ENCLOSURE

Water Supply Availability Analysis for the Coyote Valley Specific Plan

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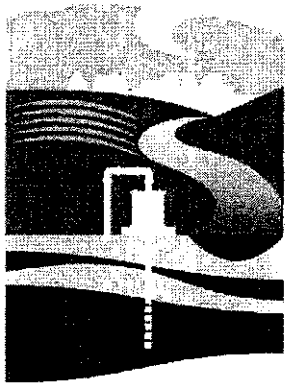


groundwater management

Santa Clara Valley Water District

Coyote Valley Specific Plan Water Supply Availability Analysis

The City of San Jose is currently preparing for the development of the Coyote Valley, and has asked the District to provide information on the water supply available to serve the development that will result through the Coyote Valley Specific Plan (CVSP).

Under SB 610, preparing the Water Supply Assessment for new development is the responsibility of the appropriate water retail agency. However, if the CEQA lead agency is unable to identify the retail water supplier for the project, then the lead agency is responsible for preparing the SB 610 Assessment. Given the District's role as the water wholesaler and groundwater manager in this area, the City as lead agency has requested that the District, in a consultation role, provide information relevant to the water supply for the proposed CVSP. This information will aid the City in its preparation of the SB 610 Water Supply Assessment.

This document was prepared in response to that request, and includes: a discussion of the existing conditions in Coyote Valley, the projected water supply based on current operations and facilities, and the estimated water demand after the CVSP is in place. Possible alternatives for supplementing the water supply in Coyote Valley are also discussed. The information in this analysis is consistent with the District's 2001 Urban Water Management Plan (UWMP) and the 2003 Integrated Water Resources Planning Study (IWRP), both of which considered the water demand from the proposed CVSP. How the alternatives fit into these existing District Plans is also discussed.

In May of 2004, the District provided guiding principles to help the City of San Jose and its consultants in identifying, developing, ranking, and implementing alternatives for the CVSP. By following those guiding principles, the City can help ensure the District's success in meeting the long-term needs of those who live and work in Santa Clara County, including the Coyote Valley.

The following analysis relies on information currently available from the City of San Jose and its CVSP core consultant team as well as the District's UWMP, IWRP, and other District sources. As more information is developed or our understanding changes through the land use planning and CEQA processes, some of the following analysis may need to be updated.

Coyote Valley and the District's Urban Water Management Plan

During the preparation of the District's 2001 UWMP, City of San Jose staff informed the District of the long-term vision for the Coyote Valley. Based on this information, the UWMP did include the vision's projection of 25,000 households and 50,000 jobs for the Coyote area.

As stated in the UWMP, the District's Board of Directors has adopted Ends Policies as direction to the CEO and staff as to the intended results of District actions. These Ends Policies, and how they can be used to guide the CV SP, were provided to the City in a document entitled "The Santa Clara Valley Water District's Guiding Principles for the City of San Jose's Coyote Valley Specific Plan" in May 2004 and are attached for reference. Following the guiding principles will help ensure the District's success in meeting the long-term needs of those who live and work in Santa Clara County, in accordance with the District's adopted Plans such as the UWMP.

In recognition of the high variability in hydrology and the importance of a reliable water supply in all years, not just on average, The UWMP and the IWRP evaluate the water supply outlook under different hydrologic conditions. Although the water supply information in this WSAA has

been updated from that found in the 2001 UWMP to reflect the District's increased understanding of the Coyote Subbasin, the same approach for characterizing water supply is used. As described later in this document, the water supply projections are very similar and the differences do not substantially change the water supply reliability estimates for the Coyote Valley.

Water conservation was identified as an important component of meeting future water needs in both the IWRP and the UWMP. Recycled water is also one of the key components of the District's water supply mix. As stated in the UWMP, the District target is that water recycling will account for 10 percent of the total water supply in Santa Clara County by the year 2020. Promoting water use efficiency measures such as water conservation and water recycling in major new developments like the CVSP is consistent with the District's water supply planning as adopted in the UWMP and the IWRP.

Background

The mission of the District is a healthy, safe, and enhanced quality of living in Santa Clara County through watershed stewardship and comprehensive management of water resources in a practical, cost-effective and environmentally sensitive manner. As the County's water wholesaler, the District helps ensure there is enough water for the area's needs now and in the future, while maintaining flood protection and protecting the environment.

Since the 1850s, groundwater has been an important component of water supply in Santa Clara County. Historical overpumping of the groundwater subbasin and significant land subsidence in the northern portion of the county led to the formation of the District as the county's groundwater management agency in 1929. Growing populations increased demands on the groundwater subbasin. Land subsidence continued and led to the construction of ten local storage reservoirs, with a combined capacity of 169,000 acre-feet, the importation of surface water, and the construction of three water treatment plants. Today, the District conjunctively manages groundwater and surface water to provide a reliable water supply for the county's 1.7 million residents and its businesses.

The District operates and maintains a countywide conservation and distribution system to convey untreated surface water to groundwater recharge facilities and treatment plants, and to convey treated water to retailers. This water conservation and distribution system includes local reservoirs designed to capture and store runoff, three water treatment plants, District in-stream and off-stream groundwater recharge facilities, and the groundwater subbasins.

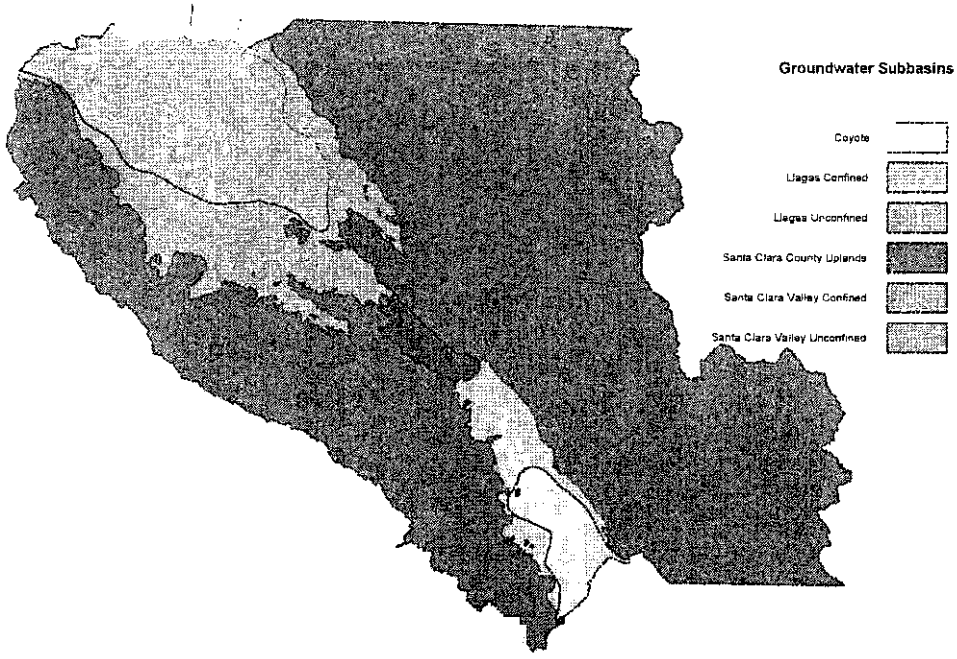
Santa Clara County Groundwater Subbasins

Santa Clara County contains three interconnected groundwater subbasins that transmit, filter, and store vast quantities of water. These subbasins are shown in Figure 1.

The Santa Clara Valley Subbasin in the northern part of the county extends from Coyote Narrows at Metcalf Road to the county's northern boundary. The subbasin is bound on the east by the Diablo Range and on the west by the Santa Cruz mountains; these two ranges nearly converge at the Coyote Narrows. The Coyote Subbasin extends from Metcalf Road south to Cochrane Road, where it meets the Llagas Subbasin at a prescribed boundary that generally coincides with a groundwater divide. The Llagas Subbasin extends from Cochrane Road, in Morgan Hill, to the county's southern boundary. The subbasin is hydraulically connected to the Bolsa Subbasin of the Hollister Basin and is bounded on the south by a prescribed boundary at the Pajaro River (the Santa Clara - San Benito County line).

The three subbasins serve multiple functions. They transmit water through the gravelly alluvial fans of streams into the aquifer zones. They filter water, making it suitable for drinking and for municipal, industrial, and agricultural uses. The subbasins collectively also have vast storage capacity, together providing protection against drought and surface water interruptions. Groundwater elevations are affected by natural and artificial recharge and groundwater extraction, and are an indicator of how much groundwater is in storage at a particular time. Both low and high elevations can cause adverse conditions. Low groundwater levels can lead to dry water-production wells and adverse impacts to fisheries and riparian habitats. High groundwater levels can lead to damaged crops, ineffectual septic systems, and nuisance conditions for below-ground structures necessitating dewatering.

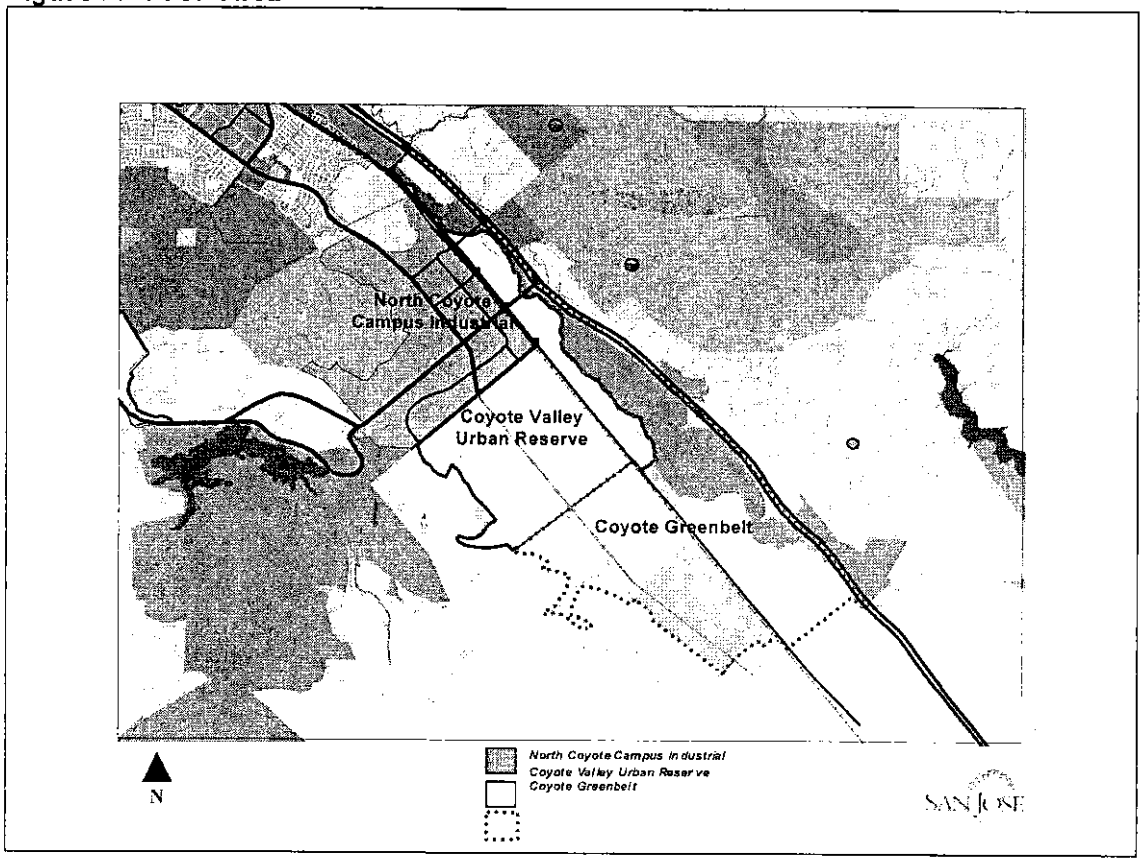
Figure 1. Groundwater Subbasins in Santa Clara County



The Coyote Valley Specific Plan

The Coyote Valley Specific Plan (CVSP) being developed by the City of San Jose calls for a mixed used development of more than 25,000 residences and 50,000 jobs within an area that extends from the Coyote Narrows in the north almost to Burnett Avenue in the south. Although this area makes up the majority of the Coyote Subbasin, the subbasin includes some additional area, primarily to the south and to the east. The CVSP is shown in Figure 2.

Figure 2. CVSP Area



Evaluating the future water supply for the CVSP entails looking at the water use and water supply for the Coyote Subbasin as a whole, including not only the greenbelt area but also a portion of the City of Morgan Hill that is also served by groundwater from the Coyote Subbasin. This is necessary since all users within the subbasin impact each other, relying on a shared source of supply.

Historical and Existing Conditions in the Coyote Valley Area

The Coyote Subbasin is approximately 7 miles long and 2 miles wide and has a surface area of approximately 15 square miles. The Coyote Subbasin is generally unconfined and has no significant, laterally extensive clay layers. The Coyote Subbasin is hydraulically interconnected with the Santa Clara Valley Subbasin to the north, and groundwater generally flows north from the Coyote Subbasin into the Santa Clara Valley Subbasin.

Coyote Creek flows north along most of the length of the subbasin near its eastern extent, downstream of and benefiting from controlled releases from Anderson and Coyote Reservoirs. Fisher Creek is an unregulated stream on the west that also flows north, receiving drainage from a significant portion of the Coyote valley floor before converging with Coyote Creek near the Narrows. In its downstream reaches, Fisher Creek gains flow from the subbasin during high groundwater conditions. Both creeks support important habitat corridors, including steelhead and salmon fisheries within Coyote Creek.

The water needs of this area are currently served by the Coyote Subbasin primarily. The subbasin is replenished both by natural recharge and by artificial recharge from controlled

releases to Coyote Creek. The District's Cross Valley pipeline traverses the area, carrying water from the Central Valley Project's San Felipe Division as well as, potentially, water from Anderson Reservoir to the District's water treatment plants and recharge facilities in the northern portions of the County. Recycled water is scheduled to be delivered to the Metcalf Energy Center in the northern area of the Coyote valley from the City of San Jose's South Bay Water Recycling Program. This projected demand of about 2850 acre-feet per year will continue to be served by recycled water in the future as well.

Historically, low lying areas in the north and western portions of the valley have experienced drainage difficulties, including high groundwater conditions. The operational storage of the Coyote Subbasin is estimated to be quite small, only about 25,000 acre-feet. Maintaining groundwater supplies while avoiding nuisance high-groundwater conditions is a challenge made even more difficult by the important fishery and habitat needs supported by Coy ote Creek.

As an unconfined aquifer with little separation between the land surface and groundwater surface, the subbasin is also very sensitive to potential groundwater contamination. The valley is largely rural currently, although nitrates from septic systems and agricultural runoff are found in some areas. As the area urbanizes, additional potential sources of contamination (such as urban runoff, gas stations, dry cleaners, and leaking sewer lines) may present new challenges.

Existing Groundwater Elevations

General groundwater elevations in the Coyote Subbasin are represented by three index wells shown in Figure 3. Throughout 2003, groundwater elevations were at least 34 feet above minimum recorded levels and at least 13 feet below the maximum levels recorded in 1983.

General groundwater elevation conditions for the Coyote Subbasin are shown on composite contour maps showing lines of equal groundwater elevation for spring and fall 2003 (Figures 4 and 5). Data from 49 wells were used to construct these contour maps. These maps show a fairly significant decline in groundwater elevations between the spring and fall. This decline is an annual phenomenon that corresponds to the agricultural irrigation season and increased summer water use. Groundwater elevations increase in the winter, when most groundwater extraction for irrigation stops and the rainy season begins.

Figure 3. Hydrograph for Coyote Subbasin Index Wells

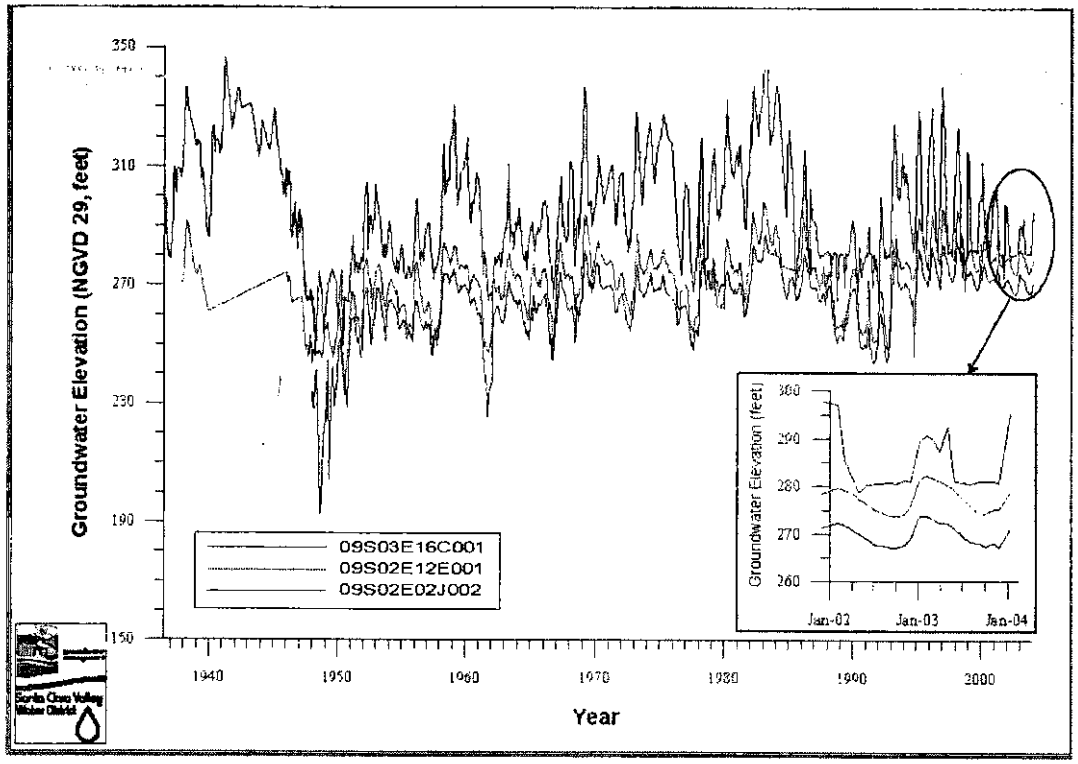


Figure 4. Groundwater Elevation Contours Spring 2003

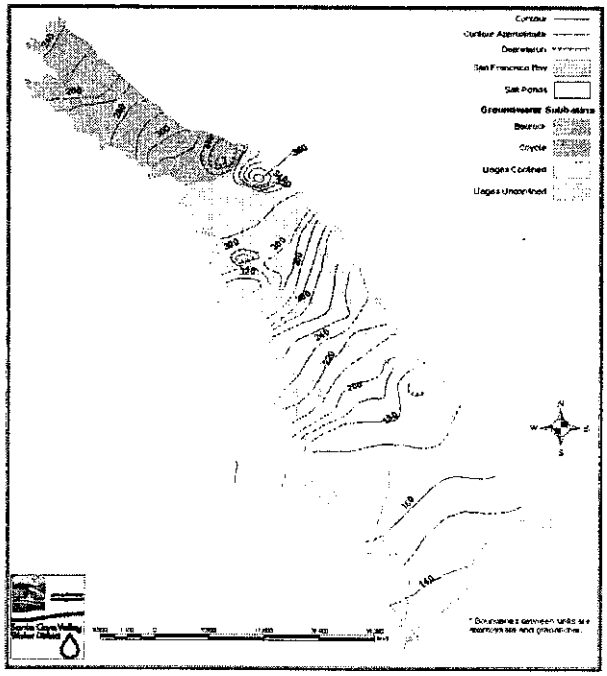
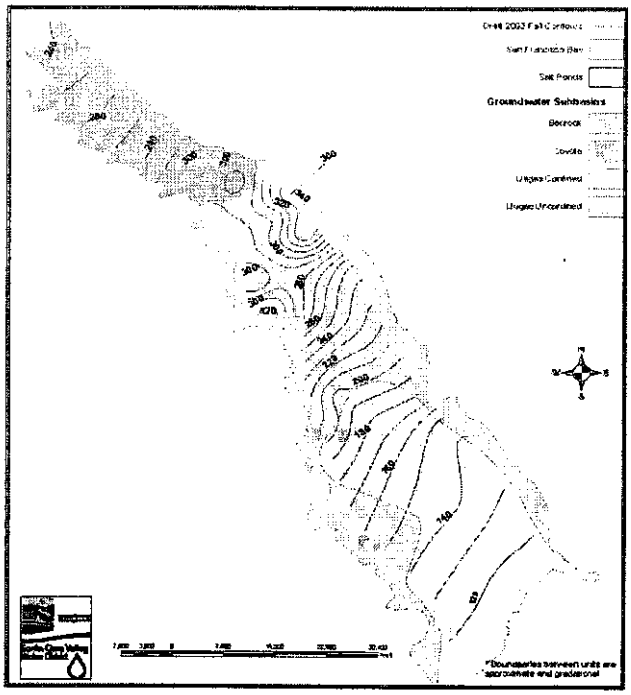


Figure 5. Groundwater Elevation Contours Fall 2003



Existing Groundwater Quality

Existing groundwater quality in the Coyote Subbasin is quite good, although there are wells with nitrates above the Drinking Water Standard. Figure 6 summarizes typical groundwater concentrations within the Coyote Subbasin.

Figure 6. Typical Concentration Ranges for Common Inorganic Constituents[a]

Constituent	Coyote Subbasin Principal Aquifer Zone[b]	Drinking Water Standard[c]	Agricultural Objective[d]
Aluminum (ug/L)	<50	1,000	5,000
Arsenic (ug/L)	<2	50	200
Barium (ug/L)	<100 - 126	1,000	-
Beryllium (ug/L)	<1	4	500
Boron (ug/L)	<100 - 132	-	200
Bromide (ug/L)	<Detection Limit or ND	-	-
Cadmium (ug/L)	<1	5	50
Calcium (mg/L)	37 – 69	-	-
Chloride (mg/L)	17 – 40	600	355
Chromium, Total (ug/L)	<1 – 2	50	1,000
Copper (ug/L)	<50	1,000	500
Fluoride (mg/L)	<0.100	1.7	2
Hardness (mg/L as $CaCO_3$)	180 – 294	-	-
Iron (ug/L)	<100 – 700	300	20,000
Lead (ug/L)	<5	15[e]	100
Magnesium (mg/L)	22 – 43	-	-
Manganese (ug/L)	<20	50	10,000
Mercury (ug/L)	<1	2	-
Nickel (ug/L)	<10	100	2,000
Nitrate (mg/L as NO_3)	6 – 48	45	135[e]
Selenium (ug/L)	<2 - <5	50	20
Silver (ug/L)	<1 - <10	100	-
Sodium (mg/L)	17 – 33	-	-
Specific Conductance (uS/cm)	516 – 625	2,200	3,000
Sulfate (mg/L)	30 – 60	600	-
Total Dissolved Solids (mg/L)	270 – 430	1,500	10,000
Zinc (ug/L)	<50	5,000	10,000

[a] Typical concentration ranges at the approximate 95% Confidence Interval estimate of the true population median.
[b] Principal Aquifer Zone: Aquifer zone from which most water supply wells pump.
[c] Drinking Water Standard: Maximum Contaminant Level (MCL) specified in Title 22 of the California Code of Regulations.
[d] Agricultural Objective: Agricultural water quality objective in the 1995 Water Quality Control Plan for the San Francisco Bay Basin, Regional Water Quality Control Board.
[e] Action level. California has not established a MCL for lead. However, there is a 15 ug/L action level for lead. The action level is exceeded if the concentration of lead in more than 10 percent of tap water samples is greater than 15 ug/L.
Nitrate Agricultural Objective: The value listed in the Basin Plan is 30 mg/L NO3+NO2 (as N), which is approximately equivalent to 135 mg/L nitrate.

Existing and Historical Water Use

The District has groundwater pumping data for the Coyote Valley dating back to July of 1987, as summarized below in Figure 7. The water uses currently in the subbasin include agricultural, domestic, and municipal and industrial. Some of the City of Morgan Hill water supply is also met by groundwater pumping from the Coyote Subbasin.

Figure 7. Historical Groundwater Pumping in acre-feet

Year	Pumping, in acre-feet
1987 (half-year)	3,709
1988	7,003
1989	6,012
1990	6,609
1991	6,434
1992	6,153
1993	6,106
1994	6,467
1995	6,693
1996	6,588
1997	8,004
1998	6,915
1999	7,784
2000	7,232
2001	6,947
2002	6,740
average	6,799

Existing Water Supply

The existing water supply is comprised primarily of groundwater, sustained by both natural and artificial recharge. Local water captured by the Anderson/Coyote reservoir system and imported water from the Central Valley Project both provide source water for recharge in Coyote Creek. It is estimated that the groundwater subbasin would remain in balance with an average annual pumping of about 8,000 acre-feet, given current District operations on Coyote Creek. The groundwater subbasin supply is discussed in more detail below.

Total Projected Demand and Water Supply for the Coyote Subbasin

Projected Water Demand

The water demand projections for the CVSP summarized below are described in more detail in the Water Demand Technical Memorandum prepared by HMH Engineers and dated June 30, 2004. These demand projections reflect the conceptual plan for the CVSP as of that time – as the land use plan is developed, the water demand projections for the CVSP will need to be updated. The demand projections described below and used in determining the sufficiency of the water supply are for project build-out; a timeline for the development of the CVSP has not been identified. It is anticipated that these demands will take decades to develop.

Greenbelt and Others

The current policies for the City of San Jose and for the County are for the areas in Coyote valley designated "greenbelt" to stay in their existing state. In estimating projected demand, it is