Appendix J

Water Supply Assessment

DRAFT

WATER SUPPLY ASSESSMENT
for
UNION CITY TRANSIT-ORIENTED DEVELOPMENT PROJECT

May 2008

Prepared for

CITY OF UNION CITY
UNION CITY, CALIFORNIA

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INTRODUCTION

BACKGROUND

The City of Union City has received an application for the Transit-Oriented Development Project (or "Project") which includes a total of 1,200 high-density residential units, 950,000 square feet of commercial office space and 100,000 square feet of commercial retail building space, to be constructed in three phases. The Project, located adjacent to the Union City BART station, is within an area identified in Union City's Redevelopment Plan EIR (2001) as Site 12 (Figures 1 and 2). Because the number of residential units of this Project will exceed the 2001 Redevelopment Plan EIR assumptions, a general plan amendment and rezoning to increase the permissible housing density will be completed as part of the Project.

The Project will require water supplies for the new homes and businesses. The existing water provider in the area is the Alameda County Water District (ACWD, or the "District"). ACWD is a retail water purveyor with a service area that includes the cities of Fremont, Newark and Union City. ACWD provides water primarily to urban customers: approximately 70% of supplies are used by residential customers, with the balance (approximately 30%) utilized by commercial, industrial, institutional and large landscape customers. Total distribution system water use (excluding system losses) was approximately 49,900 acre-feet (AF), or an average of 44.5 million gallons per day (mgd) in fiscal year 2006-07. The District's primary sources of supply come from the California State Water Project (SWP), the San Francisco Regional Water System, and local supplies from the Alameda Creek Watershed and Niles Cone Groundwater Basin (underlying the ACWD service area).

California Water Code Section §10910 requires that a water supply assessment be provided to cities and counties for a project that is subject to the California Environmental Quality Act (CEQA), and which surpasses a threshold for the number of housing units and/or square feet of commercial/industrial buildings. The cities and counties are mandated to identify the public water system that might provide water supply to the project and then to request a water supply assessment. The water supply assessment documents sources of water supply, quantifies water demands, evaluates drought impacts, and provides a comparison of water supply and demand that is the basis for an assessment of water supply sufficiency.

PURPOSE

The purpose of this Water Supply Assessment is to document ACWD's existing and future water supplies for its service area and compare them to the area's future water demands, including the future water demands of the proposed Transit-Oriented Development Project. This comparison, conducted for both normal hydrologic conditions and drought conditions, is the basis for an assessment of water supply sufficiency in accordance with the requirements of California Water Code Section §10910.

METHODOLOGY

ACWD's long-term water supply strategy was developed as part of the District's Integrated Resources Planning Study (IRP), and adopted by the ACWD Board in 1995. ACWD's 2006-2010 Urban Water Management Plan (2006-2010 UWMP) incorporates this water supply strategy. The 2006-2010 UWMP (included as Attachment A) documents ACWD's existing and future water supplies, projected future demands in the service area, and provides a comparison of water supplies and demands under normal and dry year conditions. The UWMP provides the basis for this water supply assessment.

Because the proposed Project's water demands were accounted for in the UWMP, this water supply assessment serves largely as a procedural assurance that the project demands have been properly considered in ACWD's long-term planning and will not negatively impact existing or future customers.

This assessment does differ slightly from the UWMP in that it includes an additional increment of forecast demand, specifically 560 acre-feet per year (AF/Yr) for the Patterson Ranch Development Project in Fremont. These demands were determined and analyzed in a water supply assessment completed in April of 2008 and are now considered part of ACWD's baseline demand forecast. While Patterson Ranch may be built in phases, the demand is assumed to be fully in place as early as year 2010. Also changed from the 2006-2010 UWMP is the addition of 600 acre-feet per year of recovery capacity from the Semitropic Groundwater Banking Program. Acquisition of this additional dry year recovery capacity is a condition for ACWD to provide water service to the Patterson Ranch Project (as documented in the April 2008 Patterson Ranch Water Supply Assessment).

Finally, this water supply assessment also considers uncertainties in the future reliability of ACWD's water supplies, specifically supplies from the SWP that are conveyed through the Sacramento-San Joaquin Delta. As a result of a recent court ruling imposing restrictions on the SWP operations in order to protect endangered fish, the future reliability of SWP supplies may be decreased from that which was assumed at the time of the preparation of the 2006-2010 UWMP. Given this uncertainty, this water supply assessment provides supply-demand comparisons under two scenarios for future SWP reliability. The first scenario assumes that the future long-term reliability will be similar to that estimated by the State Department of Water Resources prior to the court ruling, and the second assumes that the court's restrictions placed on Delta export pumping will remain in place for the foreseeable future.

SECTION 2
WATER DEMAND

This section provides an overview of historical and current water use in the District, and a summary of future projected water demands for the Project and ACWD's service area.

WATER USE CATEGORIES

Water use in the ACWD service area is divided into two categories: 1) distribution system use, and 2) groundwater system use. The distribution system use includes all water uses supplied by ACWD's treatment and production facilities, and conveyed to ACWD customers via the District's distribution system. This use is further subdivided into the categories of single family residential (SFR), multi-family residential (MFR), commercial, industrial, institutional, landscape and other use.

Groundwater system use includes private (non-ACWD) groundwater pumping (primarily for industrial and municipal landscape irrigation uses), ACWD's Aquifer Reclamation Program pumping, and saline groundwater outflow to San Francisco Bay. The Aquifer Reclamation Program (ARP) pumping is an ongoing ACWD program to pump saline groundwater out of the aquifer system and replace it with fresh water recharged at the District's groundwater recharge facilities. Saline groundwater outflow to San Francisco Bay represents the groundwater outflow required to maintain groundwater flow in a bayward direction necessary to prevent seawater intrusion into the local aquifer system and to flush saline groundwater back to San Francisco Bay.

The District's groundwater system use is not anticipated to change significantly in the future. Therefore, the following discussions of water use are focused on the District's distribution system water use.

HISTORICAL AND CURRENT WATER USE

Table 1 provides a summary of the last ten years of water use within the District. As shown in the table, residential water use comprises approximately 70% of District water use, with the remaining 30% used by commercial, industrial and institutional customers.

Water consumption patterns in the ACWD service area are a function of many independent factors including growth, weather conditions, economic conditions and water conservation behaviors. The District saw dramatic declines in consumption during the 1987-1992 drought due to voluntary conservation and District-sponsored demand management efforts. However, during the drought recovery period since 1992, several significant consumption-influencing factors have occurred. From 1993-2001 accelerated growth of both residential and business customers (including the high technology industry) occurred due to a strong economy. During this period, vacancy rates decreased and water consumption rose. From 2001 to 2007 the overall consumption in the District has been relatively flat, attributed primarily to less robust local economic conditions, mild weather and on-going water conservation programs.

WATER DEMANDS - TRANSIT-ORIENTED DEVELOPMENT PROJECT

In order to estimate the Project's water demands, ACWD utilized the same methodology as used in the District's 2006-2010 UWMP. Information on the proposed land use, broken down by land use category utilized in ACWD's demand forecast model, was provided to ACWD by the City of Union City and its CEQA consultant for the Project. Next, the unit demand for each land use category and subcategory (previously developed by ACWD for the District's 2006-2010 UWMP) was applied to the number of units in the proposed Project.

The results, shown in Table 2a, indicate an average annual Project demand of approximately 0.33 mgd, or approximately 375 AF/Yr (including 8% distribution system losses[1]). The peak day demand is estimated at 1.65 times the average daily demand, or approximately 0.54 mgd. As discussed below (and as presented in Table 2b), the projected future demands of the Transit-Oriented Development Project have already been accounted for by ACWD in the 2006-2010 UWMP's forecast of future water demands.

The Project, located adjacent to the Union City BART station, is within an area identified in Union City's Redevelopment Plan EIR (2001) as Site 12 (Figure 2). The Redevelopment Plan, including Site 12, was accounted for in ACWD's 2006-2010 UWMP[2]. However, the Project (as currently proposed) involves a net increase in housing units over what was planned for in the 2001 Redevelopment Plan EIR, as a result of both increased housing density and a conversion of some planned commercial development to more housing. As a result, Site 12 is estimated to have more water demand than what was estimated based on the 2001 Redevelopment Plan EIR.

However, ACWD included additional water demand in the 2006-2010 UWMP to account for limited implementation of Smart Growth (as defined by the Association of Bay Area Government, or ABAG) within each of the cities served by ACWD. ACWD's planning assumptions for Smart Growth were derived from a comparison of vacant lands analysis and city stated development plans, with the ABAG Smart Growth housing forecast published in *Projections 2003*, and are documented in Chapter 2 of the 2006-2010 UWMP. The 2006-2010 UWMP assumed an extra 2,550 high density housing units for the City of Union City for Smart Growth demands. Given that Smart Growth related water demands were to account for future implementation of Smart Growth policies, they were not directly allocated to specific projects or parcels.

As a high density residential development located at a mass-transit hub, this Project is considered a Smart Growth development. Given that the Project closely matches ABAG's

1 Distribution system losses are calculated as the difference between the total water produced at ACWD's treatment and production facilities and the total measured water use by the District's distribution system customers. Distribution system losses include non-metered water used for fire-fighting suppression, distribution system flushing, distribution piping and service line leaks, etc.

2 The 2006-2010 UWMP included provisions for 560 multi-family dwelling units, 1,180,000 square feet of office and 100,000 square feet of retail space at Site 12, with a total projected demand of 254,706 gallons per day. To date, approximately 438 multi-family dwelling units have been constructed at Site 12 (not part of the Transit-Oriented Development Project), with an estimated demand of approximately 71,413 gallons per day.

description of Smart Growth, "unallocated" demands for Union City Smart Growth can be applied to the Project. Therefore, as shown in Table 2b, 100% of the water demands estimated for the Project are considered to be included in the most recent 2006-2010 UWMP. That is, the Project's demands have been incorporated into ACWD's planning as a combination of: 1) previous Site 12 development assumptions and; 2) Union City Smart Growth assumptions.

WATER DEMANDS - ACWD SERVICE AREA

ACWD's 2006-2010 UWMP provides a detailed description of the projected water demands in the ACWD service area. These projections of future water use are based on planned future land usage in the service area. Future land use is based on vacant, undeveloped lands which are zoned for development, as designated by each of the cities in the service area. Additional potential future land use was also accounted for in the demand projections, and is based on city-approved plans for redevelopment and/or intensification of specific areas. The demand forecast also considers future demands associated with Association of Bay Area Governments (ABAG) Smart Growth projections.

The projected future demands in the ACWD service area are summarized in Table 3 (for the years 2010, 2015, 2020, 2025 and 2030). This forecast is provided for the single-family residential, multi-family residential, commercial, industrial, institutional and other water use categories. For planning purposes, landscape water use is included within the multifamily, commercial, industrial and institutional categories, and is not estimated separately. As described in the previous section, the Project's demand forecast has already been incorporated into the District's demand forecast, and therefore, is not listed separately in Table 3. However, the demand forecast for the Patterson Ranch Development Project, not previously accounted for in ACWD's planning, has been included in Table 3, per the April 2008 Patterson Ranch Development Project Water Supply Assessment.

The water demand forecast also includes projected savings due to water conservation, both District-sponsored water conservation and "natural" conservation due to plumbing code requirements (i.e., savings due to the replacement of non-conserving plumbing fixtures with low flow fixtures). ACWD is a signatory to the California Urban Water Conservation Council's MOU on Urban Water Conservation and is committed to the implementation of all locally cost-effective water conservation best management practices. A complete description of ACWD's water conservation program, as well as water saving assumptions, is provided in Chapter 7 of the attached 2006-2010 UWMP.

IMPACTS OF DROUGHT ON DEMANDS

Dry periods may impact water demands in the ACWD service area in several ways. Because approximately 40% of the District's residential demand is for landscape irrigation, dry periods may result in an increase in demands due to less local rainfall available to meet the evapotranspiration requirements of lawns and other landscaping. However, demands may also be reduced due to customer efforts to be more water efficient during dry periods. As an example, during the 1987-1992 drought, ACWD customers reduced overall water use by approximately 20%. This response to the drought was due both to voluntary efforts as well as

mandatory restrictions imposed by ACWD. However, because many customers have retained a "water conservation ethic" since the 1987-92 drought, and because of increased efficiencies of plumbing fixtures and the implementation of on-going District-sponsored water conservation programs, the ability to reduce overall water use during future droughts by similar levels may be lessened.

For planning purposes, it is assumed that during drought periods water demands for ACWD's distribution system customers (including the proposed Transit-Oriented Development Project) do not change from those during normal years. However, the groundwater system demands may be reduced during dry years as a result of reduced ARP pumping and reduced saline groundwater outflows (as groundwater levels are temporarily lowered due to increased reliance on local groundwater reserves during drought conditions). Summaries of projected demands under single dry year and multiple dry year conditions (based on a five year drought under 2026-2030 demand conditions) are provided in Tables 4 and 5, respectively.

SECTION 3
WATER SUPPLY

ACWD's three primary sources of water supply are: 1) the State Water Project (SWP); 2) San Francisco's Regional Water System; and 3) local supplies. The SWP and San Francisco Regional Water Supplies are imported into the District service area through the South Bay Aqueduct and Hetch-Hetchy Aqueduct, respectively. Local supplies include fresh groundwater from the Niles Cone Groundwater Basin (underlying the District service area), desalinated brackish groundwater from portions of the groundwater basin previously impacted by seawater intrusion, and surface water from the Del Valle Reservoir. The primary source of recharge for the Niles Cone Groundwater Basin is percolation of runoff from the Alameda Creek watershed. To a lesser degree, a portion of ACWD's SWP supplies are also used for local groundwater percolation. Infiltration of rainfall and applied water within the ACWD service area also contribute to local groundwater recharge.

ACWD's planned future water supplies also include recycled water. As described below, ACWD anticipates implementing a recycled water program to provide up to 1,600 AF/Yr for non-potable uses (i.e. irrigation and industrial uses) by the year 2020.

Due to the configuration of ACWD's water production facilities and the interconnection with the District's distribution system, the proposed Project may receive water supplies from all three primary sources of supplies, and would not be dependent on any single source of supply. Therefore, a description of all of ACWD's water supplies is provided below. Table 6 provides a summary description of the contracts and permits for these supplies and Table 7 provides a summary of the historical use of these supplies by ACWD.

WHOLESALE WATER SUPPLIES

As described above, ACWD's wholesale water supplies are: 1) State Water Project supplies purchased from the California Department of Water Resources; and 2) San Francisco Regional Water System supplies purchased from San Francisco. ACWD's contracts for these wholesale supplies are provided in Attachment B and each supply is described in greater detail below.

State Water Project

In 1961, the District signed a contract with the State Department of Water Resources (DWR) for a maximum annual amount of 42,000 acre-feet from the State Water Project (SWP). The SWP, managed by the DWR, is the largest state-built, multi-purpose water project in the country. The SWP facilities include 28 dams and reservoirs, 26 pumping and generating plants, and approximately 660 miles of aqueducts. The water stored in the SWP storage facilities originates from rainfall and snowmelt runoff in Northern and Central California watersheds. The SWP's primary storage facility is Lake Oroville in the Feather River Watershed. Releases from Lake Oroville flow down the Feather River to the Sacramento River, which subsequently flows to the Sacramento-San Joaquin Delta. The SWP diverts water from the Delta through the Banks Pumping Plant which lifts water from the Clifton

Court Forebay (in the Delta) to the California Aqueduct and Bethany Reservoir. From Bethany Reservoir, the South Bay Pumping Plant lifts water into the South Bay Aqueduct, which delivers State Water Project supplies to ACWD and other Bay Area water agencies in Alameda and Santa Clara Counties.

Semitropic Banking of ACWD's SWP Supplies: Because of the variability in the SWP supply availability, ACWD's 1995 IRP identified the need to secure 140,000 AF of off-site storage capacity to improve the dry year reliability of this supply source. Based on this IRP recommendation, ACWD has contracted with Semitropic Water Storage District for participation in the Semitropic Groundwater Banking Program in Kern County. In wet years, ACWD delivers its unused (excess) SWP supplies to Semitropic for storage in their groundwater basin. In dry years, ACWD can recover these supplies through: (1) an "in-lieu" exchange whereby ACWD will receive a portion of Semitropic's SWP supplies (and Semitropic will utilize groundwater previously stored by ACWD in its basin); and (2) a "pumpback" program where Semitropic directly pumps stored groundwater into the California Aqueduct and ACWD recovers this supply through SWP exchanges.

The rate at which ACWD can recover stored water in dry years is constrained by contractual limitations and limitations on the capacity of the Semitropic pumpback facilities. Based on the terms of the agreements with Semitropic, the amount of return capacity is based on the amount of storage capacity purchased. Because of these limitations, ACWD secured a total of 150,000 AF of storage capacity at Semitropic (in excess of the IRP's recommendation of 140,000 AF), in order to provide sufficient dry year return capacity to meet ACWD's projected needs in all but the most severe drought conditions.

As with local groundwater storage in the Niles Cone Groundwater Basin, the Semitropic Groundwater Banking Program does not provide a new source of supply for the District. Rather, it provides a means to store the District's unused SWP supplies in wet years for use during dry years when the delivery of SWP supplies may be significantly curtailed.

San Francisco's Regional Water System

ACWD also receives water from the San Francisco Regional Water System, operated by the San Francisco Public Utilities Commission (SFPUC). This supply is predominantly from the Sierra Nevada, delivered through the Hetch-Hetchy aqueducts, but also includes treated water produced by the SFPUC from its local watersheds and facilities in Alameda and San Mateo Counties. The amount of imported water available to the SFPUC's retail and wholesale customers is constrained by hydrology, physical facilities, and the institutional parameters that allocate the water supply of the Tuolumne River.

In 1984, ACWD along with 29 other Bay Area water suppliers signed a Settlement Agreement and Master Water Sales Contract (Master Contract) with San Francisco, supplemented by an individual Water Supply Contract. These contracts, which expire in June 2009, provide for a 184 mgd Supply Assurance to the SFPUC's wholesale customers collectively. ACWD's individual Supply Assurance is 12 mgd (or approximately 13,400 acre feet per year). In 1994, the District and SFPUC executed an amendment to the contract which provides an additional supply of 1.76 mgd (approximately 2,000 AF), effectively increasing the maximum annual

delivery of San Francisco Regional Water System supplies to ACWD to 13.76 mgd (approximately 15,300 AF/Yr). Although the Master Contract and accompanying Water Supply Contract expire in 2009, the Supply Assurance (which quantifies San Francisco's obligation to supply water to its individual wholesale customers) survives their expiration and continues indefinitely.

LOCAL SOURCES

As described above, ACWD's local sources include fresh groundwater from the Niles Cone Groundwater Basin, brackish groundwater desalination, and surface water supplies from the Del Valle Reservoir. Each of these supplies is described in greater detail below.

Niles Cone Groundwater Basin

The principal source of local supply for the District is the local aquifer system known as the Niles Cone Groundwater Basin. The primary source of recharge for the Niles Cone Groundwater Basin is local runoff from the Alameda Creek Watershed, which is captured, diverted and recharged at the District's groundwater recharge facilities. To a lesser extent, infiltration of rainfall and applied water within the ACWD service area also provide a local source of recharge for the groundwater basin. ACWD also uses a portion of its imported State Water Project supplies for groundwater recharge.

The water quality in the groundwater system is characterized by fresh groundwater in the eastern portion of the groundwater basin transitioning into brackish groundwater in the western portion of the basin. The brackish groundwater is a result of historical seawater intrusion from the adjacent San Francisco Bay. Since the 1960's ACWD has managed the groundwater basin to prevent any additional seawater intrusion and has an on-going program to pump trapped brackish groundwater back to San Francisco Bay through the District's Aquifer Reclamation Program wells.

The Niles Cone Groundwater Basin has capacity to store water from year to year ("local groundwater storage"). However, the usable storage capacity of the groundwater basin is significantly limited by the potential for seawater intrusion if groundwater levels are maintained too low. Although local groundwater storage (i.e. groundwater supplies in excess of recharge) provides a short term source of supply during dry years, it is not a supply that is available every year because the groundwater system will require replenishment from freshwater sources, without which seawater intrusion would occur.

Chapter 4 of the 2006-2010 UWMP (attached) provides a comprehensive description of the Niles Cone Groundwater Basin, including groundwater quality, groundwater levels, historical and projected groundwater pumping, and ACWD's groundwater management activities. A copy of ACWD's groundwater management policy is also provided in the 2006-2010 UWMP. The Niles Cone Groundwater Basin is also described in DWR Bulletin 118 – Update 2003: *California's Groundwater*, and is not listed as in "overdraft" or "potentially overdraft condition" by the DWR.

Brackish Groundwater Desalination

In 2003 ACWD commissioned the Newark Desalination Facility. This 5-mgd facility utilizes the reverse osmosis process to remove salts and other impurities from the brackish groundwater pumped at ACWD's Aquifer Reclamation Program wells. Treated water from the Newark Desalination Facility is blended with untreated local groundwater and provided as a supply for the distribution system demands. ACWD plans call for an expansion of this facility from 5-mgd to 10-mgd by the year 2010.

Del Valle Reservoir

The District and Zone 7 Water Agency of the Alameda County Flood Control and Water Conservation District (hereafter referred to as "Zone 7"), have equal rights on Arroyo Del Valle to divert water to storage. When the California Department of Water Resources (DWR) constructed Del Valle Dam in the upper Alameda Creek Watershed, those rights were recognized in an agreement among DWR, the District, and Zone 7. Consequently, DWR typically makes a total of 15,000 AF of storage available annually in Del Valle Reservoir for use by ACWD and Zone 7. ACWD and Zone 7 equally share this storage capacity, thereby providing up to 7,500 AF of storage capacity annually to ACWD.

Recycled Water

Although ACWD does not currently have a recycled water supply, the District's long-term supply strategy includes a recycled water program to be implemented by 2020, which will provide up to 1,600 AF/yr of non-potable supply (e.g. landscape irrigation and industrial process water). The source of recycled water is planned to be from a joint project with Union Sanitary District (USD). Similar to ACWD, USD's service area includes the cities of Fremont Union City and Newark. USD currently treats approximately 28 mgd (approximately 31,000 AF/Yr) of wastewater, the majority of which is discharged to San Francisco Bay via the East Bay Dischargers Association pipeline facilities. Because ACWD's planning is based on providing 1,600 AF/Yr of recycled water, it is anticipated that there will be a sufficient source of wastewater supply available for a future recycled water project in the ACWD service area.

Recycled water distribution pipelines will be separate from the District's existing potable distribution system and, therefore, would not adversely affect existing potable supply operations. The volume of recycled water produced would be the same in drought years as in normal years, thus providing a firm source of supply. Demand for recycled water for irrigation purposes is highest in the summer months. Therefore, in addition to increasing water supply, use of recycled water would help meet peak monthly and daily production capacity needs.

ACWD and USD have evaluated two potential sources of recycled water: In 1993 and in 1999 ACWD and USD evaluated a potential program whereby the recycled water would originate at USD's Alvarado Wastewater Treatment Plant (Alvarado WWTP), located at the north end of the service area in Union City. As an alternative to constructing a recycled water treatment facility at the Alvarado WWTP, in 2003 ACWD and USD completed an evaluation of the feasibility of constructing a satellite recycled water treatment facility in southern Fremont at

USD's Irvington Pump Station. The decision on the location of a future recycled water treatment facility will likely be based on a variety of factors including costs, permitting issues, environmental constraints and location of recycled water customers.

WATER SUPPLY UNCERTAINTIES

The purpose of this section is to identify factors which may impact current planning assumptions, the significance and magnitude of which are currently unknown. As described below, the potential impacts of global warming are a key uncertainty which may impact all of ACWD supplies. In addition, each of ACWD's supplies face uncertainties which may be unique to the source of supply. A summary of water supply uncertainties facing ACWD's supplies is provided in Table 8 and discussed in greater detail below.

Climate Change

Climate change may result in less snowfall, more local rainfall and rising sea-levels. Under current conditions, much of ACWD's imported water supplies are held in "storage" in winter and spring snowpack in the Sierra Nevada Mountains. With a diminished snowpack, the yield of the State Water Project and San Francisco Regional System may be significantly impacted. The magnitude of the impact of climate change on water supplies is not known. However, the following provides an overview of recent studies that have evaluated potential impacts on surface water and groundwater supplies in California.

Surface Water: In 2006 DWR released a report on climate change and its potential impact on California's water resources. Entitled *Progress on Incorporating Climate Change into Management of California's Water Resources* (*2006 Climate Change Repor*t), the report summarizes recent research into change in precipitation, air temperatures, snow levels, and snowmelt runoff. The report also evaluates possible future impact on California water supply through model simulations which reflect four climate change scenarios. Each scenario applies one of two weather conditions (weak temperature warming and weak precipitation increase or modest warming and modest drying) to one of two geopolitical conditions (high population growth and regional based economic growth coupled with slow technological advances or low population growth, global based economic growth coupled with sustainable development).

The main results of the *2006 Climate Change Report* relate to climate change's estimated impacts on the State Water Project around the year 2050:

- Estimated changes in annual average SWP south-of-Delta Table A deliveries range from a slight increase of about 1 percent for a wetter scenario to about a 10 percent reduction for one of the drier climate change scenarios.

- Estimated increased winter runoff and lower Table A allocations resulting in slightly higher average annual Article 21 deliveries in the three drier climate change scenarios[3].

[3] Article 21deliveries refer to Article 21 of the SWP contracts which allows for contractors to receive additional water deliveries only under specific conditions. These conditions include: 1) Article 21 water is available only when excess water is available in the Delta, and 2) Article 21water is available only when conveyance capacity through the SWP facilities is available. Due to the uncertainties regarding the availability of Article 21 water,

However, the increases in Article 21 deliveries do not offset the losses to Table A. The wetter scenario with higher Table A allocations results in fewer Article 21 delivery opportunities and slightly lower annual Article 21 deliveries.

- Estimated SWP carryover storage is reduced in the drier climate change scenario and is somewhat increased in the wetter climate change scenario.

The *2006 Climate Change Report* notes that there are a number of factors for which the models do not account that could significantly impact delivery capability, ranging from change in water management practices, levels of rainfall, changes in evapotranspiration, and increased Delta salinity. The report also notes that there are no technical tools available currently to model these issues.

In January of 2008, DWR released its *Draft State Water Project Delivery Reliability Report,* 2007 *(2007 Draft SWP Reliability Report).* The *2007 Draft SWP Reliability Report* considered the potential impacts of climate change on SWP supplies by including the same four scenarios of future climate change that were simulated in the *2006 Climate Change Report*. The *2007 Draft SWP Reliability Report* estimated the impact of climate change on SWP deliveries by interpolating between future studies which assumed no climate change and studies which assumed 2050-level emissions. The report estimates that, under future conditions, average annual SWP Table A deliveries will be 66% to 69% of the maximum Table A amount[4]. Further, though the estimated average annual amount of future SWP Table A deliveries increases when compared to current conditions, the amount of Article 21 deliveries decrease. Also, the amount of SWP Table A deliveries during multiple dry year periods in the future tend to decrease compared to current conditions. The *2007 Draft SWP Reliability Report* finds that this decrease could be significant, but that such an outcome depends on which of the various climate change scenarios is considered.

Groundwater: In 2003, and then again in an update prepared in August of 2005, the Pacific Institute for Studies in Development, Environment and Security prepared a literature search report for DWR, which summarized recommendations for coping with and adapting to climate change from key peer-reviewed publications and specifically considered the potential impacts of climate change on groundwater. The Pacific Institute's report is entitled, *Climate Change and California Water Resources: A Survey and Summary of the Literature*, by Michael Diparsky and Peter H. Gleick, Pacific Institute (*Climate Change and Water Resources*).

Climate Change and Water Resources found that little work has been done on the impacts of climate changes for specific groundwater basins, or for general groundwater recharge characteristics or water quality. As the following conclusions from the report illustrate, the potential impacts of climate change on groundwater resources are divided, with some potentially resulting in increased availability of groundwater and others potentially resulting in less.

ACWD does not include this supply in its water supply planning and Urban Water Management Plan.

[4] As described below, the *2007 Draft SWP Reliability Report* also includes an analysis of SWP deliveries operating under a recent court ruling to protect endangered fish in the Delta ("Wanger Decision").

- Changes in recharge will result from change in effective rainfall as well as a change in the timing of the recharge season. Increased winter rainfall could lead to increased groundwater recharge.

- Higher evaporation or shorter rainfall seasons could mean that soil deficits persist for longer periods of time, shortening recharge seasons.

- Because a significant portion of winter recharge comes from deep percolation of precipitation below the rooting zone, warmer winter temperatures between storms would be expected to increase and dry out the soil between storms. A greater amount of rain in subsequent storms would then be required to wet the root zone and provide water for deep percolation.

- Sea-level rise could affect coastal aquifers through saltwater intrusion.

- Warmer, wetter winters would increase the amount of runoff available for groundwater recharge. However this additional runoff would be occurring at a time when some basins are either being recharged at their maximum capacity or are already full.

- Reductions in spring runoff and higher evapotranspiration because of higher temperatures could reduce the amount of water available for recharge.

Local Supplies

In addition to potential climate change impacts, the availability of ACWD's local supplies may be influenced by a variety of other factors including operational and facility modifications to accommodate on-going Alameda Creek fishery restoration efforts. Upstream land use, flood control and water supply projects in the Alameda Creek Watershed may also impact the supply and quality of water available at ACWD's groundwater recharge facilities. Similarly, efforts to develop groundwater supplies by agencies in the South East Bay Plain (north of ACWD) may also impact ACWD's groundwater supply availability. However, the extent of these impacts on ACWD's local supplies, if any, is not currently known.

San Francisco Regional Supplies

In order to enhance the ability of the SFPUC water supply system to meet identified service goals for water quality, seismic reliability, delivery reliability, and water supply, the SFPUC is undertaking a Water System Improvement Program (WSIP). Completion of the projects in the WSIP is critical to ensuring the reliability of the San Francisco Regional supplies. However, it is currently uncertain if the SFPUC will be successful in implementing this program, and if it will be accomplished in a timely manner. In addition, the SFPUC water supply contract with ACWD, as well as those with other SFPUC wholesale customers, will expire in 2009. It is not clear what the terms of the re-negotiated contracts will be, or how they may impact ACWD's planning assumptions. However, SFPUC's Supply Assurance (which quantifies San Francisco's obligation to supply water to its individual wholesale customers) survives their expiration and continues indefinitely.

State Water Project Supplies

The reliability of ACWD's State Water Project supplies will continue to remain uncertain due to the on-going concerns regarding the sustainability of the Delta. These concerns include the Delta ecosystem and potential future environmental regulations, levee stability and the potential for catastrophic failure of these levees, urban encroachment within the Delta, and water quality within the Delta due to urban and agricultural discharges.

Most recently, on December 14, 2007, Federal District Court Judge Oliver Wanger issued a final court order which put into place an operational plan that requires the State Water Project and Central Valley Project (CVP), the state's two largest water delivery systems, to reduce Delta export pumping operations ("Wanger Decision"). The operational plan, formalizing a preliminary framework issued by Judge Wanger on August 31, 2007, calls for a reduction in Delta exports from the SWP and CVP to protect an endangered fish species, the Delta smelt. The court has specified that reduced operations will last until September 12, 2008, while federal agencies develop a revised federal biological opinion for Delta smelt that will ensure the projects' compliance with Endangered Species Act requirements.

In addition to the revised federal biological opinion, state, federal and other agencies are currently in the process of developing a Bay Delta Conservation Plan with the goal of providing long-term Federal and State Endangered Species Act compliance for Delta export operations. It is currently not known how the September 2008 revised federal biological opinion or the subsequent Bay Delta Conservation Plan will impact the reliability of SWP supplies. However, the DWR has recently released a draft report which estimates the reliability of the SWP supplies assuming that the Delta export restrictions under the Wanger Decision remain in effect over the long-term (*2007 Draft SWP Reliability Report*). This report provides an update to the SWP reliability assumptions provided by the DWR in 2005 (*2005 SWP Reliability Report*). Information from the *2005 SWP Reliability Report* is incorporated in ACWD's 2006-2010 UWMP.

Factors other than protection of the endangered Delta smelt may also impact the future reliability of the SWP supplies. For instance, the California Fish and Game Commission recently decided to accept the longfin smelt as a candidate species under the California Endangered Species Act (CESA). Under CESA, candidate species receive the same legal protection as listed threatened and endangered species. However, at the time of the preparation of this water supply assessment no information is available on the impacts that this listing (or other potential future listings under the ESA or CESA) may have on SWP operations.

WATER SUPPLY IN NORMAL AND DRY YEAR CONDITIONS

The projected availability for each of ACWD's water supplies under normal, critical dry year and multiple dry year conditions are provided in Tables 9 through 14. As documented in the District's 2006-2010 UWMP, information on the projected availability of ACWD's local supplies is based on the long-term historical hydrologic conditions in the Alameda Creek Watershed. Information on the projected reliability of ACWD's wholesale supplies from the

State Water Project and San Francisco Regional Water System supplies were provided by the DWR and San Francisco Public Utilities Commission, respectively.

Because of the uncertainties in the future management of Delta export operations, this water supply assessment considers two scenarios for SWP reliability. The first scenario (2005 SWP Reliability scenario) assumes that long-term SWP reliability will be addressed through the Bay Delta Conservation Plan and other planning efforts, and that the long-term reliability will be similar to that provided by the DWR under the 2005 SWP Reliability Study. The second scenario (2007 SWP Reliability scenario) is provided as a sensitivity analyses and assumes that the Wanger Decision will continue to govern the long-term Delta export operations, as assumed under the DWR's *2007 Draft SWP Reliability Report*[5].

As described below, the second scenario (2007 SWP Reliability scenario) would have a significant impact on ACWD's water supplies. Because of the reductions in the SWP supplies under the Wanger Decision, ACWD would likely have significantly less flexibility in the use and management of its water supplies. Therefore, it is likely that if the revised biological opinion (due in September 2008) results in Delta pumping restrictions similar to the Wanger Decision, ACWD would likely need to revise and update the District's Integrated Resources Plan and Urban Water Management Plan to reflect the changes in the long-term SWP reliability assumptions. These revisions would likely include a review of ACWD's planning and operating criteria, water quality, facility needs and costs. However, the analyses provided in this water supply assessment, while including a Wanger Decision scenario, are primarily focused on the comparison of water supply and demands under a variety of hydrologic conditions (i.e. normal year, critical dry year and multiple dry year conditions).

Water Supply under Normal Year Conditions

In order to be consistent with the recommendations by the DWR in the use of SWP reliability information, this water supply assessment characterizes long-term average conditions as normal year conditions. As shown in Table 9, under normal year conditions and under the 2005 SWP Reliability assumptions, supplies from the SWP and San Francisco Regional Water System comprise approximately 60% of the water available to ACWD, with the balance coming from local supplies. All of the supplies listed in Table 9, with the exception of recycled water, are existing supplies available to ACWD, and have been historically utilized by the District. Recycled water, not currently available to ACWD, is anticipated to add approximately 1,600 AF/Yr to the District's normal year water supplies by the year 2020. Supplies from local groundwater storage and the Semitropic Groundwater Banking Program are not included as normal year supplies because these supplies are intended for dry year conditions (or other water shortages) and are not intended to meet normal year demands.

The projected availability of ACWD's normal year water supplies under the 2007 SWP Reliability assumptions (with Wanger Decision restrictions on SWP supplies) is provided in

5 The 2007 DWR Reliability Report provides four scenarios for future (2027) delivery reliability. Each of these scenarios includes SWP pumping restrictions due to the Wanger Decision, but has different assumptions for the impacts of climate change on SWP supplies. This water supply assessment utilizes the most conservative scenario ("GFDL Model with B1 Emissions") that results in the lowest average annual SWP deliveries (66%).

Table 10. Under this scenario, ACWD's SWP supplies may be reduced by approximately 4,600 AF/Yr (under 2030 conditions), as compared with the 2005 SWP Reliability scenario. This reduction in SWP supplies would result in an overall decrease in ACWD total supplies during normal years of over 5%.

Water Supply under Critical Dry Year Conditions

As shown in Tables 11 and 12, the availability of ACWD's overall water supplies under a critically dry year may be significantly reduced. Results from the 2007 Reliability scenario (Table 12) indicate that the Wanger Decision does not significantly differ from the 2005 SWP Reliability assumptions for critically dry years (Table 11). Under both of these SWP supply reliability assumptions, during critically dry conditions the SWP deliveries would be reduced to 4-6% of the maximum contractual amounts (referred to as the "Table A" amounts in the SWP contracts). In addition, ACWD's other supplies from the San Francisco Regional Water System and local supplies from the Alameda Creek Watershed may also be substantially reduced during a critically dry year.

In order to mitigate these potentially severe water supply cut-backs, ACWD would rely on groundwater reserves stored in the local Niles Cone Groundwater Basin, and reserves stored at the Semitropic Groundwater Banking Program. As described above, the amount of storage in the local Niles Cone Groundwater Basin is limited (due to seawater intrusion concerns when groundwater elevations are lowered below sea-level). ACWD has therefore invested in additional off-site storage at the Semitropic Groundwater Banking Program. Under two separate agreements with Semitropic, ACWD has contracted for a combined total of 150,000 AF of storage capacity. The District currently has approximately 115,000 AF of water in storage at the Semitropic banking program. However, the maximum rate at which stored water can be returned to ACWD from Semitropic is constrained by ACWD-Semitropic contractual limitations. As shown in Tables 11 and 12, under the most severe drought conditions, the maximum rate at which water can currently be returned to ACWD is 13,500 AF/Yr[6].

Water Supply under Multiple Dry Year Conditions

Tables 13 and 14 provide summaries of the projected supply availabilities under a long-term (5 year) drought for 2026-2030 demand conditions. This multiple year drought sequence is based on the 1929-1933 historical hydrologic conditions, which represents the most severe 5-year drought on record (based on projected availability of ACWD's supplies over the 1922-94 hydrologic period). The results from these analyses indicate that, under both the 2005 and 2007 SWP Reliability assumptions (Table 13 and 14, respectively), ACWD's water supplies may be significantly reduced during a multiple year drought. However, the supply reduction would not be as severe as during a single, critically dry year condition. As with the single dry year condition, both local groundwater storage and off-site groundwater storage in Semitropic will play key roles in offsetting shortfalls in the District's other local and imported supplies.

6 ACWD's maximum rate of recovery from the Semitropic Groundwater Banking Program during critically dry years will increase by 600 AF/Yr (from 13,500 AF/Yr to 14,100 AF/Yr) as a condition of ACWD providing water service to the Patterson Ranch Development Project in Fremont, per the April 2008 Patterson Ranch WSA.

SECTION 4
WATER SUPPLY AND DEMAND ANALYSES

The following provides a comparison of ACWD water supplies and projected future demands, including the demands associated with the proposed Project. The supply/demand comparisons are provided for normal, single year dry, and multiple dry year conditions under both the 2005 and 2007 SWP Reliability scenarios.

NORMAL YEAR WATER SUPPLY

Tables 15 and 16 provide a comparison of normal year water supply and demands under future levels of development (in five-year increments from 2010 through 2030) under the 2005 and 2007 SWP Reliability scenarios, respectively, with the proposed Project. As shown in the tables, ACWD's projected supply under normal year conditions is anticipated to exceed demand under either SWP reliability assumption.

SINGLE DRY YEAR WATER SUPPLY

Tables 17 and 18 document the comparison of water supply and demand under a single critical dry year condition (based on 1977 hydrologic conditions), assuming the 2005 and 2007 SWP reliability estimates, respectively. As with the normal year conditions, the single dry year supply/demand comparison is provided in five year increments between 2010 and 2030.

As shown in the tables, the assumptions for ACWD total available supplies under both SWP reliability scenarios are similar, and under both scenarios ACWD would be facing water supply shortages of similar magnitude. For instance, ACWD has previously determined in the 2006-2010 UWMP that shortages of up to 11,000 acre-feet (approximately 15% of dry year demands) may be expected during a single, critically dry year. Because of the relative infrequency of a drought of this severity (approximately 1 in 35 years), ACWD has not secured the supplies to fully mitigate for the potential impacts. Rather, ACWD would likely attempt to mitigate the shortage impacts through a combination of demand management measures (including rationing) and purchases of dry year water through programs such as the Drought Water Bank (initiated during the 1987-92 drought by the DWR).

MULTIPLE DRY YEAR WATER SUPPLY

Tables 19 and 20 document projected water supply and demand under an extended dry period (multiple year drought) assuming the 2005 and 2007 SWP reliability estimates respectively. As documented in the 2006-2010 UWMP, ACWD recognizes the hydrology of 1929 to 1933 to be most severe five-year period for the District's imported and local supplies. The multiple year dry period was reviewed for build-out level of demand anticipated for the year 2026 to 2030.

Similar to the single dry year analysis, ACWD has already determined in the 2006-2010 UWMP that shortages may be expected during a multiple year drought. However, the magnitude of the shortages (up to 5% under 2005 SWP Reliability assumptions, and up to 8% under 2007 SWP Reliability assumptions) is significantly less that which would occur during a single critically dry year.

MITIGATION MEASURES

The proposed Project will result in an estimated increase in demands in the ACWD service area of approximately 375 AF/Yr. As described above, these demands have already been factored into ACWD's planning. The water supply and demand comparison analyses provided above indicates that ACWD has sufficient supplies to meet the District's projected demands as well as the Project's demands under normal year conditions. However, during critically dry or multiple dry years the service area may be facing water supply shortages. Because the Project's demands are already included in the 2006-2010 UWMP, the development of the Project will not result in increased shortages from that which is already factored into ACWD's planning. However, because of future uncertainties facing ACWD's water supplies and potential for a long-term reduction in supplies (due to the Wanger Decision and other factors), the Project should be developed with the latest water conservation technologies (as described below) to reduce its overall water demands. It should be noted that even with the implementation of these mitigation measures, the water supplies provided to the Project may be cut back under future dry year conditions. However, the level of cutback would be consistent with the rest of ACWD's customers, and would depend on the magnitude of the shortage facing the entire District.

Water Conservation Mitigation Measures

The Project should be developed with the latest technology in water efficient plumbing fixtures and irrigation systems at both residential and non-residential developments. Water efficient plumbing fixtures include high efficiency toilets, washers, water heaters, showerheads, and faucet aerators. Water efficient irrigation systems include weather-based irrigation-controllers and drip irrigation systems for non-turf areas. In addition, the Project should also consider the installation of drought-tolerant landscaping in-lieu of irrigated turf, wherever possible.

SECTION 5
SUMMARY AND CONCLUSIONS

1. The City of Union City has proposed the Transit-Oriented Development Project that involves a general plan amendment and rezoning for the development of 1,200 residential units, 950,000 square feet of commercial office space and 100,000 square feet of commercial retail building area. This development is considered a Smart Growth development.

2. The total projected demands for the Project are approximately 375 AF/Yr. While the Project will result in water demands greater than what was assumed on that site in the Urban Water Management Plan, the additional increment in demand is less than what was considered for Smart Growth related demands within the City of Union City. Thus, all of the demands estimated for this Project have been included in ACWD's most recent Urban Water Management Plan.

3. ACWD has diverse sources of supply that include imported water from the State Water Project and San Francisco Regional Water System, as well as local supplies from the Alameda Creek Watershed and underlying Niles Cone Groundwater Basin. Due to the configuration of ACWD's water production facilities, the proposed Project would not be dependent on any single source of supply.

4. ACWD's imported and local water supplies may be significantly cut back during droughts. In order to improve ACWD's dry year reliability, ACWD has secured 150,000 AF of off-site storage capacity at the Semitropic Groundwater Banking Program in Kern County. ACWD currently has approximately 115,000 AF in storage at the Semitropic Program.

5. Key uncertainties facing ACWD's supplies include the effects of climate change as well as supply restrictions due to endangered species and environmental protection. The restrictions on Delta export pumping imposed by a recent federal district court decision (Wanger Decision) on SWP supplies would significantly impact ACWD's water supplies, if maintained over the long-term. Based on DWR projections, ACWD's SWP supplies may be reduced by approximately 4,600 AF/Yr under normal year conditions, representing a 5% decrease in ACWD's total water supplies. In order to account for future Delta pumping restrictions, this water supply assessment includes scenarios for SWP reliability with and without the Wanger Decision pumping restrictions.

6. Under normal year conditions, ACWD's water supplies are projected to be sufficient to meet the future demands in the service area, including the Project's demands. These supplies are projected to be sufficient in either SWP supply reliability assumption (with and without the Wanger Decision pumping restrictions).

7. ACWD's 2006-2010 UWMP identifies that ACWD may face water supply shortages during a critically dry year, or during a multiple year drought. As described in the 2006-2010 UWMP, ACWD would look to secure additional supplies through a DWR drought water bank or similar water purchase/transfer program under these severe drought conditions. ACWD may also implement a drought contingency plan, which includes provisions for ACWD customers to cut back on water use, the magnitude of which would depend on the severity of the shortage. Because the Project's demands are already included in the 2006-2010 UWMP, the development of the Project will not result in increased shortages from that which is already factored into ACWD's planning. However, because ACWD anticipates potential future shortages under severe drought conditions, water supplies to the Project may be cut back during these severe dry year conditions. The level of cut back to the Project would be consistent with the rest of ACWD's customers, and would depend on the magnitude of the dry-year shortage facing the entire District.

   In order to minimize water demands, the Project should be developed with the latest technology in water efficient plumbing fixtures and irrigation systems at both residential and non-residential development. Water efficient plumbing fixtures include high efficiency toilets, washers, water heaters, showerheads, and faucet aerators. Water efficient irrigation systems include weather-based irrigation-controllers and drip irrigation systems for non-turf areas. In addition, the Project should also consider the installation of drought-tolerant landscaping in-lieu of irrigated turf, wherever possible.

8. Under Government Code §66473.7 ACWD will be required to issue a written verification ensuring sufficient water supply for the Project prior to approval of the Project's final subdivision map. ACWD will re-evaluate the assumptions and conclusions of this water supply assessment at that time.

9. This water supply assessment is based on the proposed land use of the Transit-Oriented Development Project, as provided to ACWD by the City of Union City (as documented in Table 2a). If, prior to Project approval, the proposed land use within the Project area changes from what is currently incorporated in this water supply assessment, ACWD will evaluate the impacts that these changes may have on ACWD's water supplies. In the event that the land use changes impact the conclusions of this water supply assessment, ACWD may require mitigation measures as a condition of providing water service to the Project. If the proposed land use changes occur after Project approval and approval of the final subdivision maps, ACWD will evaluate the potential water supply impacts of these changes, and may require mitigation as condition of providing water service to those areas with the changed land use condition.

Table 1
ACWD Past and Current Water Use (Acre-Feet)

Water Use Category	Fiscal Year										
	96-97	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05	05-06	06-07
Distribution System											
Single Family Residential	24,700	22,900	24,100	25,000	25,700	25,200	25,300	26,000	23,700	24,900	25,200
Multi-Family Residential	8,600	8,300	8,500	8,600	8,900	8,200	8,500	8,100	8,200	8000	8,100
Commercial	5,100	5,300	5,600	5,800	5,600	5,200	5,000	5,200	5,300	5,500	5,300
Industrial	5,200	4,700	4,600	4,700	4,600	4,300	4,100	4,100	3,400	3,500	3,400
Institutional	2,200	2,000	2,000	2,100	2,300	2,200	2,200	2,300	2,000	2,100	2,100
Landscape	4,600	3,900	4,500	5,200	5,300	5,600	5,600	6,300	5,700	5,200	5,700
Other	300	300	200	200	200	200	200	200	100	100	100
Total Consumption	50,900	47,400	49,400	51,700	52,600	50,800	50,700	52,300	48,400	49,300	49,900
System Losses	4,200	4,100	4,200	4,200	3,600	4,300	3,700	4,100	3,200	3,800	5,000
Distribution System Total	55,100	51,500	53,600	55,900	56,200	55,100	54,400	56,400	51,600	53,100	54,900
Groundwater System											
Private Groundwater	5,000	3,900	3,200	3,100	3,800	3,100	3,400	3,600	3,800	3,000	3,000
Groundwater Reclamation											
-ARP Pumping	7,800	3,800	10,600	6,300	4,300	7,400	7,700	11,100	9,400	11,600	9,900
-Saline Outflow	2,300	3,900	6,100	7,400	6,600	6,300	5,800	7,200	6,600	7,500	6,800
Groundwater System Total	15,100	11,600	19,900	16,800	14,700	16,800	16,900	21,900	19,800	22,100	19,700
Grand Total	70,200	63,100	73,500	72,700	70,900	71,900	71,300	78,300	71,400	75,200	74,600

Notes:
1. Annual consumption is based on units billed during the Fiscal Year (July 1 to June 30). ACWD uses a bi-monthly billing cycle.
2. All values rounded to the nearest 100.
3. Total Consumption values may not equal sum of individual components due to rounding.
4. Multi-Family Residential, Commercial, Industrial, and Institutional categories do not include dedicated landscape irrigation water use within these categories.
5. Landscape water use includes all dedicated landscape accounts for Multi-Family Residential, Commercial, Industrial and Institutional customers.
6. Distribution System Total represents total water production, as reported in ACWD's Annual Groundwater Survey Reports.
7. System Losses are calculated as the difference between Distribution System Total (total production) and Total Measured Consumption and include water for fire fighting suppression, distribution system flushing, distribution system and service line leaks, etc.
8. Groundwater System demands are based on annual reported values in ACWD's Annual Survey Report on groundwater conditions.
9. Groundwater Reclamation demands represents groundwater system demands to protect and reclaim the groundwater system from seawater intrusion.
10. Groundwater System demands do not include "Other Outflows" as reported in ACWD's Annual Survey Report on Groundwater Conditions.

Table 2a
Transit-Oriented Development Project Demands

Land Use Category	Planning Unit		Transit-Oriented Development Land Use[1]	Unit Demand[2]	Project Demand (gpd)
	Description	Sub-Category			
Single Family Residential	Dwelling Units	Townhouses	10	230	2,300
Multifamily Residential	Dwelling Units	n/a	1,190	150	178,500
Commercial	Building Area (sq. ft.)	Office	950,000 sq. ft	0.104	98,800
	Building Area (sq. ft.)	Retail	100,000 sq. ft	0.282	28,200
				Subtotal	307,800
				Distribution system losses[3] (8%):	26,765
				Total Projected Demand (gpd):	**334,565**
				Total Projected Demand (mgd):	**0.33**
				Total Projected Demand (AF/Yr):	**375**

Notes:

1. Transit-Oriented Development Project information provided by the City of Union City on January 23, 2008 and revised on March 13, 2008.

2. Unit Demands were developed by ACWD as part of the demand forecast for the District's 2006-2010 Urban Water Management Plan, and reflect the average unit demand within the ACWD service area for each of the land use categories.

3. Distribution system losses are calculated as the difference between total production and total measured consumption and include water for fire fighting suppression, distribution system flushing, distribution system and service line leaks, etc.

Table 2b
Comparison of Project Demands with Urban Water Management Plan Demand Assumptions

Item	Residential Units		Commercial (gpd/ft^2 Building Area)		Estimated Water Demand[1] (gpd)
	MFR DUs	Town homes	Office	Retail	
Site 12 Demands, Buildout Demand Forecast					
Site 12 - Transit Oriented Development Project	1190	10	950,000	100,000	334,565
Site 12 Built to Date[2]	438	0	0	0	71,413
				Total:	**405,978**
Site 12 Demands, as incorporated in the 2006-2010 UWMP					
Site 12 Development, per 2001 Redevelopment EIR[3]	560	0	1,180,000	100,000	254,706
Union City Smart Growth assumptions (attributed to Site 12)[4,5]					151,272
				Total:	**405,978**

Notes:

1. All water demands include distribution system losses (8%). Distribution system losses are calculated as the difference between total production and total measured consumption and include water for fire fighting suppression, distribution system flushing, distribution system and service line leaks, etc.

2. Site 12 Built to Date reflects the development at Site 12 that is not part of the TOD Project, and was built subsequent to ACWD's 2004 Demand Projections).

3. Land use assumptions for Site 12 in the 2006-2010 UWMP were provided by Union City in the 2001 Redevelopment Plan EIR.

4. Smart Growth assumptions for Union City reflect future high density residential developments located adjacent to transportation hubs. The 2006-2010 UWMP Smart Growth demand assumptions were not developed based on any specific land use project, and as such, the UWMP's Site 12 demand assumption of 254,706 gpd was not included in the Smart Growth demand assumption.

5. The 2006-2010 assumed total Smart Growth demand in Union City of 415,761 gpd. Based on 151,272 gpd of this demand attributed to Site 12, there is a remaining unallocated Smart Growth demand of 264,489 gpd for Union City.

Table 3
Estimated Future Water Demands in the ACWD Service Area (AF/Yr) – Normal Year

Water Use Category	Year				
	2010	**2015**	**2020**	**2025**	**2030**
Distribution System (source: 2006-2010 UWMP)					
Single Family Residential	27,300	28,300	28,600	28,600	28,600
Multi-Family Residential	9,800	10,100	10,500	10,900	11,200
Commercial	6,500	6,600	6,800	6,900	7,000
Industrial	7,700	8,400	8,700	9,000	9,200
Institutional	3,800	3,900	4,700	4,700	4,700
Other	300	300	300	300	300
Sub-Total	***55,400***	***57,600***	***59,600***	***60,400***	***61,000***
Adjustment for plumbing code savings	(700)	(1,100)	(1,500)	(1,700)	(1,900)
Sub-Total Distribution System Demand (without losses)	*54,800*	*56,500*	*58,100*	*58,600*	*59,100*
Sub-Total Distribution System Demand (with losses)	*59,500*	*61,400*	*63,200*	*63,700*	*64,300*
Adjustments for water conservation savings	(700)	(1,500)	(2,200)	(2,200)	(2,200)
Total Distribution System Demand (source: 2006-2010 UWMP)	**58,800**	**59,900**	**61,000**	**61,500**	**62,100**
Groundwater System Demand (source: 2006-2010 UWMP)	**14,800**	**14,800**	**14,800**	**14,800**	**14,800**
Total UWMP Demands (source: 2006-2010 UWMP)	**73,600**	**74,700**	**75,800**	**76,300**	**76,900**
2008 Patterson Ranch WSA - Demands	**600**	**600**	**600**	**600**	**600**
Total ACWD Forecast Demands	**74,200**	**75,300**	**76,400**	**76,900**	**77,500**

Notes:
1. All values rounded to the nearest 100.
2. Total values may not equal sum of individual components due to rounding errors.
3. Landscape Irrigation included within Multi-Family Residential, Commercial, Industrial, and Institutional categories.
4. Adjustment for conservation includes savings due to District-sponsored water conservation programs.
5. Total Distribution System Demand (with losses) includes estimated system losses of 8%. Distribution system losses are calculated as the difference between total production and total measured consumption and include water for fire fighting suppression, distribution system flushing, distribution system and service line leaks, etc.
6. Groundwater System demands include: (1) private pumping, (2) ARP pumping and (3) saline groundwater outflows.
7. "Total ACWD Forecast Demands" reflects the 2006-2010 UWMP demand plus 560AF of additional water demands (rounded to 600 AF) anticipated from the Patterson Ranch Development Project in Fremont, per the April 2008 Patterson Ranch Development Project Water Supply Assessment.

Table 4
Estimated Future Water Demands in the ACWD Service Area (AF/Yr) – Critical Dry Year

Water Use Category	Year				
	2010	**2015**	**2020**	**2025**	**2030**
Distribution System (source: 2006-2010 UWMP)					
Single Family Residential	27,300	28,300	28,600	28,600	28,600
Multi-Family Residential	9,800	10,100	10,500	10,900	11,200
Commercial	6,500	6,600	6,800	6,900	7,000
Industrial	7,700	8,400	8,700	9,000	9,200
Institutional	3,800	3,900	4,700	4,700	4,700
Other	300	300	300	300	300
Sub-Total	***55,400***	***57,600***	***59,600***	***60,400***	***61,000***
Adjustment for plumbing code savings	(700)	(1,100)	(1,500)	(1,700)	(1,900)
Sub-Total Distribution System Demand (without losses)	*54,800*	*56,500*	*58,100*	*58,600*	*59,100*
Sub-Total Distribution System Demand (with losses)	*59,500*	*61,400*	*63,200*	*63,700*	*64,300*
Adjustments for water conservation savings	(700)	(1,500)	(2,200)	(2,200)	(2,200)
Total Distribution System Demand (source: 2006-2010 UWMP)	**58,800**	**59,900**	**61,000**	**61,500**	**62,100**
Groundwater System Demand (source: 2006-2010 UWMP)	**10,500**	**10,500**	**10,500**	**10,500**	**10,500**
Total UWMP Demands (source: 2006-2010 UWMP)	**69,300**	**70,400**	**71,500**	**72,000**	**72,600**
2008 Patterson Ranch WSA - Demands	**600**	**600**	**600**	**600**	**600**
Total ACWD Forecast Demands	**69,900**	**71,000**	**72,100**	**72,600**	**73,200**

Notes:
1. All values rounded to the nearest 100.
2. Total values may not equal sum of individual components due to rounding errors.
3. Landscape Irrigation included within Multi-Family Residential, Commercial, Industrial, and Institutional categories.
4. Adjustment for conservation includes savings due to District-sponsored water conservation programs.
5. Total Distribution System Demand (with losses) includes estimated system losses of 8%. Distribution system losses are calculated as the difference between total production and total measured consumption and include water for fire fighting suppression, distribution system flushing, distribution system and service line leaks, etc.
6. Groundwater System demands include: (1) private pumping, (2) ARP pumping and (3) saline groundwater outflows.
7. "Total ACWD Forecast Demands" reflects the 2006-2010 UWMP demand plus 560AF of additional water demands (rounded to 600 AF) anticipated from the Patterson Ranch Development Project in Fremont, per the April 2008 Patterson Ranch Development Project Water Supply Assessment.

Table 5
Estimated Future Water Demands in the ACWD Service Area (AF/Yr) – Multiple Dry Years

Water Use Category	Year				
	2026	**2027**	**2028**	**2029**	**2030**
Distribution System (source: 2006-2010 UWMP)					
Single Family Residential	28,600	28,600	28,600	28,600	28,600
Multi-Family Residential	10,960	11,020	11,080	11,140	11,200
Commercial	6,920	6,940	6,960	6,980	7,000
Industrial	9,040	9,080	9,120	9,160	9,200
Institutional	4,700	4,700	4,700	4,700	4,700
Other	300	300	300	300	300
Sub-Total	***60,520***	***60,640***	***60,760***	***60,880***	***61,000***
Adjustment for plumbing code savings	(1740)	(1,780)	(1,820)	(1,860)	(1,900)
Sub-Total Distribution System Demand (without losses)	*58,780*	*58,860*	*58,940*	*59,020*	*59,100*
Sub-Total Distribution System Demand (with losses)	*64,000*	*64,000*	*64,100*	*64,200*	*64,300*
Adjustments for water conservation savings	(2,200)	(2,200)	(2,200)	(2,200)	(2,200)
Total Distribution System Demand (source: 2006-2010 UWMP)	**61,800**	**61,800**	**61,900**	**62,000**	**62,100**
Groundwater System Demand (source: 2006-2010 UWMP)	**10,800**	**9,900**	**5,600**	**5,500**	**6,400**
Total UWMP Demands (source: 2006-2010 UWMP)	**72,400**	**71,600**	**67,400**	**67,400**	**68,500**
2008 Patterson Ranch WSA - Demands	**600**	**600**	**600**	**600**	**600**
Total ACWD Forecast Demands	**73,000**	**72,200**	**68,000**	**68,000**	**69,100**

Notes:
1. All values rounded to the nearest 100.
2. Total values may not equal sum of individual components due to rounding errors.
3. Landscape Irrigation included within Multi-Family Residential, Commercial, Industrial, and Institutional categories.
4. Adjustment for conservation includes savings due to District-sponsored water conservation programs.
5. Total Distribution System Demand (with losses) includes estimated system losses of 8%. Distribution system losses are calculated as the difference between total production and total measured consumption and include water for fire fighting suppression, distribution system flushing, distribution system and service line leaks, etc.
6. Groundwater System demands include: (1) private pumping, (2) ARP pumping and (3) saline groundwater outflows.
7. "Total ACWD Forecast Demands" reflects the 2006-2010 UWMP demand plus 560AF of additional water demands (rounded to 600 AF) anticipated from the Patterson Ranch Development Project in Fremont, per the April 2008 Patterson Ranch Development Project Water Supply Assessment.

Table 6
Overview of Contracts and Permits for ACWD's Existing Water Supplies

SUPPLY COMPONENT	Category	Description	Maximum Quantity (AF/Yr)	Ever Used
Imported Supplies				
- State Water Project	Contract	In 1961, ACWD signed an agreement with the California State Department of Water Resources for a maximum annual amount of 42,000 AF/Yr from the State Water Project (SWP). SWP water is delivered to ACWD via the South Bay Aqueduct. This contract expires in the year 2035.	42,000	Yes
- San Francisco Regional Water System	Contract	In 1984 ACWD (and other Bay Area agencies) signed a Settlement Agreement and Master Water Sales Agreement with San Francisco. ACWD supply assurance under an individual water supply contact is 12 mgd (approx. 13,400 AF/Yr). In 1994 ACWD and San Francisco executed an amendment to the contract which provides an additional 1.76 mgd (approx. 2000 AF/Yr). Although the Master Contract and accompanying Water Supply Contract expire in 2009, the Supply Assurance (which quantified San Francisco's obligation to supply water to its individual wholesale customers) survives their expiration and continues indefinitely.	15,344	Yes
Local Supplies				
- Alameda Creek Diversions for Groundwater Recharge	Water-rights permit	ACWD received a water rights permit from the SWRCB in 1949 (permit no. 8428) to appropriate up to 40,000 AF/Yr of unappropriated water from the Alameda Creek for groundwater storage and replenishment.	40,000	Yes
- Del Valle Reservoir	Water-rights permit	ACWD received a water rights permit in from the SWRCB in 1958 (permit no. 11320) to appropriate up to 60,000 AF/Yr of unappropriated water from Arroyo Del Valle in the Alameda Creek Watershed for storage and later beneficial use.	60,000	Yes
- Groundwater Storage in Niles Cone Groundwater Basin - Desalination of Brackish Groundwater	Other	ACWD manages and protects the Niles Cone Groundwater Basin for water supply under its Groundwater Management Policy (adopted 1989, amended 2001). This Policy is based on the statutory authority granted to ACWD under the County Water District Law; the Replenishment Assessment Act of ACWD; and local well ordinances.	N/A	Yes
Banking / Transfers				
- Semitropic Groundwater Banking Program	Contract	In 1996 and in 2001 entered into agreements with Semitropic Water Storage District for 150,000 AF of combined groundwater storage capacity for banking of ACWD's excess SWP supplies in wet years. The banked water is to be returned to ACWD in dry years via a series of exchanges. These banking agreements expire in the year 2035.	13,500 (maximum return quantity during critically dry years)	Yes

Table 7
Historical Water Supply Utilization by ACWD (AF/Yr)

Fiscal Year	SWP supplies used at ACWD facilities	Del Valle	San Francisco Regional Water	Newark Desal Facility	Net Local Groundwater Recharge (less evaporation and other losses)	Total In-District Water Supply	SWP Supply delivered to Semitropic for Storage
93-94	21,600	5,000	12,200	-	28,500	67,300	-
94-95	16,100	4,200	13,000	-	35,900	69,200	-
95-96	18,600	5,300	12,200	-	27,600	63,700	-
96-97	7,700	15,900	14,700	-	25,300	63,600	6,200
97-98	12,900	10,600	13,700	-	58,000	95,200	10,000
98-99	20,800	5,300	13,600	-	33,200	72,900	18,780
99-00	25,200	3,800	13,800	-	26,900	69,700	7,230
00-01	26,400	200	13,000	-	31,000	70,600	7,250
01-02	21,900	4,600	13,500	-	32,100	72,100	83
02-03	17,600	7,400	14,000	-	31,400	70,400	20,800
03-04	18,500	6,700	13,700	2,600	30,700	72,200	4,000
04-05	18,800	6,000	11,800	3,900	38,700	79,200	9,300
05-06	15,600	7,700	11,700	2,100	31,100	68,200	41,540
06-07	13,800	11,000	15,300	2,800	26,000	68,900	11,936

Table 8
Summary of Potential Future Factors that may Influence ACWD Water Supply Reliability

SUPPLY	Factor		
	Legal/Environmental	**Water Quality**	**Climatic**
Imported Supplies			
-State Water Project	ESA* requirements may constrain Delta pumping	Potential seawater intrusion impacts if Delta Levees fail.	Supply is dependent on hydrologic conditions
- San Francisco Regional Supply	ESA requirements may require additional reservoir releases	None anticipated	Supply is dependent on hydrologic conditions
Local Supplies			
- Groundwater Recharge	ESA requirements may impact groundwater recharge operations	None anticipated	Supply is dependent on hydrologic conditions
- Groundwater Storage	None anticipated	None anticipated	Supply is dependent on availability of water to store in wet years
- Del Valle Release	ESA requirements may require downstream flow releases	None anticipated	Supply is dependent on hydrologic conditions
- Desalination	None anticipated	None anticipated	Supply is dependent on local groundwater conditions
- Recycled Water	None anticipated	None anticipated	None anticipated
Banking/Transfers			
- Semitropic Banking	None anticipated	Banked groundwater may require treatment	Supply is dependent on availability of water to store in wet years

* Endangered Species Act

Table 9
Projected Normal Year Water Supplies:
2005 SWP Reliability Assumptions –without Wanger Decision

SUPPLY	2010	2015	2020	2025	2030
Imported Supplies					
-State Water Project	28,800	30,000	31,100	32,300	32,300
- San Francisco Regional	15,000	15,000	15,000	15,000	15,000
Total Imported Supplies	43,800	45,000	46,100	47,300	47,300
Local Supplies					
- Groundwater Recharge	21,400	21,400	21,400	21,400	21,400
- Groundwater Storage	0	0	0	0	0
- Del Valle Release	7,100	7,100	7,100	7,100	7,100
- Desalination	5,100	5,100	5,100	5,100	5,100
- Recycled Water	0	0	1,600	1,600	1,600
Total Local Supplies	33,600	33,600	35,200	35,200	35,200
Banking/Transfers					
- Semitropic Banking	*N/A – Not intended or needed to meet normal year demands*				
TOTAL SUPPLY	*77,400*	*78,600*	*81,300*	*82,500*	*82,500*

Table 10
Projected Normal Year Water Supplies:
2007 SWP Reliability Assumptions –with Wanger Decision

SUPPLY	2010	2015	2020	2025	2030
Imported Supplies					
-State Water Project	26,600	26,900	27,200	27,500	27,700
- San Francisco Regional	15,000	15,000	15,000	15,000	15,000
Total Imported Supplies	41,600	41,900	42,200	42,500	42,700
Local Supplies					
- Groundwater Recharge	21,400	21,400	21,400	21,400	21,400
- Groundwater Storage	0	0	0	0	0
- Del Valle Release	7,100	7,100	7,100	7,100	7,100
- Desalination	5,100	5,100	5,100	5,100	5,100
- Recycled Water	0	0	1,600	1,600	1,600
Total Local Supplies	33,600	33,600	35,200	35,200	35,200
Banking/Transfers					
- Semitropic Banking	*N/A – Not intended or needed to meet normal year demands*				
TOTAL SUPPLY	*75,200*	*75,500*	*77,400*	*77,700*	*77,900*

Table 11
Projected Critical Dry Year Water Supplies:
2005 SWP Reliability Assumptions –without Wanger Decision

SUPPLY	2010	2015	2020	2025	2030
Imported Supplies					
-State Water Project	1,700	1,800	1,800	1,900	1,900
- San Francisco Regional	11,700	13,700	14,100	12,700	13,100
Total Imported Supplies	13,400	15,500	15,900	14,600	15,000
Local Supplies					
- Groundwater Recharge	15,600	15,600	15,600	15,600	15,600
- Groundwater Storage	10,000	10,000	10,000	10,000	10,000
- Del Valle Release	100	100	100	100	100
- Desalination	5,600	5,600	5,600	5,600	5,600
- Recycled Water	0		1,600	1,600	1,600
Total Local Supplies	31,300	31,300	32,900	32,900	32,900
Banking/Transfers					
- Semitropic Banking	14,100	14,100	14,100	14,100	14,100
TOTAL SUPPLY	*58,800*	*60,900*	*62,900*	*61,600*	*62,000*

Notes:
1. Critical Dry Year conditions are based on projected water supply availability under 1977 drought conditions.
2. Semitropic Banking assumes ACWD's existing recovery capacity increased by 600 AF/Yr (from 13,500 AF/Yr to 14,100 AF/Yr), per 2008 Patterson Ranch Development Project Water Supply Assessment.

Table 12
Projected Critical Dry Year Water Supplies:
2007 SWP Reliability Assumptions –with Wanger Decision

SUPPLY	2010	2015	2020	2025	2030
Imported Supplies					
-State Water Project	2,600	2,700	2,800	2,900	2,900
- San Francisco Regional	11,700	13,700	14,100	12,700	13,100
Total Imported Supplies	14,300	16,400	16,900	15,600	16,000
Local Supplies					
- Groundwater Recharge	15,600	15,600	15,600	15,600	15,600
- Groundwater Storage	10,000	10,000	10,000	10,000	10,000
- Del Valle Release	100	100	100	100	100
- Desalination	5,600	5,600	5,600	5,600	5,600
- Recycled Water	0		1,600	1,600	1,600
Total Local Supplies	31,300	31,300	32,900	32,900	32,900
Banking/Transfers					
- Semitropic Banking	14,100	14,100	14,100	14,100	14,100
TOTAL SUPPLY	*59,700*	*61,800*	*63,900*	*62,600*	*63,000*

Notes:
1. Critical Dry Year conditions are based on projected water supply availability under 1977 drought conditions.
2. Semitropic Banking assumes ACWD's existing recovery capacity increased by 600 AF/Yr (from 13,500 AF/Yr to 14,100 AF/Yr), per 2008 Patterson Ranch Development Project Water Supply Assessment.

Table 13
Projected Multiple Dry Year Water Supplies:
2005 SWP Reliability Assumptions –without Wanger Decision

SUPPLY	2026	2027	2028	2029	2030
Imported Supplies					
-State Water Project	11,400	27,800	10,900	16,000	13,600
- San Francisco Regional	15,300	15,300	13,100	15,300	15,300
Total Imported Supplies	26,700	43,100	24,000	31,300	28,900
Local Supplies					
- Groundwater Recharge	12,700	12,100	9,900	19,800	14,000
- Groundwater Storage	9,100	0	10,000	0	3,300
- Del Valle Release	900	5,200	1,000	3,400	1,000
- Desalination	5,000	5,000	2,000	1,900	2,600
- Recycled Water	1,600	1,600	1,600	1,600	1,600
Total Local Supplies	29,300	23,900	24,500	26,700	22,500
Banking/Transfers					
- Semitropic Banking	16,800	26,000	16,500	19,400	18,000
TOTAL SUPPLY	*72,800*	*93,000*	*65,000*	*77,400*	*69,400*

Notes:
1. Critical Dry Year conditions based on projected water supply availability under 1929-33 drought conditions.
2. Semitropic Banking assumes ACWD's existing recovery capacity increased by 600 AF/Yr (from 13,500 AF/Yr to 14,100 AF/Yr), per 2008 Patterson Ranch Development Project Water Supply Assessment.

Table 14
Projected Multiple Dry Year Water Supplies:
2007 SWP Reliability Assumptions –with Wanger Decision

SUPPLY	2026	2027	2028	2029	2030
Imported Supplies					
-State Water Project	8,200	21,800	10,500	13,700	16,400
- San Francisco Regional	15,300	15,300	13,100	15,300	15,300
Total Imported Supplies	23,500	37,100	23,600	29,000	31,700
Local Supplies					
- Groundwater Recharge	12,700	12,100	9,900	19,800	14,000
- Groundwater Storage	9,100	0	10,000	0	3,300
- Del Valle Release	900	5,200	1,000	3,400	1,000
- Desalination	5,000	5,000	2,000	1,900	2,600
- Recycled Water	1,600	1,600	1,600	1,600	1,600
Total Local Supplies	29,300	23,900	24,500	26,700	22,500
Banking/Transfers					
- Semitropic Banking	15,000	22,700	16,300	18,100	19,600
TOTAL SUPPLY	*67,800*	*83,700*	*64,400*	*73,800*	*73,800*

Notes:
1. Critical Dry Year conditions based on projected water supply availability under 1929-33 drought conditions.
2. Semitropic Banking assumes ACWD's existing recovery capacity increased by 600 AF/Yr (from 13,500 AF/Yr to 14,100 AF/Yr), per 2008 Patterson Ranch Development Project Water Supply Assessment.

Table 15
Water Supply and Demand Comparison: Normal Year Supply
(2005 SWP Reliability Assumptions –without Wanger Decision)

SUPPLY/DEMAND	Year				
	2010	2015	2020	2025	2030
Total Supply with 2005 SWP	77,400	78,600	81,300	82,500	82,500
Forecast Demands (including TOD Project)	74,200	75,300	76,400	76,900	77,500
Difference with Project	3,200	3,300	4,900	5,600	5,000

Notes:

1. All values rounded to the nearest 100 AF.
2. Forecast Demands include Project demands.

Table 16
Water Supply and Demand Comparison: Normal Year
(2007 SWP Reliability Assumptions – with Wanger Decision)

SUPPLY/DEMAND	Year				
	2010	2015	2020	2025	2030
Total Supply with 2007 SWP	75,200	75,500	77,400	77,700	77,900
Forecast Demands (including TOD Project)	74,200	75,300	76,400	76,900	77,500
Difference with Project	1,000	200	1,000	800	400

Notes:

1. All values rounded to the nearest 100 AF.
2. Forecast Demands include Project demands.

Table 17
Water Supply and Demand Comparison: Critical Dry Year
(2005 SWP Reliability Assumptions –without Wanger Decision)

SUPPLY/DEMAND	Year				
	2010	**2015**	**2020**	**2025**	**2030**
Total Supply with 2005 SWP	*58,800*	*60,900*	*62,900*	*61,600*	*62,000*
Forecast Demands (including TOD Project)	69,900	71,000	72,100	72,600	73,200
Difference with Project	(11,100)	(10,100)	(9,200)	(11,000)	(11,200)

Notes:

1. All values rounded to the nearest 100 AF.
2. Forecast Demands include Project demands.
3. Critical Dry Year conditions are based on projected water supply availability under 1977 drought conditions.

Table 18
Water Supply and Demand Comparison: Critical Dry Year
(2007 SWP Reliability Assumptions – with Wanger Decision)

SUPPLY/DEMAND	Year				
	2010	**2015**	**2020**	**2025**	**2030**
Total Supply with 2007 SWP	59,700	61,800	63,900	62,600	63,000
Forecast Demands (including TOD Project)	69,900	71,000	72,100	72,600	73,200
Difference with Project	(10,200)	(9,200)	(8,200)	(10,000)	(10,200)

Notes:

1. All values rounded to the nearest 100 AF.
2. Forecast Demands include Project demands.
3. Critical Dry Year conditions are based on projected water supply availability under 1977 drought conditions.

Table 19
Water Supply and Demand Comparison: Multiple Dry Year Conditions
(2005 SWP Reliability Assumptions –without Wanger Decision)

SUPPLY/DEMAND	Year				
	2026	2027	2028	2029	2030
Total Supply with 2005 SWP	72,800	93,000	65,000	77,400	69,400
Forecast Demands (including TOD Project)	73,000	72,200	68,000	68,000	69,100
Difference with Project	(200)	20,800	(3,000)	9,400	300

Notes:

1. All values rounded to the nearest 100 AF.
2. Forecast Demands include Project demands.
3. Multiple Dry Year conditions are based on projected water supply availability under 1929-1933 drought conditions.

Table 20
Water Supply and Demand Comparison: Multiple Dry Year Conditions
(2007 SWP Reliability Assumptions – with Wanger Decision)

SUPPLY/DEMAND	Year				
	2026	2027	2028	2029	2030
Total Supply with 2007 SWP	67,800	83,700	64,400	73,800	73,800
Forecast Demands (including TOD Project)	73,000	72,200	68,000	68,000	69,100
Difference with Project	(5,300)	11,500	(3,600)	5,800	4,700

Notes:

1. All values rounded to the nearest 100 AF.
2. Forecast Demands include Project demands.
3. Multiple Dry Year conditions are based on projected water supply availability under 1929-1933 drought conditions.

Figure 1
ACWD Service Area and Transit-Oriented Development Project Location Map

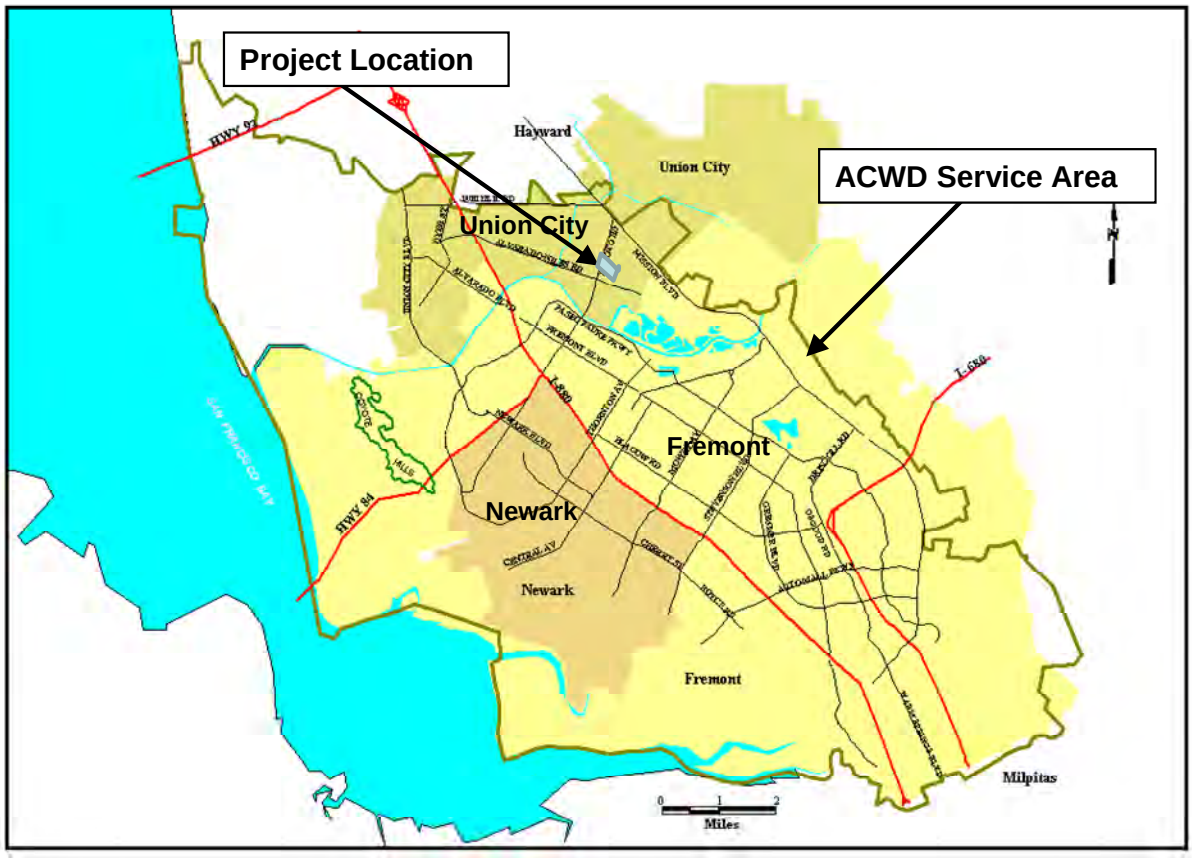
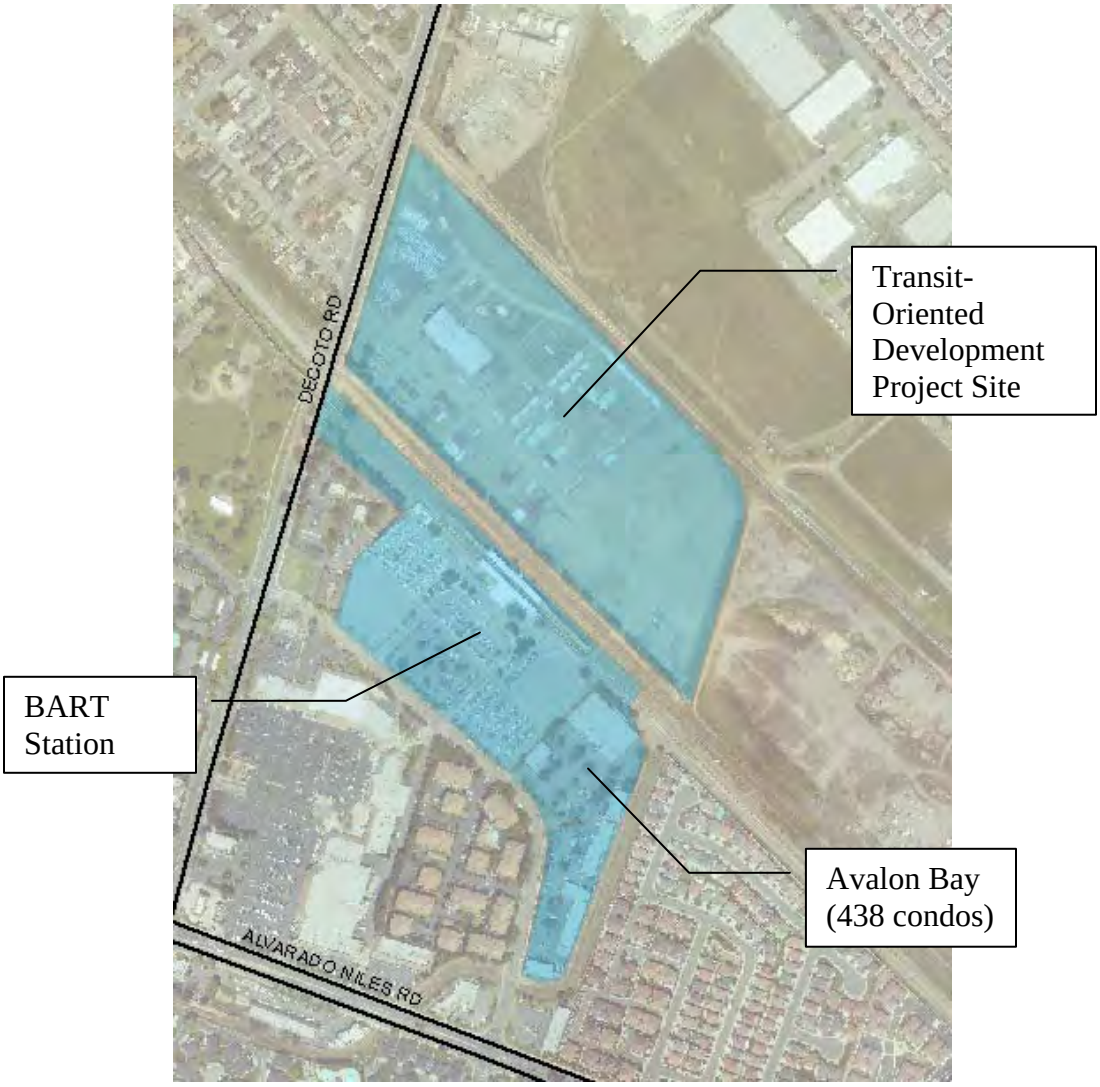


Figure 2
Site 12 from Union City Redevelopment EIR (2001):
Transit-Oriented Development Project Details



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ATTACHMENT A
ACWD URBAN WATER MANAGEMENT PLAN 2006-2010

ATTACHMENT B
ACWD WATER SUPPLY CONTRACTS

- **State Water Project Water Supply Contract (partial)**
- **San Francisco Water Supply Contract**

(note: Complete State Water Project Supply Contract is available on DWR website: http://www.swpao.water.ca.gov/wsc/index.cfm)