives are outside of the species' known range.
Northern harrier	*Circus cyaneus*	CSC	Non-native annual grassland and marsh.	May occur. Winter range may include annual grassland in the vicinity of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, BWTP and PRC.
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	FC (nesting)	Inhabits extensive deciduous riparian thickets or forests with dense, low-level or understory foliage, which abut slow-moving watercourses, backwaters, or seeps. Willow almost always a dominant component of the vegetation.	Unlikely to occur. Lack of suitable habitat within the vicinity of the alternatives.
California spotted owl	*Strix occidentalis occidentalis*	FSC, FSS CSC	Resides in dense, old growth, multi-layered mixed conifer, redwood, Douglas fir, and oak woodland habitats, from sea level up to approximately 7,600 feet.	May occur. Suitable habitat is Sierran mixed conifer forest within the vicinity of the alternatives.
Burrowing owl	*Athene cunicularia*	FSC, CSC	Frequents open grasslands and shrublands with perches and burrows. A yearlong resident of open, dry grassland and desert habitats, and in grass, forb, and open shrub stages of pinyon-juniper and ponderosa pine habitats up to 5,300 feet.	May occur. Suitable habitat is present in annual grasslands in the vicinity of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, BWTP and PRC.
Short-eared owl	*Asio flammeus*	CSC (nesting)	Occurs in open areas with few trees, such as annual and perennial grasslands, prairies, dunes, meadows, irrigated lands, and saline and fresh emergent wetlands.	May occur. Winter range may include grassland and agricultural habitat in the western portion of El Dorado County.
Vaux's swift	*Chaetura vauxi*	FSC, CSC (nesting)	Prefers redwood and Douglas fir habitats with nest sites in large, hollow trees and snags, especially tall, burned-out stubs. Forages over moist terrain and habitats, preferring rivers and lakes.	Unlikely to occur. Suitable habitat is not present in the vicinity of the alternatives.

TABLE 6-1
SPECIAL-STATUS PLANT AND WILDLIFE SPECIES POTENTIALLY OCCURRING IN THE VICINITY OF PROPOSED ALTERNATIVES

Common Name	Scientific Name	Status[a]	Habitat	Potential for Occurrence
Birds (con't)				
Black swift	*Cypseloides niger*	FSC, CSC (nesting)	Breeds very locally in Sierra Nevada and Cascade Ranges. Nests in moist crevices or caves, or on cliffs near waterfalls in deep canyons. Forages widely over many habitats; seems to avoid arid regions.	Known to occur. The species is recorded within 5 miles of EDHWTP and Folsom Lake RWPF, BLWTP and facilities, BWTP and PRC, and Crawford Ditch and Ringold Creek Pipeline.
Rufous hummingbird	*Selasphorus rufus*	FSC	Found in a wide variety of habitats that provide nectar-producing flowers; uses valley foothill hardwood, valley foothill hardwood-conifer, riparian, and various chaparral habitats.	May occur. The alternatives are within the migration route of the species, but not winter or summer ranges.
Lewis' woodpecker	*Melanerpes lewis*	FSC (nesting)	Uncommon, local winter resident occurring in open oak savannahs, broken deciduous, and coniferous habitats. Breeds locally along the eastern slopes of the Coast Ranges and in the Sierra Nevada, Warner, Klamath, and Cascade Range mountains.	May occur. Winter range only. Suitable habitat present in blue oak woodland and Sierran mixed conifer forest in the vicinity of the alternatives.
Loggerhead shrike	*Lanius ludovicianus*	FSC, CSC	Open habitats with sparse shrubs and trees (or other suitable perch sites) and bare ground and/or low, sparse herbaceous cover. Oak woodlands for nesting. Found in lowlands and foothills throughout California.	May occur. Suitable habitat in blue oak woodland in the vicinity of the alternatives.
Grasshopper sparrow	*Ammodramus savannarum*	FSC (nesting)	Uncommon and local summer resident and breeder in foothills and lowlands west of the Cascade-Sierra Nevada crest from Mendocino and Trinity counties, south to San Diego County. Occurs in dry, dense grasslands.	May occur. Summer range. Suitable habitat in annual grassland in the western portion of El Dorado County.

TABLE 6-1
SPECIAL-STATUS PLANT AND WILDLIFE SPECIES POTENTIALLY OCCURRING IN THE VICINITY OF PROPOSED ALTERNATIVES

Common Name	Scientific Name	Status[a]	Habitat	Potential for Occurrence
Birds (con't)				
Brewer's sparrow	*Spizella breweri*	FSC (nesting)	Summer resident and breeder east of the Cascade-Sierra Nevada crest, in mountains and higher valleys of Mojave Desert, and in the southern San Joaquin Valley. Breeds in treeless shrub habitats with moderate canopy, especially in sagebrush above the pinyon-juniper belt. Winters in open desert scrub and cropland habitats of southern Mojave and Colorado deserts.	Unlikely to occur. Alternatives are outside the species' known geographic range.
Little willow flycatcher	*Empidonax traillii brewsteri*	FSC, CE (nesting)	Wet meadow and montane riparian habitats from 2,000 to 8,000 feet. Most often occurs in broad, open river valleys or large mountain meadows with lush growth of shrubby willows.	May occur. The species is reported approximately 10 miles southeast of Union Valley Reservoir and approximately 8 miles east of Alder Creek along Silver Fork American River.
Bank swallow	*Riparia riparia*	FSC, CT (nesting)	Migrant found primarily in riparian and other lowland habitats in California west of the deserts. Requires vertical banks and cliffs with fine-textured or sandy soils near streams, rivers, ponds, lakes, and the ocean for nesting. Feeds primarily over riparian areas during breeding season and over grassland and cropland during migration.	Unlikely to occur. The alternatives are not within the species' known range.
Lawrence's goldfinch	*Carduelis lawrencei*	FSC (nesting)	Highly erratic and localized in occurrence in the Central Valley, northern California, and the central and southern coast. Present mostly April through September in oak or other arid woodland and chaparral, near water.	May occur. Summer range. Suitable habitat likely in blue oak woodland and chaparral habitat in the vicinity of the alternatives.

TABLE 6-1
SPECIAL-STATUS PLANT AND WILDLIFE SPECIES POTENTIALLY OCCURRING IN THE VICINITY OF PROPOSED ALTERNATIVES

Common Name	Scientific Name	Status[a]	Habitat	Potential for Occurrence
Birds (con't				
Hermit warbler	*Dendroica occidentalis*	FSC (nesting)	Breeds in major mountain ranges from San Gabriel and San Bernardino mountains northward (excluding coastal ranges south of Santa Cruz). Breeds in mature ponderosa pine, montane hardwood-conifer, mixed conifer, Douglas fir, redwood, red fir, and Jeffrey pine habitats. In winter, also occurs in valley foothill hardwood. Avoids areas with a high deciduous volume; absent from riparian areas and clearcuts.	May occur. Suitable habitat likely in Sierran mixed conifer forest in the vicinity of the alternatives. .
Tricolored blackbird	*Agelius tricolor*	FSC, CSC (nesting colony)	Breeds near freshwater, preferably in emergent wetland with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, and tall herbs. Feeds in grassland and cropland habitats. Found throughout the Central Valley and on the coast.	May occur. Suitable habitat is near open water in cattail or blackberry thickets. There is a known nesting occurrence in El Dorado County but location information has been suppressed.
Mammals				
Yuma myotis	*Myotis yumanensis*	FSC, CSC	Common and widespread in California except in the Mojave and Colorado desert. Found in a wide variety of habitats, especially open woodlands and forests with water, up to 11,000 feet, but is uncommon to rare above 8,000 feet.	May occur. Suitable habitat is likely to be present throughout El Dorado County.
Long-eared myotis	*Myotis evotis*	FSC	Roosts in buildings, crevices, spaces under bark, and snags. Caves are used primarily as night roosts. Feeds along habitat edges, in open habitats, and over water. Sea level to at least 9,000 feet.	May occur. Suitable habitat is likely to be present throughout El Dorado County.

TABLE 6-1
SPECIAL-STATUS PLANT AND WILDLIFE SPECIES POTENTIALLY OCCURRING IN THE VICINITY OF PROPOSED ALTERNATIVES

Common Name	Scientific Name	Status[a]	Habitat	Potential for Occurrence
Mammals (con't)				
Long-legged myotis bat	*Myotis volans*	FSC	Occurs in the coastal ranges, the Cascade/Sierra Nevada ranges to southern California, most of the Great Basin region, and in several Mojave Desert mountain ranges. Most common in woodland and forest above 4,000 feet.. Roosts under bridges, in buildings, caves, and mines.	Unlikely to occur. Alternatives are located outside of species' known elevational range.
Fringed myotis	*Myotis thysanodes*	FSC	Optimal habitats are pinyon-juniper, valley foothill hardwood, and hardwood-conifer, generally from 4,000 to 7,000 feet. Uses open habitats, early successional stages, streams, lakes, and ponds as foraging areas. Roosts in caves, mines, buildings, and crevices.	Unlikely to occur. Alternatives are located outside of species' known elevational range.
Small-footed Myotis bat	*Myotis ciliolabrum*	FSC	Common in arid uplands. Occurs along the coast from Contra Costa County south. Also occurs on the west and east sides of the Sierra Nevada and in Great Basin and desert habitats from Modoc to Kern and San Bernardino counties. Occurs in a wide variety of habitats, primarily in relatively arid wooded and brushy uplands near water up to 8,900 feet.	May occur. Suitable habitat is likely to be present throughout El Dorado County.
Townsend's big-eared bat	*Corynorhinus townsendii townsendii*	FSC, CSC	Found in all but alpine and subalpine habitats; most abundant in mesic habitats. Requires caves, mines, tunnels, buildings, or other man-made structures for roosting. This species is extremely sensitive to disturbance and may abandon a roost if disturbed.	May occur. Suitable habitat is likely to be present throughout El Dorado County.
Western mastiff bat	*Eumopos perotis*	CSC	Typically roosts in caves, crevices, mines or other rock formations.	May occur. Suitable habitat is likely to be present throughout El Dorado County.

TABLE 6-1
SPECIAL-STATUS PLANT AND WILDLIFE SPECIES POTENTIALLY OCCURRING IN THE VICINITY OF PROPOSED ALTERNATIVES

Common Name	Scientific Name	Status[a]	Habitat	Potential for Occurrence
Mammals (con't)				
Spotted bat	*Euderma maculatum*	FSC, CSC	Habitats range from arid deserts and grasslands through mixed conifer forests up to 10,600 feet in southern California. Prefers sites with adequate roosting habitat, such as cliffs. Often limited by the availability of cliff habitat. Feeds over water and along marshes.	Unlikely to occur. Alternatives are located outside of species' known elevational range.
Pallid bat	*Antrozous pallidus*	CSC	Open, dry habitats with rocky areas from sea-level up through mixed conifer forests; typically roosts in caves, crevices, or mines.	May occur. Suitable habitat is likely to be present throughout El Dorado County.
San Joaquin pocket mouse	*Perognathus inornatus*	FSC	Dry, open grassland or scrub in the Central and Salinas valleys from 1,000 to 2,000 feet.	Unlikely to occur. Project vicinity is located outside of species' known distribution.
Sierra Nevada snowshoe hare	*Lepus americanus tahoensis*	FSC CSC	Montane riparian habitats with thickets of alders and willows, and stands of young conifers interspersed with chaparral above 4,800 feet in the southern Sierras.	Unlikely to occur. Project vicinity is located outside of species' known distribution.
Sierra Nevada mountain beaver	*Aplodontia rufa californica*	FSC CSC	Occurs in dense riparian and open brushy stages of most forest types. Deep, friable soils are required for burrowing along cool, moist microclimates. Live in burrows located in or near deep soils near streams and springs. Typical habitat in the Sierra is montane riparian.	May occur. The species has been reported approximately 7 miles southeast of the Rubicon River Project.
American (=pine) marten	*Martes americana*	FSC, FSS	Optimal habitats are various mixed evergreen forests with more than 40% crown closure and large trees and snags for den sites. Most commonly found in red fir and lodgepole pine forests between 4,000 and 10,600 feet elevation.	Unlikely to occur. Project vicinity is located outside of species' known elevation range.

TABLE 6-1
SPECIAL-STATUS PLANT AND WILDLIFE SPECIES POTENTIALLY OCCURRING IN THE VICINITY OF PROPOSED ALTERNATIVES

Common Name	Scientific Name	Status[a]	Habitat	Potential for Occurrence
Mammals (con't)				
Pacific fisher	*Martes pennanti pacifica*	FSC, FSS CSC	Suitable habitat consists of large areas of mature, dense forest such as red fir, lodgepole pine, ponderosa pine, mixed conifer, and Jeffery pine forests with snags and greater than 50% canopy closure.	May occur. Suitable habitat in Sierran mixed conifer and red fir in the vicinity of the Rubicon River Project. The species has been reported approximately 14 miles northeast of Union Valley Reservoir.
California wolverine	*Gulo gulo luteus*	FSC, FSS CT, CFP	Mixed conifer, red fir, and lodgepole habitats, and probably sub-alpine conifer, alpine dwarf shrub, wet meadow, and montane riparian habitats. Occurs in the Sierra Nevada from 4,300 to 10,800 feet. Majority of recorded sightings are found above 8,000 feet elevation.	Unlikely to occur. Project vicinity is located outside of species' known elevation range.
Sierra Nevada red fox	*Vulpes vulpes necator*	FSC, FSS CT	Occurs throughout the Sierra Nevada at elevations above 7,000 feet in forests interspersed with meadows or alpine forests. Open areas are used for hunting, and forested habitats are used for cover and reproduction.	Unlikely to occur. Alternatives are outside of the species known elevation range.

[a]Status

Federal
FE = federally endangered
FT = federally threatened
FD = federally de-listed
FSC = federal species of special concern
FP = proposed as federally endangered/threatened/de-listed
FSS = Forest Service Sensitive

State
CE= California endangered
CT= California threatened
CSC= California species of special concern
CFP= California fully protected
CR= California rare

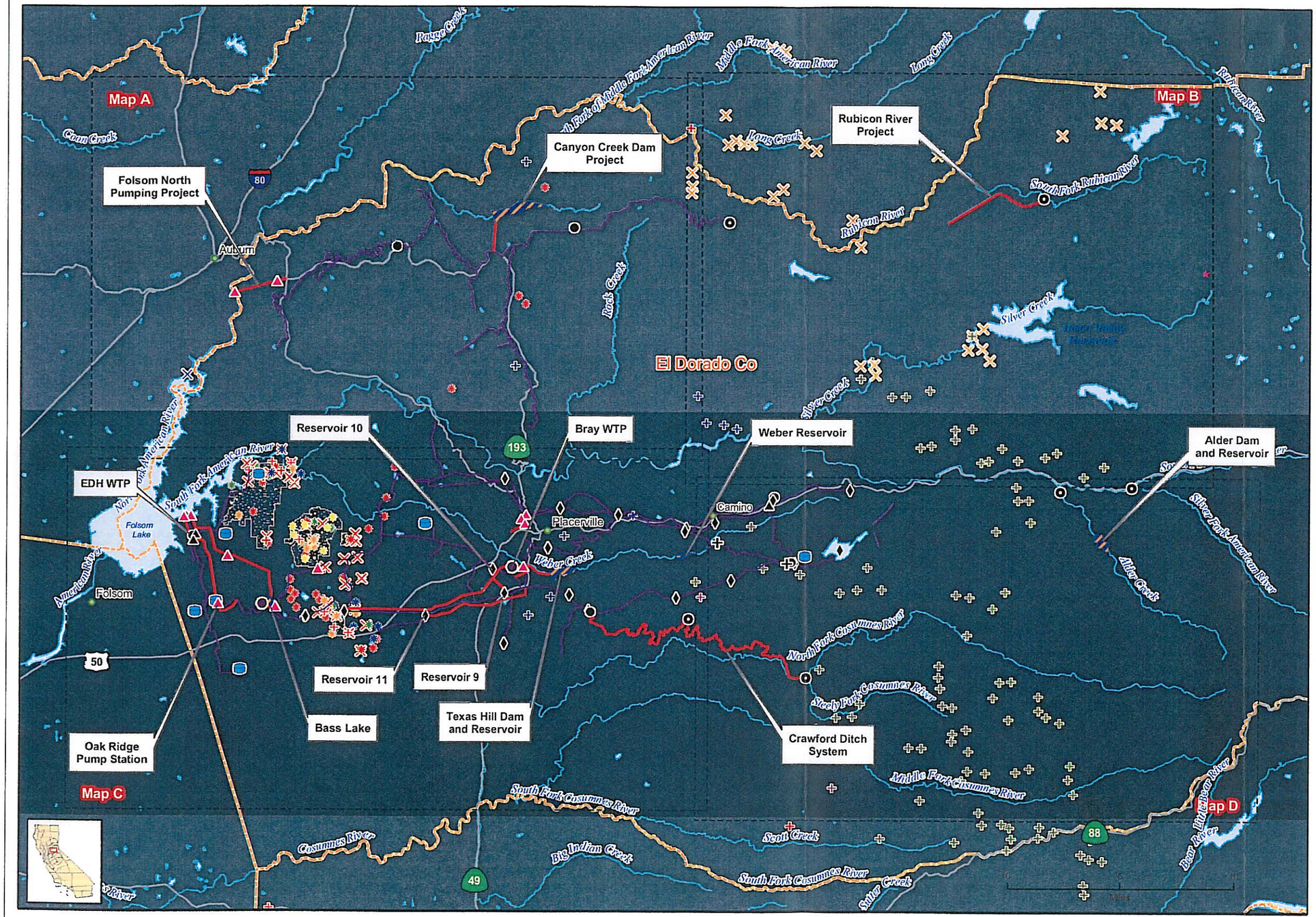
CNPS= California Native Plant Society
1B= rare, threatened, or endangered in California and elsewhere
2= rare, threatened, or endangered in California, but more common elsewhere
3= plants about which more information is needed
4= plants of limited distribution

sierrae). Five of these species (Stebbin's morning-glory, Pine Hill ceanothus, Pine Hill flannelbush, El Dorado bedstraw, and El Dorado County mule ears) are not known to occur outside of this portion of El Dorado County (USFWS 2002). Four of these species: Stebbin's morning-glory, El Dorado bedstraw, Pine Hill ceanothus, and Pine Hill flannelbush are federally-listed species. Rescue soils are derived from gabbroic rock or 'gabbro,' which is a medium or coarse-grained rock consisting primarily of plagioclase feldspar and pyroxene. The Rescue soils series occurs in western El Dorado County over a 30,000-acre, oval-shaped area centering around Green Valley Road and stretching from Folsom Lake in the north to Highway 50 in the south. The gabroic northern mixed chaparral vegetation community is found only on the rescue stony loam soils found here. Serpentine soils are derived from the weathering of serpentinite rock. Serpentine soil habitats are distinct because of chemical and physical characteristics that make them poor in nutrients and sometimes toxic due to heavy metals content. These habitats may also have lower soil moisture availability. Low nitrogen and phosphorus content, low calcium in relation to high magnesium, high erodibility, and low moisture availability in serpentine habitats has led to highly specialized flora (Kruckberg 1984). Refer to **Figure 6-6** for the location of serpentine and Rescue soils.

As part of the El Dorado County General Plan (County of El Dorado 1996), the County has established a policy to protect the eight sensitive plant species known as the Pine Hill endemics and their habitats through the establishment of the Pine Hill Ecological Preserve. A total of 1,518 acres have been protected to date. The preserve consists of five units including 1) Cameron Park Unit to the south; 2) Pine Hill Unit (centrally located); 3) Penny Lane Unit east of Pine Hill; 3) Martel Creek Unit west of Pine Hill; and 4) Salmon Falls Unit to the North. These five units are discontinuous but are managed as a single preserve (County of El Dorado 2002). The preserve is a collaborative project supported by the California Department of Fish and Game, California Department of Forestry and Fire Protection, El Dorado County, EID, U.S. Bureau of Land Management (BLM), USBR, USFWS, and the American River Conservancy (County of El Dorado 2002).

6.5.3 SPECIAL-STATUS WILDLIFE

A number of known occurrences of special-status wildlife species were identified in the alternatives including 11 state or federally listed endangered, threatened, or candidate species and eighteen species of special concern or California fully protected. Several of these special-status species are known to occur in the vicinity of the alternatives and are presented in **Table 6-1**. Refer to **Figure 6-4** (Index Map) and **Figures 6-5a** through **6-5d** for the location of recorded special-status wildlife species. Detailed descriptions of special-status species that are known to occur within 5 miles of any of the



EID and GDPUD

- Proposed Pump Station
- Proposed Water Treatment Plant
- Proposed Pipe or Ditch
- Proposed Reservoir
- Existing Pipe or Ditch

Exisiting Facilities

- Diversion Dam
- Pump Station
- Reservoir
- Tank
- Water Treatment Plant
- Turnout

Pine Hill Preserve

Federal Species of Special Concern

- Big-Scale Balsamroot
- El Dorado County Mule Ears
- Saw-Toothed Lewisia
- Stebbin's Phacelia
- Bisbee Peak Rush-Rose
- Nissenan Manzanita
- Parry's Horkelia
- Pleasant Valley Mariposa Lily
- Red Hills Soaproot

Federally Threatened or Endangered

- El Dorado Bedstraw
- Layne's Ragwort
- Pine Hill Ceanothus
- Pine Hill Flannelbush
- Stebbins's Morning Glory

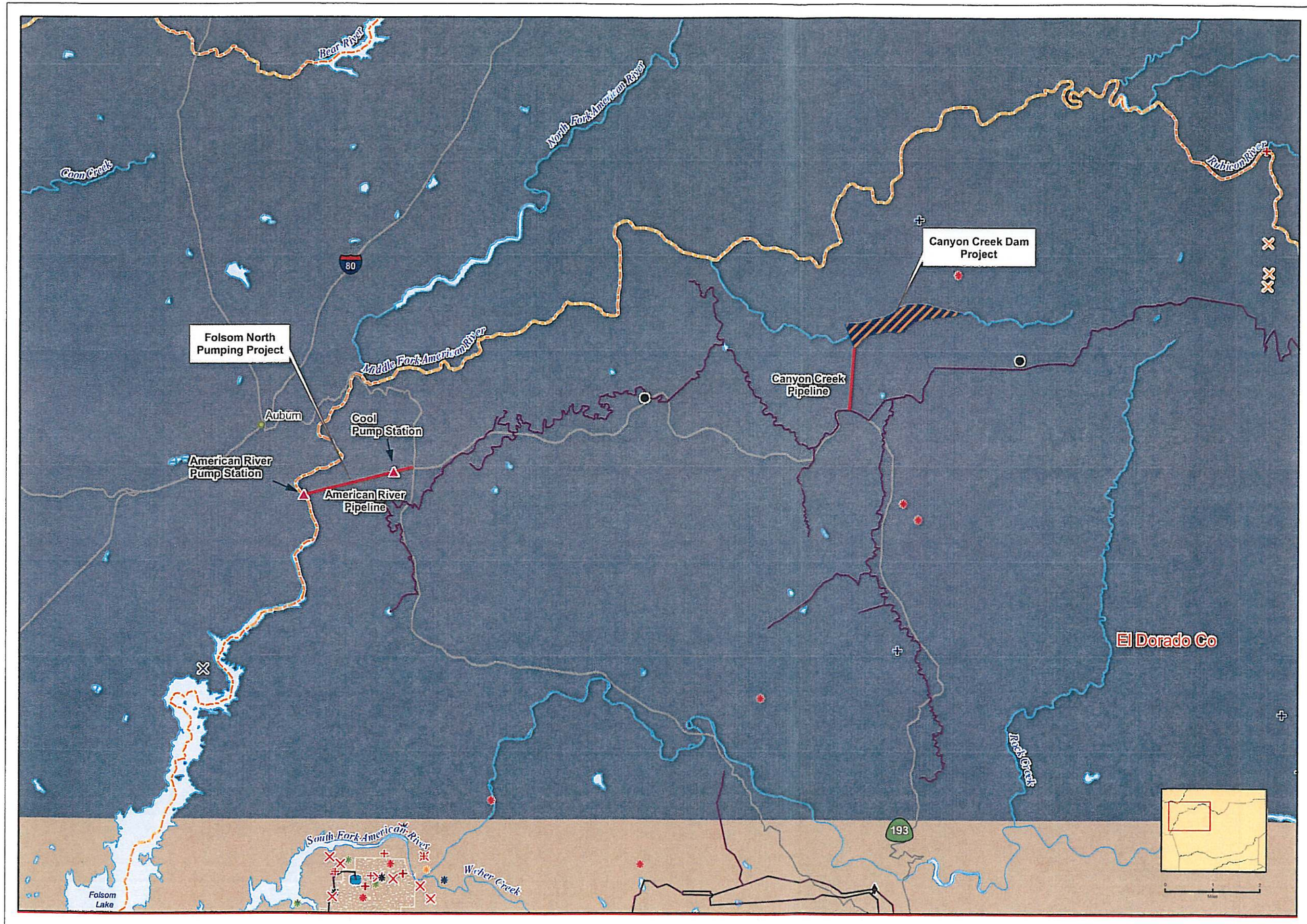
California Native Plant Society

- Shore Sedge

Figure 6-2

Special-Status Plants - Index Map

Source: CDFG, El Dorado County



EID and GDPUD

- Proposed Pump Station
- Proposed Water Treatment Plant
- Proposed Pipe or Ditch
- Proposed Reservoir
- Existing Pipe or Ditch

Exisiting Facilities

- Diversion Dam
- Pump Station
- Reservoir
- Tank
- Water Treatment Plant
- Turnout

Pine Hill Preserve

Federal Species of Special Concern

- Big-Scale Balsamroot
- El Dorado County Mule Ears
- Saw-Toothed Lewisia
- Stebbin's Phacelia
- Bisbee Peak Rush-Rose
- Nissenan Manzanita
- Parry's Horkelia
- Pleasant Valley Mariposa Lily
- Red Hills Soaproot

Federally Threatened or Endangered

- El Dorado Bedstraw
- Layne's Ragwort
- Pine Hill Ceanothus
- Pine Hill Flannelbush
- Stebbins's Morning Glory

California Native Plant Society

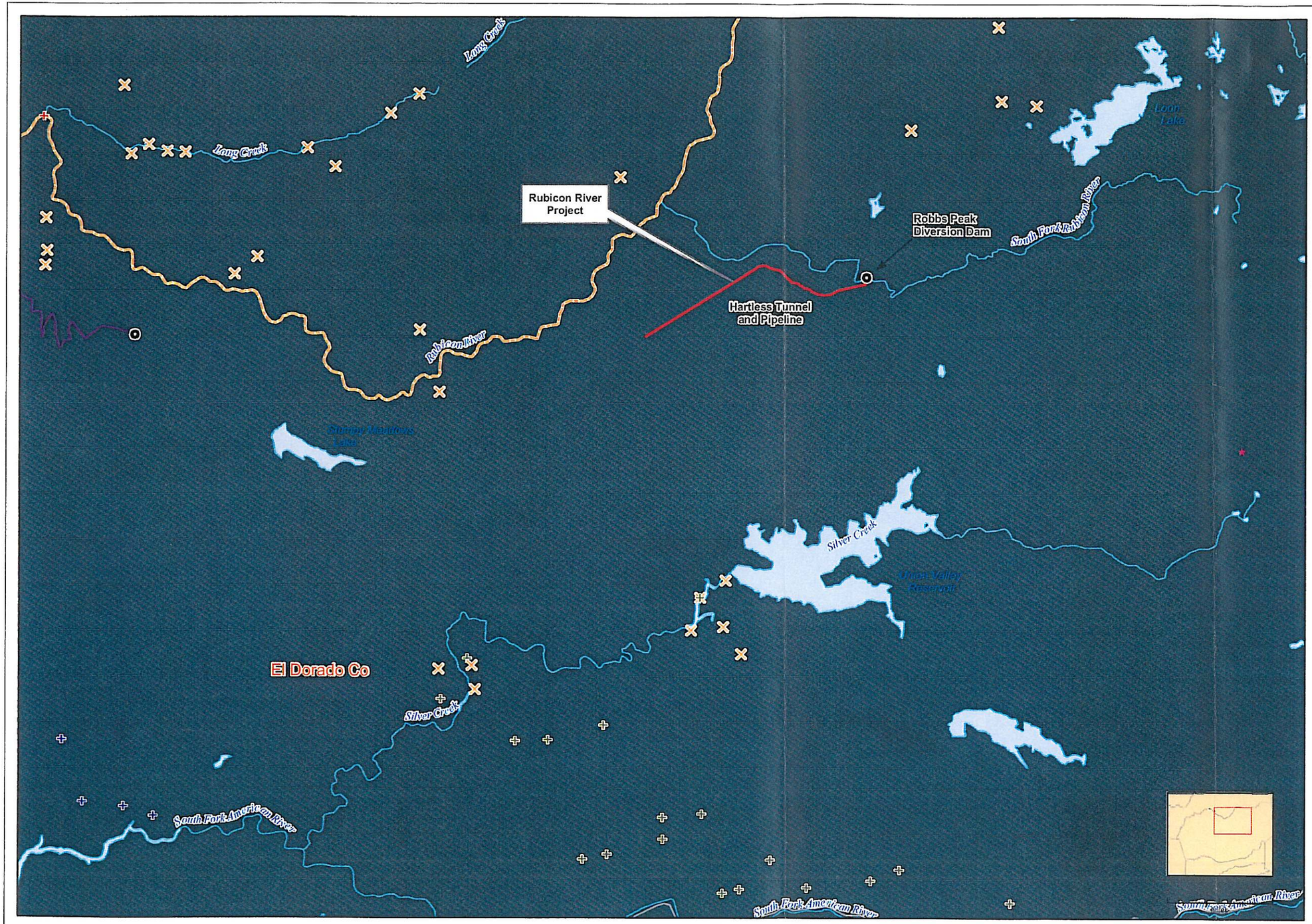
- Shore Sedge

Figure 6-3a

Special-Status Plants - Georgetown Divide PUD Proposed Alterenatives

Source: CDFG, El Dorado County

projects/El Dorado Water Agency_12000/Phase II Water Plan/Graphics/Fig_6_3a.pdf 5/5/03f



EID and GDPUD

- Proposed Pump Station
- Proposed Water Treatment Plant
- Proposed Pipe or Ditch
- Proposed Reservoir
- Existing Pipe or Ditch

Exisiting Facilities

- Diversion Dam
- Pump Station
- Reservoir
- Tank
- Water Treatment Plant
- Turnout

Federal Species of Special Concern

- Big-Scale Balsamroot
- El Dorado County Mule Ears
- Saw-Toothed Lewisia
- Stebbin's Phacelia
- Bisbee Peak Rush-Rose
- Nissenan Manzanita
- Parry's Horkelia
- Pleasant Valley Mariposa Lily
- Red Hills Soaproot

Federally Threatened or Endangered

- El Dorado Bedstraw
- Layne's Ragwort
- Pine Hill Ceanothus
- Pine Hill Flannelbush
- Stebbins's Morning Glory

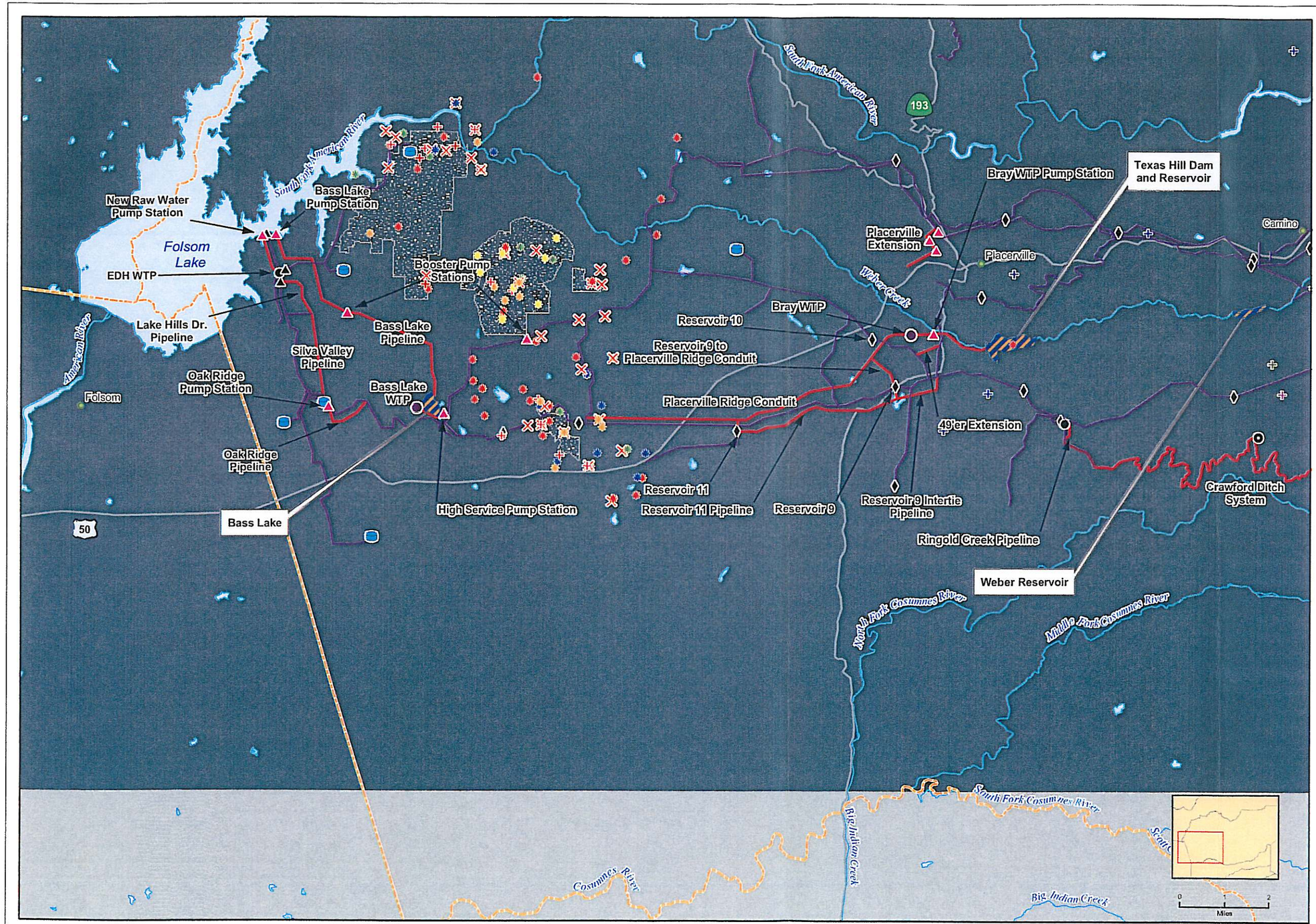
California Native Plant Society

- Shore Sedge

Figure 6-3b

Special-Status Plants - Georgetown Divide PUD Proposed Alterenatives

Source: CDFG, El Dorado County



EID and GDPUD

- Proposed Pump Station
- Proposed Water Treatment Plant
- Proposed Pipe or Ditch
- Proposed Reservoir
- Existing Pipe or Ditch

Exisiting Facilities

- Diversion Dam
- Pump Station
- Reservoir
- Tank
- Water Treatment Plant
- Turnout

Pine Hill Preserve

Federal Species of Special Concern

- Big-Scale Balsamroot
- El Dorado County Mule Ears
- Saw-Toothed Lewisia
- Stebbin's Phacelia
- Bisbee Peak Rush-Rose
- Nissenan Manzanita
- Parry's Horkelia
- Pleasant Valley Mariposa Lily
- Red Hills Soaproot

Federally Threatened or Endangered

- El Dorado Bedstraw
- Layne's Ragwort
- Pine Hill Ceanothus
- Pine Hill Flannelbush
- Stebbins's Morning Glory

California Native Plant Society

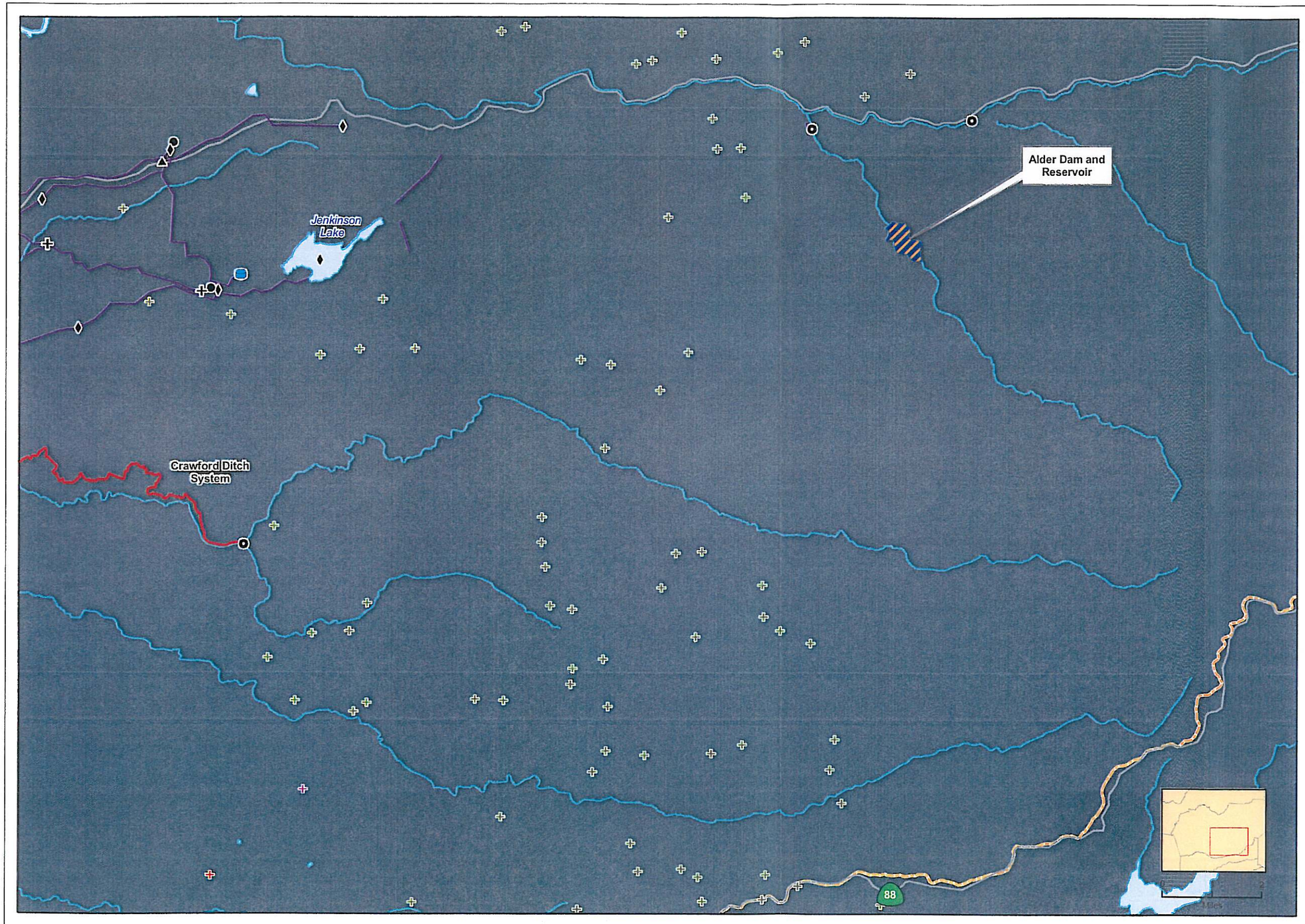
- Shore Sedge

Figure 6-3c

Special-Status Plants - El Dorado Irrigation District Proposed Alterenatives

Source: CDFG, El Dorado County

projects/El Dorado Water Agency_12000/Phase II Water Plan/Graphics/Fig_6_3c.pdf 5/5/03f



EID and GDPUD

- Proposed Pump Station
- Proposed Water Treatment Plant
- Proposed Pipe or Ditch
- Proposed Reservoir
- Existing Pipe or Ditch

Exisiting Facilities

- Diversion Dam
- Pump Station
- Reservoir
- Tank
- Water Treatment Plant
- Turnout

Federal Species of Special Concern

- Big-Scale Balsamroot
- El Dorado County Mule Ears
- Saw-Toothed Lewisia
- Stebbin's Phacelia
- Bisbee Peak Rush-Rose
- Nissenan Manzanita
- Parry's Horkelia
- Pleasant Valley Mariposa Lily
- Red Hills Soaproot

Federally Threatened or Endangered

- El Dorado Bedstraw
- Layne's Ragwort
- Pine Hill Ceanothus
- Pine Hill Flannelbush
- Stebbins's Morning Glory

California Native Plant Society

- Shore Sedge

Figure 6-3d

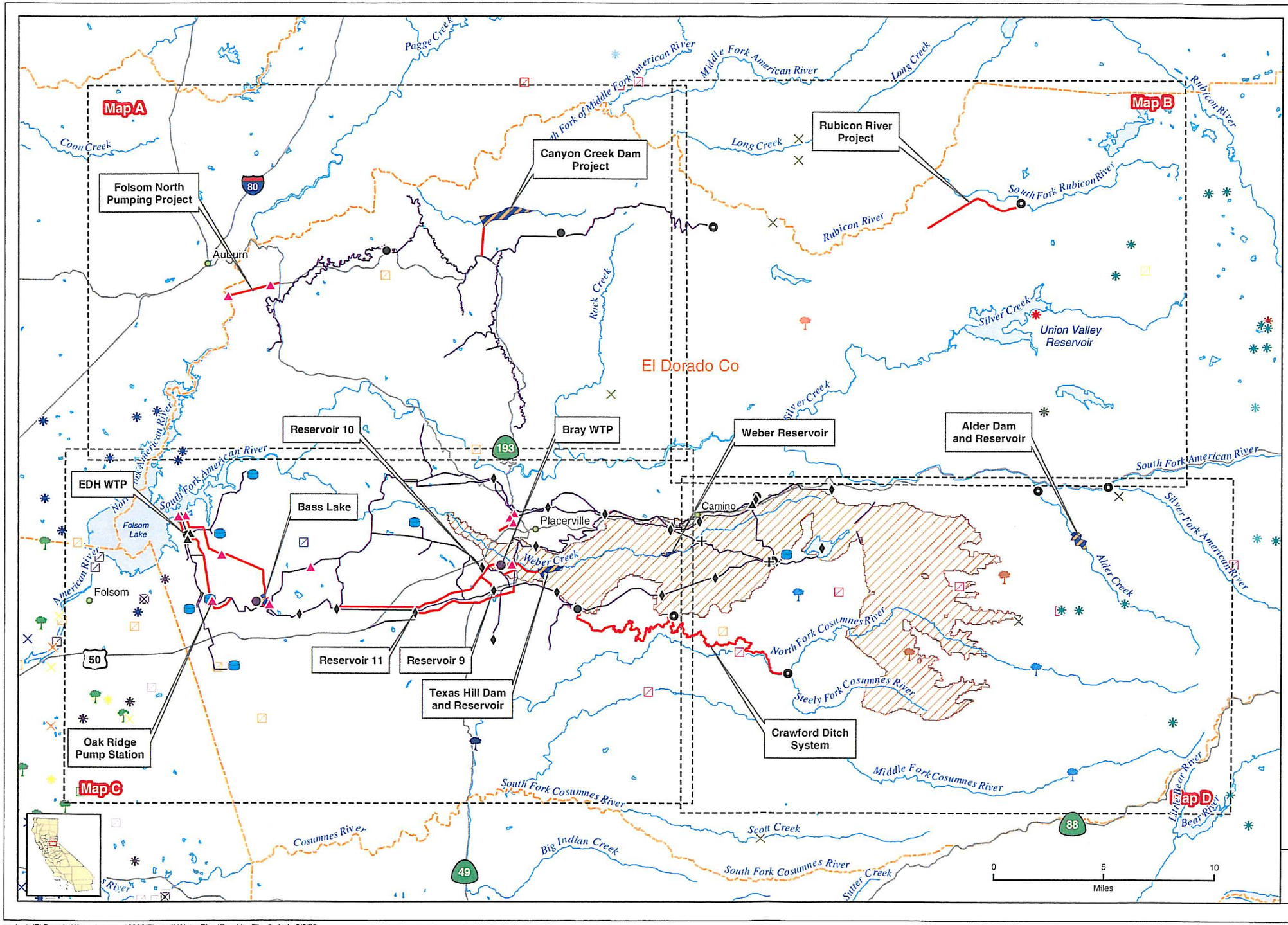
Special-Status Plants

El Dorado Irrigation District

Proposed Alterenatives

Source: CDFG, El Dorado County

projects/El Dorado Water Agency_12000/Phase II Water Plan/Graphics/Fig_6_3d.pdf 5/5/03f



EID and GDPUD

- Proposed Pump Station
- Proposed Water Treatment Plant
- Proposed Pipe or Ditch
- Proposed Reservoir
- Existing Pipe or Ditch

Exisiting Facilities

- Diversion Dam
- Pump Station
- Reservoir
- Tank
- Water Treatment Plant
- Turnout

State or Federally Listed Species

- California Tiger Salamander
- Mountain Yellow-legged Frog
- California Wolverine
- Giant Garder Snake
- Willow Flycatcher
- Valley Elderberry Longhorn Beetle
- California Red-legged Frog
- Vernal Pool Fairy Shrimp
- Bald Eagle
- Sierra Nevada Red Fox
- Vernal Pool Tadpole Shrimp

Special Concern or CA Fully Protected

- Black-Crowned Night Heron
- Coopers Hawk
- Golden Eagle
- Great Egret
- Northern Goshawk
- Osprey
- Western Spadefoot Toad
- White-tailed Kite
- Black Swift
- Burrowing Owl
- California Horned Lizard
- Great Blue Heron
- Foothill Yellow-legged Frog
- Northwestern Pond Turtle
- Sierra Nevada Mountain Beaver
- Snowy Egret
- Swainson's Hawk

Sensitive Habitats

- Central Valley Drainage Hardhead/Squawfish Stream
- Central Valley Drainage Resident Rainbow Trout Stream
- Northern Hardpan Vernal Pool
- Northern Claypan Vernal Pool
- Central Valley Drainage Spring Stream
- Shagnum Bog
- CA Red-Legged Frog Critical Habitat

Figure 6-4
Wildlife Species and Sensitive Habitats - Index Map

projects/El Dorado Water Agency_12000/Phase II Water Plan/Graphics/Fig_6_4.ai 5/5/03

Folsom North Pumping Project

Auburn

Cool Pump Station

American River Pump Station

American River Pipeline

Canyon Creek Dam Project

Canyon Creek Pipeline

80

193

El Dorado Co

Folsom Lake

EID and GDPUD

- Proposed Pump Station
- Proposed Water Treatment Plant
- Proposed Pipe or Ditch
- Proposed Reservoir
- Existing Pipe or Ditch

Exisiting Facilities

- Diversion Dam
- Pump Station
- Reservoir
- Tank
- Water Treatment Plant
- Turnout

State or Federally Listed Species

- California Tiger Salamader
- Mountain Yellow-legged Frog
- California Wolverine
- Giant Garder Snake
- Willow Flycatcher
- Valley Elderberry Longhorn Beetle
- California Red-legged Frog
- Vernal Pool Fairy Shrimp
- Bald Eagle
- Sierra Nevada Red Fox
- Vernal Pool Tadpole Shrimp

Special Concern or CA Fully Protected

- Black-Crowned Night Heron
- Cooper's Hawk
- Golden Eagle
- Great Egret
- Northern Goshawk
- Osprey
- Western Spadefoot Toad
- White-tailed Kite
- Black Swift
- Burrowing Owl
- California Horned Lizard
- Great Blue Heron
- Foothill Yellow-legged Frog
- Northwestern Pond Turtle
- Sierra Nevada Mountain Beaver
- Snowy Egret
- Swainson's Hawk

Sensitive Habitats

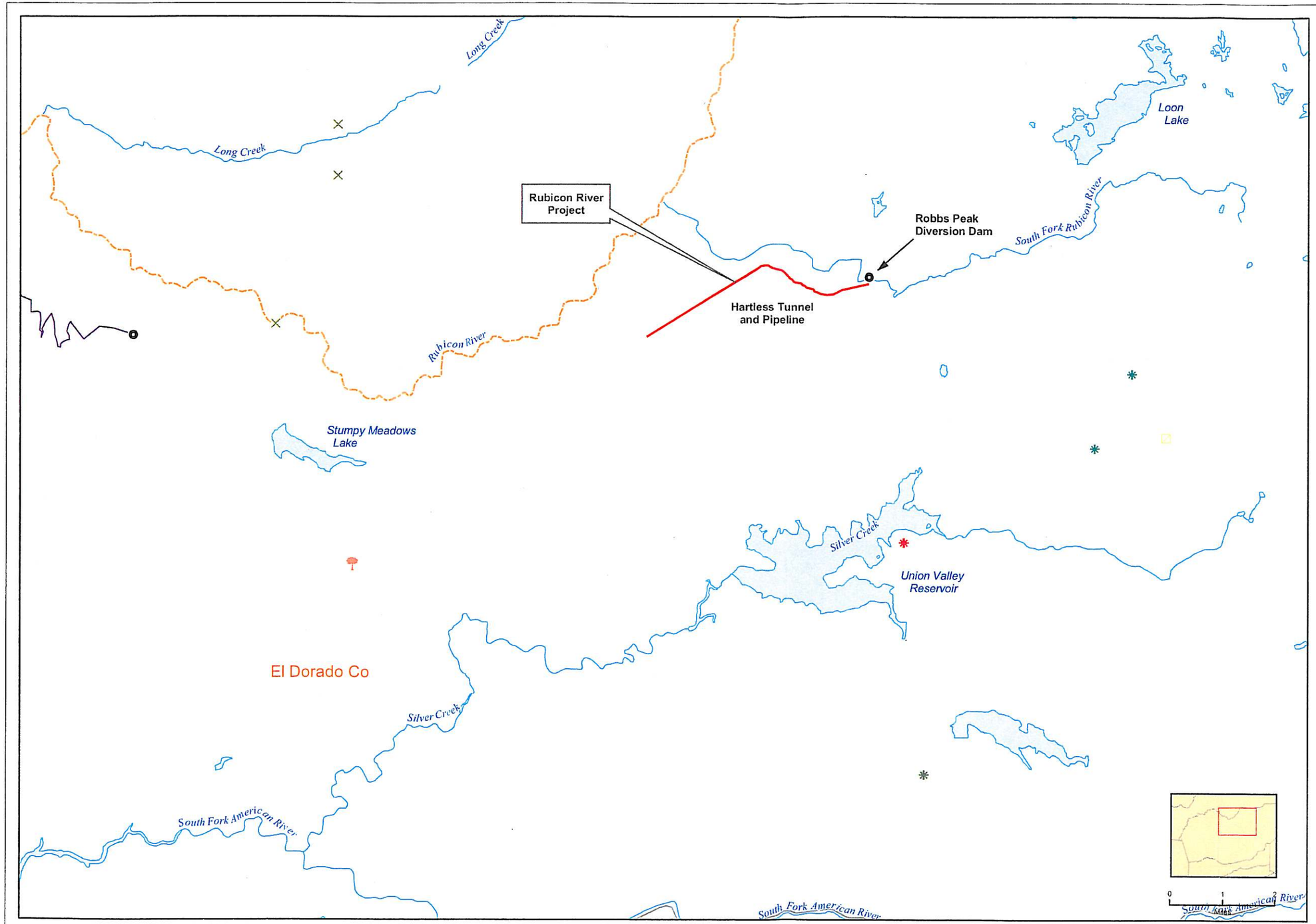
- Central Valley Drainage Hardhead/Squawfish Stream
- Central Valley Drainage Resident Rainbow Trout Stream
- Northern Hardpan Vernal Pool
- Northern Claypan Vernal Pool
- Central Valley Drainage Spring Stream
- Shagnum Bog

0 1 2 Miles

Figure 6-5a

Wildlife Species and Sensitive Habitats
GDPUD Proposed Alternatives

projects/El Dorado Water Agency_12000/Phase II Water Plan/Graphics/Fig_6_5.pdf 5/5/03f



EID and GDPUD

- Proposed Pump Station
- Proposed Water Treatment Plant
- Proposed Pipe or Ditch
- Proposed Reservoir
- Existing Pipe or Ditch

Exisiting Facilities

- Diversion Dam
- Pump Station
- Reservoir
- Tank
- Water Treatment Plant
- Turnout

State or Federally Listed Species

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- California Wolverine
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- Willow Flycatcher
- Valley Elderberry Longhorn Beetle
- California Red-legged Frog
- Vernal Pool Fairy Shrimp
- Bald Eagle
- Sierra Nevada Red Fox
- Vernal Pool Tadpole Shrimp

Special Concern or CA Fully Protected

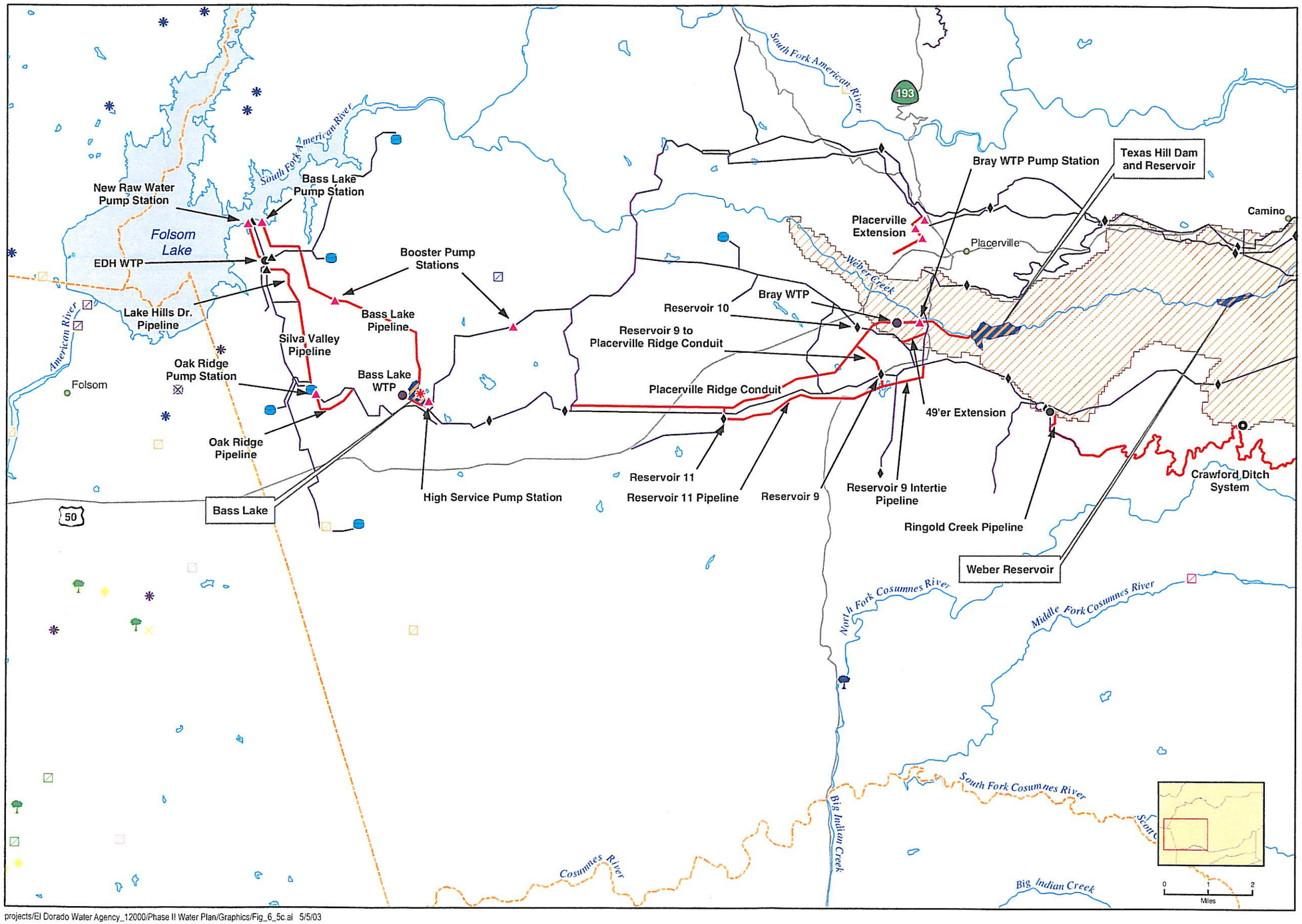
- Black-Crowned Night Heron
- Cooper's Hawk
- Golden Eagle
- Great Egret
- Northern Goshawk
- Osprey
- Western Spadefoot Toad
- Whilte-tailed Kite
- Black Swift
- Burrowing Owl
- California Horned Lizard
- Great Blue Heron
- Foothill Yellow-legged Frog
- Northwestern Pond Turtle
- Sierra Nevada Mountain Beaver
- Snowy Egret
- Swainson's Hawk

Sensitive Habitats

- Central Valley Drainage Hardhead/Squawfish Stream
- Central Valley Drainage Resident Rainbow Trout Stream
- Northern Hardpan Vernal Pool
- Northern Claypan Vernal Pool
- Central Valley Drainage Spring Stream
- Shagnum Bog

Figure 6-5b

Wildlife Species and Sensitive Habitats
GDPUD Proposed Alternatives



EID and GDPUD

- Proposed Pump Station
- Proposed Water Treatment Plant
- Proposed Pipe or Ditch
- Proposed Reservoir
- Existing Pipe or Ditch

Exisiting Facilities

- Diversion Dam
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State or Federally Listed Species

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- Vernal Pool Tadpole Shrimp

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- Golden Eagle
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- Northern Goshawk
- Osprey
- Western Spadefoot Toad
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- Black Swift
- Burrowing Owl
- California Horned Lizard
- Great Blue Heron
- Foothill Yellow-legged Frog
- Northwestern Pond Turtle
- Sierra Nevada Mountain Beaver
- Snowy Egret
- Swainson's Hawk

Sensitive Habitats

- Central Valley Drainage Hardhead/Squawfish Stream
- Central Valley Drainage Resident Rainbow Trout Stream
- Northern Hardpan Vernal Pool
- Northern Claypan Vernal Pool
- Central Valley Drainage Spring Stream
- Shagnum Bog

CA Red-Legged Frog Critical Habitat

Source: USFWS, CDFG

projects/El Dorado Water Agency_12000/Phase II Water Plan/Graphics/Fig_6_5c.ai 5/5/03

Figure 6-5c
Wildlife Species and Sensitive Habitats
El Dorado Irrigation District Proposed Alternatives

South Fork American River

South Fork American River

Alder Dam and Reservoir

Silver Fork American River

Weber Creek

Jenkinson Lake

Alder Creek

North Fork Cosumnes River

Crawford Ditch System

Steely Fork Cosumnes River

Middle Fork Cosumnes River

Little Bear River

Scott Creek

Scott Creek

Scott Creek

88

0 1 2

Miles

projects/El Dorado Water Agency_12000/Phase II Water Plan/Graphics/Fig_6_5d.ai 5/5/03

EID and GDPUD

- Proposed Pump Station
- Proposed Water Treatment Plant
- Proposed Pipe or Ditch
- Proposed Reservoir
- Existing Pipe or Ditch

Exisiting Facilities

- Diversion Dam
- Pump Station
- Reservoir
- Tank
- Water Treatment Plant
- Turnout

State or Federally Listed Species

- California Tiger Salamader
- Mountain Yellow-legged Frog
- California Wolverine
- Giant Garder Snake
- Willow Flycatcher
- Valley Elderberry Longhorn Beetle
- California Red-legged Frog
- Vernal Pool Fairy Shrimp
- Bald Eagle
- Sierra Nevada Red Fox
- Vernal Pool Tadpole Shrimp

Special Concern or CA Fully Protected

- Black-Crowned Night Heron
- Cooper's Hawk
- Golden Eagle
- Great Egret
- Northern Goshawk
- Osprey
- Western Spadefoot Toad
- Whilte-tailed Kite
- Black Swift
- Burrowing Owl
- California Horned Lizard
- Great Blue Heron
- Foothill Yellow-legged Frog
- Northwestern Pond Turtle
- Sierra Nevada Mountain Beaver
- Snowy Egret
- Swainson's Hawk

Sensitive Habitats

- Central Valley Drainage Hardhead/Squawfish Stream
- Central Valley Drainage Resident Rainbow Trout Stream
- Northern Hardpan Vernal Pool
- Northern Claypan Vernal Pool
- Central Valley Drainage Spring Stream
- Shagnum Bog

CA Red-Legged Frog Critical Habitat

Source: USFWS, CDFG

Figure 6-5d

Wildlife Species and Sensitive Habitats
El Dorado Irrigation District Proposed Alternatives

alternatives are provided in Appendix I. Species that are known or expected to occur within 5 miles of the alternatives are discussed by component below.

California red-legged frog is one federally listed species that may potentially occur in the project area. There is designated critical habitat for this species in El Dorado County. This critical CRLF habitat unit (Unit 3) consists of drainages in the Weber Creek and North Fork Cosumnes River watersheds in El Dorado County and encompasses approximately 59,000 acres. California red-legged frogs have been documented in Weber Creek. This is one of only three populations remaining in the Sierra Nevada. In order to be considered critical habitat the area must meet several primary constituent elements. The primary constituent elements are essential aquatic habitat, associated uplands, and dispersal habitat connection (USFWS 2001). In identifying the location of critical habitat, USFWS has placed the burden to determine if these elements are actually present on the applicant.

6.6 ALTERNATIVES EVALUATION CRITERIA

A system of screening level criteria has been developed to identify constraints and opportunities of the various alternatives on terrestrial biological resources. This system is a habitat-based approach that establishes priority levels for each habitat that occurs within the alternatives. Wildlife habitats were classified according to the Wildlife Habitat Relationship (WHR) System (Mayer and Laudenslayer, 1988). **Figure 6-1** shows wildlife habitats that occur within the proposed alternatives. The habitat areas were organized into three priority categories and ranked based on their legal status, rarity in the area, importance to wildlife, and sensitivity to human disturbance.

The highest priority wildlife habitats are those areas that are most vulnerable to potential project related impacts. For example, the higher the habitat priority, the more extensive the permitting requirements and, ostensibly, associated mitigation and mitigation costs. These criteria were used to evaluate the alternatives. However, habitats listed as first priority may be reduced to second or third priority habitats if more detailed site-specific analysis is completed and it is determined that state or federally-listed species are not present. A description of each priority level and associated habitats is provided below.

6.6.1 FIRST PRIORITY HABITAT

First priority habitats have the potential to support threatened or endangered species listed by the state or federal government (i.e., habitats occupied regularly and considered important for maintaining the species' current population levels). These habitats have the greatest legal protection and highest sensitivity to impact. First Priority Habitats correspond to the federal and California Endangered Species Acts, Sections 15065 and 15206(b)(5) of the CEQA *Guidelines*, and Appendix G of the CEQA

Guidelines as they pertain to rare, threatened, or endangered species either listed under the state or federal Endangered Species Acts or as defined in Section 15380 of the CEQA *Guidelines*. First priority habitats are used by threatened, rare, and endangered species and those bird species covered by the Bald and Golden Eagle Protection Act. First priority habitats present within the proposed alternatives areas include:

- Blue Oak Woodland
- Serpentine and Rescue Soils
- Waters of the United States including Wetlands

6.6.2 SECOND PRIORITY HABITAT

Second priority habitats are particularly valuable due to their rarity or vulnerability to impact, and typically support special-status species that are not currently listed by state or federal agencies as endangered or threatened, but are afforded protection (i.e., federal Species of Concern, federal candidate species, California Species of Special Concern, and California Rare species). These habitats are often used or considered important for maintaining the current population levels of state and federal special-status species (excluding threatened or endangered species). Second priority habitats present within the proposed alternatives areas include:

- Chamise-redshank Chaparral
- Mixed Chaparral
- Montane Chaparral

6.6.3 THIRD-PRIORITY HABITAT

Third priority habitats have relatively low value to wildlife species and/or support species that have been assigned a designation or status other than those listed in First or Second Priority Habitats. Third Priority Habitats are common habitats that have been highly disturbed, or are nearly devoid of natural vegetation. Third priority habitats present within the proposed alternatives areas include:

- Annual Grassland
- Barren
- Montane Hardwood

- Red Fir
- Sierran Mixed Conifer
- Urban
- Agriculture

6.6.4 SPECIAL-STATUS SPECIES

There are several special-status plant and wildlife species potentially occurring in the vicinity of the proposed alternatives. Table 1 summarizes the status, general habitat, and potential for occurrence of special-status plant and wildlife species that were obtained through a search of the CNDDB and CNPS database. Species' potential for occurrence in the project area is based on the presence of suitable habitat as mapped from the WHR system spatial data obtained from CaSIL. Species that are known or expected to occur within 5 miles of the alternatives are discussed by alternative below. Other special-status species may occur in the project area, as described in **Table 6-1**. Detailed descriptions of special-status species that are known to occur within 5 miles of any of the alternatives are provided in Appendix I.

6.7 EL DORADO IRRIGATION DISTRICT PROPOSED WATER SUPPLY OPTIONS

El Dorado Irrigation District (EID) has identified Alternatives No. 3 or 3A as the recommended water supply and conveyance alternatives. Alternative No. 3 assumes that future water demands would increase in accordance with the 1996 General Plan forecast. Alternative No. 3A assumes that future water demands would increase in accordance with the lower "No Project" forecast. Each alternative consists of several components that require construction of new facilities such as waterlines, pump stations, water treatment plants, or dams. Alternative No. 3A consists of a combination subset of some of the components identified as part of Alternative No. 3. For each alternative, the components, key environmental issues, and likely regulatory requirements are provided.

6.7.1 ALTERNATIVE NO. 3

Alternative 3 consists of several proposed components. These include:

- Expansion of the EDHWTP and Folsom Reservoir Raw Water Pumping Facilities
- Expansion of Bass Lake and Proposed New Facilities
- Construction of Bray Water Treatment Plant and Placerville Ridge Conduit

- Expansion of Weber Reservoir
- Improvements in the Crawford Ditch System and Construction of the Ringold Creek Pipeline
- Construction of the Placerville Extension and the 49'er Extension
- Reconstruction of Reservoir 10
- Proposed Alder Creek Dam and Alternative Conveyance Routes
- Proposed Texas Hill Reservoir

A map of the facilities associated with this alternative is provided in **Figure 6-3c**. A discussion of the habitats in which the facilities are located and the special-status species known to occur within 5 miles of the facilities is presented below for each component. This is followed by a discussion of the key environmental constraints for each alternative.

Alternative No. 3 Components

Expansion of the EDHWTP and Folsom Reservoir Raw Water Pumping Facilities

The facilities associated with this component of Alternative No. 3 are shown on **Figure 6-3c** and include the proposed improvements described in Chapter 5.

The facilities associated with this alternative are located within annual grassland, which is a Third Priority wildlife habitat (**Figure 6-1**), and potentially wetlands in the form of vernal pools, which are a First Priority wildlife habitat. The Pine Hill preserve is approximately 1.5 miles northeast of the proposed Lake Hills Drive Pipeline. Known occurrences of special-status plant species within 5 miles of the proposed facilities include Pine Hill ceanothus (FE, CNPS 1B), Pine Hill flannelbush (FE, CR, CNPS 1B), El Dorado bedstraw (FE, CR, CNPS 1B), Stebbin's morning glory (FE, CE, CNPS 1B), Layne's Ragwort (FT, CNPS 1B), El Dorado County mule ears (FSC, CNPS 1B), Bisbee Peak rush-rose (FSC, CNPS 3), and Red Hills soaproot (FSC, CNPS 1B) (**Figure 6-3c**). Known occurrences of special-status wildlife species within 5 miles of the proposed facilities include vernal pool fairy shrimp (*Branchinecta lynchi*, FT), valley elderberry longhorn beetle (*Desmocerus californicus* dimorphus, FT), bald eagle (*Haliaeetus leucocephalus*, FT proposed for delisting on 7/6/99, CE, CFP [nesting and wintering]) northwestern pond turtle (*Clemmys marmorata marmorata*, FSC, CSC), Swainson's hawk (FSC, CT [nesting]), California horned lizard (FSC, CSC), great blue heron (*Ardea herodias*, FSC, CSC), and great egret (*Egretta alba*, CSC) (**Figure 6-5c**).

Expansion of Bass Lake and Proposed New Facilities

The facilities associated with this component of Alternative No. 3 include the expansion of Bass Lake, construction of Bass Lake Water Treatment Plant (BLWTP) and pump stations, and construction of the Bass Lake Conduit and in-line Booster Pump Station (**Figure 6-3c**). These facilities are described in Chapter 5.

Bass Lake and the proposed facilities are within chamise-redshank chaparral (Second Priority Habitat) and annual grassland (Third Priority Habitat) (**Figure 6-1**). The Pine Hill rare plant preserve is approximately one mile northeast of the Bass Lake Conduit. Known occurrences of special-status plant species within 5 miles of the facilities include Layne's Ragwort, Pine Hill ceanothus, Pine Hill flannelbush, El Dorado bedstraw, Stebbin's morning glory, El Dorado County mule ears, Bisbee Peak rush-rose, and Red Hills soaproot (**Figure 6-3c**). Known occurrences of special-status wildlife species within 5 miles of the proposed facilities include vernal pool fairy shrimp, valley elderberry longhorn beetle, northwestern pond turtle, California horned lizard, bald eagle, great blue heron, and great egret (**Figure 6-5c**).

Construction of Bray Water Treatment Plant and Placerville Ridge Conduit

The facilities associated with this component of Alternative No. 3 include construction of the Bray Water Treatment Plant (BWTP) and the Placerville Ridge Conduit (**Figure 6-3c**).

The proposed sites of the BWTP and Placerville Ridge Conduit route are within blue oak woodland habitat (First Priority Habitat) (**Figure 6-1**). The Pine Hill rare plant preserve is less than one-half mile from the western end of the Placerville Ridge Conduit (**Figure 6-3c**). Known occurrences of special-status plant species within 5 miles of the facilities include Stebbin's morning glory, El Dorado bedstraw, Layne's Ragwort, Pine Hill ceanothus, Pine Hill flannelbush, El Dorado County mule ears, Red Hills soaproot, Nissenan manzanita (*Arctostaphylos nissenana,* FSC, CNPS 1B), and Bisbee Peak rush-rose (**Figure 6-3c**). Known occurrences of special-status wildlife species within 5 miles of the proposed facilities include bald eagle, northwestern pond turtle, and California horned lizard (**Figure 6-5c**). The proposed site of the BWTP and about 2 miles of the eastern end of the Placerville Ridge conduit are within federally designated California Red-legged frog critical habitat (**Figure 6-5c**). There is only one known occurrence of CRLF in El Dorado County (CNDDB 2002). This occurrence is a breeding population in the north fork of Weber Creek, upstream of the Weber Creek Dam and Reservoir, near Snows Crossing, approximately one mile south of Camino.

Expansion of Weber Reservoir

The expansion of Weber Reservoir is a proposed component of Alternative No. 3 (**Figure 6-3c**).

Weber Reservoir is within Sierran mixed conifer habitat (Third Priority Habitat) (**Figure 6-1**). There are no rare plant preserves within 10 miles of the site. Known occurrences of special-status plant species within 5 miles of Weber Reservoir include Layne's ragwort, Nissenan manzanita, Pleasant Valley Mariposa lily (*Calochortus clavatus* var. *avius,* FSC CNPS 1B), and Parry's horkelia (*Horkelia parryi,* FSC, CNPS 1B) (**Figure 6-3c**). An occurrence of the northwestern pond turtle was reported within 5 miles of the reservoir (**Figure 6-5c**). Weber Reservoir is within federally-designated California red-legged frog critical habitat (**Figure 6-5c**). As discussed above, there is one known breeding population of California red-legged frog in El Dorado County. This population is located in the North Fork of Weber Creek.

Improvements in the Crawford Ditch System and Construction of the Ringold Creek Pipeline

This component of Alternative No. 3 includes improvements to the Crawford ditch system and construction of the Ringold Creek Pipeline (**Figure 6-2**).

A portion of the Crawford Ditch is within mixed chaparral (Second Priority Habitat) (**Figure 6-1**). The largest portion of the Crawford Ditch is within Sierran mixed conifer habitat and a smaller portion passes through Montane hardwood habitat (both Third Priority Habitat). Ringold Creek Pipeline is within Sierran mixed conifer habitat (**Figure 6-1**). There are no rare plant preserves within 10 miles of the site. Known occurrences of special-status plant species within 5 miles of Crawford Ditch and the proposed Ringold Creek Pipeline include Layne's Ragwort, Pleasant Valley Mariposa lily, Parry's Horkelia, and Nissenan manzanita (**Figure 6-3c** and **Figure 6-3d**). Known occurrences of special-status wildlife species within 5 miles of the Crawford Ditch and the proposed Ringold Creek Pipeline include Foothill yellow-legged frog (less than 0.5 miles from Crawford Ditch in the North Fork Cosumnes River) and northwestern pond turtle (**Figure 6-5c** and **Figure 6-5d**). The northern end of the proposed Ringold Creek Pipeline is within federally-designated critical California red-legged frog habitat (**Figure 6-5c**). As discussed above, there is one known breeding population of California red-legged frog in El Dorado County. This population is located in the North Fork of Weber Creek.

Construction of the Placerville Extension and the 49'er Extension

Alternative No. 3 includes two proposed waterline extensions, the Placerville Extension and the 49'er Extension (**Figure 6-3c**).

The 49'er Extension is within blue oak woodland habitat (First Priority) (**Figure 6-1**). The Placerville Extension is within urban/agriculture habitat (Third Priority). The closest rare plant preserve is approximately 8 miles from either of these components. Known occurrences of special-status plant species within 5 miles of these sites include Nissenan manzanita and Layne's ragwort (**Figure 6-2c**). There is a reported occurrence of northwestern pond turtle (FSC, CSC), a special-status wildlife species, within 5 miles of the proposed facilities (**Figure 6-5c**). The 49'er Extension is within federally designated California red-legged frog habitat (**Figure 6-5c**). As discussed above, there is one known breeding population of California red-legged frog in El Dorado County. This population is located in the North Fork of Weber Creek.

Reconstruction of Reservoir 10

As part of Alternative No. 3, Reservoir 10 would be reconstructed.

Reservoir 10 is within blue oak woodland habitat (First Priority) (**Figure 6-1**). The closest rare plant preserve is about 6.5 miles west of Reservoir 10. Known occurrences of the special-status plants, Nissenan manzanita and Layne's ragwort, have been reported within 5 miles of Reservoir 10 (**Figure 6-3c**). There is a reported occurrence of northwestern pond turtle (FSC, CSC), a special-status wildlife species, within 5 miles of Reservoir 10 (**Figure 6-5c**).

Proposed Alder Creek Dam and Alternative Conveyance Routes

The construction of Alder Creek Dam and two alternative conveyance routes is a component of Alternative No. 3 (**Figure 6-1**).

The site of the proposed Alder Creek Dam is within montane chaparral habitat (Second Priority) (**Figure 6-1**). The nearest rare plant preserve is more than 20 miles west of the site. Known occurrences of the special-status plant, Pleasant Valley Mariposa lily, have been reported within 5 miles of the Alder Creek Dam site (**Figure 6-3d**). Known occurrences of special-status wildlife species within 5 miles of the project site include mountain yellow-legged frog (*Rana muscosa,* FC, CSC), black swift (*Cypseloides niger*, FSC, CSC), and Northern goshawk (*Accipiter gentilis,* FSS, FSC, CSC) (**Figure 6-3d**).

Proposed Texas Hill Reservoir

The proposed Texas Hill Dam and Reservoir was not identified as a component of Alternative No. 3. However, EID has requested that an evaluation of this project be performed (**Figure 6-1**).

The Texas Hill Reservoir project site is within Sierran mixed conifer habitat (Third Priority) (**Figure 6-1**). The nearest rare plant preserve is approximately 8 miles west of the site. Known occurrences of special-status plant species within 5 miles or less of the project site include Layne's ragwort (located at the project site) and Nissenan manzanita (**Figure 6-3c**). The nearest known occurrences of special-status wildlife species include northern goshawk approximately 6.5 miles east of the site and northwestern pond turtle approximately 7 miles north of the site (**Figure 6-5c**). The Texas Hill Reservoir project site is within federally-designated California red-legged frog critical habitat (**Figure 6-5c**). As discussed above, there is one known breeding population of California red-legged frog in El Dorado County. This population is located in the North Fork of Weber Creek.

Key Environmental Constraints and Potential Regulatory Compliance Requirements

From a regulatory process perspective, various compliance requirements exist for this alternative. Folsom Reservoir, as a federal CVP facility, would require NEPA compliance with the U.S. Bureau of Reclamation. Additionally, under the Warren Act (of 1911), impoundment, storage, or use of a federal facility for non-project (i.e., non-CVP water) would require the execution of a Warren Act contract. Concomitant with NEPA, the U.S. Bureau of Reclamation would be obligated to comply with the Fish & Wildlife Coordination Act with USFWS. Other permitting or regulatory requirements, including the Endangered Species Act are identified below.

- Potential effects on federally-listed species including CRLF and USFWS designated CRLF critical habitat – consultation with USFWS under the Endangered Species Act
- Potential effects on state-listed species – consultation with CDFG under Section 2081 of the California Fish and Game Code
- Potential fill or impacts to Waters of the U.S - obtain USACE Section 404 of the Clean Water Act permit, CDFG Streambed Alteration Agreement, and Regional Water Quality Control Board 401 Certification.
- Potential upstream and downstream impacts on Alder Creek and Weber Creek – obtain CDFG permit under Section 5937 of the California Fish and Game Code.

Improvements to the Crawford Ditch system that would result in any increase in diversions from the North Fork Cosumnes River would likely require consultation, again under the federal ESA, but with the National Marine Fisheries Service (NMFS). NMFS has long viewed the Cosumnes River as an important coldwater stream and has taken the position that its headwaters, if unobstructed, would also

qualify for protection under the federal ESA. NMFS is concerned with anadromous fish species (e.g., chinook salmon and steelhead) and so, would be looking at these areas as potential spawning areas for returning adults.

6.7.2 ALTERNATIVE NO. 3A

Alternative No. 3 consists of several proposed components. Some components of Alternative No. 3A are identical to Alternative No. 3. The components of this alternative include:

- Expansion of the EDHWTP and Folsom Reservoir Raw Water Pumping Facilities
- Expansion of Bass Lake and Construction of Bass Lake Water Treatment Plant (Option)
- Reconstruction of Reservoir 10
- Reservoir 9 Pipeline
- Construction of the 49'er Expansion
- Reservoir 11 Pipeline

A map of the facilities associated with this alternative is provided in **Figure 6-3c**. A discussion of the habitats in which the facilities are located and the special-status species known to occur within 5 miles of the facilities is presented below for each component. This is followed by a discussion of the key environmental constraints for each alternative.

Alternative No. 3A Components

Expansion of the EDHWTP and Folsom Reservoir Raw Water Pumping Facilities

This component is identical to that described for Alternative No. 3. See the description in the previous section.

Expansion of Bass Lake and Construction of Bass Lake Water Treatment Plant (Option)

The expansion of Bass Lake and construction of the Bass Lake Water Treatment Plant (BLWTP) are components of Alternative No. 3A only if additional property cannot be acquired in EL Dorado Hills for the expansion of EDHWTP (**Figure 6-3c**).

The Bass Lake expansion and proposed water treatment plant are within annual grassland habitat (Third Priority) (**Figure 6-1**). The nearest rare plant preserves are approximately 2.5 miles northeast and east Bass Lake (**Figure 6-3c**). Known occurrences of special-status plant species within the preserve and

within 5 miles of Bass Lake include Layne's Ragwort, Pine Hill ceanothus, Pine Hill flannelbush, El Dorado bedstraw, Stebbin's morning glory, El Dorado County mule ears, Bisbee Peak rush-rose, and Red Hills soaproot (**Figure 6-3c**). Known occurrences of special-status wildlife species within 5 miles of the proposed facilities include vernal pool fairy shrimp, bald eagle, northwestern pond turtle, California horned lizard, great blue heron, and great egret (**Figure 6-5c**).

Reconstruction of Reservoir 10

This component is identical to that described for Alternative No. 3. See the description in the previous section.

Reservoir 9 Pipeline

The proposed waterline between Lateral 3.6N and Reservoir 9 is a unique component of Alternative No. 3A (**Figure 6-3c**).

The proposed waterline route is within blue oak woodland habitat (First Priority) (**Figure 6-1**). The nearest rare plant preserve is approximately 8 miles west of the site. Known occurrences of the special-status plants, Laynes ragwort and Nissenan manzanita occur within 5 miles of the proposed site (**Figure 6-3c**). There are no known occurrences of special-status wildlife species reported within 5 miles of the site.

Construction of the 49'er Expansion

Alternative No. 3A includes the proposed 49'er Intertie (**Figure 6-3c**).

The proposed route of the 49'er Extension is within Blue Oak woodland habitat (First Priority) (**Figure 6-1**). The closest rare plant preserve is approximately 8 miles west of the proposed route. Known occurrences of special-status plant species within 5 miles of the site include Nissenan manzanita and Layne's ragwort (**Figure 6-3c**). There are no reported occurrences of special-status wildlife species within 5 miles of the proposed facility.

Reservoir 11 Pipeline

The proposed waterline between Reservoir 9 and Reservoir 11 is a unique component of Alternative No. 3A (**Figure 6-3c**).

The proposed waterline route is within blue oak woodland (First Priority Habitat) and annual grassland (Third Priority Habitat) (**Figure 6-1**). The nearest rare plant preserve is approximately 3.5 miles west of the western end of the proposed route. Known occurrences of special-status species within 5 miles of

proposed route include Nissenan manzanita, Layne's ragwort, Stebbin's morning glory, Pine Hill ceanothus, El Dorado bedstraw, Bisbee Peak rush-rose, and El Dorado County mule ears (**Figure 6-3c**). There are no reported occurrences of special-status wildlife species within 5 miles of the proposed facility.

Key Environmental Constraints and Potential Regulatory Compliance Requirements

Similar to the previous alternative, NEPA, Warren Act, and Fish and Wildlife Coordination Act requirements would apply for the Folsom Reservoir portion of this alternative. Other permitting obligations and approvals are set out below.

- Potential effects on federally-listed species including CRLF and USFWS designated CRLF critical habitat – consultation with USFWS under the Endangered Species Act
- Potential effects on state-listed species – consultation with CDFG under Section 2081 of the California Fish and Game Code
- Potential fill or impacts to Waters of the U.S - obtain USACE Section 404 of the Clean Water Act permit, CDFG Streambed Alteration Agreement, and Regional Water Quality Control Board 401 Certification.

6.7.3 Summary of EID Proposed Alternatives

Although EID Alternative Nos. 3 and 3A contain several components that are similar, three components that are unique to Alternative No. 3 would likely result in significant effects on biological resources and require substantial consultation with the regulatory agencies. These include the Weber Dam expansion, Alder Creek Dam and Reservoir, and Texas Hill Dam and Reservoir. The Weber Creek drainage is currently designated by USFWS as critical habitat for the California red-legged frog. Directly adjacent to Weber Creek is the only known population of California red-legged frog in El Dorado County. In addition, creation of the Texas Hill Dam and Reservoir on Weber Creek would result in the creation of additional habitat for non-native species that prey on California red-legged frog (i.e., bullfrog). Installation of dams and creation of new reservoirs on Weber and Alder creeks would result in effects to upstream and downstream habitats. These effects could include, but are not limited to, impacts to riparian vegetation and associated wildlife species from reduced high and low flow periods, impacts to the presence and amount of amphibian and reptile habitat available and the quality of that habitat, and impacts to riparian and aquatic plant species.

NEPA compliance, as discussed, would be triggered by the "use" of Folsom Reservoir as defined under the Warren Act.

6.8 GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT PROPOSED WATER SUPPLY OPTIONS

Georgetown Divide Public Utility District (GDPUD) has chosen three of their most viable alternatives for evaluation in this report. For each alternative, the associated biological resources that fall under State or Federal jurisdiction are described below.

6.8.1 CANYON CREEK DAM

Canyon Creek Dam would be located on Canyon Creek below the confluence with Dark Canyon Creek (**Figure 6-1**). Water would be conveyed from Canyon Creek Dam to the existing GDPUD system through 2.6 miles of pipeline and tunnel to a site north of Greenwood.

The proposed site of Canyon Creek Dam is within Sierran mixed conifer habitat (Third Priority) (**Figure 6-1**). Known occurrences of special-status plant species within 5 miles of the site include Layne's ragwort and Nissenan manzanita (**Figure 6-3a**). Known occurrences of northwestern pond turtle have been reported within 5 miles of the proposed facility (**Figure 6-5a**).

Key Environmental Constraints and Potential Regulatory Compliance Requirements

- Potential effects on federally-listed species – consultation with USFWS under the Endangered Species Act
- Potential effects on state-listed species – consultation with CDFG under Section 2081 of the California Fish and Game Code
- Potential fill or impacts to Waters of the U.S - obtain USACE Section 404 of the Clean Water Act permit, CDFG Streambed Alteration Agreement, and Regional Water Quality Control Board 401 Certification.
- Potential upstream and downstream impacts on Canyon Creek – obtain CDFG permit under Section 5937 of the California Fish and Game Code.

6.8.2 RUBICON RIVER PROJECT

The proposed Rubicon River Project would involve construction of a gravity diversion (**Figure 6-1**) from the South Fork of the Rubicon River between the Gerle Creek Reservoir and Robb's Forebay.

Water would be diverted through a 2.6-mile pipeline, following the historical diversion route. From this pipeline the water would be conveyed to the headwaters of Pilot Creek through a new 2.6-mile tunnel (**Figure 6-3b**).

The proposed site of the gravity diversion and proposed pipeline/tunnel route are within Sierran mixed conifer habitat (Third Priority) (**Figure 6-1**). Known occurrences of Stebbin's Phacelia (*Phacelia stebbinsii*, FSC, CNPS 1B), a special-status plant, have been reported within 5 miles of the site (**Figure 6-3b**). Known occurrences of special-status wildlife species within 5 miles of the site include bald eagle (**Figure 6-5b**).

The Rubicon River supports a rainbow trout and brown trout population. Neither species is listed on either the federal or state endangered species lists, but they are recognized as species of management concern. The Rubicon River has also been designed a Wild Trout Stream by the California Fish and Game Commission from Hell Hole to its confluence with the American River.

Key Environmental Constraints and Potential Regulatory Compliance Requirements

Any increased diversions from historical levels at the point of diversion would require careful hydrologic analyses. Unless federal lands or funding are involved, NEPA compliance is unlikely for this alternative. Other likely environmental requirements, however, are listed below.

- Potential effects on federally-listed species – consultation with USFWS under the Endangered Species Act
- Potential effects on state-listed species – consultation with CDFG under Section 2081 of the California Fish and Game Code
- Potential fill or impacts to Waters of the U.S - obtain USACE Section 404 of the Clean Water Act permit, CDFG Streambed Alteration Agreement, and Regional Water Quality Control Board 401 Certification.

6.8.3 Folsom North Pumping Project

The Folsom north pumping project would involve construction of an intake structure and pump station site near the Auburn Dam site on the north fork of the American River. This is in the vicinity of PCWA's permanent pumps, for which an EIS/EIR was recently completed with PCWA and the U.S. Bureau of Reclamation. A pipeline would be constructed from the pump station (requiring significant

lift) to a water treatment plant site operated by GDPUD (**Figure 6-1**). A small regulating reservoir would also be constructed along the pipeline route.

The proposed site of the pump station and proposed pipeline route are within Sierran mixed conifer and urban/agriculture habitats (Third Priority) (**Figure 6-1**). Known occurrences of big-scale balsamroot (*Balsamorhiza macrolepis* var. *macrolepis*, FSC, CNPS 1B), a special-status plant, have been reported within 5 miles of the proposed pipeline (**Figure 6-3a**). Known occurrences of northwestern pond turtle, a special-status plant, have been reported within 5 miles of the proposed pipeline (**Figure 6-5a**).

Within the north and middle forks of the American River various fish species are present including rainbow trout, brown trout, hitch, Sacramento sucker, pikeminnow, and riffle sculpin. While both the rainbow trout and brown trout are species of management concern, there are no federal or state listed species or proposed listed species.

Key Environmental Constraints and Potential Regulatory Compliance Requirements

Screening issues (fisheries) for a new intake and diversion facility on the North Fork of the American River would exist. It is unlikely that the Anadromous Fish Screen Program (AFSP) under the CVPIA would be involved (because of its location relative to Folsom Reservoir), however, CDFG would need to be consulted to insure proper design criteria of the screens (maximum sweeping and impingement velocities).

NEPA compliance again, would depend on the use of federal lands or acquired federal funding for the facility. Much of the environmental baseline and, to some extent, in-river resource evaluations, have already been exhaustively analyzed by PCWA and the U.S. Bureau of Reclamation for this location (e.g., see PCWA/U.S. Bureau of Reclamation Pump Station Project Final EIS/EIR).

Other permitting or approval requirements include the following.

- Potential effects on federally-listed species – consultation with USFWS under the Endangered Species Act
- Potential effects on state-listed species – consultation with CDFG under Section 2081 of the California Fish and Game Code
- Potential fill or impacts to Waters of the U.S - obtain USACE Section 404 of the Clean Water Act permit, CDFG Streambed Alteration Agreement, and Regional Water Quality Control Board 401 Certification.

6.8.4 SUMMARY OF GDPUD PROPOSED ALTERNATIVES

Although each of the GPUD proposed alternative projects would likely require similar permits, the Canyon Creek Dam Project includes development and installation of a new dam and reservoir on Canyon Creek. Implementation of this alternative project would result in both upstream and downstream effects from the proposed dam and reservoir site on Canyon Creek. These effects could include, but are not limited to, impacts to riparian vegetation and associated wildlife species from reduced high and low flow periods, impacts to the presence and amount of amphibian and reptile habitat available and the quality of that habitat, and impacts to riparian and aquatic plant species. In addition, creation of a reservoir would provide habitat for non-native species that typically prey on native species (e.g., bullfrog).

CHAPTER 7

Public Outreach

7.1 BACKGROUND

The public outreach component of the Plan was prepared by Lucy & Company. The scope of public outreach included outreach during the plan development stage (Phase I) and outreach for the draft plan stage (Phase II).

The Phase I public outreach included a public workshop, among a variety of other outreach tactics necessary to announce and attract people to the workshop. The project team and coordinating committee met at the conclusion of Phase I to address the results and determine the appropriate outreach efforts to continue in Phase II.

With input from the project Coordinating Committee, a public outreach goal and objectives for both Phase I and Phase II were developed:

7.1.1 PUBLIC OUTREACH GOAL

Gain a consensus among county water purveyors and interested stakeholders on a county-wide water plan that the water agency board will feel appropriate to adopt and implement.

7.1.2 PUBLIC OUTREACH OBJECTIVES

The objectives of the public outreach program are to:

- Increase awareness about the water plan and its development among interested agencies, stakeholders and residents of the communities of the five water purveyors as measured by the results of outreach efforts.
- Enhance image of the El Dorado County Water Agency as a proactive collaborator, interested in identifying county-wide solutions for water resources and land use planning as measured by positive media stories.

- Gain support for the passage of the plan by the water agency board in 2003 as measured by addressing applicable comments on water supply and demand projections gathered during the public outreach process.

The following public outreach activities were proposed and performed to accomplish the objectives and the overall goal.

7.2 PUBLIC OUTREACH ACTIVITIES

7.2.1 STAKEHOLDER DATABASE

An outreach questionnaire was distributed to water purveyors to help identify key stakeholders to be included in the database and determine outreach sensitivities. From this information and other research efforts a comprehensive stakeholder database was developed.

A database from the water agency was customized to include all county water purveyors, local community representatives, elected officials, development community representatives, environmental groups, local, state and federal agencies and other pertinent stakeholders.

The following steps were taken to refine the database for the mailing of the flyer:

- Received additional mailing lists from the members of the coordinating committee and entered the contacts into an Excel database.
- Contacted the water purveyors and asked them for more information. When that information was received, it was immediately entered into the database.
- Distributed the database to all committee and project team members for final revisions and incorporated into the database.
- Conducted additional research to add community groups, neighborhood associations, media contacts, elected and government officials, etc. that were not previously included on the list.
- Conducted extensive internal review of the database and made appropriate revisions.

7.2.2 MEDIA RELATIONS

Media relations were conducted to reach the community at large and notify them about the public workshop and the county water planning effort. The angle – will El Dorado County have enough water for the future? – was intended to inspire the news media to either promote the workshop in advance or generate coverage of the event for a story following the meeting. A news release was developed and

was distributed the week of January 27, 2003 to the following local media of each water purveyor community and the Sacramento print media:

- The Georgetown Gazette
- The Mountain Democrat
- The Sacramento Bee
- Sacramento Business Journal
- The Tahoe Daily Tribune

Follow-up calls were conducted and several media ran the story both in advance of the meeting and as a recap. Some reporters included interviews with the water agency and water purveyors.

The following newspapers, with their respective circulation indicated, ran the story. Considering the success in media relations, the story reached thousands of Sacramento area residents as well as the residents of the El Dorado communities involved in the plan.

Media Coverage

- The Sacramento Bee/Sacbee.com, March 2, circulation: 300,000
- The Tahoe Daily Tribune, February 10, circulation: 19,500
- The Mountain Democrat, February 6, circulation: 12,790
- The Georgetown Gazette, February 6, circulation: 1,525

The coverage was generally positive. Excerpts of the coverage include the following quotes:

- "A workshop was held on February 12, 2003 to comment on the county's water needs, Curtis said. Although no single issue dominated, he said, people were concerned about water supply and drought protection and how water purveyors would meet demand with the county surface water sources." – Cathy Locke, *Bee Staff Writer, Sacbee.com*
- "The purpose of the committee is to provide countywide input to the plan. Having local knowledge in water issues, members of the coordinating committee provide a valuable resource to result in the most accurate and comprehensive plan possible." – Georgetown Gazette

A complete copy of the clips of print coverage is included in Appendix H of this report.

7.2.3 FLYER

Lucy & Company wrote, designed, and printed 500 flyers, which were distributed to the stakeholder database prior to the public workshop. The flyer provided the project background, meeting information, and a graph illustrating current demand versus projected demand for water in the county. The key message – will El Dorado County have enough water for the future? – was intended to inspire the public to come out and learn how the county water agency is preparing for the future. A copy of the flyer appears in the Appendix H.

The flyers were mailed to the database Wednesday, January 26, 2003.

7.2.4 ADVERTISEMENTS

Quarter-page newspaper ads were designed to announce the meeting. The ads, announcing the meeting, ran in the following El Dorado County newspapers between February 5 and February 11:

- The Tahoe Daily Tribune, February 10, circulation 19,500
- The Mountain Democrat, February 6, circulation 12,790

As in the case of media relations, the newspaper ads reached several thousand El Dorado County residents prior to the meeting. A copy of the ad appears in Appendix H.

7.3 PUBLIC WORKSHOP

A public workshop was held on Wednesday, February 12, at the El Dorado County Supervisors Meeting Room, from 6 to 8 PM, and consisted of a brief overview presentation on the purpose of the plan along with a summary of the data gathered and proposed alternatives to date, and "work stations" in the lobby where the public could speak one-on-one with any of the water purveyors representing Grizzly Flats, Georgetown Divide, South Tahoe, El Dorado Irrigation District, the water agency and the agricultural commission.

Sign-in sheets, nametags, agendas, and other pertinent materials were also provided. A project fact sheet of the proposed alternatives for each water purveyors was prepared and distributed. Additionally, maps of each water district were displayed at each workstation.

7.3.1 ATTENDEES

Despite the significant media coverage and ad placement in newspapers, only eight members of the public attended the public workshop in addition to participating staff. The project team was disappointed with the low turnout but pleased with how well the format of the workshop worked for those who did attend.

7.3.2 FORMAT/PUBLIC WORKSHOP

EDCWA and the Agricultural Commission managed workstation one. Representatives from the El Dorado Irrigation District (EID) met with residents at workstation two. Grizzly Flats Community Services District and Georgetown Public Utility District (GDPUD) officials fielded residents' comments at workstation three, and South Tahoe Public Utility (STPUD) District representatives staffed workstation four. Tahoe City Public Utility District (TCPUD) data were represented through handouts and a map for the interested public.

7.3.3 PUBLIC COMMENTS AND QUESTIONS

A summary of written comments, questions and suggestions received at the workshops via discussions held with coordinating committee members and responses to the comments are included in Appendix H.

A post-meeting recap and Phase II public outreach plan are included in Appendix H.

APPENDIX A

Bibliography

1. Water Supply Master Plan, December 2001 – El Dorado Irrigation District
2. Update to the Water Supply and Demand Report, May 2002 – EID
3. Grizzly Flats CSD Reconnaissance Investigation of Off-stream Storage, March 1988 – Borcalli
4. Grizzly Flats CSD Water Supply Reconnaissance Level Study – March 1994 – Borcalli
5. MTBE Water System Impacts and mitigation Evaluation, September 2000 – Boyle Engineering
6. Urban Water Management Plan, 2002 – South Tahoe PUD
7. Tahoe City PUD Water Master Plan, April 2002 – West Yost
8. Georgetown Divide Water Management Study, 1992 – Calif. Dept. of Water Resources
9. Water Well Survey Report, 1978 – Calkins
10. Water Supply Study Part II of a Two Part Study – Charles Abraham, August 2001
11. Part III Water Supply Study, EPS Growth Projection – C. Abraham, Sept. 2001
12. Water Forum Agreement, January 2000 – Water Forum
13. Master Memorandum of Understanding among SMUD, EDCWA, and EID, September 2002
14. Introduction and Summary from Draft EIR Policy fro Water Allocation in the Lake Tahoe Basin – State Water Resources Control Board, 1984
15. Georgetown Divide PUD Supplemental Water Supply from Rubicon River Reconnaissance Level Study – Sierra Hydrotech, August 1988
16. Draft – Folsom North Pumping Project Preliminary Report – Sierra Hydrotech, September 1997

APPENDIX B

Coordinating Committee Participants

EL DORADO COUNTY

Bill Hetland	Water Agency
Lonnie Curtis	Water Agency
Jim Roberts	Water Agency
Pierre Rivas	Planning Department
Randy Pesses	Department of Transportation
Bill Snodgrass	Agricultural Commission
Kim Wilson	Agricultural Commission

PURVEYORS

Hank White	Georgetown Divide Public Utility District
Dave Witter	El Dorado Irrigation District
Rick Hydrick	South Tahoe Public Utility District
Bob Lourey	Tahoe City Public Utility District
Harry Dunlop	Grizzly Flats Community Services District

PROJECT TEAM MEMBERS

Joe Alessandri	ECO:LOGIC Engineering
John Enloe	ECO:LOGIC Engineering
Georgette Lorenzen	Economics and Planning Systems, Inc.
Dmitry Semenov	Economics and Planning Systems, Inc.
Robert Shibatani	Stantec
Janelle Nolan-Summers	ENTRIX
Francis Borcalli	Wood Rodgers
Linda Tucker	Lucy & Co.

EL DORADO COUNTY

List of Water Systems by Owner ID

Record Selection Criteria: Program/Element 4622 - 4644

Report ID / Program/ Element	Facility Information	Owner Information	Emergency Notification	General Information
4622 SMALL COMMUNITY WATER SYSTEM (BASE CHAR				
WA0000495	FA0001601 KYBURZ MUTUAL WATER SYSTEM KYBURZ DRIVE P.O. BOX 33 KYBURZ, CA 95720 916-293-3310	OW0000161 U.S. FOREST SERVICE 100 FORNI RD 100 FORNI RD PLACERVILLE, CA 95667 530-622-5061	**BLAIGHT, JIM** Day : 530-293-3270 Night : 530-293-3335 **DAVIS, JOHN** Day : 530-293-3270 Night : 916-920-8925	Mail To FACILITY Permit No. 0000305 No. of Serv. Con. 120 Pop. Served 288
WA0000301	FA0001169 COLD SPRING PARK 8201 HWY 49 P.O. BOX 1030 EL DORADO, CA 95623 209-245-6569	OW0000443 PETRYK, TOM 7430 SAMOLEWOOD DR P.O. BOX 849 STOCKTON, CA 95210	**MORALES, LARRY** Day : 530-620-6905 Night : 530-620-6905 **LUZ, JAMES #23** Day : 530-620-6905 Night : 530-620-3954	Mail To FACILITY Permit No. 0000102 No. of Serv. Con. 40 Pop. Served 100
WA0000358	FA0000508 BEAR STATE WATER WORKS 4921 VOLCANOVILLE ROAD 4921 VOLCANOVILLE RD GEORGETOWN, CA 95634 916-333-4210	OW0000535 CARSTENS, EVELYN M. 4921 VOLCANOVILLE RD 4921 VOLCANOVILLE RD GEORGETOWN, CA 95634	**FAHLEN, FRED** Day : 916-637-4441 Night : 916-333-4210 **CARSTENS, EVELYN** Day : 916-637-4441 Night :	Mail To FACILITY Permit No. 0000217 No. of Serv. Con. 33 Pop. Served 100
WA0000400	FA0000604 CRYSTAL CAVES MHP 2874 PERRY CREEK RD P.O. BOX 1227 MANHATTAN BEACH, CA 90267-1227	OW0000547 SISOLA, GERTRUDE CAROLDE C/O 311 VISTA DEL MAR #A C/O 311 VISTA DEL MAR #A REDONDO BEACH, CA 90277	**CREASON, KAREN** Day : 530-620-4552 Night : 310-373-8570 **HULL, GREGORY** Day : 530-620-4552 Night :	Mail To FACILITY Permit No. 0000422 No. of Serv. Con. 40 Pop. Served 105
WA0000491	FA0000637 QUINTETTE SERVICE CORP WATER WENTWORTH SPRINGS RD P.O. BOX 1535 GEORGETOWN, CA 95634 916	OW0000568 UNIV. OF CALIF. BERKELEY FOUND 2440 BANCROFT WAY #301 2440 BANCROFT WAY #301 BERKELEY, CA 94720	**PRIME, HOLLIS** Day : 530-333-2552 Night : 530-333-9146 **PALMER, DON** Day : 530-621-2552 Night :	Mail To FACILITY Permit No. 0000306 No. of Serv. Con. 41 Pop. Served 100
WA0000392	FA0000596 OAK KNOLL MOBILE HOME PARK HWY 50 WEST OF PINON RD [illegible]	OW0000797 GRACE, GARY L. & DOLOR. 4150 BLACK OAK DR 4150 BLACK OAK DR	**GRACE, GARY** Day : 530-677-2016 Night : 530-676-7792	Mail To FACILITY Permit No. 0000404 No. of Serv. Con. 33

STATELINE, NV 89449
775-586-2313

Day :
Night :

Total Number of Records for This Program/Element : 1.0

4633 NON-COMMUNITY WATER SYSTEM (BASE CHARGI

WA0000367 FA0000229
CAMP CHOLITA CAMPGROUND (HEALTH)
8092 WENTWORTH SPRINGS RD
8092 WENTWORTH SPRINGS ROAD
GEORGETOWN, CA 95634
530-333-4673

OW0000026
GONZALVE, MIKE
291 ANTHIS
291 ANTHIS
PLACERVILLE, CA 95667

Day :916-333-4673
Night :916-333-4673

SMITH, SUZANNE
Day :916-333-4673
Night :

Mail To
Permit No. 0900206
No. of Serv. Con. 35
Pop. Served 50

FACILITY

WA0000374 FA0000227
CAMP MINER RESTAURANT
8860 WENTWORTH SPRINGS RD
8860 WENTWORTH SPRINGS RD
GEORGETOWN, CA 95634
916-333-4674

OW0000027
LAMONTE, CAROL & NEAL
8860 WENTWORTH SPRINGS RD
8860 WENTWORTH SPRINGS RD
GEORGETOWN, CA 95634

LA MONTE, NEAL
Day :916-333-4674
Night :916-333-2557

HALLFORD, LILLIAN
Day :916-333-4674
Night :

Mail To
Permit No. 0900305
No. of Serv. Con. 2
Pop. Served 50

FACILITY

WA0001187 FA0000730
PIONEER PARK WATER SYSTEM
PLEASANT VALLEY
3600 FAIRLANE CT SUITE 1
PLACERVILLE, CA 95667
916-621-5330

OW0000043
EL DORADO COUNTY
330 FAIR LN
330 FAIR LN
PLACERVILLE, CA 95667

ALCOTT, CRAVEN
Day :916-621-5330
Night :916-621-5845

DELANOE, THOMAS
Day :916-621-5330
Night :

Mail To
Permit No. 0900213
No. of Serv. Con. 1
Pop. Served 100

FACILITY

WA0004895 FA0002194
LOTUS PARK WATER SYSTEM
550 LOTUS RD
3000 FAIRLANE SUITE #1
PLACERVILLE, CA 95667

OW0000043
EL DORADO COUNTY
330 FAIR LN
330 FAIR LN
PLACERVILLE, CA 95667

ALCOTT, CRAVEN
Day :916-621-5330
Night :916-621-5890

SEABORNE, MARSHALL
Day :916-621-5330
Night :

Mail To
Permit No. 0900212
No. of Serv. Con. 3
Pop. Served 100

FACILITY

WA0002201 FA0001256
HEAVENLY VALLEY INC
WILDWOOD AVE
P.O. BOX 2180
STATELINE, NV 89449
530-541-1330

OW0000070
HEAVENLY VALLEY, INC.
3860 SADDLE RD
P.O. BOX 2180
SO LAKE TAHOE, CA 96150
775-586-2313

MALCOM TIBBETTS
Day :530-541-6184
Night :

Day :530-541-6184
Night :

Mail To
Permit No. 0900587
No. of Serv. Con. 2
Pop. Served 100

FACILITY

EL DORADO COUNTY

List of Water Systems by Owner ID

Record ID / Pr / El	Facility Information	Owner Information	Emergency Notification	General Information	
WA0004573	FA0002008 HEAVENLY VALLEY GONDOLA TOP STATION 2950 SADDLE RD P.O. BOX 2180 STATELINE, NV 89449 775-586-2313	OW0000070 HEAVENLY VALLEY, INC. 2950 SADDLE RD P.O. BOX 2180 SO LAKE TAHOE, CA 96150 775-586-2313	Day : Night : Day : Night :	Mail To Permit No. No. of Serv. Con. Pop. Served	OWNER 500
WA0004577	FA0003060 HEAVENLY VALLEY GONDOLA TOP STATION 3860 SADDLE RD P.O. BOX 2180 STATELINE, NV 89449 775-586-2313	OW0000070 HEAVENLY VALLEY, INC. 2950 SADDLE RD P.O. BOX 2180 SO LAKE TAHOE, CA 96150 775-586-2313	ANDREW STRAIN Day : 775-586-2313 Night : Day : 775-586-2313 Night :	Mail To Permit No. No. of Serv. Con. Pop. Served	OWNER 0900685 1 600
WA0000411	FA0000612 SMUD: ROBBS PEAK POWERHOUSE POWER PINES CAMPGROUND P.O. BOX 15830 SACRAMENTO, CA 95852 530-644-2048	OW0000130 SMUD P.O. BOX 15830	MILLER, CARL Day : 916-732-6257 Night : 916-732-6982 HAPPS, JIM Day : 916-732-6257 Night :	Mail To Permit No. No. of Serv. Con. Pop. Served	FACILITY 0900316 45 100
WA0000497	FA0000640 CERLE CREEK SUMMER HOMES WENTWORTH SPRINGS RD. 4102 HANCOCK DR SACRAMENTO, CA 95821 510-530-6482	OW0000161 U.S. FOREST SERVICE 100 FORNI RD 100 FORNI RD. PLACERVILLE, CA 95667 530-622-5061	DILLON, BILL Day : 916-482-8079 Night : 707-427-1483 FRINK, DAVE Day : 916-482-8079 Night :	Mail To Permit No. No. of Serv. Con. Pop. Served	FACILITY 0901250 41 82
WA0000499	FA0000642 CLEON TRACT WATER ASSOCIATION HWY 50 AT PACIFIC HOUSE 10120 HWY 50 POLLOCK PINES, CA 95726	OW0000161 U.S. FOREST SERVICE 100 FORNI RD 100 FORNI RD. PLACERVILLE, CA 95667 530-622-5061	CARBY, BILL OR MIKE Day : 530-293-3334 Night : 530-293-3528 OFFICE Day : 530-293-3334 Night :	Mail To Permit No. No. of Serv. Con. Pop. Served	FACILITY 0900307 10 250
WA0001165	FA0000727 RED FIR GROUP CAMPGROUND WATER SYST PACIFIC RANGER DISTRICT C/O U.S.F.S. 100 FORNI RD PLACERVILLE, CA 95667	OW0000161 U.S. FOREST SERVICE 100 FORNI RD 100 FORNI RD. PLACERVILLE, CA 95667 530-622-5061	USFS/PLATT, RICH Day : 916-644-2349 Night : 916-622-5061 USFS/BROOKS, ELLIOTT Day : 916-644-2349 Night :	Mail To Permit No. No. of Serv. Con. Pop. Served	FACILITY 0901252 1 25

WA0001196 FA0000737
STUMPY MEADOWS-STVR RANGER STN
1600 WENTWORTH SPRINGS RD
C/O U.S.F.S. 100 FORNI RD
PLACERVILLE, CA 95667

OW0000161
U.S. FOREST SERVICE
100 FORNI RD
100 FORNI RD
PLACERVILLE, CA 95667
530-622-5061

USFS/ALLEN, ART
Day : 916-333-4312
Night : 916-293-3510

L & L/THOM HUTCHINSON
Day : 916-333-4312
Night :

Mail To FACILITY
Permit No. 0601244
No. of Serv. Con. 62
Pop. Served 100

WA0001198 FA0000739
LOON LAKE CAMPGROUND
PACIFIC RANGER DISTRICT
C/O U.S.F.S. 100 FORNI RD.
PLACERVILLE, CA 95667

OW0000161
U.S. FOREST SERVICE
100 FORNI RD
100 FORNI RD.
PLACERVILLE, CA 95667
530-622-5061

USFS/L & L/THOM HUT.
Day : 916-293-3510
Night : 916-644-2349

PLATT, RICH
Day : 916-293-3510
Night :

Mail To FACILITY
Permit No. 0601230
No. of Serv. Con. 46
Pop. Served 125

293-0227

WA0001199 FA0000740
ICE HOUSE CAMPGROUND
PACIFIC RANGER DISTRICT
C/O U.S.F.S. 100 FORNI RD
PLACERVILLE, CA 95667

OW0000161
U.S. FOREST SERVICE
100 FORNI RD
100 FORNI RD
PLACERVILLE, CA 95667
530-622-5061

USFS/L & L/THOM HUT.
Day : 916-293-3510
Night : 916-644-2349

PLATT, RICH
Day : 916-293-3510
Night :

Mail To FACILITY
Permit No. 0601229
No. of Serv. Con. 84
Pop. Served 200

WA0001593 FA0000547
GERLE CREEK CAMPGROUND
PACIFIC RANGER DISTRICT
C/O U.S.F.S. 100 FORNI RD
PLACERVILLE, CA 95667

OW0000161
U.S. FOREST SERVICE
100 FORNI RD
100 FORNI RD.
PLACERVILLE, CA 95667
530-622-5061

USFS/L & L/LOTT, LEVI
Day : 916-293-3510
Night : 916-644-2349

GOTTSCHALK, LORRAINE
Day : 916-293-3510
Night :

Mail To FACILITY
Permit No. 0601228
No. of Serv. Con. 50
Pop. Served 125

WA0001600 FA0000945
CHILA FLAT CAMPGROUND
SILVERFORK RD
C/O U.S.F.S. 100 FORNI RD.
PLACERVILLE, CA 95667

OW0000161
U.S. FOREST SERVICE
100 FORNI RD
100 FORNI RD.
PLACERVILLE, CA 95667
530-622-5061

USFS/CRAMER, BILL
Day : 209-295-4512
Night : 916-644-2324

GAYNOR, DEBBIE
Day : 209-295-4512
Night :

Mail To FACILITY
Permit No. 0601222
No. of Serv. Con. 26
Pop. Served 75

WA0001602 FA0000950
SAND FLAT CAMPGROUND
SAND FLAT
C/O U.S.F.S. 100 FORNI RD
PLACERVILLE, CA 95667

OW0000161
U.S. FOREST SERVICE
100 FORNI RD
100 FORNI RD.
PLACERVILLE, CA 95667
530-622-5061

USFS/CRAMER, BILL
Day : 209-295-4512
Night : 916-644-2324

GAYNOR, DEBBIE
Day : 209-295-4512
Night :

Mail To FACILITY
Permit No. 0601230
No. of Serv. Con. 29
Pop. Served 75

EL DORADO COUNTY

List of Water Systems by Owner ID

Record ID Pwsid	Facility Information	Owner Information	Emergency Notification	General Information	
WA0001604	FA0000951 SILVER FORK CAMPGROUND SILVER FORK CAMPGROUND C/O U.S.F.S. 100 FORNI RD PLACERVILLE, CA 95667	OW0000161 U.S. FOREST SERVICE 100 FORNI RD 100 FORNI RD PLACERVILLE, CA 95667 530-622-5061	USFS/CRAMER, BILL Day : 209-295-4512 Night : 916-644-2324 GAYNOR, DEBBIE Day : 209-295-4512 Night :	Mail To Permit No. No. of Serv. Con. Pop. Served	FACILITY 0901243 34 75
WA0001605	FA0000952 CAPPS CROSSING CAMPGROUND GRIZZLY FLAT C/O U.S.F.S. 100 FORNI RD PLACERVILLE, CA 95667	OW0000161 U.S. FOREST SERVICE 100 FORNI RD 100 FORNI RD. PLACERVILLE, CA 95667 530-622-5061	USFS/CRAMER, BILL Day : 209-295-4512 Night : 916-644-2324 GAYNOR, DEBBIE Day : 209-295-4512 Night :	Mail To Permit No. No. of Serv. Con. Pop. Served	FACILITY 0901219 11 25
WA0001608	FA0000953 PIPI CAMPGROUND WATER SYSTEM PIPI CAMPGROUND C/O U.S.F.S. 100 FORNI RD PLACERVILLE, CA 95667	OW0000161 U.S. FOREST SERVICE 100 FORNI RD 100 FORNI RD. PLACERVILLE, CA 95667 530-622-5061	USFS/CRAMER, BILL Day : 209-295-4512 Night : 209-295-4251 GORDON, JANICE Day : 209-295-4512 Night :	Mail To Permit No. No. of Serv. Con. Pop. Served	FACILITY 0900203 51 150
WA0001610	FA0000946 SODA SPRINGS RANGER STATION WATER LOON LAKE RD C/O U.S.F.S. 100 FORNI RD PLACERVILLE, CA 95667	OW0000161 U.S. FOREST SERVICE 100 FORNI RD 100 FORNI RD. PLACERVILLE, CA 95667 530-622-5061	USFS/PLATT, RICH Day : 916-644-2349 Night : 916-622-5061 USFS/BROOKS, ELLIOTT Day : 916-644-2349 Night :	Mail To Permit No. No. of Serv. Con. Pop. Served	FACILITY 0900302 7 25
WA0001615	FA0000954 CLEVELAND CORRAL REST AREA ICE HOUSE RD C/O U.S.F.S. 100 FORNI RD PLACERVILLE, CA 95667	OW0000161 U.S. FOREST SERVICE 100 FORNI RD 100 FORNI RD. PLACERVILLE, CA 95667 530-622-5061	USFS/L & LITHOM HUT. Day : 916-293-3510 Night : 916-644-2349 PLATT, RICH Day : 916-293-3510 Night :	Mail To Permit No. No. of Serv. Con. Pop. Served	FACILITY 0901223 1 25
WA0001617	FA0000955 PENINSULA RECREATION AREA UNION VALLEY C/O U.S.F.S. 100 FORNI RD PLACERVILLE, CA 95667	OW0000161 U.S. FOREST SERVICE 100 FORNI RD 100 FORNI RD. PLACERVILLE, CA 95667 530-622-5061	USFS/L & LITHOM HUT. Day : 916-293-3510 Night : 916-644-2349 PLATT, RICH Day : 916-293-3510 Night :	Mail To Permit No. No. of Serv. Con. Pop. Served	FACILITY 0901245 131 250

WA0004671 FA0002353
WOLF CREEK CAMPGROUND
DIO 100 FERN RD
PLACERVILLE, CA 95667

OW0000161
U.S. FOREST SERVICE
100 FERN RD
100 FERN RD
PLACERVILLE, CA 95667
530-622-5061

USFS/PLATT, RICH
Day 530-644-2349
Night 530-644-2349

USFS/BOYER, DAVE
Day 530-644-2349
Night 530-644-2691

Mail To OWNER
Permit No 0000214
No. of Serv. Con 42
Pop. Served 230

WA0000370 FA0000200
CAMP LOTUS STORE
BASS Rd
P.O. BOX 578
LOTUS, CA 95651
916-622-8672

OW0000236
CENTER, WILLIAM
P.O. BOX 523
P.O. BOX 523
LOTUS, CA 95651

CENTER, ROBIN & BILL
Day 916-622-4742
Night 916-622-8672

WHITMAN, ZOL
Day 916-622-4742
Night 916-621-0790

Mail To FACILITY
Permit No. 0500205
No. of Serv. Con. 8
Pop. Served 1000

WA0000368 FA0000293
FORWARD BIBLE CONFERENCE
10321 WENTWORTH SPRINGS RD
10321 Wentworth Springs Road
GEORGETOWN, CA 95634
530-333-4287

OW0000244
FORWARD BIBLE CONFERENCE
10321 Wentworth Springs Rd
10321 Wentworth Springs Road
GEORGETOWN, CA 95634

KENNEDY, ED
Day 530-333-4287
Night 530-333-0753

NELSON, JERRY
Day 530-333-4287
Night

Mail To FACILITY
Permit No. 0500306
No. of Serv. Con 7
Pop. Served 85

WA0000405 FA0000007
RIVERS BEND RESORT
6400 HWY 49
P.O. BOX 500
LOTUS, CA 95651
916-626-5104

OW0000265
TANGA, TROY
920 E NAPA ST
920 E. NAPA STREET
SONOMA, CA 95476
530-922-6446

MCLEAN, VIC & KATHERINE
Day 916-626-5104
Night

Day 916-626-5104
Night

Mail To FACILITY
Permit No 0500417
No. of Serv. Con 10
Pop. Served 100

WA0004534 FA0001047
COLD RUSH/BEAVER RUNNERS
COLOMA
P.O. BOX 1070
LOTUS, CA 95651
530-621-1972

OW0000265
TANGA, TROY
920 E. NAPA ST
920 E. NAPA STREET
SONOMA, CA 95476
530-922-6446

BARTON, MICHAEL
Day 916-626-7631
Night

Day 916-626-7631
Night

Mail To OWNER
Permit No 0500211
No. of Serv. Con 2
Pop. Served 103

WA0000401 FA0000605
COYOTE JUNCTION WATER SYSTEM
6021 MT AUBURN RD
P.O. BOX 643
SOMERSET, CA 95684
916-620-4750

OW0000269
SUM, ROBERT L.
109 WESLEY ST.
109 WESLEY ST.
CAPITOLA, CA 95010

STERRETT, RICHARD
Day 916-620-4750
Night 916-620-0109

SIERRA CENTRAL CU
Day 916-620-4750
Night

Mail To FACILITY
Permit No 0500119
No. of Serv. Con 7
Pop. Served 50

Record ID Pr / Fl / TV	Facility Information	Owner Information	Emergency Notification	General Information	
WA0000402	FA0000013 ROOST ROOST CAFE 8023 GRIZZLY FLAT RD 11422 W. MORGAN ROAD GARDUS, CA 95390 530-621-3713	OW0000205 NASTASIA, VICTOR 11422 MORGAN RD P.O. BOX 3553 AQUA DULCE, CA 91350-4837	CARR, CURTIS Day: 916-621-3713 Night: 805-206-1387 NASTASIA, VICTOR Day: 530-621-1710 Night:	Mail To: Permit No.: No. of Serv. Con.: Pop. Served:	OWNER 0900105 3 100
WA0000402	FA0000052 PEART'S LITTLE PLACE - RESTAUR 8331 GRIZZLY FLAT RD 8331 GRIZZLY FLAT RD SOMERSET, CA 95684 916-622-9820	OW0000307 DULL, RICHARD 8331 GRIZZLY FLAT RD 8331 GRIZZLY FLAT RD SOMERSET, CA 95684	RICHARD & JOYCE DULL Day: 916-621-2915 Night: 916-622-9820 SAUNDERS, DAVID Day: 916-621-2915 Night:	Mail To: Permit No.: No. of Serv. Con.: Pop. Served:	FACILITY 0900119 4 50
WA0000382	FA0000242 CHAR'S MART & GAS (HEALTH) 6711 MT AUBURN RD 6711 MT. AUBURN RD SOMERSET, CA 95684 530-620-5516	OW0000342 MOSS ENTERPRISES, INC 6711 MT. AUBURN RD 6711 MT. AUBURN RD SOMERSET, CA 95684	KARGL, PAUL Day: 916-677-9029 Night: 916-573-1010 KARGL, NORM Day: 916-677-9029 Night:	Mail To: Permit No.: No. of Serv. Con.: Pop. Served:	FACILITY 0900107 4 100
WA0000375	FA0000230 CHILI BAR PUT-IN HWY 193 SO FORK AMERICAN 1671 CHILI BAR CT PLACERVILLE, CA 95667 530-642-1669	OW0000365 KAHL, JAMES D. 1669 CHILI BAR CT 1669 CHILI BAR CT PLACERVILLE, CA 95667	ALEXANDER, DENNIS Day: 530-642-1669 Night: 760-376-6768 DECHANT, RICHARD Day: 530-642-1669 Night: 760-376-3723	Mail To: Permit No.: No. of Serv. Con.: Pop. Served:	FACILITY 0900302 6 100
WA0000376	FA0000231 CHICO'S PLACE 9130 WENTWORTH SPRINGS RD 9130 WENTWORTH SPRINGS RD GEORGETOWN, CA 95634 530-333-1147	OW0000366 ADIN, SCOTT 24243 SYLVAN GLEN RD 910 WENTWORTH SPRINGS 805-812-0108 Day: 916-333-1147 Night:	VICKERY, MARILYN & Day: 916-333-1147 Night:	Mail To: Permit No.: No. of Serv. Con.: Pop. Served:	FACILITY 0900318 2 50
WA0000384	FA0000303 ICE HOUSE RESORT (HEALTH) 5900 ICE HOUSE RD P.O. BOX 930 POLLOCK PINES, CA 95726 530-293-3321	OW0000436 ICE HOUSE RESORT CORP. P.O. BOX 870 P.O. BOX 870 TUOLUMNE, CA 95379	WENTWORTH, JULIE Day: 916-293-3321 Night: 916-644-2920 WENTWORTH, DEBORAH Day: 916-293-3321 Night:	Mail To: Permit No.: No. of Serv. Con.: Pop. Served:	FACILITY 0900314 1 100

WA0000367 FA0000575
LEGH MEADOWS CAMP
LEGH RD
P.O. BOX 49
GRIZZLY FLATS, CA 95636
916-626-7010

OWN0001220
SOA NORTHERN CALIF
CONFERENCE
P.O. BOX 25165
P.O. BOX 25165
PLEASANT HILL, CA 94523

MCBROOM, RON & JOANNE
Day : 916-626-3610
Night :

Day : 916-626-7115
Night :

Mail To :
Permit No : 0900112
No. of Serv. Con : 10
Pop. Served : 450

FACILITY

WA0000369 FA0000587
BACCHI RANCH WATER SYSTEM
HIGHWAY 49
P.O. BOX 479
LOTUS, CA 95651

OWN0000534
BACCHI, FRANCIS H.
6241 HWY 49
6241 HWY 49
LOTUS, CA 95651

BACCHI, CHUCK & JUDY
Day : 916-626-4056
Night : 916-626-7305

RANGEL, NATE
Day : 916-626-4055
Night : 916-626-6772

Mail To :
Permit No : 0900419
No. of Serv. Con : 5
Pop. Served : 100

FACILITY

WA0000371 FA0000585
CAMP MAUVAS WATER SYSTEM
3300 CAMP MAUVAS RD
3300 CAMP MAUVAS RD
PLACERVILLE, CA 95667
916-622-5877

OWN0000539
LDS CHURCH
3300 CAMP MAUVAS
3300 CAMP MAUVAS
PLACERVILLE, CA 95667

SEDGWICK, ALAN & LOIS
Day : 530-626-8151
Night : 916-991-4560

CLOSE, GARY
Day : 530-626-5181
Night :

Mail To :
Permit No : 0900114
No. of Serv. Con : 3
Pop. Served : 1000

FACILITY

WA0000380 FA0000592
TIERRA DEL ORO GIRL SCOUT
COUNCIL
7401 HAPPY VALLEY RD
3005 GOLD CANAL DR
RANCHO CORDOVA, CA 95670

OWN0000539
GIRL SCOUT TIERRA DEL ORO
3005 GOLD CANAL DR
3005 GOLD CANAL DR
RANCHO CORDOVA, CA 95670

YOUNG, ROBERT
Day : 916-644-6106
Night : 916-638-4475

THOMSON, DENISE
Day : 916-644-6106
Night :

Mail To :
Permit No. : 0900180
No. of Serv. Con : 2
Pop. Served : 100

FACILITY

WA0001216 FA0000601
INDIAN VALLEY RESORT
IDLEWILD RD
1917 FALEN COURT
PETALUMA, CA 94954
415-210-9260

OWN0000544
O'HALLORAN, EDWIN &
ANNE-MARIE
1917 FALEN CT
1917 FALEN CT
PETALUMA, CA 94954
415-210-9260

O'HALLORAN,
Day : 415-210-9260
Night : 707-778-1252

Day : 415-210-9260
Night :

Mail To :
Permit No. : 0900420
No. of Serv. Con : 4
Pop. Served : 50

FACILITY

WA0000493 FA0000606
POINT PLEASANT CAMPGROUND
7423 HWY 49
P.O. BOX 137
COLOMA, CA 95613
916-622-2057

OWN0000548
FANCHER, VIRGINIA
P.O. BOX 137
P.O. BOX 137
COLOMA, CA 95613

LONGO, TIMOTHY
Day : 530-622-2578
Night : 530-622-2057

FANCHER, VICTOR
Day : 530-622-2578
Night :

Mail To :
Permit No. : 0900412
No. of Serv. Con : 2
Pop. Served : 112

FACILITY

EL DORADO COUNTY

List of Water Systems by Owner ID

Record ID Fr / Sy	Facility Information	Owner Information	Emergency Notification	General Information
WA0000407	FA0000509 SCOTS TRACT WATER SYSTEM HWY 50 WEST OF STRAWBERRY 237 CHESTNUT LN DAVIS, CA 95616	OW0000550 SCOTT'S TRACT OPEN OWNERS ASC 237 CHESTNUT LN 237 CHESTNUT LN DAVIS, CA 95616	MONTI, BOB & BEVERLY Day : 916-753-5219 Night : 916-917-0419 HOWKE, ROBERT Day : 916-753-5216 Night : 916-659-7540	Mail To : FACILITY Permit No. : 0900120 No. of Serv. Con. : 72 Pop. Served : 180
WA0000409	FA0000510 SILVERFORK MUTUAL WATER SYSTE SILVER FORK ESRD P.O. BOX 44 KYBURZ, CA 95720	OW0000551 DAMON, CRYSTAL P.O. BOX 6 P.O. BOX 6 KYBURZ, CA 95720	DAMON, CRYSTAL Day : 916-293-3226 Night : 916-534-6266 PHULPS, MICHAEL Day : 916-293-3238 Night :	Mail To : FACILITY Permit No. : 0900301 No. of Serv. Con. : 44 Pop. Served : 95
WA0000412	FA0000513 CODY WATER ASSOCIATION HWY 50 AT STRAWBERRY 5224 EVEREST WAY SACRAMENTO, CA 95842	OW0000553 HART, KENNETH 307 BRENTWOOD 307 BRENTWOOD WALLACE, CA 95330	Day : Night : 916-659 GROSSMAN, REBECCA Day : Night :	Mail To : FACILITY Permit No. : 0901260 No. of Serv. Con. : 64 Pop. Served : 185
WA0000419	FA0000514 WHITEWATER VOYAGES 7325 HWY 49 P.O. BOX# 1139 LOTUS, CA 95651 800-488-7238	OW0000554 MC GINNIS , BILL 5225 SAN PABLO DAM RD 5225 SAN PABLO DAM ROAD EL SOBRANTE, CA 94820 530-622-7215	MC GINNIS, BILL Day : 800-488-7238 Night : 510-222-5984 COLE, WANDA Day : 800-488-7238 Night :	Mail To : FACILITY Permit No. : 0900423 No. of Serv. Con. : 1 Pop. Served : 100
WA0000424	FA0000520 PIONEER BIBLE CHURCH WATER SYSTEM 6051 NT AURUM RD P.O. BOX 39 SOMERSET, CA 95684 209-245-4059	OW0000558 PIONEER BIBLE CHURCH P.O. BOX 39 P.O. BOX 39 SOMERSET, CA 95684	NEUFELD, GLEN Day : 530-626-4989 Night : 530-622-2689 LANGFORD, ROB Day : 530-621-4100 Night : 530-626-4059	Mail To : FACILITY Permit No. : 0900104 No. of Serv. Con. : 1 Pop. Served : 250
WA0000498	FA0000541 GOLD N NUGGET CAMPGROUND HWY 193 & AMERICAN RIVER P.O. BOX 578 LOTUS, CA 95651 916-622-8572	OW0000565 THE NUGGET P.O. BOX 578 P.O. BOX 578 LOTUS, CA 95651	HOYT, JENNIFER & CURTIS Day : Night : 916-622-4742 CENTER, BILL Day : Night : 916-622-8572	Mail To : FACILITY Permit No. : 0900204 No. of Serv. Con. : 8 Pop. Served : 1000

WA0002172 FA0001226
CAMP CONCORD
HIGHWAY 89
1550 PARKSIDE DR. #311
CONCORD, CA 94519
510-541-1203

OWD000821
UNITED STATES OF AMERICA
100 FORNI RD
100 FORNI RD
PLACERVILLE, CA 95667

BRIAN WILLS
Day :530-541-1203
Night :

Day :530-541-1203
Night :

Mail To FACILITY
Permit No. 0900831
No. of Serv. Con. 12
Pop. Served 100

WA0002173 FA0001237
CAMP SACRAMENTO (HEALTH)
* HIGHWAY 50
4623 T STREET
SACRAMENTO, CA 95819
530-659-7202

OWD000821
UNITED STATES OF AMERICA
100 FORNI RD
100 FORNI RD
PLACERVILLE, CA 95667

GIL DOVALINA
Day :530-659-7202
Night :

Day :530-659-7202
Night :

Mail To FACILITY
Permit No. 0900516
No. of Serv. Con. 20
Pop. Served 250

WA0002190 FA0001254
ECHO LAKE CAMP
9120 ECHO LAKE Rd
2150 VIRGINIA STREET
BERKELEY, CA 94704
530-659-7506

OWD000821
UNITED STATES OF AMERICA
100 FORNI RD
100 FORNI RD
PLACERVILLE, CA 95667

DAN BENAVIDEZ
Day :530-659-7506
Night :

Day :530-659-7506
Night :

Mail To OWNER
Permit No. 0900550
No. of Serv. Con. 1
Pop. Served 150

WA0002204 FA0001326
SIERRA PINES BAPTIST CAMP
(HEALTH)
7169 SIERRA PINES Rd
P.O. BOX 70
TWIN BRIDGES, CA 95735
530-659-7111

OWD000821
UNITED STATES OF AMERICA
100 FORNI RD
100 FORNI RD
PLACERVILLE, CA 95667

RANDY HOGUE
Day :530-659-7111
Night :

Day :530-659-7111
Night :

Mail To FACILITY
Permit No. 0900551
No. of Serv. Con. 67
Pop. Served 25

WA0002055 FA0001163
ANGORA LAKES RESORT
ANGORA LAKES Rd
P.O. BOX 8007
SOUTH LAKE TAHOE, CA 96154
530-541-3752

OWD000831
HILDINGER, KARL JAMES ETAL
ANGORA LAKES ROAD
P.O. BOX 8007
SOUTH LAKE TAHOE, CA 96150
916-677-5503

HILDINGER, JIM
Day :530-541-2032
Night :

Day :530-541-2032
Night :

Mail To FACILITY
Permit No. 0900515
No. of Serv. Con. 11
Pop. Served 1000

WA0002003 FA0001109
AMERICAN LEGION TRACT ASSOC
3000 LAKE TAHOE BLVD
7767 GREENRIDGE WAY
FAIR OAKS, CA 95628
530-544-4248

OWD000835
AMERICAN LEGION TRA
3030 LAKE TAHOE BOULEVARD
7767 GREENRIDGE WAY
SOUTH LAKE TAHOE, CA 96150
916-544-4243

CHARLES STODDARD
Day :530-544-4248
Night :

Day :530-544-4248
Night :

Mail To OWNER
Permit No. 0900629
No. of Serv. Con. 29
Pop. Served 60

List of Water Systems by Owner ID

Record ID Pr / Sy #	Facility Information	Owner Information	Emergency Notification	General Information
WA0002086	FA0001192 GRABOWSKY ENTERPRISES 1103 EMERALD BAY RD 742 HARPER LANE DIAMOND, CA 94508 530-544-2067	OW0000839 BEL PAC INC/GRABOWSKY TR 1103 EMERALD BAY ROAD 742 HARPER LANE SOUTH LAKE TAHOE, CA 91650	MCCOURT, FRANK Day : 916-544-2067 Night : 800-745-6857 FREAS, SUZI Day : 916-544-2557 Night : 916-541-2219	Mail To : OWNER Permit No : 0900501 No. of Serv. Con. : 15 Pop. Served : 30
WA0002087	FA0001193 BEVERLY LODGE 3480 LAKE TAHOE BLVD 3480 LAKE TAHOE BOULEVARD SOUTH LAKE TAHOE, CA 96150 530-544-2557	OW0000839 SLATER, SUNG WAL 3480 LAKE TAHOE BOULEVARD 3480 LAKE TAHOE BOULEVARD SOUTH LAKE TAHOE, CA 96150 916-544-2557	SUNG WAL SLATER Day : 530-544-2557 Night : Day : 530-544-2557 Night :	Mail To : FACILITY Permit No. : 0900553 No. of Serv. Con. : 30 Pop. Served : 25
WA0002114	FA0001204 EDDYS LODGE 3535 LAKE TAHOE BLVD 3535 LAKE TAHOE BOULEVARD SOUTH LAKE TAHOE, CA 96154 530-544-3445	OW0000845 MORAR, AMTHABHAI 3535 LAKE TAHOE BOULEVARD 3535 LAKE TAHOE BOULEVARD SOUTH LAKE TAHOE, CA 91650 916-544-3445	AMTHABHAI MORAR Day : 530-541-3445 Night : Day : 530-541-3445 Night :	Mail To : FACILITY Permit No. : 0900523 No. of Serv. Con. : 35 Pop. Served : 100
WA0002115	FA0001205 DREAM INN 1200 SKI RUN BLVD 1200 SKI RUN BOULEVARD SOUTH LAKE TAHOE, CA 96150 530-544-6228	OW0000846 MORAR, KISHOR 1200 SKI RUN BOULEVARD 1200 SKI RUN BOULEVARD SOUTH LAKE TAHOE, CA 96150 916-544-6228	KISHOR MORAR Day : 530-544-6228 Night : Day : 530-544-6228 Night :	Mail To : FACILITY Permit No. : 0900592 No. of Serv. Con. : 23 Pop. Served : 40
WA0002131	FA0001209 BAYVIEW CAMPGROUND HIGHWAY 89 AT EMERALD BAY 675 GILMAN STREET PALO ALTO, CA 94301 530-544-0564	OW0000849 CALIFORNIA LAND MANAGEMENT 675 GILMAN STREET 675 GILMAN STREET PALO ALTO, CA 94301 916-544-0564	MIKE GUARINO Day : 530-573-2661 Night : Day : 530-573-2661 Night :	Mail To : OWNER Permit No. : 0900542 No. of Serv. Con. : 2 Pop. Served : 100
WA0003417	FA0001679 BRYANT GREENIR TRACTS UNIT HIGHWAY 50 103 LINDA LANE PLEASANT HILL, CA 94523 800-659-7910	OW0000850 UNITED STATES FOREST SERVICE 4260 EIGHT MILE ROAD 4260 EIGHT MILE ROAD CAMINO, CA 95709 916-644-2324	RICK GELINAS Day : 925-945-1410 Night : Day : 925-945-1410 Night :	Mail To : FACILITY Permit No. : 0900618 No. of Serv. Con. : 50 Pop. Served : 75

WA0002268 FA0001315
TAMARACK PARK HOMEOWNERS ASSOC
HIGHWAY 50
P.O. BOX 155
TWIN BRIDGES, CA 95735
530-659-9367

OWD000850
UNITED STATES FOREST SE
4260 EIGHT MILE ROAD
4260 EIGHT MILE ROAD
CAMINO, CA 95709
916-644-2324

BABAYCO, AL
Day : 530-659-7332
Night : 530-659-7038

YOST, WILBUR
Day : 530-659-7332
Night : 530-659-7038

Mail To	FACILITY
Permit No.	0900549
No. of Serv. Con.	43
Pop. Served	100

WA0004576 FA0001289
SIERRA TAHOE SKI RESORT
9921 SIERRA AT TAHOE RD
9921 SIERRA AT TAHOE ROAD
SEE #1980
TWIN BRIDGES, CA 95735
530-659-7535

OWD000855
UNITED STATES FOREST SERVICE
4260 EIGHT MILE ROAD
4260 EIGHT MILE ROAD
CAMINO, CA 95709
916-644-2324

BLANN, CASEY
Day : 530-659-7453
Night : 530-659-7453

BRAY, ANDREW
Day : 530-659-7453
Night : 530-573-0500

Mail To	FACILITY
Permit No.	0900564
No. of Serv. Con.	2
Pop. Served	500

WA0002134 FA0001247
BALDWIN BEACH
HIGHWAY 89
675 GILMAN STREET
PALO ALTO, CA 94301
650-688-5394

OWD000854
USFS LAKE TAHOE BMU
870 EMERALD BAY RD 1
870 EMERALD BAY ROAD, SUITE 1
SOUTH LAKE TAHOE, CA 96150
530-573-2600

GAYLE ELLIS
Day : 530-544-5004
Night :

Day : 530-544-5004
Night :

Mail To	FACILITY
Permit No.	0900554
No. of Serv. Con.	1
Pop. Served	200

WA0002166 FA0001252
EAGLE FALLS
HIGHWAY 89
870 EMERALD BAY ROAD #1
SOUTH LAKE TAHOE, CA 96150
530-573-2600

OWD000854
USFS LAKE TAHOE BMU
870 EMERALD BAY RD 1
870 EMERALD BAY ROAD, SUITE 1
SOUTH LAKE TAHOE, CA 96150
530-573-2600

MIKE GUARINO
Day : 530-573-2651
Night :

Day : 530-573-2651
Night :

Mail To	FACILITY
Permit No.	0900533
No. of Serv. Con.	1
Pop. Served	500

WA0002197 FA0001251
ECHO CHALET INC
2500 ECHO LAKES RD
2500 ECHO LAKES ROAD
ECHO LAKES, CA 96121
530-659-7207

OWD000854
USFS LAKE TAHOE BMU
870 EMERALD BAY RD 1
870 EMERALD BAY ROAD, SUITE 1
SOUTH LAKE TAHOE, CA 96150
530-573-2600

TOM FASHINELL
Day : 530-659-7207
Night :

Day : 530-659-7207
Night :

Mail To	FACILITY
Permit No.	0900552
No. of Serv. Con.	10
Pop. Served	40

WA0002225 FA0001276
NORTH ECHO SUMMIT MUTUAL WATER
HIGHWAY 50
5949 SOBRANTE AVENUE
EL SOBRANTE, CA 94803
530-659-7316

OWD000854
USFS LAKE TAHOE BMU
870 EMERALD BAY RD 1
870 EMERALD BAY ROAD, SUITE 1
SOUTH LAKE TAHOE, CA 96150
530-573-2600

ART HAAKE
Day : 707-824-8314
Night :

Day : 707-824-8314
Night :

Mail To	FACILITY
Permit No.	0900591
No. of Serv. Con.	42
Pop. Served	84

EL DORADO COUNTY

List of Water Systems by Owner ID

Record ID (F / P / S / I)	Facility Information	Owner Information	Emergency Notification	General Information
WA0002234	FA0001283 RAINBOW TRACT WATER ASSOC CHRISTMAN WILLEY 1110 DARKVIEW TERRACE AUBURN, CA 95603 530-889-2057	OW0000854 USFS LAKE TAHOE BMU 870 EMERALD BAY RD 1 870 EMERALD BAY ROAD, SUITE 1 SOUTH LAKE TAHOE, CA 96150 530-573-2600	WORDEN , GLENN Day : 530-589-2857 Night : Day : 530-589-2857 Night :	Mail To : FACILITY Permit No. : 0900556 No. of Serv. Con. : 21 Pop. Served : 75
WA0002250	FA0001295 SPRING CREEK TRACT ASSOCIATION HIGHWAY 89 2741 ELMWOOD AVENUE BERKELEY, CA 94705 530-541-2231	OW0000854 USFS LAKE TAHOE BMU 870 EMERALD BAY RD 1 870 EMERALD BAY ROAD, SUITE 1 SOUTH LAKE TAHOE, CA 96150 530-573-2600	TRISCHLER, GREGORY Day : 530-541-0910 Night : 510-895-7913 THORNTON, ELIZABETH Day : 530-541-0018 Night :	Mail To : FACILITY Permit No. : 0900506 No. of Serv. Con. : 140 Pop. Served : 280
WA0002293	FA0001325 ECHO PEAK WATER ASSOCIATION LOWER ECHO LAKE 21 DRAKE DRIVE SAN ANSELMO, CA 94960 530-823-0715	OW0000854 USFS LAKE TAHOE BMU 870 EMERALD BAY RD 1 870 EMERALD BAY ROAD, SUITE 1 SOUTH LAKE TAHOE, CA 96150 530-573-2600	MIKE ARTEMIEFF Day : 530-550-0715 Night : Day : 530-550-0715 Night :	Mail To : FACILITY Permit No. : 0900603 No. of Serv. Con. : 16 Pop. Served : 32
WA0002135	FA0001218 CASCADE MUTUAL WATER COMPANY HIGHWAY 50 P.O. BOX 10024 SOUTH LAKE TAHOE, CA 96158 530-541-2095	OW0000925 BRIGHT, HAROLD CASCADE LAKE SUBDIVISION P.O. BOX 7034 SOUTH LAKE TAHOE, CA 96150 916-541-6040	JOHN MEEK JR. Day : 209-478-1957 Night : Day : 209-478-1957 Night :	Mail To : OWNER Permit No. : 0900523 No. of Serv. Con. : 32 Pop. Served : 60
WA0002192	FA0001245 CAMP SHILEY MT TALLAC ORGANZ TRACT 2 71 TREVARNO ROAD ATTN: MIKE NICHOLSON LIVERMORE, CA 94550 530-541-5305	OW0000869 LIVERMORE AREA REC/PARKS DIST #2 MT. TALLAC ORG TRACT 71 TREVARNO ROAD SOUTH LAKE TAHOE, CA 96150 510-373-5700	PAT SOTELO Day : 530-541-6985 Night : 530-541-0995 CHRISTINE VAN HATTEM Day : 530-541-6985 Night : 530-541-6985	Mail To : OWNER Permit No. : 0900505 No. of Serv. Con. : 28 Pop. Served : 200
WA0002193	FA0001249 CATHEDRAL WATER ASSOCIATION FALLEN LEAF LAKE C/O 385 GRAND AVE., SUITE 200 OAKLAND, CA 946104616 530-542-4990	OW0000869 CATHEDRAL WATER ASSOCIATION FALLEN LEAF LAKE 19432 GLENDALE AVENUE SOUTH LAKE TAHOE, CA 96150 916-542-3135	SPANIER , ALAN Day : 530-542-4990 Night : 530-544-5699 GREEN , KEN Day : 530-542-4990 Night : 530-949-6333	Mail To : OWNER Permit No. : 0900511 No. of Serv. Con. : 22 Pop. Served : 35

WA0002210 FA0001263
LAKE HAVEN MOTEL
900 POPLAR
P.O. BOX 1097
SOUTH LAKE TAHOE, CA 96157
530-544-2416

OWN0000879
WANG, SHU HUA
900 POPLAR
P.O. BOX 1097
SOUTH LAKE TAHOE, CA 96150
916-541-2515

JOHN WANG
Day : 530-544-2416
Night :

Day : 530-541-2416
Night :

Mail To OWNER
Permit No. 0900547
No. of Serv. Con. 26
Pop. Served 50

WA0002214 FA0001267
MIDWAY MOTEL ANNEX
1070 LAKE TAHOE BLVD
P.O. BOX 13965
SOUTH LAKE TAHOE, CA 96151
530-544-4397

OWN0000593
GOVAN, K AND PATEL, V
1035 MIDWAY ROAD
1359 DENTON AVENUE
SOUTH LAKE TAHOE, CA 96150
916-544-4397

SAM PATEL
Day : 530-544-4397
Night : 530-544-4397

ROY PATEL
Day : 530-544-4397
Night : 530-544-4397

Mail To OWNER
Permit No. 0900579
No. of Serv. Con. 16
Pop. Served 32

WA0002225 FA0001275
MT RALSTON PROPERTIES ASSOC INC
HWY 50
HIGHWAY 50
10395 MEALCO OAKS COURT
ELK GROVE, CA 95624
530-265-4821

OWN0000595
MT RALSTON PROPERTIES ASSOC INC
HIGHWAY 50
10395 MEALCO OAKS COURT
TWIN BRIDGES, CA 95735
916-265-4821

MILLER, MATTHEW
Day : 530 659-0125
Night :

Day : 530-659-0125
Night :

Mail To OWNER
Permit No. 0900543
No. of Serv. Con. 90
Pop. Served 180

WA0002227 FA0001277
NATIONAL 9
3901 PIONEER TRAIL
3901 PIONEER TRAIL
SOUTH LAKE TAHOE, CA 96150
530-541-2119

OWN0000087
PATEL, JAGDISH & PURVIMA
3901 PIONEER TRAIL
2256 W TEXAS STREET
SOUTH LAKE TAHOE, CA 96150
916-541-2119

NARESH PATEL
Day : 530-541-2119
Night :

Day : 530-541-2119
Night :

Mail To FACILITY
Permit No. 0900581
No. of Serv. Con. 22
Pop. Served 60

WA0002230 FA0001279
F.L.M.UTUAL
400 FALLEN LEAF RD
1100 LA QUESTA
PORTOLA VALLEY, CA 94028
650-541-1222

OWN0000989
FALLEN LEAF LAKE ASSOCIATES
400 FALLEN LEAF ROAD
P.O. BOX 2475
SOUTH LAKE TAHOE, CA 96150
916-541-1222

RICH, JOHN B.
Day : 530-541-1244
Night :

Day : 530-541-1244
Night :

Mail To OWNER
Permit No. 0900500
No. of Serv. Con. 40
Pop. Served 100

WA0002231 FA0001280
FALLEN LEAF MUTUAL WATER CO
FALLEN LEAF LAKE
50 N BAILEY STREET
FALLON, NV 89406
530-541-3106

OWN0000509
FALLEN LEAF MUTUAL WATER CO
FALLEN LEAF LAKE
50 N BAILEY STREET
SOUTH LAKE TAHOE, CA 96150
702-423-4613

ROBERT FORICEK
Day : 530-583-3717
Night : 530-541-3106

WILLIS SWAN
Day : 530-583-3717
Night : 775-423-4613

Mail To OWNER
Permit No. 0900641
No. of Serv. Con. 120
Pop. Served 100

Record ID / Facility ID	Facility Information	Owner Information	Emergency Notification	General Information
WA0002253	FA0001282 ROYAL INN 3500 LAKE TAHOE BLVD 3500 LAKE TAHOE BLVD ROYAL INN SOUTH LAKE TAHOE, CA 96150 530-544-1177	OW0003890 PATEL, PATEL, DESAI, PATEL 3030 LAKE TAHOE BOULEVARD P.O. BOX 7511 SOUTH LAKE TAHOE, CA 96150 916-541-1177	KULDEEP S. MAND Day : 530-544-3952 Night : 530-541-2940 SAM PATEL Day : 530-544-3953 Night :	Mail To : FACILITY Permit No. : 0900506 No. of Serv. Con. : 30 Pop. Served : 95
WA0002238	FA0001285 SCHMIDT CENTER 3909 LAKE TAHOE BLVD 8334 LA RIVIERA DRIVE SACRAMENTO, CA 95823 530-541-6838	OW0000052 ROMINGER, ROSE MARIE TRUSTEE 25682572 LAKE TAHOE BOULEVARD 8334 LA RIVIERA DRIVE SOUTH LAKE TAHOE, CA 96150 916-383-7186	ROSE MARIE ROMINGER Day : 916-383-7186 Night : 530-541-6838 DAVID KURTZMAN Day : 916-383-7186 Night :	Mail To : OWNER Permit No. : 0900526 No. of Serv. Con. : 6 Pop. Served : 25
WA0002239	FA0001287 SIERRA NEVADA BUILDING 4109 LAKE TAHOE BLVD P.O. BOX 29 SOUTH LAKE TAHOE, CA 96157 530-544-5211	OW0000054 MCCARTHY, ED 4109 LAKE TAHOE BOULEVARD P.O. BOX 29 SOUTH LAKE TAHOE, CA 96150 916-544-4211	EDWARD MCCARTHY Day : 530-544-5211 Night : Day : 530-541-5211 Night :	Mail To : OWNER Permit No. : 0900508 No. of Serv. Con. : 6 Pop. Served : 150
WA0002242	FA0001290 SKI RUN MANAGEMENT COMPANY SKI RUN BLVD 3150 SACRAMENTO AVENUE SOUTH LAKE TAHOE, CA 96150 530-543-1195	OW0000838 D'LOUHY, TOM & KAREN SKI RUN BOULEVARD 3150 SACRAMENTO AVENUE SOUTH LAKE TAHOE, CA 96150 916-542-1195	D'LOUHY, TOM Day : 530-542-1195 Night : Day : 530-542-1195 Night :	Mail To : OWNER Permit No. : 0900553 No. of Serv. Con. : 10 Pop. Served : 35
WA0002253	FA0001299 STANFORD SIERRA CAMP FALLEN LEAF RD P.O. BOX 10010 SOUTH LAKE TAHOE, CA 96158 530-541-1244	OW0000901 STANFORD ALUMNI ASSOCIATION FALLEN LEAF ROAD P.O. BOX 10010 SOUTH LAKE TAHOE, CA 96150 530-541-1244	BUNNELL, DAVE Day : 530-541-1244 Night : 530-541-3795 BAKER, ROD Day : 530-541-1244 Night : 530-544-0502	Mail To : FACILITY Permit No. : 0900507 No. of Serv. Con. : 50 Pop. Served : 100
WA0002256	FA0001302 TAHOE CHALET INN ANNEX 1908 MCKINNEY AVE 3360 LAKE TAHOE BLVD SOUTH LAKE TAHOE, CA 95150 530-544-3311	OW0000903 MAGNUM INC 3860 LAKE TAHOE BLVD P.O. BOX 183 SOUTH LAKE TAHOE, CA 9****0 916-544-3311	SWEET, GARY Day : 530-544-3311 Night : Day : 530-544-3311 Night :	Mail To : FACILITY Permit No. : 0900932 No. of Serv. Con. : 26 Pop. Served : 75

WA0004578 FA0001310
TAHOE VALLEY MOTEL
2241 LAKE TAHOE Blvd
2241 LAKE TAHOE BLVD
SOUTH LAKE TAHOE, CA 96150
530-541-0353

OWN0000910
WRIGHT, EDWARD
2241 LAKE TAHOE BOULEVARD
P.O. BOX 7742
SOUTH LAKE TAHOE, CA 96158
916-541-0353

ED WRIGHT
Day : 530-541-0353
Night :

Day : 530-541-0353
Night :

Mail To OWNER
Permit No 0900568
No. of Serv Con 21
Pop. Served 42

WA0002275 FA0001321
VALUE INN
2559 LAKE TAHOE BLVD
2559 LAKE TAHOE BLVD
SOUTH LAKE TAHOE, CA 96150
530-544-3559

OWN0000917
GERKEN, JOHN & THOMAS
2559 LAKE TAHOE BOULEVARD
P.O. BOX 13554
SOUTH LAKE TAHOE, CA 96150
916-544-3559

MAND, MIKE
Day : 530-544-3059
Night : 702-702-7300

SINGH, KASMIR
Day : 530-544-3059
Night : 702-702-7300

Mail To FACILITY
Permit No 0900539
No. of Serv Con 62
Pop. Served 120

WA0002285 FA0001327
PHILLIPS TRACT WATER SYSTEM
HIGHWAY 50
11244 COLOMA ROAD #115
GOLD RIVER, CA 956704459

OWN0000921
J. STEPHEN SCHOFF
8 STEPHEN COURT
11244 COLOMA ROAD #115
SACRAMENTO, CA 95829
916-802-5554

DANIEL E. ROSS
Day : 916-635-1424
Night : 800-374-9779

JOHN COOK
Day : 916-635-1424
Night : 916-922-1492

Mail To FACILITY
Permit No 0900538
No. of Serv Con 12
Pop. Served 24

WA0002288 FA0001330
HEATHER LAKE ROAD TRACT
HEATHER LAKE RD
1213 HEATHER LAKE ROAD
SOUTH LAKE TAHOE, CA 96150
530-541-2565

OWN0000923
HEATHER LAKE HOMEOWNERS
HEATHER LAKE RD
1213 HEATHER LAKE ROAD
SOUTH LAKE TAHOE, CA 96150
916-541-2565

JERRY HOWARD
Day : 530-541-0162
Night :

Day : 530-541-0162
Night :

Mail To FACILITY
Permit No 0900562
No. of Serv. Con. 13
Pop. Served 25

WA0000383 FA0000409
NASHVILLE CANTINA & GRILL
7909 HWY 49
7909 HWY 49
EL DORADO, CA 959294930
530-620-5555

OWN0000384
GALINDO, MARIE
7909 HWY 49
7909 HWY 49
EL DORADO, CA 959294930

GALINDO, MARIE
Day : 916-621-0865
Night : 714-573-0900

DRYSDALE, JOYCE
Day : 916-621-0865
Night :

Mail To FACILITY
Permit No 0900209
No. of Serv. Con. 2
Pop. Served 50

WA0002035 FA0001175
ALDER INN
1072 SKI RUN Blvd
1072 SKI RUN BOULEVARD
SOUTH LAKE TAHOE, CA 96150
530-544-4485

OWN0001003
STEFANI, JUNE, KELLO, & CIRMA
1072 SKI RUN BLVD
P.O. BOX 6110

JUNE LUCAS STEFANI
Day : 530-544-4485
Night :

Day : 530-544-4485
Night :

Mail To OWNER
Permit No 0900551
No. of Serv Con 24
Pop. Served 25

List of Water Systems by Owner ID

Record ID / Type / Status	Facility Information	Owner Information	Emergency Notification	General Information
WA0002212	FA0001295 MARK TWAIN MOTEL 947 PARK AVE 947 PARK AVENUE SOUTH LAKE TAHOE, CA 96150 530-544-5733	OW0001020 MARK TWAIN MOTEL 947 PARK AVE	VINOD PATEL Day : 530-544-5733 Night : 530-544-5733 NALU PATEL Day : 530-544-5733 Night :	Mail To : FACILITY Permit No. : 0900548 No. of Serv. Con : 21 Pop. Served : 35
WA0004163	FA0001582 PINEWOOD LODGE 3819 LAKE TAHOE BLVD 3819 LAKE TAHOE BLVD SOUTH LAKE TAHOE, CA 96150 530-544-3349	OW0001038 DAVIES, RAYMOND JEFFERSON P.O. BOX 214648	PRADIP PATEL Day : 530-544-3478 Night : Day : 530-544-3478 Night :	Mail To : FACILITY Permit No. : 0900533 No. of Serv. Con : 21 Pop. Served : 70
WA0002285	FA0001301 TAHOE CHALET INN 3860 LAKE TAHOE BLVD 3860 LAKE TAHOE BLVD SOUTH LAKE TAHOE, CA 96150 530-544-3311	OW0001090 GONZALES, CHARLES R 3801 MISSION ST	SWEET, GARY Day : 530-544-3311 Night : Day : 530-544-3311 Night :	Mail To : FACILITY Permit No. : 0900535 No. of Serv. Con : 48 Pop. Served : 109
WA0002276	FA0001322 VILLA TAHOE CONDOMINIUMS 3604 TERRY LN 3616 PIONEER TRAIL SOUTH LAKE TAHOE, CA 96150 530-541-2555	OW0001167 COLE REED ASSOCIATES 3648 UNION AVENUE	WILMOT, WADE Day : 530-543-0563 Night : Day : 530-543-0563 Night :	Mail To : OWNER Permit No. : 0900524 No. of Serv. Con : 22 Pop. Served : 44
WA0002237	FA0001286 ALPENROSE INN 4074 PINE BLVD 4074 PINE BOULEVARD SOUTH LAKE TAHOE, CA 96150 530-544-2345	OW0001300 CONRAD, HANNELORE 1037 NORWICH COURT	CONRAD, HANNELORE Day : 530-544-2345 Night : Day : 530-544-2345 Night :	Mail To : FACILITY Permit No. : 0900582 No. of Serv. Con : 19 Pop. Served : 40
WA0002066	FA0001196 CRYSTAL RANGE MOTEL 941 EMERALD BAY RD P.O. BOX 7302 SOUTH LAKE TAHOE, CA 96158 530-541-1068	OW0001295 MAN NISAR P.O. BOX 7302	NISAR MAN Day : 530-541-1068 Night : Day : 530-541-1068 Night :	Mail To : FACILITY Permit No. : 0900519 No. of Serv. Con : 21 Pop. Served : 38

WA0002260 FA0001305
ALPINE INN & SPA
920 STATELINE AVE
P.O. BOX 4129
SOUTH LAKE TAHOE, CA 96157
530-544-4959

OW0002022
HALWANI , JOHN
920 STATELINE AVE
P. O. BOX 4129
SOUTH LAKE TAHOE, CA 96150
530-544-1630

HALWANI , JOHN
Day : 530-544-3340
Night : 530-544-3340

JONES , JIM
Day : 530-544-1040
Night :

Mail To :
Permit No. 0900576
No. of Serv. Con. 38
Pop. Served 25

WA0002266 FA0001312
SUMMIT PINES APARTMENTS
1200 MELBA ST
P.O. BOX 16048
SOUTH LAKE TAHOE, CA 96151
530-544-3331

OW0002116
DUNN , ROLAND
1200 MELBA
P. O. BOX 16048
SOUTH LAKE TAHOE, CA 96150
530-546-7664

DUNN , ROLAND
Day : 530-544-3331
Night :

Day : 530-544-4001
Night :

Mail To :
Permit No. 0900621
No. of Serv. Con. 15
Pop. Served 25

WA0002113 FA0001203
EMERALD PINES MOTEL
631 EMERALD BAY RD
P.O. BOX 9110
SOUTH LAKE TAHOE, CA 96150
530-544-7734

OW0002145
BROCHES , ESTA
631 EMERALD BAY RD
P.O. BOX 9110
SOUTH LAKE TAHOE, CA 96150
530-546-0808

ZAMORA , EFRAIN
Day : 530-545-0225
Night : 530-546-0982

GLINSKY , MICHAEL
Day : 530-545-0225
Night : 530-544-6100

Mail To :
Permit No. 0900557
No. of Serv. Con. 22
Pop. Served 25

WA0002268 FA0001314
CAMPUS CRUSADE FOR CHRIST
631 EMERALD BAY RD
100 LAKE HART DRIVE
DEPT. 0300-2100 U.S.A.
ORLANDO, FL 32832

OW0002162
COMMON DEVELOPMENT
COMPANY
4905 CHANCE AVE
321 NORTH FIGUEROA STREET,
SUITE 1300
ORLANDO, FL 323010939

CUMMINS, JUDY
Day : 407-854-1210
Night :

Day : 407-859-1210
Night :

Mail To :
Permit No. 0900590
No. of Serv. Con. 31
Pop. Served 25

WA0002244 FA0001292
SKY LAKE LODGE
3544 LAKE TAHOE BLVD
P.O. BOX 33
ZEPHYR COVE, NV 89448
530-544-0770

OW0002277
RINZI, LEO
3544 LAKE TAHOE BLVD
P.O. BOX 33
SO LAKE TAHOE, CA 96150
775-901-0895

BETTIS, KEVIN
Day : 530-544-0770
Night : 775-901-0895

FINZI, LEO
Day : 530-545-0770
Night : 775-901-0895

Mail To :
Permit No. 0900585
No. of Serv. Con. 22
Pop. Served 25

WA0002265 FA0001101
BROCHES LODGE
3892 LAKE TAHOE BLVD
3892 LAKE TAHOE BOULEVARD
SOUTH LAKE TAHOE, CA 96150
530-544-3842

OW0002303
PATEL , PRADIP & GANPAT
3892 LAKE TAHOE BLVD
3892 LAKE TAHOE BLVD.
SOUTH LAKE TAHOE, CA 96150
530-544-3842

PATEL , PRADIP
Day : 530-544-3842
Night :

Day : 530-544-3842
Night :

Mail To :
Permit No. 0900554
No. of Serv. Con. 39
Pop. Served 30

Record ID / Facility Information	Owner Information	Emergency Notification	General Information
WA0002213 FA0001286 MATTERHORN MOTEL 2147 LAKE TAHOE BLVD 2147 LAKE TAHOE BOULEVARD SOUTH LAKE TAHOE, CA 96150 530-541-0567	OW0002351 SHAIKH, ZAHEDA MUKHTAR 2307 LAKE TAHOE BLVD 2307 LAKE TAHOE BLVD SO LAKE TAHOE, CA 96150 530-541-0567	ZAHEDA SHAIKH Day : 530-541-0567 Night : Day : 530-541-0567 Night :	Mail To : FACILITY Permit No. : 0900555 No. of Serv. Con. : 25 Pop. Served : 50
WA0000405 FA0000335 SILVERFORK STORE WATER SYSTEM 13320 HWY 50 P.O. BOX 59 KYBURZ, CA 95720 916-293-3172	OW0002459 CHOE, SABRINA AND HOSAK 13200 US HWY 50 P.O. BOX 59 KYBURZ, CA 95720 530-293-3238	CHOE, HOSAK/SABRINA Day : 530-293-3172 Night : 530-644-5047 Day : 530-293-3172 Night :	Mail To : FACILITY Permit No. : 0900103 No. of Serv. Con. : 3 Pop. Served : 90

Total Number of Records for This Program/Element : 116

4634 NON-COMMUNITY WATER SYSTEM (NON-TRANSIE

WA0002202 FA0001256 HEAVENLY VALLEY INC MEADOWOOD AVE P.O. BOX 2180 STATELINE, NV 89449 530-541-1330	OW0000070 HEAVENLY VALLEY, INC. 3860 SADDLE RD P.O. BOX 2180 SO LAKE TAHOE, CA 96150 775-586-7311	JERRY HOWARD Day : 530-542-6184 Night : Day : 530-543-0194 Night :	Mail To : FACILITY Permit No. : 0900560 No. of Serv. Con. : 2 Pop. Served : 1000
V 002020 FA0001051 LAKE TAHOE USD-AL TAHOE (WATER SYS) 1021 AL TAHOE BLVD 1021 LAKE TAHOE BLVD SOUTH LAKE TAHOE, CA 96150 530-541-2850	OW0000170 LAKE TAHOE UNIFIED SCHOOL DIST P.O. BOX 14426	JIM DEMEOLA Day : 530-543-2219 Night : Day : 530-543-2219 Night :	Mail To : OWNER Permit No. : 0900549 No. of Serv. Con. : 4 Pop. Served : 1300
WA0002267 FA0001313 TAHOE VALLEY ELEMENTARY SCHOOL 911 TAHOE KEYS DR 1021 AL TAHOE BLVD SOUTH LAKE TAHOE, CA 96150-6455 530-541-0239	OW0000170 LAKE TAHOE UNIFIED SCHOOL DIST P.O. BOX 14426	DEMEOLA, JIM Day : 530-543-2219 Night : Day : 530-543-2219 Night :	Mail To : FACILITY Permit No. : 0900548 No. of Serv. Con. : 1 Pop. Served : 700
WA0000404 FA0000356 PIONEER SCHOOL (HEALTH) 6500 MT AUBURN RD P O BOX 8 SOMERSET, CA 95684	OW0000439 PIONEER UNION SCHOO TRUST 337 PLACERVILLE DR P. O. BOX 8 PLACERVILLE, CA 95667	KIESTER, JEFF Day : 530-620-7210 Night : 530-620-7210	Mail To : FACILITY Permit No. : 0900111 No. of Serv. Con. : 5 Pop. Served : 900

WA0000366	FA0000594	OWN0000541	FRIEND, RALPH	Mail To	FACILITY
	LATROBE ELEMENTARY SCHOOL	LATROBE SCHOOL DISTRICT	Day : 530-677-0260	Permit No.	0900418
	7500 SOUTH SHINGLE RD	337 PLACERVILLE DR.	Night : 530-933-0225	No. of Serv. Con.	1
	7500 SO SHINGLE RD	337 PLACERVILLE DR.		Pop. Served	75
	SHINGLE SPRINGS, CA 95682	PLACERVILLE, CA 95667	CARROLL, DENNIS		
	530-677-2093		Day : 530-677-0260		
			Night :		
WA0000454	FA0000639	OWN0000541	FRIEND, RALPH	Mail To	FACILITY
	MILLERS HILL SCHOOL	LATROBE SCHOOL DISTRICT	Day : 530-677-0260	Permit No.	0900210
	7500 SOUTH SHINGLE RD	337 PLACERVILLE DR.	Night : 530-933-0225	No. of Serv. Con.	1
	7500 SO SHINGLE RD	337 PLACERVILLE DR.		Pop. Served	165
	SHINGLE SPRINGS, CA 95682	PLACERVILLE, CA 95667	CARROLL, DENNIS		
	916-677-2685		Day : 530-677-0260		
			Night :		
WA0000410	FA0000611	OWN0000552	KARNITZ, PHIL	Mail To	FACILITY
	SILVERFORK SCHOOL (HEALTH)	SILVER FORK SCHOOL DISTRICT	Day : 530-644-6118	Permit No.	0900304
	1229 PO SAN LOMA AVE	337 PLACERVILLE DR.	Night : 530-293-3163	No. of Serv. Con.	1
	6161 A PINE STREET	337 PLACERVILLE DR.		Pop. Served	40
	POLLOCK PINES, CA 95726	PLACERVILLE, CA 95667	COVER, KAYE		
	530-293-3163		Day : 530-644-6118		
			Night : 530-647-9051		
WA0004579	FA0003062	OWN0000054	GENE F. SMITH	Mail To	OWNER
	SOUTH SHORE RECREATION AREA	USFS LAKE TAHOE BMU	Day : 530-573-2718	Permit No.	0900549
	HWY 89	870 EMERALD BAY RD 1	Night :	No. of Serv. Con.	123
	870 EMERALD BAY ROAD	870 EMERALD BAY ROAD, SUITE 1		Pop. Served	3300
	SOUTH LAKE TAHOE, CA 96150	SOUTH LAKE TAHOE, CA 96150			
	530-573-2719	530-573-2600	Day : 530-573-2719		
			Night :		
WA0000544	FA0001654	OWN0001856	CAMPBELL, KRISTA	Mail To	FACILITY
	DEWEESE MONTESSORI SCHOOL	CAMPBELL, KRISTA	Day : 530-676-4110	Permit No.	0900408
	3400 GREEN VALLEY RD	3400 GREEN VALLEY RD	Night : 530-676-3383	No. of Serv. Con.	1
	3425 GREEN VALLEY ROAD	3425 GREEN VALLEY ROAD		Pop. Served	50
	RESCUE, CA 95672	RESCUE, CA 95672			
	530-676-4110	530-676-4110	DEWEESE, JIM		
			Day : 530-676-4110		
			Night : 916-716-5463		
WA0002254	FA0001300	OWN0002248	EYMANN, ERIC	Mail To	FACILITY
	STATION HOUSE INN	WILLFORD FAMILY PARTNERSHIP	Day : 530-542-1101	Permit No.	0900529
	901 PARK AVE	901 PARK AVE.	Night :	No. of Serv. Con.	100
	901 PARK AVENUE	901 PARK AVE.		Pop. Served	30
	SOUTH LAKE TAHOE, CA 96150	SO LAKE TAHOE, CA 96150			
	530-542-1101		Day : 530-542-1101		
			Night :		

Total Number of Records for This Program/Element : 12.

4635 COMM. WATER SYS. (15-24 CONNECTIONS)

Record ID / Facility Information	Owner Information	Emergency Notification	General Information
WA0000373 FA0000590 CANDLELIGHT VILLAGE WATER SYST 7950 MT AUBURN RD 7950 MT AUBURN RD SOMERSET, CA 95684	OW0000587 CANDLELIGHTER, THE 7950 MT AUBURN RD 7950 MT AUBURN RD SOMERSET, CA 95684	EMIGH, JON Day : 530-620-6042 Night : 209-274-4911 EMIGH, TOM Day : 530-621-5342 Night :	Mail To FACILITY Permit No 0900112 No. of Serv. Con 19 Pop. Served 38
WA0002034 FA0031180 ROCKWATER APTS 787 EMERALD BAY RD 139 BACON COURT LAFAYETTE, CA 94549 530-543-3387	OW0002568 BITZER , MARK 787 EMERALD BAY RD 139 BACON COURT SO LAKE TAHOE, CA 95150 925-256-8770	MARK BITZER Day : 925-256-8770 Night : Day : 925-256-8770 Night :	Mail To FACILITY Permit No 0900056 No. of Serv. Con 24 Pop. Served 50

Total Number of Records for This Program/Element : 2.0

4644 STATE SMALL WATER SYSTEM (BASE CHARGE)

Record ID / Facility Information	Owner Information	Emergency Notification	General Information
WA0000577 FA0000213 DEER CROSSING CAMP LOON LAKE 500 PROVIDENCE CT CURTIS(IND), CA 95614 916-425-0451	OW0000161 U.S. FOREST SERVICE 100 FORNI RD 100 FORNI RD PLACERVILLE, CA 95667 530-622-5061	WILTENS, OWEN Day : 408-996-9448 Night : Day : 408-996-9448 Night :	Mail To FACILITY Permit No 0900313 No. of Serv. Con 1 Pop. Served 40
V 01585 FA0000948 PYRAMID TRACT WEST WATER SYS. PYRAMID CREEK TRACT 3162 STARDUST STREET ROCKLIN, CA 95677 916-783-8223	OW0000161 U.S. FOREST SERVICE 100 FORNI RD 100 FORNI RD. PLACERVILLE, CA 95667 530-622-5061	NUNLEY, GIL Day : 916-783-8223 Night : 916-622-6091 WACKFORD, BILL Day : 916-783-8223 Night :	Mail To FACILITY Permit No. 0900252 No. of Serv. Con. 10 Pop. Served 20
WA0001609 FA0000942 ROCKY CREEK WATER SYSTEM #2 STRAWBERRY TRACT P.U.D. 12-19 7213 POCKET RD GVMT/MENTO, CA 95831	OW0000161 U.S. FOREST SERVICE 100 FORNI RD 100 FORNI RD. PLACERVILLE, CA 95667 530-622-5061	FIELLEN, RICHARD Day : 916-455-7063 Night : 916-393-7853 SPITTLER, DOUG Day : 916-455-7063 Night : 916-652-7472	Mail To FACILITY Permit No. 0900119 No. of Serv. Con. 16 Pop. Served 24
WA0001611 FA0000943 STRAWBERRY TRACT WATER SYSTEM 1-6 STRAWBERRY TRACT 400 CAPITOL MALL, 22ND FLOOR	OW0000161 U.S. FOREST SERVICE 100 FORNI RD 100 FORNI RD. PLACERVILLE, CA 95667	HOFFELT, RICHARD Day : 916-441-2430 Night : 916-491-3533	Mail To FACILITY Permit No. 0900117 No. of Serv. Con. 9 Pop. Served 24

WA0002036 FA0001176
ALTA MIRA BUILDING
3330 LAKE TAHOE BLVD
3351 LAKE TAHOE BLVD #2
SOUTH LAKE TAHOE, CA 96150
530-541-3339

OWN0000830
ANDERSON & CONLON
3234 LAKE TAHOE BOULEVARD
P.O. BOX 434
SOUTH LAKE TAHOE, CA 96150
916-544-0021

WILLIAM CONLON
Day : 530-541-5229
Night :

Day : 530-541-5229
Night :

Mail To OWNER
Permit No 0900527
No. of Serv. Con 6
Pop. Served 20

WA0002060 FA0001184
ASPEN APARTMENTS
3780 ASPEN AVE
P.O. BOX 14003
SOUTH LAKE TAHOE, CA 96151
530-542-3685

OWN0000832
KUNS, RICHARD
3780 ASPEN AVENUE
P.O. BOX 14003
SOUTH LAKE TAHOE, CA 96150
916-542-3688

RICHARD KUNS
Day : 530-542-3688
Night :

Day : 530-542-3688
Night :

Mail To OWNER
Permit No 0900512
No. of Serv. Con 8
Pop. Served 12

WA0002119 FA0001206
DELLA DELLA COTTAGES
3901 ASPEN AVE
17850 HIGH ROAD
SONOMA, CA 95476
530-541-2660

OWN0000947
DELLA DELLA LAWRENCE & B
3901 ASPEN AVENUE
770 FILBERT, SUITE 5
SOUTH LAKE TAHOE, CA 96150
415-986-0567

BARBARA DELLA DELLA
Day : 530-541-2660
Night :

Day : 530-541-2660
Night :

Mail To OWNER
Permit No 0900559
No. of Serv. Con 7
Pop. Served

WA0002123 FA0001211
ASPEN CREEK WATER ASSOCIATION
ASPEN CREEK TRACT
142 NW LAUREL STREET
DUNDEE, OR 97115
530-659-7580

OWN0000950
UNITED STATES FOREST SERVICE
4300 EIGHT MILE ROAD
4300 EIGHT MILE ROAD
CAMINO, CA 95709
916-644-2324

TIM COLLINS
Day : 503-535-1503
Night :

SALLY TURNER
Day : 503-538-1005
Night : 510-672-2117

Mail To FACILITY
Permit No 0900516
No. of Serv. Con 12
Pop. Served 12

WA0002563 FA0001414
47 MILESTONE/ASPEN CREEK TRACT
HIGHWAY 50
P.O. BOX 485
ROVERDOT TERRACE, CA 95416
916-434-7180

OWN0000950
UNITED STATES FOREST SERVICE
4300 EIGHT MILE ROAD
4300 EIGHT MILE ROAD
CAMINO, CA 95709
916-644-2324

INSKEEP, CHUCK
Day : 879-465-3349
Night : 707-938-2773

FERRARIO, SONDRA
Day : 916-485-3349
Night :

Mail To FACILITY
Permit No 0900516
No. of Serv. Con 12
Pop. Served 24

WA0002271 FA0001317
LOWER EMERALD BAY TRACT
HIGHWAY 89
P.O. BOX 356
TAHOMA, CA 96142
530-541-2080

OWN0000954
USFS LAKE TAHOE BMU
870 EMERALD BAY RD 1
870 EMERALD BAY ROAD, SUITE 1
SOUTH LAKE TAHOE, CA 96150
530-573-2620

L. CHARLES KELLERMYER
Day : 530-583-3905
Night :

Day : 530-500-0000
Night :

Mail To FACILITY
Permit No 0900585
No. of Serv. Con 9
Pop. Served 24

EL DORADO COUNTY

List of Water Systems by Owner ID

Record ID / Status	Facility Information	Owner Information	Emergency Notification	General Information
WA0002243	FA0001294 SOUTH ECHO SUMMIT TRACT OWC SOUTH ECHO SUMMIT TRACT 720 MORRIS WAY SACRAMENTO, CA 95864 530-434-5600	OW0000654 USFS LAKE TAHOE BMU 870 EMERALD BAY RD 1 870 EMERALD BAY ROAD, SUITE 1 SOUTH LAKE TAHOE, CA 96150 530-573-2600	ANDERSON , JOHN Day : 916-712-0653 Night : 916-455-5605 HICKS , LOUIE Day : 916-712-0653 Night : 916-455-5605	Mail To : FACILITY Permit No. : 0900653 No. of Serv. Con. : 12 Pop. Served : 14
WA0002282	FA0001298 STANDFORD HILL TRACT FALLEN LEAF RD 409 LA SALLE AVE. VENTURA, CA 93003 530-543-1641	OW0000654 USFS LAKE TAHOE BMU 870 EMERALD BAY RD 1 870 EMERALD BAY ROAD, SUITE 1 SOUTH LAKE TAHOE, CA 96150 530-573-2600	FISH, JOHN Day : 805-650-6450 Night : 408-354-7806 ALLAN MORTON Day : 805-650-6450 Night :	Mail To : FACILITY Permit No. : 0900615 No. of Serv. Con. : 10 Pop. Served : 20
WA0002201	FA0001257 HAROLD'S MOTEL 2749 YOUNG ST P.O. BOX 13207 SOUTH LAKE TAHOE, CA 96151 530-544-2151	OW0000975 CARSON TRUST 2748 YOUNG STREET P.O. BOX 13207 SOUTH LAKE TAHOE, CA 96150 916-542-2100	DONALD FORD Day : 530-543-1608 Night : 530-543-1608 ELIZABETH FORD Day : 530-543-1608 Night :	Mail To : FACILITY Permit No. : 0900644 No. of Serv. Con. : 8 Pop. Served : 12
WA0002205	FA0001259 HUCKLEBERRY RIDGE MUTUAL WATER HIGHWAY 89 550 VIA MIRADEL 916-293-3131	OW0000975 HUCKLEBERRY RIDGE MUTUAL WATER HIGHWAY 89 1 WINDHALL CANYON DRIVE TWIN BRIDGES, CA 95735 916-293-3131	TED ELLSWORTH Day : 530-293-3131 Night : 916-822-3858 ROBERTA RILEY Day : 530-293-3131 Night :	Mail To : FACILITY Permit No. : 0900837 No. of Serv. Con. : 10 Pop. Served : 14
WA0002245	FA0001293 SONORA APARTMENTS 1081 SONORA AVE 2748 KENILWORTH AVENUE EL CERRITO, CA 94530 530-544-2938	OW0000598 LENSTROM, DAVID & JOYCE 1081 SONORA AVENUE 2748 KENILWORTH AVENUE SOUTH LAKE TAHOE, CA 96150 916-541-7194	LABARGE, PAM Day : 530-544-2838 Night : 510-235-0136 LENSTROM, JOYCE Day : 530-544-2838 Night : 510-235-0136	Mail To : OWNER Permit No. : 0900622 No. of Serv. Con. : 6 Pop. Served : 14
WA0002251	FA0001297 TAHOE BLUE WATER COMPANY 2140 HIGHWAY 50 2140 HIGHWAY 50 SOUTH LAKE TAHOE, CA 96150 530-541-2658	OW0000600 STALLS, GEORGE 2140 HIGHWAY 50 P.O. BOX 13507 SOUTH LAKE TAHOE, CA 96150 530-469-5191	STALLS, GEORGE Day : 775-843-2658 Night : Day : 775-843-2658 Night :	Mail To : OWNER Permit No. : 0900579 No. of Serv. Con. : 6 Pop. Served : 12

WA0004127	FA0002181 ERYSON CREEK WATER ASSOCIATION HIGHWAY 50 2000 UNIVERSITY PARK DRIVE SACRAMENTO, CA 95822 530-492-4737	OW0001362 ERYSON CREEK WATER ASSOCIATION 2000 UNIVERSITY PARK DRIVE	NORNA COYLE Day : 916-492-4737 Night : 510 220 8106 GENE BECKEL Day : 916-492-4737 Night : 510-220-8106	Mail To Permit No. No. of Serv. Con. Pop. Served	FACILITY 0900531 10 50
WA0002126	FA0001214 HUNTER WATER SUPPLY SYSTEM 1154 EMERALD BAY RD P.O. BOX 16707 SOUTH LAKE TAHOE, CA 96151 530-544-1616	OW0001008 SHANAHAN, KELLY 1154 EMERALD BAY ROAD P.O. BOX 16707 SOUTH LAKE TAHOE, CA 96150 530-544-1643	FRANK MCCOURT Day : 916-344-2087 Night : Day : 916-544-2087 Night :	Mail To Permit No. No. of Serv. Con. Pop. Served	OWNER 0800508 7 14

Total Number of Records for This Program/Element : 22.

End of Report 1.0.1.01.00

Total Number of Records : 153

Economic & Planning Systems

Public Finance
Real Estate Economics
Regional Economics
Land Use Policy

DRAFT

TECHNICAL MEMORANDUM

To: Joe Alessandri, ECO:LOGIC Engineering

From: Georgette Lorenzen and Dmitry Semenov

Subject: El Dorado County Water Demand Forecast; EPS #11448

Date: June 4, 2003

As a part of the water supply and demand planning process for El Dorado County Water Agency (EDCWA), ECO:LOGIC has retained Economic & Planning Systems (EPS) to produce a countywide water demand forecast based in part on the land use forecasts developed in conjunction with the current General Plan/Environmental Impact Report (EIR) process.

The purpose of this memorandum is to describe the methodology used in determining the water demand forecast for the County.

The first section of the memorandum summarizes the methodology and the results of the water demand forecast development. **Section II** specifies the methodology for land use forecasts development. **Section III** discusses the allocation of land use forecasts to the purveyors' boundaries. **Section IV** described the methodology for water demand factors calculation. This memorandum concludes with the summary of the countywide water demand forecast estimates in **Section V**.

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I. OVERVIEW AND SUMMARY

There are three basic components or steps used to construct the water demand forecast. They are:

1. Land Use Forecasts for the County of El Dorado.
2. Distribution of the Land Use Forecasts between the Five Major Water Purveyors and the Remaining County Areas.
3. Application of Water Demand Factors to the Land Use Forecasts by Purveyor or Other County Areas.

Each of these steps are highlighted below and then discussed in greater detail in the following sections of this memorandum.

LAND USE FORECASTS

For the purposes of the land use forecasts, El Dorado County was divided into two areas:

- The Western Slope; and
- The Tahoe Basin.

Residential and non-residential (employment) land forecasts for the Western Slope area were developed by EPS as part of the current County General Plan/EIR process. The land use forecasts for the Tahoe Basin are based on the 2006 Land Use projections developed by the Tahoe Regional Planning Agency (TRPA) and extended to 2025 by EPS for purposes of this analysis.

Wood Rodgers prepared an agricultural land use analysis for the Western Slope of the County as well as a corresponding projection of water demand from agricultural uses. EPS incorporated the projection of agricultural water demand into this technical memorandum.

For both the Western Slope and the Tahoe Basin, the land use projections are at the traffic analysis zone (TAZ) level. Land use projections were developed for 2025 and buildout of the General Plan.

DISTRIBUTION OF NEW DEVELOPMENT BY WATER PURVEYOR

There are five major water purveyors in the County. They are as follows:

- In the Western Slope area:
  - El Dorado Irrigation District (EID)
  - Georgetown Divide Public Utility District (GDPUD)
  - Grizzly Flats Community Service District (GFCSD)
- In the Tahoe Basin:
  - South Tahoe Public Utility District (STPUD)
  - Tahoe City Public Utility District (TCPUD)

Outside of the service areas of the water purveyors, the water needs are supplied by smaller water companies and private wells. For the purposes of this study, the territory that is not serviced by the five major purveyors is cumulatively referred to as the "Other County Areas" (OCA).

The land use projections were allocated to each of the five purveyors or the OCA, based on the percent distribution of acreage of the purveyors in each TAZ. The TAZs' boundaries and corresponding water purveyor service areas are shown on the map in **Figure 2**.

WATER DEMAND FACTORS

To estimate the water demand for each of the purveyors as well as the remaining County areas, the land use projections are multiplied by a water demand factor. The water demand factors used are based on data provided by each of the purveyors. As a result, the water demand factors vary for similar land use categories.

ECO:LOGIC and EPS, based on conversations with the purveyors, determined that it was preferable to uses the demand factors provided by each purveyor rather than develop comprehensive factors by land use for the Western Slope or the Tahoe Basin. Using the demand factors and or data provided by the purveyors allows for consistency and comparability between planning documents and water supply and demand analyses conducted by each purveyor.

SUMMARY OF WATER DEMAND AT 2025 AND BUILDOUT

Figure 1 summarizes the water demand projections developed both for the Western Slope and the Tahoe Basin under different alternatives for three points in time: the base year (1999 for the Western Slope and 2001 for the Tahoe Basin), 2025, and Buildout. These alternatives provide a range that allows estimating the annual countywide water demand.

On the lower end of the growth forecast (No Project in the Western Slope area and Alternative 1 in the Tahoe Basin), the overall annual system water demand in El Dorado County is estimated to be 125,700 acre-feet in 2025 and 152,600 acre-feet at buildout.

On the higher end of the growth forecast (1996 General Plan in the Western Slope area and Alternative 2 in the Tahoe Basin), the overall annual system water demand in El Dorado County is estimated to be 134,700 acre-feet in 2025 and 183,900 acre-feet at buildout.

Figure 1
El Dorado County Water Demand Forecast
Water Demand Summary [1]

Description	Acre Feet Per Year				
	Base Year [2]	2025		Buildout	
	Estimated Demand	New Demand (1999-2025)	Total Demand	New Demand (1999-Buildout)	Total Demand
	A	B	C=A+B	D	E=A+D
Western Slope:					
No Project Alternative	58,300	55,800	114,100	82,300	140,600
Roadway Constrained Alternative	58,300	58,900	117,200	91,000	149,300
Environmentally Constrained Altern	58,300	63,400	121,700	94,200	152,500
1996 General Plan	58,300	64,000	122,300	113,100	171,400
Tahoe Basin:					
Alternative 1	9,100	2,500	11,600	2,900	12,000
Alternative 2	9,100	3,300	12,400	3,400	12,500
Range of Demand:					
Low Demand	67,400	58,300	125,700	85,200	152,600
High Demand	67,400	67,300	134,700	116,500	183,900

"summary"

[1] Water demand projections reflect ag adjustment.
[1] 1999 for the Western Slope
2001 for the Tahoe Basin

II. LAND USE FORECASTS

The demand for water in El Dorado County over the next 25 years, in large part, will be related to growth in population and employment. Water demand in the Tahoe Basin will also be related to growth in recreational and tourism activity.

Housing and employment growth forecasts were developed by EPS for the Western Slope of the County, by TAZ, in conjunction with the current General Plan/EIR process. These forecasts are used to maintain consistency with the General Plan process.

It should be noted that this memo estimates water demand for households rather than residential units. Using households rather housing units allows for a standard vacancy factor of 5 percent (a standard industry assumption for vacancies). The residential water demand is projected for households and, therefore, includes an allowance for vacancy.

The land use forecasts for the Tahoe Basin are based on the 2006 Land Use projections developed by the TRPA and extended to 2025 by EPS for purposes of this analysis. The buildout number of households is determined by the growth limitations currently in place within the Tahoe Basin.

For both the Western Slope and the Tahoe Basin, the land use projections are at the TAZ level. Land use projections were developed for 2025 and buildout of the General Plan.

Agricultural land use (both existing and future) was also considered for purposes of estimating the water demand. EPS relied on data provided by Wood Rodgers, Inc. as to the projected water demanded by agricultural users. Wood Rodgers is continuing to review and revise their agricultural water demand analysis. Therefore, the numbers reported in this memorandum are subject to change as more information becomes available.

The land use forecasts are described in greater detail below.

THE WESTERN SLOPE

EPS, in conjunction with the El Dorado County General Plan team as part of the County General Plan/EIR process, developed three land use alternatives that were published in the March 5, 2002 "*El Dorado County Land Use Forecast for Draft General Plan.*" Of the three land use alternatives detailed in the March 5, 2002 report, only two of the three will receive equal weight analysis in the EIR (the No Project Alternative and the 1996 General Plan).

In October of 2002 EPS developed two additional land use alternatives (Environmentally Constrained and Roadway Constrained 6-Lane "Plus"). The housing and employment

growth forecasted under these two alternatives fall within the range of the land use forecasted under the No Project Alternative (low) and the 1996 General Plan Alternative (high).

The water demand forecast was developed for four alternatives, which are:

- **The No Project Alternative:** The No Project Alternative is based on the 1996 General Plan, but assumes that the Writ governs land use decisions through 2025 and beyond. The Writ generally prohibits new discretionary approvals of residential development until the County adopts a new General Plan, with the exception of parcels for which a development agreement was entered into prior to the issuance of Writ.
- **The Roadway Constrained 6-Lane "Plus" Alternative:** This alternative assumes that Highway 50 is expanded to no more than six lanes and land parcels which currently do not have approved development agreements or tentative subdivision maps will be allowed to buildout at a maximum density of four units per parcel.
- **The Environmentally Constrained Alternative:** This alternative is based on a reduced overall buildout capacity of the County as determined by reassigned land use designations proposed by County planning staff on a parcel-by-parcel level. It also includes a mixed-use component for commercial properties, with 10 percent of commercial acres designated to have a residential component. Densities vary between land uses designated as a community region or a rural center. For all residential land uses, excluding the mixed-use component, it was assumed that parcels would buildout at maximum densities.
- **The 1996 General Plan Alternative:** This alternative is based on the 1996 General Plan Land Use designations. The main difference between this alternative and the No Project Alternative is that the Writ is not assumed to apply.

These land use alternatives are the four equal weight alternatives analyzed in the County General Plan EIR.

The land use forecast alternatives considered in this report project residential housing units (and households) and non-residential employment at 2025 and at buildout of the General Plan. Projected single family and multi-family households and retail, service, and other employment are detailed at the TAZ level.

The base year for the forecast is 1999. An explanation of why 1999 was chosen for the base year is included in the March 5, 2002 Report (see page 15).

Figure 3 summarizes the land use forecasts for these four alternatives. **Appendix A** contains detailed growth projections for all categories under each alternative.

THE TAHOE BASIN

The growth projections for the Tahoe Basin are based on the information provided by the TRPA in 2002. The Tahoe Basin land use projections are also allocated to TAZs and contain the following categories:

- Residential Households
- Hotel/Motel Rooms
- Campground Sites
- Retail Employment
- Service Employment
- Recreational Employment
- Other Employment

For residential households, hotel/motel rooms, and campground sites, the TRPA provided both the total number of units and the number of units with full-time and seasonal occupancy.

The growth in the Tahoe Basin is regulated by the rules established by the TRPA that limit the number of units that can be built annually and specify the total number of remaining developable parcels. According to the TRPA, the total number of parcels available for development in 2001 in the El Dorado County area of Tahoe Basin was 3,300, with approximately 2,800 parcels in the STPUD service area and approximately 50 parcels in the TCPUD service area. The remaining developable parcels were assigned to Other County Areas.

The TRPA land use forecasts go through 2006. EPS extended the forecasts through 2025 and buildout. The base year for the forecast is 2001 as determined by the TRPA.

The Tahoe Basin has several important demographic and growth factors that need to be considered in developing land use forecasts. Currently, new development in the area is restricted to 116 residential units per year. However, an initiative is currently being considered by the TRPA staff that might reduce the allowable development to 87 units per year. Per the TRPA, the resolution of this issue may take place in early 2003, but the exact date is not finalized as of the writing of this report.

In addition, seasonal occupancy of the Tahoe Basin is an important consideration because a vast majority of the existing homes and future homes are projected to be second homes or tourist rentals. The TRPA estimates that more than 44 percent of new households will be seasonally occupied in 2006.

The treatment of these seasonal homes is an important consideration in determining future water demand. As the Tahoe Basin gets closer to buildout and if the demand for tourist rental homes in the area increases, the seasonal occupancy may decrease over time, i.e., greater full time usage. As a result water demand will increase over time. This increase will result in higher maximum daily and hourly peaks and annual total demand.

In order to bracket the potential range of water demand in the Tahoe Basin, we have developed two alternative land use forecasts through 2025 and buildout. They are as follows:

- **Alternative 1: Low Growth/Seasonal Occupancy:** This alternative assumes that the current initiative seeking to further reduce the number of residences that can be built in South Tahoe area (not to exceed 87 units per year) is passed. It also assumes the continuing seasonal occupancy of a portion of units. Under this scenario the area is estimated to reach buildout in 2034.
- **Alternative 2: Moderate Growth/Full Occupancy:** The second alternative assumes the present level of allowable development in South Tahoe (116 residential units per year) and also projects that 50 percent of all residential units, hotel/motel rooms, and campground sites are currently not occupied full-time will have full-time occupancy. Under this scenario the area is estimated to reach buildout in 2027.

The land use forecasts are summarized in **Figure 4**. The buildout capacity was provided by the TRPA. **Appendix B** contains detailed growth projections for all categories under each alternative.

III. ALLOCATION OF GROWTH TO PURVEYOR BOUNDARIES

In order to translate the land use forecasts into water demand for each of the five water purveyors as well as the OCA, it is necessary to determine how much of the projected growth will occur within each of the purveyors' boundaries.

To determine the growth to be allocated to each of the water purveyors, an acreage distribution factor was calculated based on the purveyor's existing service area boundaries. These service boundaries were overlaid on to the TAZs' boundaries using the software package ArcView GIS 3.2A. Based on this exercise, growth was allocated to purveyors and OCA on a *pro rata* acreage share basis.

Appendix C-1 shows the acreage allocation factors by TAZ for the Western Slope area. **Appendix C-2** shows the acreage allocation factors by TAZ for the Tahoe Basin. Any growth outside of the purveyor boundaries was allocated to the OCA.

While this methodology worked for the majority of the water purveyors and TAZs, some exceptions did exist.

In the Western Slope area, the only modification had to do with Grizzly Flats CSD. The purveyor's service area is completely located within one TAZ and geographically constitutes a very small portion of the TAZ (See **Figure 2**). However, the total number of projected households located in the TAZ (278 households) matches closely to the number of accounts serviced by the purveyor in 1999 (approximately 300 accounts). A simplifying assumption was made to allocate all projected growth within this TAZ to the purveyor boundary.

Currently, the water demand within the GFCSD service area consumes most of the water available to the purveyor. The GFCSD is attempting to secure additional water rights of 400 acre-feet per year, which would be enough to meet the water demand for several years beyond 2025 under every growth scenario considered in this report, assuming all growth takes place within the purveyor service area. However, the water demand will become higher than the available water supply as the area approaches the buildout capacity. Additional water rights would have to be secured after 2025, or the new development would have to provide its own water once the purveyor reaches its supply capacity. However, this would only be the case if all future growth within the TAZ is limited to the GFCSD service area.

In the Tahoe Basin area, because of the specifics of land use and growth patterns (a large number of homes are located outside of the purveyor service areas), the pro-rated acreage percentage allocation method described in the beginning of this section did not yield reliable results in the allocation of residential growth to TCPUD and STPUD.

Therefore, the number of residential accounts indicated by the purveyors for the base year was used. The difference between the total number of households provided by the TRPA and the number of the residential accounts services by the purveyors was assigned to the OCA. The households and businesses in OCA receive water from private wells and numerous smaller water companies. No attempt has been made to generate separate forecasts for these water companies beyond the general OCA estimate (because of the fact that the efforts to obtain the necessary information from the water companies were unsuccessful and that in general these companies have on average relatively few accounts). This allocation became the basis for future growth projections.

The future growth allocation to purveyor boundaries was made based on the development constraints established by the TRPA, historic growth trends reported by the purveyors, and growth estimates generated by the TRPA for the years 2001 through 2006.

Figures 5 and 7 summarize the results of growth allocation to purveyor boundaries for the Western Slope and the Tahoe Basin respectively. **Figure 6** contains the growth allocation detail for the EID's three service regions.

IV. WATER DEMAND FACTORS

Once new growth is allocated either to a water purveyor or to the remaining county areas, a water demand factor is applied to the applicable land use to calculate the estimated water demand in acre-feet per year.

The water demand factors used in this analysis were based on data provided by each of the water purveyors. In some cases, simplifying assumptions were made for purposes of this analysis and are detailed in the section for each purveyor below. The water demand factors are summarized in **Figure 8**.

Purveyor-specific water demand factors were used because each service area exhibits unique water demand and growth trends, thus making universal water demand factors unreliable.

Agricultural water demand for the Western Slope was projected by Wood Rodgers, Inc. The assumptions used to determine agricultural water demand are detailed in a separate memorandum prepared by Wood Rodgers. Wood Rodgers is continuing to review and revise the agricultural water demand analysis. Therefore, the numbers reported herein are subject to change.

EID

EID service area is subdivided into three smaller service areas—El Dorado Hills, Western Region, and Eastern Region. Because this analysis is a "big picture" look at water demand, the projections presented herein are for the aggregated the EID service area. However, because of the different pace of growth within the EID Regions, EPS used region-specific demand factors to increase the accuracy of the forecast. The residential and commercial water demand calculations for each of the regions are summarized in **Figures 15 through 18**.

- **Residential Demand**: The residential water demand factors are based on the EID *Administrative Draft Water Supply Master Plan*. See **Figure 9**.
- **Commercial/Industrial/Office (CIO) Demand:** The CIO water demand factor is the total CIO water demand divided by the total number of employees in the EID service area. See **Figure 9**.
- **Agricultural Demand**: The agricultural water demand projections were provided by Wood Rodgers and remain unchanged throughout the different land use alternatives.
- **Recreational Turf Services**: The Recreational Turf Services includes irrigation of golf courses and sports fields. Water demand for these uses was provided by EID (*Administrative Draft Water Supply Master Plan*) and reflects a historic average

water demand for the past 11 years. Historical data does not suggest any growth trends in water use over time.

- **Ditches**: Water losses associated with the use of ditches for water delivery fluctuate significantly by the year. A conservative approach was taken in the preparation of this report projecting that the future water demand within this category will average approximately 1,500 acre-feet annually. The base year shows only 1,000 acre-feet because of the fact that it was the actual demand for that year. However, the 1999 demand in this category is also considered to be unusually low.
- **Unaccounted For and Beneficial Uses:** The unaccounted for water is the water that is taken into the system from a purveyor's main sources, but not delivered to the consumers (put to beneficial use or otherwise unaccounted for). This category of water demand is projected to be reduced (as a percentage of active demand) over time based on historical patterns and goals established by EID. This assumption is in line with the EID strategy and performance geared towards reducing leakage and water losses.
- **Latent demand**: Latent demand includes inactive accounts and uninstalled meters, which potentially can generate immediate water demand. Estimated to remain unchanged as a percentage of active demand based on historical data provided by EID that does not indicate any reduction or growth trends.

GDPUD

- **Residential Demand**: The residential water demand factor was provided by GDPUD. No breakout of consumption by residential land uses is available. Therefore, the same factor was used for both single-family and multi-family residences, as shown in **Figure 8**.
- **CIO Demand:** The CIO water demand factor was estimated based on the total CIO water demand divided by the total number of employees in the service area.
- **Irrigation Demand**: The agricultural / irrigation water demand projections were provided by Wood Rodgers and remain unchanged throughout the different land use alternatives.
- **Golf Course Demand:** A Property Owners Association is responsible for maintaining a golf course with a water demand that is projected to remain constant over the course of time.
- **Unaccounted For and Beneficial Uses Demand:** This water demand includes operational losses that average 3,000 acre-feet per year (per GDPUD) and water system treatment and conveyance that constitutes 4.2 percent of active demand.

- **Latent Demand:** The water factor for latent demand was provided by GDPUD and is assumed to decrease (as a percentage of active demand) over time as additional customers become a part of active demand.

GFCSD

Only one universal per service demand factor was provided by GFSCD that included an allocation for all commercial, unaccounted for, and beneficial water uses. An adjustment was made for the 1999 water demand to account for units with seasonal occupancy. The seasonal occupancy is projected to decrease over time and by 2025 all residencies will have full-time occupancy.

STPUD

- **Residential** water demand factors were provided by STPUD and converted from gallons per day to acre-feet per year by EPS.
- **CIO:** The CIO demand factor is the total CIO water demand divided by the total number of employees in the service area.
- **Hotel/Motel Rooms and Campground Sites Demand**: EPS estimated the water demand factors for these uses based on data provided by the State Water Resources Control Board of the State of California (*Policy for Implementing the State Revolving Fund for Construction of Wastewater Treatment Facilities*, Table G-1).
- **Unaccounted For and Beneficial Uses Demand:** This water demand factor was provided by STPUD.
- **Latent Demand**: Not included because data are not available.

TCPUD

- **Residential Demand**: Residential water demand factors were provided by TCPUD and converted from gallons per day to acre-feet per year by EPS.
- **CIO:** The CIO water demand factor was estimated based on the total CIO water demand divided by the total number of employees in the service area.
- **Hotel/Motel Rooms and Campground Sites Demand:** EPS estimated the water demand factors for these uses based on data provided by the State Water Resources Control Board of the State of California (*Policy for Implementing the State Revolving Fund for Construction of Wastewater Treatment Facilities*, Table G-1).
- **Unaccounted For and Beneficial Uses Demand:** This water demand factor was not included as no data is currently available.

- **Latent Demand**: Not included because data are not available.

OCA

- Separate calculations were made for the Western Slope and the Tahoe Basin areas because of differences in water demand trends discussed earlier.
- The calculated factors are a weighted average for demand in the areas serviced by purveyors.
- No unaccounted for, beneficial uses, and latent demand factors were calculated because of the fact that the water is supplied through private wells and by smaller water companies that do not have the capability to track these factors.

V. COUNTYWIDE WATER DEMAND FORECAST

Water demand forecasts were estimated based on the growth projections and demand factors described in the previous sections. For residential and employment growth, water demand was estimated by multiplying the projected number of units (households, jobs, etc.) by the appropriate water factor.

For other categories (agricultural, latent demand, etc.), the water demand allocation was made according to the assumptions discussed in the water demand factors section above.

Water demand forecasts were developed for each alternative described above for three points in time: the base year (1999 for the Western Slope and 2001 for the Tahoe Basin), 2025, and Buildout. The results are summarized in **Figure 10**. These alternatives provide a range for the annual countywide water demand.

It should be noted that the base year water demand was estimated based on the historic average water demand factors and variables (households, employment, etc.) calculated based on the methodology specified in this report. While it is not the actual demand recorded by the purveyors for the base year, it is very close to the actual numbers with a very insignificant variance.

For low growth forecast (No Project in the Western Slope area and Alternative 1 in the Tahoe Basin), the overall annual system water demand in El Dorado County is estimated to be 125,700 acre-feet in 2025 and 152,600 acre-feet at buildout.

For high growth forecast (1996 General Plan in the Western Slope area and Alternative 2 in the Tahoe Basin), the overall annual system water demand in El Dorado County is estimated to be 134,700 acre-feet in 2025 and 183,900 acre-feet at buildout.

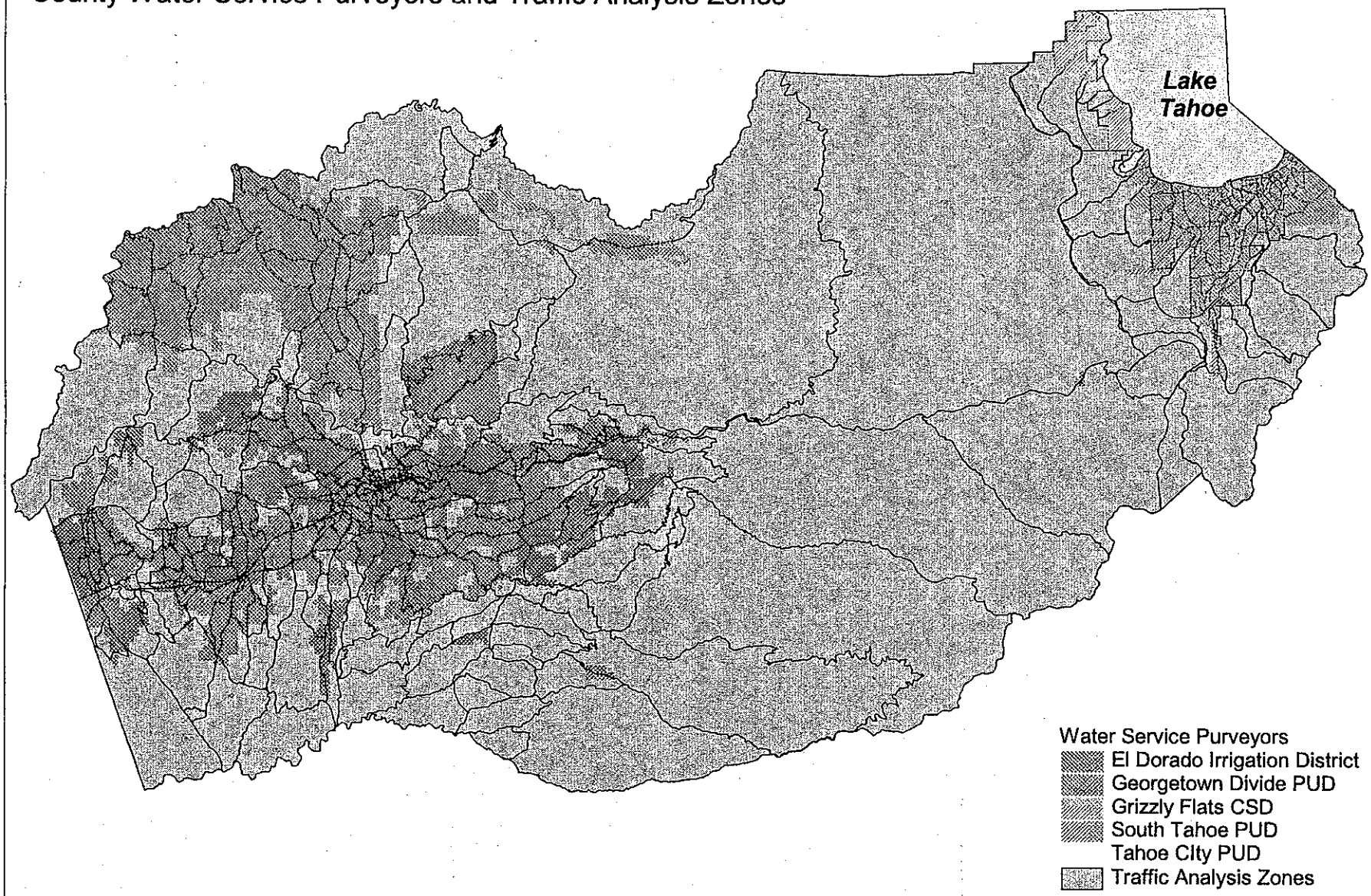
The detailed water demand forecasts for each water purveyor under each alternative are summarized in **Figures 11 through 20**.

AGRICULTURAL WATER DEMAND

It should be noted that the agricultural water demand forecast for the Western Slope used in this report was developed by Wood Rodgers, Inc. and is still being reviewed and revised. Therefore, the numbers reported herein are subject to change. **Figure 21** provides a comparison of the initial agricultural water demand estimated by EPS based on data provided by the water purveyors with the estimates provided by Wood Rodgers. Wood Rodgers estimates include the potential water demand that could be generated by the agricultural district areas.

Figure 2
El Dorado County Water Agency
County Water Service Purveyors and Traffic Analysis Zones

DRAFT



Prepared by EPS

purveyor_taz

Figure 3
El Dorado County Water Demand Forecast
Western Slope Growth Projections Summary

Description	Residential [1]						Employment			
	Housing Units			Households			Retail	Service	Other	Total
	Single-Family	Multi-Family	Total	Single-Family	Multi-Family	Total				
Existing Units (1999)	39,631	5,189	44,820	37,649	4,930	42,579	6,464	15,425	8,545	30,434
No Project										
Through 2025										
New Units/Employees (1999-2025)	19,927	1,507	21,434	18,942	1,442	20,384	9,282	16,123	10,783	36,188
Total Units/Employees (Incl. Existing)	59,558	6,696	66,254	56,591	6,372	62,963	15,746	31,548	19,328	66,622
Through Buildout										
New Units/Employees (1999-Buildout)	27,141	2,379	29,520	25,792	2,280	28,072	22,049	37,068	25,243	84,360
Total Units/Employees (Incl. Existing)	66,772	7,568	74,340	63,441	7,210	70,651	28,513	52,493	33,788	114,794
Roadway Constrained										
Through 2025										
New Units/Employees (1999-2025)	24,194	1,645	25,839	22,984	1,579	24,563	8,515	15,423	10,517	34,455
Total Units/Employees (Incl. Existing)	63,824	6,835	70,659	60,633	6,509	67,142	14,979	30,848	19,062	64,889
Through Buildout										
New Units/Employees (1999-Buildout)	38,852	2,806	41,658	36,909	2,687	39,596	23,027	37,748	25,913	86,688
Total Units/Employees (Incl. Existing)	78,482	7,996	86,478	74,558	7,617	82,175	29,491	53,173	34,458	117,122
Environmentally Constrained										
Through 2025										
New Units/Employees (1999-2025)	25,852	6,447	32,299	24,559	6,137	30,696	11,384	18,886	12,441	42,711
Total Units/Employees (Incl. Existing)	65,482	11,636	77,119	62,208	11,067	73,275	17,848	34,311	20,986	73,145
Through Buildout										
New Units/Employees (1999-Buildout)	40,704	14,374	55,077	38,682	13,671	52,353	18,384	29,311	20,014	67,709
Total Units/Employees (Incl. Existing)	80,334	19,563	99,897	76,331	18,601	94,932	24,848	44,736	28,559	98,143
1996 General Plan										
Through 2025										
New Units/Employees (1999-2025)	27,369	5,122	32,491	26,014	4,876	30,890	11,021	18,630	12,545	42,196
Total Units/Employees (Incl. Existing)	67,000	10,311	77,311	63,663	9,806	73,469	17,485	34,055	21,090	72,630
Through Buildout										
New Units/Employees (1999-Buildout)	61,375	17,317	78,692	58,313	16,475	74,788	23,027	37,748	25,913	86,688
Total Units/Employees (Incl. Existing)	101,006	22,506	123,512	95,962	21,405	117,367	29,491	53,173	34,458	117,122

"ws_growth"

[1] Residential Households are 95% of Residential Housing Units (to account for a 5% vacancy factor).

Source: EPS.

Figure 4
El Dorado County Water Demand Forecast
Tahoe Basin Growth Projections Summary

Description	Residential Households	Hotel/Motel Rooms	Campground Sites	Employment			
				Retail	Service	Recreation	Other
Existing Units (2001)	15,831	5,888	1,498	3,464	3,015	235	2,287
"Low Growth" Alternative							
Through 2025							
New Units (1999-2025)	2,633	1,573	838	572	602	(28)	425
Total Units	18,464	7,461	2,336	4,036	3,617	207	2,712
Through Buildout							
New Units (1999-Buildout)	3,300	2,140	1,140	779	818	(37)	567
Total Units	19,131	8,028	2,638	4,243	3,833	198	2,854
"Moderate Growth" Alternative							
Through 2025							
New Units (1999-2025)	4,242	2,791	1,133	677	710	26	465
Total Units	20,073	8,679	2,631	4,141	3,725	261	2,752
Through Buildout							
New Units (1999-Buildout)	4,315	2,951	1,213	779	818	35	567
Total Units	20,146	8,839	2,711	4,243	3,833	270	2,854

"tb_growth"

Source: TRPA and EPS.

Figure 5
El Dorado County Water Demand Forecast
Western Slope Growth Projections Summary

Description	Units	Total for 1999					Total for 2025					Total for Capacity				
		NS	EID	GFCSD	GDPUD	Total	NS	EID	GFCSD	GDPUD	Total	NS	EID	GFCSD	GDPUD	Total
No Project Alternative																
Residential:																
Single-Family Units	Households	8,627	22,749	263	2,791	34,430	14,571	35,279	393	3,129	53,372	17,513	37,318	1,079	4,312	60,222
Multi-Family Units	Households	644	4,126	-	160	4,930	834	5,365	4	169	6,372	1,026	5,892	29	263	7,210
Mobile Home Units	Households	947	1,936	15	321	3,219	947	1,936	15	321	3,219	947	1,936	15	321	3,219
Total Units		10,218	28,811	278	3,272	42,579	16,352	42,580	412	3,619	62,963	19,486	45,146	1,123	4,896	70,651
Employment:																
Retail Employment	Employees	587	5,626	2	249	6,464	2,508	12,916	2	320	15,746	5,590	21,366	6	1,551	28,513
Service Employment	Employees	3,061	11,711	26	627	15,425	7,760	23,001	27	760	31,548	13,668	35,821	33	2,971	52,493
Other Employment	Employees	1,395	6,662	23	465	8,545	4,295	14,459	23	551	19,328	8,166	23,572	27	2,023	33,788
Total Employment:		5,043	23,999	51	1,341	30,434	14,563	50,376	52	1,631	66,622	27,424	80,759	66	6,545	114,794
Roadway Constrained Alternative																
Residential:																
Single-Family Units	Households	8,627	22,749	263	2,791	34,430	15,823	37,954	408	3,229	57,414	20,960	42,597	1,881	5,901	71,339
Multi-Family Units	Households	644	4,126	-	160	4,930	869	5,469	5	166	6,509	1,135	6,125	57	300	7,617
Mobile Home Units	Households	947	1,936	15	321	3,219	947	1,936	15	321	3,219	947	1,936	15	321	3,219
Total Units		10,218	28,811	278	3,272	42,579	17,639	45,359	428	3,716	67,142	23,042	50,658	1,953	6,522	82,175
Employment:																
Retail Employment	Employees	587	5,626	2	249	6,464	2,379	12,249	2	349	14,979	5,636	22,096	6	1,753	29,491
Service Employment	Employees	3,061	11,711	26	627	15,425	7,502	22,505	27	814	30,848	13,713	36,085	33	3,342	53,173
Other Employment	Employees	1,395	6,662	23	465	8,545	4,155	14,297	23	587	19,062	8,200	23,962	27	2,269	34,458
Total Employment:		5,043	23,999	51	1,341	30,434	14,036	49,051	52	1,750	64,889	27,549	82,143	66	7,364	117,122

Figure 5
El Dorado County Water Demand Forecast
Western Slope Growth Projections Summary

Description	Units	Total for 1999					Total for 2025					Total for Capacity				
		NS	EID	GFCSD	GDPUD	Total	NS	EID	GFCSD	GDPUD	Total	NS	EID	GFCSD	GDPUD	Total
Environmentally Constrained Alternative																
Residential:																
Single-Family Units	Households	8,627	22,749	263	2,791	34,430	16,030	39,067	486	3,406	58,989	20,423	45,164	1,770	5,755	73,112
Multi-Family Units	Households	644	4,126	-	160	4,930	1,222	9,261	9	575	11,067	1,824	14,387	53	2,337	18,601
Mobile Home Units	Households	947	1,936	15	321	3,219	947	1,936	15	321	3,219	947	1,936	15	321	3,219
Total Units		10,218	28,811	278	3,272	42,579	18,199	50,264	510	4,302	73,275	23,194	61,487	1,838	8,413	94,932
Employment:																
Retail Employment	Employees	587	5,626	2	249	6,464	2,938	14,476	3	431	17,848	4,317	18,843	6	1,682	24,848
Service Employment	Employees	3,061	11,711	26	627	15,425	8,613	24,711	29	958	34,311	11,052	30,439	33	3,212	44,736
Other Employment	Employees	1,395	6,662	23	465	8,545	4,757	15,524	25	680	20,986	6,426	19,923	27	2,183	28,559
Total Employment:		5,043	23,999	51	1,341	30,434	16,308	54,711	57	2,069	73,145	21,795	69,205	66	7,077	98,143
1996 General Plan Alternative																
Residential:																
Single-Family Units	Households	8,627	22,749	263	2,791	34,430	16,832	39,690	409	3,513	60,444	27,754	54,023	2,391	8,575	92,743
Multi-Family Units	Households	644	4,126	-	160	4,930	1,324	8,083	5	394	9,806	2,949	16,116	66	2,274	21,405
Mobile Home Units	Households	947	1,936	15	321	3,219	947	1,936	15	321	3,219	947	1,936	15	321	3,219
Total Units		10,218	28,811	278	3,272	42,579	19,103	49,709	429	4,228	73,469	31,650	72,075	2,472	11,170	117,367
Employment:																
Retail Employment	Employees	587	5,626	2	249	6,464	2,727	14,328	2	428	17,485	5,636	22,096	6	1,753	29,491
Service Employment	Employees	3,061	11,711	26	627	15,425	8,150	24,921	27	957	34,055	13,713	36,085	33	3,342	53,173
Other Employment	Employees	1,395	6,662	23	465	8,545	4,550	15,833	23	684	21,090	8,200	23,962	27	2,269	34,458
Total Employment:		5,043	23,999	51	1,341	30,434	15,427	55,082	52	2,069	72,630	27,549	82,143	66	7,364	117,122

"ws_allocation"

Source: EPS.

Figure 6
El Dorado County Water Demand Forecast
EID Growth Projections Summary by Region

Description	Units	Total for 1999				Total for 2025				Total for Capacity			
		Eastern	Western	El Dorado	Total	Eastern	Western	El Dorado	Total	Eastern	Western	El Dorado	Total
No Project Alternative													
Residential:													
Single-Family Units	Households	8,974	8,730	5,045	22,749	10,498	10,886	13,895	35,279	11,541	11,655	14,122	37,318
Multi-Family Units	Households	1,957	2,075	94	4,126	2,307	2,457	601	5,365	2,419	2,836	637	5,892
Mobile Home Units	Households	898	928	110	1,936	898	928	110	1,936	898	928	110	1,936
Total Units		11,829	11,733	5,249	28,811	13,703	14,271	14,606	42,580	14,858	15,419	14,869	45,146
Employment:													
Retail Employment	Employees	2,840	2,300	486	5,626	3,975	5,724	3,217	12,916	6,080	10,585	4,701	21,366
Service Employment	Employees	5,222	4,169	2,320	11,711	5,835	6,367	10,799	23,001	7,353	14,045	14,423	35,821
Other Employment	Employees	3,499	2,456	707	6,662	4,243	3,723	6,493	14,459	5,797	9,099	8,676	23,572
Total Employment:		11,561	8,925	3,513	23,999	14,053	15,814	20,509	50,376	19,230	33,729	27,800	80,759
Roadway Constrained Alternative													
Residential:													
Single-Family Units	Households	8,974	8,730	5,045	22,749	11,154	11,876	14,924	37,954	13,673	13,516	15,408	42,597
Multi-Family Units	Households	1,957	2,075	94	4,126	2,303	2,505	661	5,469	2,474	2,946	705	6,125
Mobile Home Units	Households	898	928	110	1,936	898	928	110	1,936	898	928	110	1,936
Total Units		11,829	11,733	5,249	28,811	14,355	15,309	15,695	45,359	17,045	17,390	16,223	50,658
Employment:													
Retail Employment	Employees	2,840	2,300	486	5,626	4,447	4,665	3,137	12,249	6,342	11,037	4,717	22,096
Service Employment	Employees	5,222	4,169	2,320	11,711	6,037	6,101	10,367	22,505	7,400	14,223	14,462	36,085
Other Employment	Employees	3,499	2,456	707	6,662	4,532	3,627	6,138	14,297	5,929	9,333	8,700	23,962
Total Employment:		11,561	8,925	3,513	23,999	15,016	14,393	19,642	49,051	19,671	34,593	27,879	82,143

Figure 6
El Dorado County Water Demand Forecast
EID Growth Projections Summary by Region

Description	Units	Total for 1999				Total for 2025				Total for Capacity			
		Eastern	Western	El Dorado	Total	Eastern	Western	El Dorado	Total	Eastern	Western	El Dorado	Total
Environmentally Constrained Alternative													
Residential:													
Single-Family Units	Households	8,974	8,730	5,045	22,749	10,985	12,420	15,662	39,067	12,580	15,536	15,536	43,652
Multi-Family Units	Households	1,957	2,075	94	4,126	2,783	4,945	1,533	9,261	3,512	8,781	8,781	21,074
Mobile Home Units	Households	898	928	110	1,936	898	928	110	1,936	898	928	928	2,754
Total Units		11,829	11,733	5,249	28,811	14,666	18,293	17,305	50,264	16,990	25,245	25,245	67,480
Employment:													
Retail Employment	Employees	2,840	2,300	486	5,626	4,805	6,141	3,530	14,476	5,787	9,247	9,247	24,281
Service Employment	Employees	5,222	4,169	2,320	11,711	6,207	7,559	10,945	24,711	6,764	11,975	11,975	30,714
Other Employment	Employees	3,499	2,456	707	6,662	4,761	4,450	6,313	15,524	5,417	7,705	7,705	20,827
Total Employment:		11,561	8,925	3,513	23,999	15,773	18,150	20,788	54,711	17,968	28,927	28,927	75,822
1996 General Plan Alternative													
Residential:													
Single-Family Units	Households	8,974	8,730	5,045	22,749	11,400	12,945	15,345	39,690	15,876	20,170	17,977	54,023
Multi-Family Units	Households	1,957	2,075	94	4,126	2,319	4,652	1,112	8,083	3,039	11,164	1,913	16,116
Mobile Home Units	Households	898	928	110	1,936	898	928	110	1,936	898	928	110	1,936
Total Units		11,829	11,733	5,249	28,811	14,617	18,525	16,567	49,709	19,813	32,262	20,000	72,075
Employment:													
Retail Employment	Employees	2,840	2,300	486	5,626	4,444	6,482	3,402	14,328	6,342	11,037	4,717	22,096
Service Employment	Employees	5,222	4,169	2,320	11,711	6,076	7,681	11,164	24,921	7,400	14,223	14,462	36,085
Other Employment	Employees	3,499	2,456	707	6,662	4,549	4,611	6,673	15,833	5,929	9,333	8,700	23,962
Total Employment:		11,561	8,925	3,513	23,999	15,069	18,774	21,239	55,082	19,671	34,593	27,879	82,143

"eid_allocation"

Source: EPS.

Figure 7
El Dorado County Water Demand Forecast
Tahoe Basin Growth Projections Summary

Description	Units	Total for 2001				Total for 2025				Total for Capacity			
		NS	STPUD	TCPUD	Total	NS	STPUD	TCPUD	Total	NS	STPUD	TCPUD	Total
Alternative 1													
Residential Units	Households	2,766	12,509	556	15,831	3,140	14,718	606	18,464	3,140	15,371	620	19,131
Motel / Hotel Rooms	Rooms	388	5,490	10	5,888	411	7,040	10	7,461	420	7,598	10	8,028
Campground Sites	Sites	456	750	292	1,498	754	1,290	292	2,336	862	1,484	292	2,638
Employment:													
Retail Employment	Employees	171	3,280	13	3,464	193	3,830	13	4,036	202	4,028	13	4,243
Service Employment	Employees	238	2,731	46	3,015	289	3,282	46	3,617	307	3,480	46	3,833
Recreation Employment	Employees	13	222	-	235	39	168	-	207	48	150	-	198
Other Employment	Employees	115	2,172	-	2,287	140	2,572	-	2,712	149	2,705	-	2,854
Total Employment:		537	8,405	59	9,001	661	9,852	59	10,572	706	10,363	59	11,128
Alternative 2													
Residential Units	Households	2,766	12,509	556	15,831	4,155	15,298	620	20,073	4,155	15,371	620	20,146
Motel / Hotel Rooms	Rooms	388	5,490	10	5,888	510	8,132	37	8,679	518	8,282	39	8,839
Campground Sites	Sites	456	750	292	1,498	765	1,372	494	2,631	785	1,414	512	2,711
Employment:													
Retail Employment	Employees	171	3,280	13	3,464	193	3,935	13	4,141	202	4,028	13	4,243
Service Employment	Employees	238	2,731	46	3,015	289	3,390	46	3,725	307	3,480	46	3,833
Recreation Employment	Employees	13	222	-	235	39	222	-	261	48	222	-	270
Other Employment	Employees	115	2,172	-	2,287	140	2,612	-	2,752	149	2,705	-	2,854
Total Employment:		537	8,405	59	9,001	661	10,159	59	10,879	706	10,435	59	11,200

"tb_allocation"

Source: EPS, South Tahoe PUD, Tahoe City PUD, TRPA.

Figure 8
El Dorado County Water Agency
Water Demand Factors by Purveyor, 1999 to Buildout

District	Units of Consumption	Water Demand Factors		
		1999	2025	Buildout
El Dorado Irrigation District [1]				
Single-Family Residential Units [2]	af/yr/du	See Figure 9	See Figure 9	See Figure 9
Multi-Family Residential Units	af/yr/du	See Figure 9	See Figure 9	See Figure 9
Commercial / Industrial / Office	af/yr/employee	See Figure 9	See Figure 9	See Figure 9
Agricultural Demand [7]	af/yr	5,950	22,100	22,580
Recreational Turf Services [19]	af/yr	1,720	1,720	1,720
Ditches [21]	af/yr	1,000	1,500	1,500
Unaccounted for & Beneficial Uses Water [22]	% of active demand [3]	18.31%	15.00%	12.00%
Latent Demand	% of active demand [3]	6.71%	7.00%	7.00%
Georgetown Divide PUD [4]				
Single-Family Residential Units [2] [5]	af/yr/du	0.48	0.48	0.48
Multi-Family Residential Units [5]	af/yr/du	0.48	0.48	0.48
Commercial / Industrial / Office [6]	af/yr/employee	0.18	0.18	0.18
Irrigation [7]	af/yr	4,351	11,770	17,530
Property Owners Association [8]	af/yr	123	123	123
Unaccounted for & Beneficial Uses Water [9]	af/yr	3,000 af + 4.2%	3,000 af + 4.2%	3,000 af + 4.2%
Latent Demand [11]	% of active demand [10]	22%	20%	15%
Grizzly Flats CSD [12] [13]				
Single-Family Residential Units [2]	af/yr/du	0.47	0.42	0.42
Multi-Family Residential Units	af/yr/du	0.47	0.42	0.42
Commercial / Industrial / Office	af/yr/employee	0.50	0.47	0.42
South Tahoe PUD [14]				
Single-Family Residential Units [2] [15]	af/yr/du	0.32	0.35	0.35
Hotel/Motel Rooms [20]	af/yr/u	0.11	0.11	0.11
Campground Sites [20]	af/yr/u	0.03	0.03	0.03
Commercial Units	af/yr/account	3.39	4.00	4.00
Commercial / Industrial / Office	af/yr/employee	0.24	0.27	0.27
Unaccounted for & Beneficial Uses Water	af/yr	1,018	1,243	1,243
Tahoe City PUD [15] [16]				
Single-Family Residential Units [2] [17]	af/yr/du	0.49	0.49	0.49
Hotel/Motel Rooms [20]	af/yr/u	0.11	0.11	0.11
Campground Sites [20]	af/yr/u	0.03	0.03	0.03
Commercial Units	af/yr/account	0.49	0.49	0.49
Commercial / Industrial / Office	af/yr/employee	0.08	0.08	0.08
Other County Areas - Western Slope [18]				
Single-Family Residential Units	af/yr/du	0.69	0.72	0.70
Multi-Family Residential Units	af/yr/du	0.28	0.29	0.29
Commercial / Industrial / Office	af/yr/employee	0.11	0.15	0.14
Agricultural Demand [7]	af/yr	2,005	4,865	13,865
Other County Areas - Tahoe Basin [18]				
Residential Units [2]	af/yr/du	0.33	0.35	0.35
Hotel/Motel Rooms	af/yr/u	0.11	0.11	0.11
Campground Sites	af/yr/u	0.03	0.03	0.03
Commercial / Industrial / Office	af/yr/employee	0.24	0.27	0.27

"demand_factors"

Notes for Figure 8:

[1] Based on EID December 2001 Administrative Draft of Master Supply Water Plan.
[2] Assumes mobile home units have the same water demand as single-family units.
[3] Active demand in EID includes all residential, irrigation, commercial, and recreational uses.
[4] Based on consumption/revenue data by route, 1995-2000, complied by Eco:Logic.
[5] No breakout of consumption by residential land uses is available.
[6] Based on 126 Commercial / Industrial / Office (CIO) connections in 2000 with a mean 6.2 employees per establishment.
[7] Agricultural demand data (including base year) was provided by Wood Rodgers, Inc.
[8] Property Owner Association (POA) demand is not expected to increase in the future.
[9] Unaccounted for / beneficial uses water and losses for 2000 was estimated at 3,257 af. This includes 257 af for treatment and conveyance (4.2% of active demand) and 3,000 af estimate of operational losses (leakage, evaporation, etc.). Projection for future is 3,000 af/yr plus 4.2% of active demand.
[10] Active demand in GDPUD includes all residential, irrigation, commercial and POA uses.
[11] Latent demand for the district in 2000 was estimated at 1,352 af. Active demand in 2000 was 6,178 af.
[12] Based on March 11, 1998 Investigation of Off-Stream Storage report.
[13] Includes all commercial, unaccounted for and beneficial water uses but no latent water demand.
[14] Based on Draft STPUD Urban Water Management Plan, June 2002.
[15] Based on TCPUD Water Master Plan from October 2001. Rubicon zone is the only service area in El Dorado County (552 connections anticipated in 2002).
[16] Includes all unaccounted for water and beneficial water uses, but not latent demand.
[17] No breakout of consumption by land use is available.
[18] No Service Area demand is the weighted average of the demand factors for all purveyors.
[19] Based on historical data provided in Table 4-B of EID Administrative Draft Water Supply Master Plan. Assumed to remain constant.
[20] Based on Policy for Implementing The State Revolving Fund for Construction of Wastewater Treatment Facilities, State Water Resources Control Board, State of California, Table G-1: Estimated water consumption at different types of establishments.
[21] Water demand for ditches is projected to be approximately 1,500 af/year. 1999 was a low year for this type of water use.
[22] The 1999 factor is an estimate calculated by EPS. It is different percentage-wise from the one reported by EID due to the fact that EID calculates it as a percentage of total demand, and EPS calculates it as a percentage of active demand as defined above (see Note [3]).
[23] Agricultural demand data (including base year) was provided by Wood Rodgers, Inc.

Figure 9
El Dorado County Water Agency
Water Demand Factors - EID [1]

Description	Region						Total Consumption
	El Dorado Hills		Western		Eastern		
	Unit Consumption	Households/ Employees	Unit Consumption	Households/ Employees	Unit Consumption	Households/ Employees	
Single-Family Residential [2]	0.79	6,805	0.79	11,235	0.62	8,613	19,592
Multi-Family Residential [4]	0.43	585	0.28	3,592	0.25	1,856	1,721
Commercial / Industrial Per Unit [4]	3.58	217	1.72	598	2.68	310	2,636
Commercial / Industrial Per Employee [3]	0.22	3,513	0.12	8,925	0.07	11,561	2,636

"EID_factors"

[1] Assumes that demand factors do not change over time.
[2] Used demand factors for Medium Density Residential Units from the Administrative Draft Water Supply Master Plan.
[3] Per base-year allocation to regions.
[4] Administrative Draft Water Supply Master Plan and 2002 Update To The Water Supply & Demand Report, May 20, 2002.

Source: El Dorado Irrigation District, *Administrative Draft Water Supply Master Plan* and *2002 Update To The Water Supply & Demand Report, May 20, 2002* .

Figure 10
El Dorado County Water Demand Forecast
Water Demand Summary [1]

Description	Acre Feet Per Year				
	Base Year [2]	2025		Buildout	
	Estimated Demand	New Demand (1999-2025)	Total Demand	New Demand (1999-Buildout)	Total Demand
	A	B	C=A+B	D	E=A+D
Western Slope:					
No Project Alternative	58,300	55,800	114,100	82,300	140,600
Roadway Constrained Alternative	58,300	58,900	117,200	91,000	149,300
Environmentally Constrained Alternative	58,300	63,400	121,700	94,200	152,500
1996 General Plan	58,300	64,000	122,300	113,100	171,400
Tahoe Basin:					
Alternative 1	9,100	2,500	11,600	2,900	12,000
Alternative 2	9,100	3,300	12,400	3,400	12,500
Range of Demand:					
Low Demand (No Project & Alt. 1)	67,400	58,300	125,700	85,200	152,600
High Demand (1996 GP & Alt. 2)	67,400	67,300	134,700	116,500	183,900

"summary"

[1] Water demand projections reflect ag adjustment.
[2] 1999 for the Western Slope
2001 for the Tahoe Basin

Figure 11
El Dorado County Water Agency
El Dorado County Western Slope Water Demand Forecast

No Project
Western Slope

Purveyor / Demand Component	Total Water Demand (af/yr)		
	1999	2025	Buildout
El Dorado Irrigation District			
Residential			
Single-Family Households	16,446	26,086	27,519
Multi-Family Household	1,111	1,523	1,673
Mobile Home Households	1,377	1,377	1,377
Commercial			
Retail Employees	577	1,657	2,696
Service Employees	1,369	3,541	5,336
Other Employees	691	2,170	3,384
Other			
Agricultural Demand	5,950	22,100	22,580
Recreational Turf Services	1,720	1,720	1,720
Ditches	1,000	1,500	1,500
Unaccounted for & Beneficial Uses Water	5,536	9,251	8,134
Latent Demand	2,030	4,317	4,745
Total Water Demand for EID	**37,806**	**75,242**	**80,665**
Georgetown Divide PUD			
Residential			
Single-Family Households	1,351	1,514	2,087
Multi-Family Household	77	82	127
Mobile Home Households	155	155	155
Commercial			
Retail Employees	46	59	285
Service Employees	115	140	546
Other Employees	86	101	372
Other			
Irrigation	4,351	11,770	17,530
Property Owners Association	123	123	123
Unaccounted for & Beneficial Uses Water	3,265	3,586	3,891
Latent Demand	1,387	2,789	3,184
Total Water Demand for GDPUD	**10,956**	**20,319**	**28,302**
Grizzly Flats CSD			
Residential			
Single-Family Households	124	165	453
Multi-Family Household	-	2	12
Mobile Home Households	7	6	6
Commercial			
Retail Employees	1	1	3
Service Employees	13	13	14
Other Employees	12	11	11
Other			
Unaccounted for & Beneficial Uses Water	-	-	-
Latent Demand	-	-	-
Total Water Demand for GFCSD	**157**	**197**	**499**
Other County Areas - Western Slope			
Residential			
Single-Family Households	5,992	10,427	12,326
Multi-Family Household	179	242	301
Mobile Home Households	658	678	667
Commercial			
Retail Employees	67	371	809
Service Employees	351	1,147	1,979
Other Employees	160	635	1,182
Other			
Agricultural Demand	2,005	4,865	13,865
Unaccounted for & Beneficial Uses Water	-	-	-
Latent Demand	-	-	-
Total Water Demand for Other County Areas	**9,411**	**18,363**	**31,128**
Total Water Demand for Western Slope	**58,329**	**114,122**	**140,594**

"no_project"

Figure 12
El Dorado County Water Agency
El Dorado County Western Slope Water Demand Forecast

Roadway Constrained
Western Slope

Purveyor / Demand Component	Total Water Demand (af/yr)		
	1999	2025	Buildout
El Dorado Irrigation District			
Residential			
Single-Family Households	16,446	28,087	31,327
Multi-Family Household	1,111	1,561	1,747
Mobile Home Households	1,377	1,377	1,377
Commercial			
Retail Employees	577	1,551	2,771
Service Employees	1,369	3,429	5,369
Other Employees	691	2,101	3,426
Other			
Agricultural Demand	5,950	22,100	22,580
Recreational Turf Services	1,720	1,720	1,720
Ditches	1,000	1,500	1,500
Unaccounted for & Beneficial Uses Water	5,536	9,514	8,618
Latent Demand	2,030	4,440	5,027
Total Water Demand for EID	**37,806**	**77,381**	**85,461**
Georgetown Divide PUD			
Residential			
Single-Family Households	1,351	1,563	2,856
Multi-Family Household	77	80	145
Mobile Home Households	155	155	155
Commercial			
Retail Employees	46	64	322
Service Employees	115	150	614
Other Employees	86	108	417
Other			
Irrigation	4,351	11,770	17,530
Property Owners Association	123	123	123
Unaccounted for & Beneficial Uses Water	3,265	3,589	3,931
Latent Demand	1,387	2,803	3,325
Total Water Demand for GDPUD	**10,956**	**20,405**	**29,419**
Grizzly Flats CSD			
Residential			
Single-Family Households	124	171	790
Multi-Family Household	-	2	24
Mobile Home Households	7	6	6
Commercial			
Retail Employees	1	1	3
Service Employees	13	13	14
Other Employees	12	11	11
Other			
Unaccounted for & Beneficial Uses Water	-	-	-
Latent Demand	-	-	-
Total Water Demand for GFCSD	**157**	**204**	**848**
Other County Areas - Western Slope			
Residential			
Single-Family Households	5,992	11,323	14,752
Multi-Family Household	179	252	333
Mobile Home Households	658	678	667
Commercial			
Retail Employees	67	352	816
Service Employees	351	1,108	1,985
Other Employees	160	614	1,187
Other			
Agricultural Demand	2,005	4,865	13,865
Unaccounted for & Beneficial Uses Water	-	-	-
Latent Demand	-	-	-
Total Water Demand for Other County Areas	**9,411**	**19,191**	**33,604**
Total Water Demand for Western Slope	**58,329**	**117,182**	**149,333**

"roadway"

Figure 13
El Dorado County Water Agency
El Dorado County Western Slope Water Demand Forecast

Environmentally Constrained Western Slope

Purveyor / Demand Component	Total Water Demand (af/yr)		
	1999	2025	Buildout
El Dorado Irrigation District			
Residential			
Single-Family Households	16,446	28,995	33,541
Multi-Family Household	1,111	2,740	4,237
Mobile Home Households	1,377	1,377	1,377
Commercial			
Retail Employees	577	1,834	2,324
Service Employees	1,369	3,738	4,453
Other Employees	691	2,251	2,781
Other			
Agricultural Demand	5,950	22,100	22,580
Recreational Turf Services	1,720	1,720	1,720
Ditches	1,000	1,500	1,500
Unaccounted for & Beneficial Uses Water	5,536	9,938	8,942
Latent Demand	2,030	4,638	5,216
Total Water Demand for EID	**37,806**	**80,830**	**88,671**
Georgetown Divide PUD			
Residential			
Single-Family Households	1,351	1,649	2,785
Multi-Family Household	77	278	1,131
Mobile Home Households	155	155	155
Commercial			
Retail Employees	46	79	309
Service Employees	115	176	591
Other Employees	86	125	401
Other			
Irrigation	4,351	11,770	17,530
Property Owners Association	123	123	123
Unaccounted for & Beneficial Uses Water	3,265	3,603	3,967
Latent Demand	1,387	2,871	3,454
Total Water Demand for GDPUD	**10,956**	**20,830**	**30,447**
Grizzly Flats CSD			
Residential			
Single-Family Households	124	204	743
Multi-Family Household	-	4	22
Mobile Home Households	7	6	6
Commercial			
Retail Employees	1	1	3
Service Employees	13	14	14
Other Employees	12	12	11
Other			
Unaccounted for & Beneficial Uses Water	-	-	-
Latent Demand	-	-	-
Total Water Demand for GFCSD	**157**	**241**	**800**
Other County Areas - Western Slope			
Residential			
Single-Family Households	5,992	11,471	14,374
Multi-Family Household	179	355	535
Mobile Home Households	658	678	667
Commercial			
Retail Employees	67	434	625
Service Employees	351	1,273	1,600
Other Employees	160	703	930
Other			
Agricultural Demand	2,005	4,865	13,865
Unaccounted for & Beneficial Uses Water	-	-	-
Latent Demand	-	-	-
Total Water Demand for Other County Areas	**9,411**	**19,778**	**32,595**
Total Water Demand for Western Slope	**58,329**	**121,679**	**152,513**

"ec"

Figure 14
El Dorado County Water Agency
El Dorado County Western Slope Water Demand Forecast

1996 General Plan
Western Slope

Purveyor / Demand Component	Total Water Demand (af/yr)		
	1999	2025	Buildout
El Dorado Irrigation District			
Residential			
Single-Family Households	16,446	29,417	39,979
Multi-Family Household	1,111	2,360	4,708
Mobile Home Households	1,377	1,377	1,377
Commercial			
Retail Employees	577	1,819	2,771
Service Employees	1,369	3,791	5,369
Other Employees	691	2,334	3,426
Other			
Agricultural Demand	5,950	22,100	22,580
Recreational Turf Services	1,720	1,720	1,720
Ditches	1,000	1,500	1,500
Unaccounted for & Beneficial Uses Water	5,536	9,963	10,012
Latent Demand	2,030	4,649	5,840
Total Water Demand for EID	**37,806**	**81,030**	**99,282**
Georgetown Divide PUD			
Residential			
Single-Family Households	1,351	1,700	4,150
Multi-Family Household	77	191	1,101
Mobile Home Households	155	155	155
Commercial			
Retail Employees	46	79	322
Service Employees	115	176	614
Other Employees	86	126	417
Other			
Irrigation	4,351	11,770	17,530
Property Owners Association	123	123	123
Unaccounted for & Beneficial Uses Water	3,265	3,601	4,025
Latent Demand	1,387	2,864	3,662
Total Water Demand for GDPUD	**10,956**	**20,785**	**32,101**
Grizzly Flats CSD			
Residential			
Single-Family Households	124	172	1,004
Multi-Family Household	-	2	28
Mobile Home Households	7	6	6
Commercial			
Retail Employees	1	1	3
Service Employees	13	13	14
Other Employees	12	11	11
Other			
Unaccounted for & Beneficial Uses Water	-	-	-
Latent Demand	-	-	-
Total Water Demand for GFCSD	**157**	**205**	**1,066**
Other County Areas - Western Slope			
Residential			
Single-Family Households	5,992	12,045	19,534
Multi-Family Household	179	384	864
Mobile Home Households	658	678	667
Commercial			
Retail Employees	67	403	816
Service Employees	351	1,204	1,985
Other Employees	160	672	1,187
Other			
Agricultural Demand	2,005	4,865	13,865
Unaccounted for & Beneficial Uses Water	-	-	-
Latent Demand	-	-	-
Total Water Demand for Other County Areas	**9,411**	**20,251**	**38,918**
Total Water Demand for Western Slope	**58,329**	**122,271**	**171,366**

"1996_gp"

Figure 15
El Dorado County Water Agency
El Dorado Irrigation District - Residential and Commercial Water Demand Forecast by Service Region

No Project
EID Res & Comm

Demand Component	Total Water Demand (af/yr)											
	1999				2025				Buildout			
	Eastern	Western	El Dorado	Total	Eastern	Western	El Dorado	Total	Eastern	Western	El Dorado	Total
Single-Family Households	5,564	6,897	3,986	16,446	6,509	8,600	10,977	26,086	7,155	9,207	11,156	27,519
Multi-Family Household	489	581	40	1,111	577	688	258	1,523	605	794	274	1,673
Mobile Home Households	557	733	87	1,377	557	733	87	1,377	557	733	87	1,377
Retail Employees	204	265	107	577	286	660	711	1,657	437	1,220	1,040	2,696
Service Employees	375	480	513	1,369	419	734	2,388	3,541	528	1,619	3,189	5,336
Other Employees	251	283	156	691	305	429	1,436	2,170	417	1,049	1,919	3,384
Total Water Demand for EID				**21,570**				**36,353**				**41,985**

Figure 16
El Dorado County Water Agency
El Dorado Irrigation District - Residential and Commercial Water Demand Forecast by Service Region

Roadway Constrained
EID Res & Comm

Demand Component	Total Water Demand (af/yr)											
	1999				2025				Buildout			
	Eastern	Western	El Dorado	Total	Eastern	Western	El Dorado	Total	Eastern	Western	El Dorado	Total
Single-Family Households	5,564	6,897	3,986	16,446	6,915	9,382	11,790	28,087	8,477	10,678	12,172	31,327
Multi-Family Household	489	581	40	1,111	576	701	284	1,561	619	825	303	1,747
Mobile Home Households	557	733	87	1,377	557	733	87	1,377	557	733	87	1,377
Retail Employees	204	265	107	577	320	538	694	1,551	456	1,272	1,043	2,771
Service Employees	375	480	513	1,369	434	703	2,293	3,429	532	1,639	3,198	5,369
Other Employees	251	283	156	691	326	418	1,357	2,101	426	1,076	1,924	3,426
Total Water Demand for EID				**21,570**				**38,107**				**46,016**

Figure 17
El Dorado County Water Agency
El Dorado Irrigation District - Residential and Commercial Water Demand Forecast by Service Region

Environmentally Constrained
EID Res & Comm

Demand Component	Total Water Demand (af/yr)											
	1999				2025				Buildout			
	Eastern	Western	El Dorado	Total	Eastern	Western	El Dorado	Total	Eastern	Western	El Dorado	Total
Single-Family Households	5,564	6,897	3,986	16,446	6,811	9,812	12,373	28,995	7,800	12,273	13,468	33,541
Multi-Family Household	489	581	40	1,111	696	1,385	659	2,740	878	2,459	900	4,237
Mobile Home Households	557	733	87	1,377	557	733	87	1,377	557	733	87	1,377
Retail Employees	204	265	107	577	345	708	781	1,834	416	1,066	842	2,324
Service Employees	375	480	513	1,369	446	871	2,420	3,738	486	1,380	2,587	4,453
Other Employees	251	283	156	691	342	513	1,396	2,251	389	888	1,504	2,781
Total Water Demand for EID				21,570				40,934				48,713

Figure 18
El Dorado County Water Agency
El Dorado Irrigation District - Residential and Commercial Water Demand Forecast by Service Region

1996 General Plan
EID Res & Comm

Demand Component	Total Water Demand (af/yr)											
	1999				2025				Buildout			
	Eastern	Western	El Dorado	Total	Eastern	Western	El Dorado	Total	Eastern	Western	El Dorado	Total
Single-Family Households	5,564	6,897	3,986	16,446	7,068	10,227	12,123	29,417	9,843	15,934	14,202	39,979
Multi-Family Household	489	581	40	1,111	580	1,303	478	2,360	760	3,126	823	4,708
Mobile Home Households	557	733	87	1,377	557	733	87	1,377	557	733	87	1,377
Retail Employees	204	265	107	577	319	747	752	1,819	456	1,272	1,043	2,771
Service Employees	375	480	513	1,369	437	885	2,469	3,791	532	1,639	3,198	5,369
Other Employees	251	283	156	691	327	531	1,476	2,334	426	1,076	1,924	3,426
Total Water Demand for EID				**21,570**				**41,098**				**57,630**

"eid_res"

Figure 19
El Dorado County Water Agency
El Dorado County Tahoe Basin Water Demand Forecast

Alternative 1
Tahoe Basin

Purveyor / Demand Component	Total Water Demand (af/yr)		
	2001	2025	Buildout
South Tahoe PUD			
Residential			
Residential Households	4,054	5,140	5,368
Commercial			
Hotel/Motel Rooms	604	774	836
Campgrounds	21	36	42
Retail Employees	781	1,049	1,104
Service Employees	650	899	953
Recreation Employees	53	46	41
Other Employees	517	705	741
Other			
Unaccounted for & Beneficial Uses Water	1,018	1,243	1,243
Latent Demand	-	-	-
Total Water Demand for STPUD	**7,698**	**9,893**	**10,328**
Tahoe City PUD			
Residential			
Residential Households	274	299	306
Commercial			
Hotel/Motel Rooms	1	1	1
Campgrounds	8	8	8
Retail Employees	1	1	1
Service Employees	3	3	3
Other Employees	-	-	-
Other			
Unaccounted for & Beneficial Uses Water	-	-	-
Latent Demand	-	-	-
Total Water Demand for TCPUD	**288**	**312**	**319**
Other County Areas - Tahoe Basin			
Residential			
Residential Households	916	1,114	1,114
Commercial			
Hotel/Motel Rooms	43	45	46
Campgrounds	13	21	24
Retail Employees	41	53	55
Service Employees	56	79	84
Recreation Employees	3	11	13
Other Employees	27	38	41
Other			
Unaccounted for & Beneficial Uses Water	-	-	-
Latent Demand	-	-	-
Total Water Demand for Other County Areas	**1,099**	**1,361**	**1,377**
Total Water Demand for Tahoe Basin	**9,085**	**11,566**	**12,024**

"tahoe_1"

Figure 20
El Dorado County Water Agency
El Dorado County Tahoe Basin Water Demand Forecast

Alternative 2
Tahoe Basin

Purveyor / Demand Component	Total Water Demand (af/yr)		
	2001	2025	Buildout
South Tahoe PUD			
Residential			
Residential Households	4,054	5,343	5,368
Commercial			
Hotel/Motel Rooms	604	895	911
Campgrounds	21	38	40
Retail Employees	781	1,078	1,104
Service Employees	650	929	953
Recreation Employees	53	61	61
Other Employees	517	716	741
Other			
Unaccounted for & Beneficial Uses Water	1,018	1,243	1,243
Latent Demand	-	-	-
Total Water Demand for STPUD	**7,698**	**10,302**	**10,421**
Tahoe City PUD			
Residential			
Residential Households	274	306	306
Commercial			
Hotel/Motel Rooms	1	4	4
Campgrounds	8	14	14
Retail Employees	1	1	1
Service Employees	3	3	3
Other Employees	-	-	-
Other			
Unaccounted for & Beneficial Uses Water	-	-	-
Latent Demand	-	-	-
Total Water Demand for TCPUD	**288**	**328**	**329**
Other County Areas Demand - Tahoe Basin			
Residential			
Residential Households	916	1,475	1,474
Commercial			
Hotel/Motel Rooms	43	56	57
Campgrounds	13	21	22
Retail Employees	41	53	55
Service Employees	56	79	84
Recreation Employees	3	11	13
Other Employees	27	38	41
Other			
Unaccounted for & Beneficial Uses Water	-	-	-
Latent Demand	-	-	-
Total Water Demand for Other County Areas	**1,099**	**1,733**	**1,746**
Total Water Demand for Tahoe Basin	**9,085**	**12,362**	**12,495**

"tahoe_2"

Figure 21
El Dorado County Water Demand Forecast
Agricultural Water Demand Projections Comparison - Western Slope

Description	Base Year (af/yr) [3]			2025 (af/yr)			Buildout (af/yr)		
	Initial Estimate [1]	Wood Rodgers Estimate [2]	Difference	Initial Estimate [1]	Wood Rodgers Estimate [2]	Difference	Initial Estimate [1]	Wood Rodgers Estimate [2]	Difference
EID	5,239	5,950	711	5,239	22,100	16,861	5,239	22,580	17,341
GDPUD	4,463	4,351	(112)	4,463	11,770	7,307	4,463	17,530	13,067
GFCSD	-	-	-	-	-	-	-	-	-
Other County Areas	-	2,005	2,005	-	4,865	4,865	-	13,865	13,865
Total	**9,702**	**12,306**	**2,604**	**9,702**	**38,735**	**29,033**	**9,702**	**53,975**	**44,273**

"ag_comp"

Sources: EPS; Wood Rodgers, Inc.

[1] As shown in EPS Draft Technical Memorandum (El Dorado County Water Demand Forecast) dated December 19, 2002 (based on data provided by purveyors.
[2] Used in current report.
[3] Base year is 1999 for the Initial Estimate and 2000 for Wood Rodgers estimates.

TABLE 5 - H

ALTERNATIVE 3 (PUMPED / GRAVITY SUPPLY)

CAPITAL COST ESTIMATE

ENR CCI = 6410 (1991)

Item	Description	Quantity	Unit	Unit Price	Cost
Phase 1 (2000)					
1	Expand EDHWTP 14 MGD to 30 MGD	1	lump sum	$7,000,000	$7,000,000
2	Expand Existing Raw Water PS 14 MGD to EDHWTP to 30 MGD	1	lump sum	$1,300,000	$1,300,000
3	New Folsom Lake Raw Water PS to EDHWTP, 10 MGD	1	lump sum	$3,500,000	$3,500,000
4	36" EDHWTP Raw Waterline (Parallel Existing 30" Raw Waterline)	2,500	feet	$260	$641,000
5	42" EDHWTP Raw Waterline (Parallel Existing 24" Raw Waterline)	2,200	feet	$340	$748,000
6	36" Silva Valley Rd Main, Green Valley Rd to Oak Ridge Tank	11,000	feet	$290	$3,190,000
7	30" Lake Hills Drive Main, EDH WTP to Green Valley Rd	8,000	feet	$260	$2,080,000
8	Oak Ridge PS - 3 MGD	1	lump sum	$830,000	$830,000
9	18" Parallel TM, - Oak Ridge PS to Serrano Pkwy	3,500	feet	$130	$455,000
10	Reconstruct Reservoir 10	1	lump sum	$800,000	$800,000
	SUBTOTAL				$21,764,000
	CONSTRUCTION CONTINGENCY (25%)				$5,441,000
	CONSTRUCTION COST				$27,205,000
	ENGINEERING AND ADMINISTRATION (20%)				$5,441,000
	TOTAL PHASE 1 CAPITAL COST				$32,646,000
Phase 2 (2010)					
1	18" Highway 50/Lateral 3 [illegible] Intertie ([illegible] Intertie)	5,370	feet	$130	$698,000
2	12" EDM/Placerville Intertie	4,650	feet	$105	$488,000
3	Placerville Intertie Pressure Reducing Station	1	lump sum	$50,000	$50,000
	SUBTOTAL				$1,236,000
	CONSTRUCTION CONTINGENCY (25%)				$309,000
	CONSTRUCTION COST				$1,545,000
	ENGINEERING AND ADMINISTRATION (20%)				$309,000
	TOTAL PHASE 2 CAPITAL COST				$1,854,000
Phase 3 (2015)					
1	Expand EDHWTP 30 MGD to 38 MGD	1	lump sum	$4,800,000	$4,800,000
2	Expand New Raw Water PS to EDHWTP 10 MGD to 18 MGD	1	lump sum	$800,000	$800,000
3	Improve Crawford Ditch	1	lump sum	$1,100,000	$1,100,000
4	Ringold Creek Piping	1	lump sum	$1,500,000	$1,500,000
5	Bray WTP, 18 MGD	1	lump sum	$17,000,000	$17,000,000
6	48" Placerville Ridge Conduit - Bray WTP to Reservoir 9 Turnout	8,350	feet	$360	$3,014,000
7	36" Placerville Ridge Conduit - Res 9 Turnout to Res 11	25,200	feet	$290	$7,308,000
8	Expand Weber Reservoir to 1,500 af	1	lump sum	$410,000	$410,000
	SUBTOTAL				$35,932,000
	CONSTRUCTION CONTINGENCY (25%)				$8,983,000
	CONSTRUCTION COST				$44,915,000
	ENGINEERING AND ADMINISTRATION (20%)				$8,983,000
	TOTAL P[illegible] CAPITAL COST				$53,898,000

				SUBTOTAL	$47,295,000
				CONSTRUCTION CONTINGENCY (25%)	$11,816,250
				CONSTRUCTION COST	$59,061,250
				ENGINEERING AND ADMINISTRATION (20%)	$11,816,250
				TOTAL PHASE 4 CAPITAL COST	$70,897,500
Phase 5 (2023)					
1	Raw Water PS to Bass Lake - 14 MGD	1	lump sum	$4,000,000	$4,000,000
2	Bass Lake Conduit Booster PS - 14 MGD	1	lump sum	$1,400,000	$1,400,000
3	36" Bass Lake Conduit	39,000	feet	$290	$11,020,000
4	Bass Lake WTP - 14 MGD	1	lump sum	$15,000,000	$15,000,000
5	Bass Lake High Service PS - 14 MGD	1	lump sum	$1,400,000	$1,400,000
				SUBTOTAL	$33,020,000
				CONSTRUCTION CONTINGENCY (25%)	$8,255,000
				CONSTRUCTION COST	$41,275,000
				ENGINEERING AND ADMINISTRATION (20%)	$8,255,000
				TOTAL PHASE 5 CAPITAL COST	$49,530,000
Phase 6 (2030)					
1	16" Pipeline from Placerville Ridge Conduit to Reservoir 9	2,500	feet	$130	$364,000
				SUBTOTAL	$364,000
				CONSTRUCTION CONTINGENCY (25%)	$91,000
				CONSTRUCTION COST	$455,000
				ENGINEERING AND ADMINISTRATION (20%)	$91,000
				TOTAL PHASE 6 CAPITAL COST	$546,000
				GRAND TOTAL CAPITAL COST (ROUNDED)	$200,200,000

TABLE 8-Q

ALTERNATIVE 3A (PUMPED / GRAVITY SUPPLY)

CAPITAL COST ESTIMATE

ENR CCI = 6150

Item	Description	Quantity	Unit	Unit Price	Cost
Phase 1 (2005)					
1	Expand EDHWTP 14 MGD to 20 MGD	1	lump sum	$7,100,000	$7,100,000
2	Expand Existing Raw Water PS to EDHWTP 14 MGD to 20 MGD	1	lump sum	$1,300,000	$1,300,000
3	New Folsom Lake Raw Water PS to EDHWTP, 6 MGD	1	lump sum	$2,600,000	$2,600,000
4	36" EDHWTP Raw Waterline (Parallel Existing 36" Raw Waterline)	2,500	feet	$350	$911,000
5	42" EDHWTP Raw Waterline (Parallel Existing 25" Raw Waterline)	2,200	feet	$340	$718,000
6	42" Silva Valley Rd Main, Green Valley Rd to Oak Ridge Tank	11,000	feet	$340	$3,740,000
7	36" Lake Hills Drive Main, EDH WTP to Green Valley Rd	8,000	feet	$290	$2,320,000
8	Oak Ridge PS - 9 MGD	1	lump sum	$1,000,000	$1,000,000
9	16" WL - Oak Ridge PS to Serrano Parkway	3,500	feet	$130	$455,000
10	Reconstruct Reservoir 10	1	lump sum	$800,000	$800,000
	SUBTOTAL				$20,904,000
	CONSTRUCTION CONTINGENCY (25%)				$5,226,000
	CONSTRUCTION COST				$26,130,000
	ENGINEERING AND ADMINISTRATION (20%)				$5,226,000
	TOTAL PHASE 1 CAPITAL COST				$31,356,000
Phase 2 (2010)					
1	20" DSM Parallel Pipeline (Lateral 3 PS to Reservoir 9)	4,200	feet	$160	$645,000
	SUBTOTAL				$645,000
	CONSTRUCTION CONTINGENCY (25%)				$161,250
	CONSTRUCTION COST				$806,250
	ENGINEERING AND ADMINISTRATION (20%)				$161,250
	TOTAL PHASE 2 CAPITAL COST				$967,500
Phase 3 (2015)					
1	Expand EDHWTP 28 MGD to 32 MGD	1	lump sum	$1,350,000	$1,350,000
2	Expand New Raw Water PS to EDHWTP 9 MGD to 12 MGD	1	lump sum	$900,000	$900,000
	SUBTOTAL				$2,250,000
	CONSTRUCTION CONTINGENCY (25%)				$575,000
	CONSTRUCTION COST				$2,875,000
	ENGINEERING AND ADMINISTRATION (20%)				$575,000
	TOTAL PHASE 3 CAPITAL COST				$3,450,000

			CONSTRUCTION CONTINGENCY (25%)		[illegible]
			CONSTRUCTION COST		$4,442,500
			ENGINEERING AND ADMINISTRATION (20%)		$888,500
			TOTAL PHASE 4 CAPITAL COST		$5,331,000
Phase 5 (2035)					
1	Expand EBWTP 32 MGD to 42 MGD	1	lump sum	$5,000,000	$5,000,000
2	Expand New Raw Water PS 12 MGD to 32 MGD	1	lump sum	$950,000	$950,000
			SUBTOTAL		$6,500,000
			CONSTRUCTION CONTINGENCY (25%)		$1,637,500
			CONSTRUCTION COST		$8,187,500
			ENGINEERING AND ADMINISTRATION (20%)		$1,637,500
			TOTAL PHASE 5 CAPITAL COST		$9,826,000
Phase 6 (2040)					
	No Projects				$0
			SUBTOTAL		$0
			CONSTRUCTION CONTINGENCY (25%)		$0
			CONSTRUCTION COST		$0
			ENGINEERING AND ADMINISTRATION (20%)		$0
			TOTAL PHASE 6 CAPITAL COST		$0
			GRAND TOTAL CAPITAL COST (ROUNDED)		$20,300,000

TABLE 4 –GDPUD
FOLSOM NORTH PUMPING PLANT
PRELIMINARY ESTIMATED COSTS
(1997 Dollars)

MAIN PUMP STATION: RIVER TO REGULATORY STORAGE
Joint FCWA-GDPUD Installation near Auburn Damsite on right bank. Values are incremental costs to GDPUD. Source: Montgomery Watson: "*Final Report - Preliminary Concept Plan - Restoration and Management of Auburn Damsite*", April 1996.

Pump Station, pumps and appurtenances:		$764,400	
Intake Structure:		$283,700	
	Subtotal:	$1,048,100	
Escalation 1 yr @ 4%:		$41,900	
INCREMENTAL COST MAIN PUMP STATION:			$1,090,000
SECONDARY PUMP STATION: Regulatory Storage to Cool:			
Pump station, pumps and appurtenances:			$250,000
PIPELINES:			
21" ϕ high pressure 3,000 ft @ $250/ft:		$750,000	
21" ϕ low pressure 13,000 ft @ $150/ft:		$1,950,000	
Thrust blocking, misc structures, appurtenances:		$200,000	
River crossing incremental cost:		$200,000	
PIPELINE, MAIN PUMP STATION TO COOL:			$3,100,000
TOTAL CONSTRUCTION:			$4,440,000
Engineering Design & Supervision:	20%		$888,000
Contingency:	25%		$1,332,000
	TOTAL:		$6,660,000

COOL MUNICIPAL TREATMENT PLANT: [illegible]

project to study the impact of the 1976/1977 drought and operation of Canyon Creek Project conjunctively with Stumpy Meadows Project.

An existing Stumpy Meadows operational model was modified to operate Stumpy Meadows Project conjunctively with Canyon Creek Project. A file of unimpaired inflow to Canyon Creek Reservoir for 1927 through 1983 was developed from records of a USGS stream gaging station "Canyon Creek near Georgetown" (USGS Station 11433400), which operated from 1967 to 1979. Monthly data for 1927 through 1966 and 1980 through 1983 were estimated by correlating data from the gaging station with Pilot Creek inflow to Stumpy Meadows.

There are no runoff data for Otter Creek watershed. The area above the Otter Creek diversion is 12.2 square miles, with an average annual precipitation of about 56 inches. Runoff at the dam was estimated using the area-precipitation method, adjusted for existing upstream diversions. Duration curves were used to determine the amount of water that could be diverted at Otter Creek Diversion Dam. Evaporation losses for Canyon Creek Reservoir were assumed to be at the same rates as those for Stumpy Meadows Reservoir, even though Canyon Creek is at a lower elevation.

DWR analyzed Canyon Creek operation in conjunction with Stumpy Meadows operation, both with and without an Otter Creek Diversion. Project yield was estimated based on the hydrologic period 1975 through 1978. Safe yield of Canyon Creek Project was estimated to be about 6,100 acre-feet without and 6,900 acre-feet with the Otter Creek Diversion. Assuming a 30 percent agricultural deficiency in 1977, firm yield was estimated to be about 6,780

Canyon Creek would be about $43,400,000 without and $66,000,000 with Otter Creek Diversion. Cost figures appear below:

	Cost (Million Dollars)
Canyon Creek Dam (earthfill)	34.0
Conveyance System, Canyon Creek to Existing Conveyance and Distribution System	11.4
Project Cost Without Otter Creek	45.4
Otter Creek Diversion Dam	0.6
Conveyance to Canyon Creek	20.0
Total Otter Creek Diversion	20.6
Total Project Cost With Otter Creek Diversion	66.0

Economic and Financial Feasibility

To determine cost per acre-foot of water from the Canyon Creek Project, the following assumptions were used:

Repayment Interest	6%
Construction Interest	6%
Economic Life	50 years
Construction Period	2 years
Annual Operation and Maintenance Cost	$100,000

Based on these assumptions and estimated firm yield, water cost was estimated to be $460 per acre-foot of firm yield without and $580 per acre-foot of firm yield with Otter Creek Diversion. The incremental cost of firm yield from Otter Creek would be over $1,250 per acre-foot. This is *not* cost per acre-foot required or delivered. Otter Creek Diversion is costly, and the additional water supply it would provide would not be needed by 2020. Otter Creek Diversion should not be considered at this time.

A supplemental water supply will not be required until after the end of the century, and even then water may be required only during critically dry situations. The Canyon Creek Project would be an "insurance policy" to guarantee that GDPUD has water to meet

TABLE 4

PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST
SPRING FLAT RESERVOIR SITE[1/]

Item	Description	Quantity	Unit	Unit Price, $	Total Price, $
1	Mobilization and Demobilization	1.0	LS	35,000.00	35,000
2	Clearing and Grubbing	30.0	AC	4,500.00	135,000
3	Stripping	15.2	AC	1,050.00	16,000
4	Reservoir Excavation	318,515.0	CY	4.50	1,433,300
5	Dike Embankment from Reservoir Excavation	312,480.0	CY	3.40	1,062,500
6	Haul, Spread, and Compact Excess Material	6,026.0	CY	4.70	28,300
7	Geosynthetic Clay Lining				
	Flat Bottom	641,701.0	SF	0.43	275,900
	Side Slopes	220,243.0	SF	0.52	114,500
8	Operating Road Aggregate (4" thick)	851.0	TN	16.80	14,300
9	Perimeter Chain Link Fencing (6')	4,375.0	LF	11.30	49,400
10	Erosion Control Seeding	10.1	AC	1,460.00	14,700
11	Pump Station with Generator Unit	1.0	LS	130,000.00	130,000
12	Inlet/Outlet Structure	1.0	LS	75,000.00	75,000
13	Interconnection Pipeline (12" diameter)	3,500.0	LF	34.20	119,700
	Subtotal				3,303,600
	Construction Contingencies @ 15%				525,500
	Subtotal				4,029,100
	Engineering, Legal, and Administrative Fees @ 15%				604,400
	TOTAL				4,633,500

[1/] The preliminary opinion of probable construction cost shown above does not include land acquisition costs or recurring costs for facilities operation and maintenance and equipment replacement.

MASTER MEMORANDUM OF UNDERSTANDING REGARDING A JOINT BENEFIT INVESTIGATION PLAN AMONG THE SACRAMENTO MUNICIPAL UTILITY DISTRICT, EL DORADO COUNTY WATER AGENCY, AND EL DORADO IRRIGATION DISTRICT

By execution of this Master Memorandum of Understanding (MMOU), the Sacramento Municipal Utility District (SMUD), the El Dorado County Water Agency (EDCWA), and El Dorado Irrigation District (EID), individually "Party" and collectively the "Parties", establish the general governing principles and framework within which to develop and implement a Joint Benefit Investigation Plan (Plan) for studies and other actions of mutual benefit to the Parties parallel to the UARP relicensing of the Upper American River Project (UARP). The Parties make their commitments based on the following facts:

A. SMUD is a municipal utility district established pursuant to the Municipal Utility District Act (California Government Code §§ 11501, *et seq.*) and the Federal Energy Regulatory Commission (FERC) licensee for and owner of the UARP, FERC No. 2101, located primarily in El Dorado County.

B. EDCWA is a body politic and corporate established by the El Dorado County Water Agency Act (California Water Code Appendix §§ 96-1, *et seq.*). EDCWA consists of all the territory lying within the exterior boundaries of El Dorado County, and the board of directors of the agency is composed of representatives from both the El Dorado County Board of Supervisors and public water purveyors within the county. EDCWA has the power to take acts necessary in order that sufficient water may be available for present and future beneficial uses within the agency boundaries, including the power to carry on technical and other necessary investigations pertaining to water supply, water rights, and use of water within the agency.

C. EID is an irrigation special district duly organized and existing since 1925 under the Irrigation District Act (California Water Code §§ 20500 *et seq.*) and authorizing statutes (California Water Code §§ 22975 *et seq.*). EID is governed by a five-member board elected by divisions. Under existing law, EID provides

protection and enhancement of aquatic and terrestrial biotic resources and habitat. Although the Parties agree that the scope of the current relicensing process addresses new and improved recreation facilities and opportunities, including whitewater recreation, and protection and enhancement of aquatic and terrestrial biotic resources and habitat, the Parties also agree that the current scope of the UARP relicensing process may not address all of El Dorado County's water interests.

E. Therefore, the Parties believe that there are mutually beneficial reasons for SMUD, EDCWA, and EID to enter into an agreement for the purpose of defining and conducting joint investigations to identify new project benefits that would be mutually beneficial to SMUD, EID, and EDCWA and/or any entity it represents or of benefit to an individual Party or entity.

F. The Parties intend to investigate new project benefits that could arise from any one or more of three broad categories: changes in operation of existing facilities; physical modifications to existing facilities; and the construction of new facilities.

F. Pursuant to written agreements or authorizations secured by EDCWA, EDCWA will represent the interests of all local public agencies with authority and responsibility for land use and water resource planning and supply in El Dorado County with the exception of EID, including but not limited to El Dorado County, El Dorado County Water Agency, and Georgetown Divide Public Utility District. EID has chosen to represent itself and its execution of this agreement is a condition precedent to initiating this MMOU. Further, EDCWA obtaining written agreements or authorizations for representation of the aforementioned entities is also a condition precedent to initiating this MMOU. Such agreements or authorizations will include provisions acknowledging that the entity represented by EDCWA agrees to the terms of this MMOU and any subsequent agreements developed pursuant to this MMOU.

G. The Parties agree that data, information and studies developed through this agreement that are outside the scope of the UARP relicensing will not be used by a party in the FERC UARP relicensing without further agreement of the Parties.

NOW, THEREFORE, SMUD, EDCWA, and EID hereby agree as follows:

A. General Governing Principles:

A.1. The Plan can best be accomplished through the use of a master memorandum of understanding (MMOU) and two or more subsequent memorandums of understanding (SMOU).

A.1.1. This MMOU establishes: (a) the general principles that will govern the Parties' actions throughout development and implementation of the Plan; (b) the general framework for conducting the Plan; and (c) the specific actions to be taken by the Parties in Phase 1 of the Plan.

A.1.2. Subsequent SMOUs will be executed prior to implementation of each Plan phase after Phase 1. Each SMOU will contain provisions consistent with this MMOU and will incorporate directly, or by reference, the general governing principles contained in Section A of this MMOU.

A.2. Any negotiations to implement new project benefits as a result of activities under this MMOU shall consider whether existing UARP electrical production would thereby be reduced. If it would, the Parties shall address the issue of whether SMUD is owed compensation for diminished production, and if so, how much.

A.3. SMUD will continue to be the sole owner and licensee of the UARP, as it exists at the time of this MMOU or as it may be improved. EID and EDCWA and those entities it represents each agree not to submit a competing application for a new license for the UARP, unless SMUD fails to file or abandons a timely application for a new license for the UARP or transfers the UARP license to any other entity.

A.4. Except as provided in Recital G and Sections A.3., A.6.2., A.6.3., A.6.4., A.7., A.8., B.1.2.c., and B.1.3.d. herein, this MMOU does not waive any rights or remedies afforded any Party under the Federal Power Act or its implementing regulations, as amended or other relevant state or federal law.

A.5. The Parties agree to cost share the studies required to implement the Plan in the following manner:

studies; EID and/or EDCWA will also bear 50% of the costs for general studies. For purposes of this MMOU, general studies are investigations or analyses that do not clearly relate to a perceived benefit for one Party. An example of a general study is the preliminary constraints analysis identified in Section B.1.1.b.(3) that will focus on legal and permitting requirements and constraints associated with water development.

A.5.3. Focused Studies: All other studies will be considered to be "Focused" studies and will be funded on a cost-benefit basis to be negotiated by the Parties prior to implementation of each study.

A.5.4. Other costs: Each Party will bear its own staff, consultant, and legal costs.

A.5.5. The Parties may mutually agree to cost-sharing arrangements for particular general studies and focused studies that allow either Party's share to be deferred over time, and /or partially or wholly offset by in-kind contributions.

A.6. If the Plan results in the selection of one or more Preferred Project Alternatives that necessitate obtaining new or modifying existing water rights through application to the State Water Resources Control Board (SWRCB), the Parties agree it will be important to ensure that the SWRCB process be phased with the applicable FERC process (either UARP relicensing or a new proceeding) to avoid performing unnecessary or duplicative environmental studies or impeding the UARP relicensing process.

A.6.1. It will be the responsibility of the primary beneficiary of the new right or of the modification to an existing right to apply to the SWRCB for the required approvals, which approvals the Parties acknowledge will be subject to all valid and existing water rights. This step cannot be taken until there is a clear agreement on a project that will deliver a specified volume of water at a specified location.

A.6.2. EID and/or EDCWA (or an agency represented by EDCWA for purposes of this MMOU) will be the applicant for any new

consumptive water right or for a modification of an existing consumptive water right. The Parties recognize that any project that requires a new consumptive use water right or a significant modification to an existing consumptive use right is likely to be controversial and involve protracted proceedings before the SWRCB. Therefore, to the extent that any Preferred Project Alternative requires such SWRCB approval, and to the extent FERC approval is required, such project will not be included as part of the UARP relicensing and will be the subject of a separate proceeding unless the Parties otherwise agree.

A.6.3. Prior to initiating any FERC proceeding for a Preferred Project Alternative involving a new consumptive use water right, EID and/or EDCWA must have identified water available for appropriation and the SWRCB process must have advanced at least to the point where SWRCB staff has given tentative concurrence that water is available for appropriation. Prior to initiating any FERC proceeding for a Preferred Project Alternative involving a significant modification to an existing consumptive use right, the SWRCB proceeding must have advanced to the point where the time for filing protests has passed and (1) the water right applicant has resolved, or the SWRCB has dismissed, all protests claiming an interference with a vested water right; or (2) the Parties agree, in the exercise of their respective absolute discretion, that the FERC proceeding may nonetheless be initiated.

A.6.4. No project will be forwarded into the UARP relicensing proceeding except by the assent of all Parties to this MMOU. The Parties' decision whether to forward a project into the UARP relicensing will be guided by their mutual desire to avoid disruption to the UARP relicensing timetable and work programs.

A.6.5 Further, the Parties recognize the importance of, and SMUD, EID, and certain agencies represented by EDCWA, have participated in the regional water planning effort known as the Water Forum, are signatories to the Water Forum Agreement, and are or will be signatories to subsid[illegible] Purveyor Specific Agreements. Therefore, the Parties recognize that the consumptive use element of any new project cannot be inconsistent with the Water Forum

that may reflect a variety of water needs such as aquatic resource protection, recreation, and w supply. This computer model, developed within the UARP relicensing process, will initially reflect the existing configuration of the UARP, and as such, will be useful in evaluating modifications to UARP operations. To the extent the Water Balance Model must be modified to incorporate alternatives that involve modifications to UARP facilities or construction of new facilities, the Parties will share the cost of such modifications as described in Governing Principle E of this MMOU, Section A.5.

A.8. The Parties agree that during the conduct of the Plan, confidential and proprietary information of the Parties or those entities represented by EDCWA may be utilized or developed. In order to protect such information, the Parties agree to execute a Confidentiality Agreement, which shall become Exhibit A to and incorporated within this MMOU.

A.9. The Parties recognize that circumstances may arise that may necessitate termination of the MMOU or a change in the Parties.

A.9.1. This MMOU and any subsequent SMOUs may be terminated at any time by the Parties by mutual agreement as evidenced in a writing. Such termination shall also be effective as to all parties represented by EDCWA.

A.9.2. If one or more of the entities represented by EDCWA wishes to discontinue EDCWA's representation and directly participate in the Plan, that entity shall notify the Parties in writing of its intent; this writing must also include the name of the entity's representative and an unequivocal statement of agreement that the entity agrees to be bound by all provisions of the MMOU and any subsequent SMOUs that may have been executed prior to the notice that are applicable to EDCWA or any of the entities represented by it.

A.9.3. SMUD reserves the right, following 30-days' written notice to EDCWA's Board, to terminate the MMOU and any subsequent SMOUs that may have been executed if one or more entities represented by EDCWA withdraws from the Plan, initiates litigation against SMUD related to or arising from the relicensing

of the UARP in any forum, or files a competing application for the new license for the UARP.

A.9.4. If any Party commits a material breach of this MMOU, the non-breaching Party or Parties may provide written notice to the Board of the breaching Party and specify a reasonable time, but not less than 30 days, to cure the breach. If the breaching Party then fails to cure the breach within the specified time, the non-breaching Party or Parties reserve the right to terminate the MMOU and any subsequent SMOUs that may have been executed, following 15-days' written notice to the breaching Party's Board of the intent of the non-breaching Party or Parties to terminate.

A.10. The Parties agree that all studies and analyses of potential alternatives conducted pursuant to this MMOU that relate to consumptive water supply will include elements providing for identification of potential impacts on the water rights and water supply of third parties, including the City of Sacramento (Sacramento) and U. S. Bureau of Reclamation (Reclamation), and identification of measures that might minimize or avoid such impacts, with the goal of eliminating any such impacts. If any study indicates that such a third-party impact might occur, the Parties will make all relevant study data available to the affected third party.

B. Framework for Conducting the Joint Benefit Investigation Plan

B.1. The Parties agree that the work to be conducted under the Plan will be accomplished in three phases with targeted dates for completion. However, to the extent the work is conducted in parallel with the UARP relicensing process with the intent of incorporating input into that process, the timelines of that process will be controlling.

B.1.1. Phase 1 - Identification of Preliminary Alternatives: Phase 1 work will be governed by this MMOU. The end product of this phase will be the development of Preliminary Alternatives for study in Phase 2.

B.1.1.a Immediately following execution of this MMOU, SMUD, [illegible], and EDCWA will each designate members to serve as a joint team of experts to oversee

Workshop in Placerville to allow all other gover[illegible]nt agencies (local, state, and federal), non-governmental organizations, and interested individuals or groups to present possible investigation and project ideas or alternatives for consideration by the JBI Team. The Input Workshop will focus on ideas, not merely the expression of interests or concerns. Target date: third quarter of 2002.

(2) EID and EDCWA will provide the JBI Team with preliminary estimates of the following for EID and EDCWA and the entities it represents based on best available information: current water rights held, current water usage by location and type of use (irrigation, municipal, industrial) future water needs by location and type of use, water supply projects currently under development or consideration. Target date: third quarter of 2002. (The County's information will subsequently be supplemented by the results of a long-range County Water Resources Development and Management Plan EDCWA has commissioned from Boyle Engineering.)

(3) As part of the JBI Team's study development, the Parties will undertake a separate effort to identify state and federal legal and permitting requirements and constraints that need to be considered at this phase of the process. Target date: third quarter of 2002.

(4) Based on the information developed during Phase 1, the JBI Team will determine Preliminary Alternatives for further study during Phase 2. These alternatives may include re-operation of the existing UARP project