CHAPTER 3
SOURCES OF SUPPLY

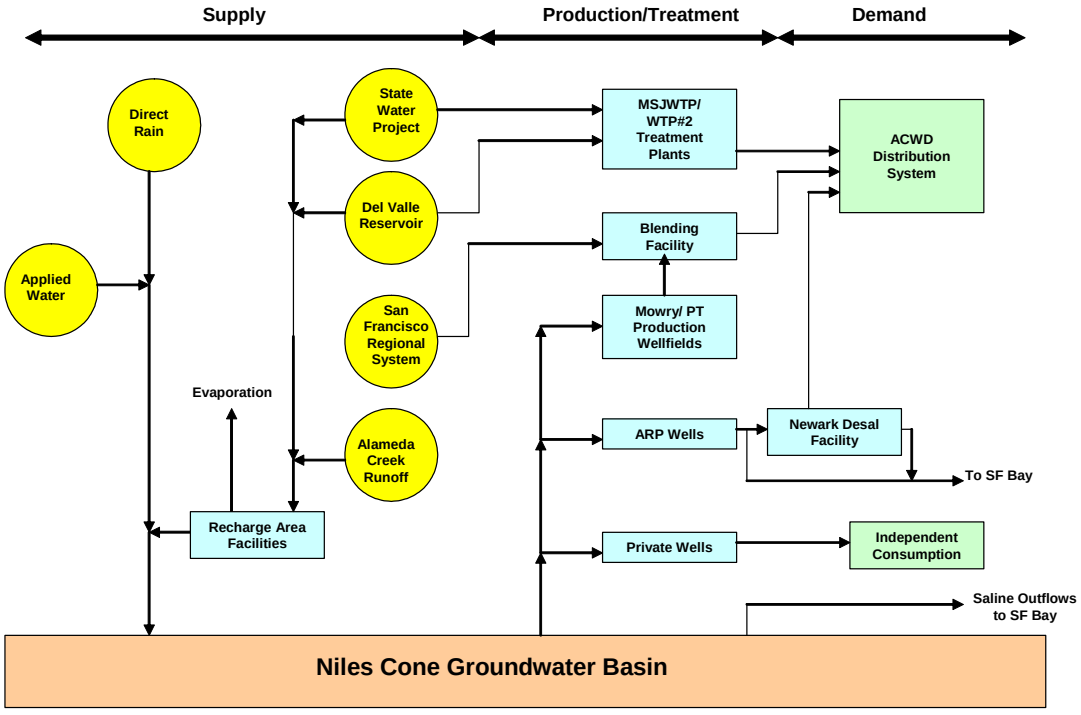
This chapter provides a summary of the District's sources of supply and their availability, as well as an overview of the management of these supplies and how water quality may impact future water supply reliability. A summary of ACWD's water supply strategy is provided in Chapter 8 – Water Supply Strategy.

3.1 SOURCES OF SUPPLY AND SUPPLY AVAILABILITY

ACWD currently has three primary sources of water supply: (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 from 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 also contribute to local groundwater recharge.

Before being supplied to ACWD's customers, the source water supplies are treated to meet and surpass all state and federal drinking water standards. ACWD operates two surface water treatment plants that treat SWP and local surface water from Del Valle Reservoir. The Newark Desalination Facility treats brackish groundwater to remove salts and other impurities, and the Blending Facility blends high quality San Francisco water with local fresh groundwater (with higher hardness) to provide a blended supply with lower overall hardness. Figure 3-1 provides a schematic of the District's sources of supply and production facilities.

Figure 3-1
ACWD Water Supply and Production Schematic



Over the 1994-2004 period, 27% of the total in-District water demands (distribution system and groundwater system demands) have been met by State Water Project supplies, 19% from San Francisco Regional supplies and 54% from local supplies (Del Valle Reservoir and groundwater recharge from local runoff and infiltration of rainfall and applied water). When considering only the distribution system demands (potable water), over the same time period, about 36% of the District's distribution system water supply was from the State Water Project. This water was either purified at one of ACWD's two water treatment plants or used to recharge local aquifers. Water from the San Francisco Regional System provided approximately 25% of the distribution system water supply and local supplies from Del Valle Reservoir and groundwater (recharged from runoff from the Alameda Creek Watershed and infiltration of rainfall and applied water) accounted for the balance (about 39%) of the distribution system supplies. Figures 3-2 and 3-3 provide a summary of the District's sources of supply.

Figure 3-2
Average Sources of Supply (1994-2004)
for Combined Distribution System and Groundwater System Demands

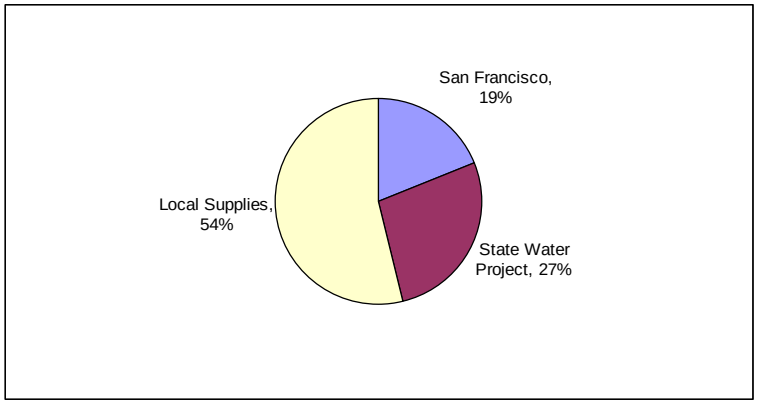
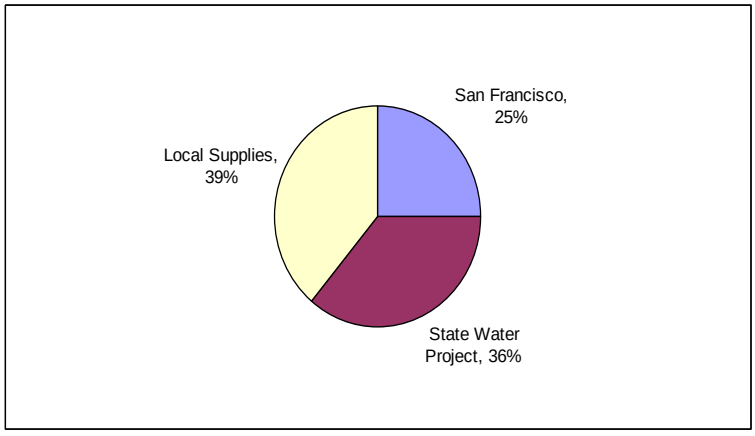


Figure 3-3
Average Sources of Supply (1994-2004)
for Distribution System Demands Only



Each of the District's water supply sources is discussed in greater detail below. Table 3-1 provides a summary of the estimated availability of each of these supplies and Table 3-2 provides a summary of the factors that may affect the existing and future reliability of these supplies. Tables 3-3 and 3-4 provide a summary of the availability of wholesale water supplies from the SWP and San Francisco Regional System.

Table 3-1
Summary of Water Supply Availability for Existing Supplies (AF/Yr)

SUPPLY COMPONENT	Estimated Water Supply Availability			
	Median Year[1] (1944 Conditions)	Long-Term Average[2]	Maximum Availability[3]	Minimum Availability[4]
Imported Supplies				
State Water Project	31,600	28,800	42,000	1,600
San Francisco Regional	15,300	15,000	15,300	11,700
Local Supplies				
Groundwater Recharge[5]	23,200	21,400	40,000	7,600
Groundwater Storage	N/A	N/A	10,000	0
Del Valle Release	3,500	7,100	20,200	0
Desalination[6]	5,100	5,100	5,600	5,100
Banking/Transfers				
Semitropic Banking	N/A	N/A	33,450	13,500
TOTAL SUPPLY	*78,700*	*77,400*	*N/A*	*N/A*

N/A Not Applicable

Notes:

1. Median Year values represent the median projected supply availability considering the sum of all of ACWD existing supplies and are based on the 1922-1994 historical hydrologic conditions (assuming 2005 operating conditions). The water supply availability under the year 1944 hydrologic conditions is utilized for the Median Year. Local Groundwater Storage and Semitropic Banking are not included in the Median Year because these supply components are used solely for dry year supplies and not under Median Year conditions.

2. Long-term Average values represent the average water supply availability based on the 1922-94 historical hydrologic conditions. Local Groundwater Storage and Semitropic Banking are not included in the Long-term Average because these supply components only provide dry year supplies and are based on a balanced "put" and "take" over the long-term.

3. Maximum Availability represents the maximum quantity of supply from each supply component. For the imported supplies, these quantities represent the maximum contractual amount that ACWD can receive from these sources. For local supplies, the maximum quantities represent the maximum amount projected to be available based on the 1922-94 historical hydrologic conditions. For Groundwater Storage, the maximum assumes that the groundwater basin is within normal operating levels in the beginning of the year. For Semitropic Banking, the maximum amount is based on maximum contractual return capacity to ACWD assuming 100% SWP allocation. The Maximum supply quantities listed above are not additive because the availability of these individual supplies may not occur under the same year/hydrologic condition.

4. Minimum Availability represents the minimum quantity of supply from each supply component. These quantities represent the minimum projected supply availability based on the 1922-94 historical hydrologic conditions. For Groundwater Storage, the minimum quantity assumes that the groundwater basin was at the minimum operating groundwater elevation in the beginning of the year and there is no usable groundwater storage available. For Semitropic Banking, the minimum quantity assumes that only Semitropic "pumpback" capacity is available to return banked water to ACWD. The Minimum Availability quantities are not additive because the availability of these individual supplies may not occur under the same year/hydrologic condition.

5. Groundwater Recharge is calculated as recharge from deep percolation of rainfall and applied water plus recharge at ACWD's groundwater percolation facilities (with local runoff from the Alameda Creek Watershed) less "Other Outflows" (as described in ACWD's annual Groundwater Survey Reports). Groundwater Recharge values in Table 3-1 do not include recharge from State Water Project or Del Valle Reservoir supplies.

6. Maximum Availability of Desalination based on Phase 1 Newark Desalination Facility capacity of 5 mgd operated year-round. Median Year availability based on 10% outage. Minimum Availability based on modeling analyses with 2005 supply/demand conditions and long-term hydrologic conditions (1922-1994). Minimum Availability under future demand conditions may be less due to Aquifer Reclamation Program pumping limitations if groundwater elevations are lowered during extended dry periods.

Table 3-2
Summary of Potential Future Factors that may Influence ACWD Water Supply Reliability

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

* Endangered Species Act

Table 3-3
ACWD Supply Request and Projected Availability of SWP Supplies (AF/Yr)

Supply Request and Projected Availability	Year					
	2005	2010	2015	2020	2025	2030
ACWD Forecast Delivery Request	42,000	42,000	42,000	42,000	42,000	42,000
DWR Projected Supply Availability						
Maximum	42,000	42,000	42,000	42,000	42,000	42,000
Median Year	31,600	32,700	33,800	34,900	36,000	36,000
Single Dry Year	1,600	1,700	1,800	1,800	1,900	1,900
Multiple Dry Year						
-Year 1	11,300	11,300	11,400	11,400	11,400	11,400
-Year 2	29,200	28,900	28,500	28,200	27,800	27,800
-Year 3	10,400	10,500	10,700	10,800	10,900	10,900
-Year 4	14,400	14,800	15,200	15,600	16,000	16,000
-Year 5	13,600	13,600	13,600	13,600	13,600	13,600

Source: California Department of Water Resources, Notice to State Water Project Contractors, May 25, 2005

Table 3-4
ACWD Supply Request and Projected Availability of San Francisco Regional Supplies (AF/Yr)

Supply Request and Projected Availability	Year					
	2005	2010	2015	2020	2025	2030
ACWD Forecast Delivery Request	15,300	15,300	15,300	15,300	15,300	15,300
SFPUC Projected Supply Availability						
Maximum	15,300	15,300	15,300	15,300	15,300	15,300
Median Year	15,300	15,300	15,300	15,300	15,300	15,300
Single Dry Year	11,700	11,700	13,700	14,100	12,700	13,100
Multiple Dry Year						
-Year 1	15,300	15,300	15,300	15,300	15,300	15,300
-Year 2	15,300	15,300	15,300	15,300	15,300	15,300
-Year 3	13,500	13,500	13,700	14,100	14,600	13,100
-Year 4	15,300	15,300	15,300	15,300	15,300	15,300
-Year 5	15,300	15,300	15,300	15,300	15,300	15,300

Source: San Francisco Public Utilities Commission, Transmittal Letter to ACWD, June 1, 2005

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.

State Water Project Availability

DWR planning studies provide data for the projected supply availability for the District's State Water Project supply. The DWR has developed a State Water Project Delivery Reliability Report which provides an analysis of the projected availability of SWP supplies. The DWR is responsible for updating this report every two years. At the time of the preparation of this Urban Water Management Plan, the DWR was in the process of developing the 2005 Delivery Reliability Report, and therefore a final version of the 2005 report was not available for use in the preparation of this UWMP. However, in a May 25, 2005 Notice to State Water Project Contractors, the DWR provided relevant sections from the working draft of the 2005 Reliability Report for use in the preparation of the UWMP, including the most recent modeling analyses of SWP availability under current and future demand conditions. For purposes of the preparation of the ACWD's UWMP, DWR scenarios 6 and 7 have been utilized by ACWD. Both of these scenarios assume the 2004 Long Term Central Valley Project Operations and Criteria Plan (OCAP) is in place. Scenario 6 is projected deliveries under 2005 conditions and Scenario 7 is based on 2025 conditions. As provided by the DWR, supply availability for the intervening years is interpolated from the 2005 and 2025 conditions. A summary of the projected supply availability is provided in Table 3-3.

In order to assist the DWR in its water supply planning, on an annual basis ACWD submits its forecasted use (through the year 2035) of its SWP supplies to the DWR. For planning purposes, ACWD requests the full delivery of its maximum contractual amount of 42,000 acre-feet. Currently, SWP water that is not directly used by ACWD within the service area (to meet distribution and/or groundwater system demands) is stored within the local groundwater basin or at the Semitropic Groundwater Bank for later dry year use (see discussion below).

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 storage to improve the dry year reliability of the District's SWP supplies. Based on this IRP recommendation, ACWD has contracted with Semitropic Water Storage District for participation in the Semitropic Groundwater Banking Program. ACWD has secured 150,000 AF of groundwater storage capacity at Semitropic under this program. 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. 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. Due to these constraints, the SFPUC is very dependent on reservoir storage to firm-up its water supplies.

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 quantified San Francisco's obligation to supply water to its individual wholesale customers) survives their expiration and continues indefinitely.

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). The goal of the WSIP is to deliver capital improvements aimed at enhancing the SFPUC's ability to meet its water service mission of providing high quality water to its customers in a reliable, affordable and environmentally sustainable manner.

The origins of the WSIP are rooted in the SFPUC's "Water Supply Master Plan" (April 2000). Planning efforts for the WSIP gained momentum in 2002 with the passage of San Francisco ballot measures Propositions A and E, which approved the financing for the water system improvements. Also in 2002, Governor Davis signed Assembly Bill No. 1823, the Wholesale Regional Water System Security and Reliability Act. The WSIP is expected to be completed in 2016.

A Program Environmental Impact Report (PEIR) is being prepared by San Francisco under the California Environmental Quality Act (CEQA) for the Water Supply Improvement Program. A PEIR is a special kind of Environmental Impact Report under CEQA that is prepared for an agency program or series of actions that can be characterized as one large project. PEIRs generally analyze broad environmental effects of the program with the acknowledgment that site-specific environmental review may be required at a later date.

Projects included in the WSIP will undergo individual project specific environmental review as required. Under CEQA, project specific environmental review would result in preparation of a Categorical Exemption, Negative Declaration or Environmental Impact Report. Each project will also be reviewed for compliance with the National Environmental Policy Act and local, state and federal permitting requirements as necessary.

San Francisco Regional Water System Supply Availability

Table 3-4 provides a summary of the projected supply availability of San Francisco Regional Water System supplies under median (normal), and dry year conditions. These projections are based on the delivery requests of the SFPUC's wholesale customers, including ACWD's supply requests of its full contractual amounts from the SFPUC through the year 2030. Water supply reliability information provided by the SFPUC indicates that the SFPUC can meet the demands of its retail and wholesale customers, including ACWD, in years of average and above average precipitation. However, the Master Contract allows the SFPUC to reduce water deliveries during droughts, emergencies and for scheduled maintenance activities. The SFPUC and all wholesale customers adopted an Interim Water Shortage Allocation Plan in 2000 to address the allocation of water between San

Francisco and wholesale customers in aggregate and among individual wholesale customers during water shortages of up to 20% of system-wide use. This plan also expires in June 2009. Under the Master Contract, reductions to wholesale customers are to be based on each agency's proportional purchases of water from the SFPUC during the year immediately preceding the onset of shortage, unless this formula is supplanted by a water conservation plan agreed to by all parties. The Master Contract's default formula discouraged SFPUC's wholesale customers from reducing purchases from SFPUC during periods of normal water supply through demand management programs or development of alternative supplies. To overcome this problem, SFPUC and its wholesale customers adopted an Interim Water Shortage Allocation Plan (IWSAP) in calendar 2000. This IWSAP applies to water shortages up to 20% on a system-wide basis and will remain in effect through June 2009.

The IWSAP has two components. The Tier One component of the IWSAP allocates water between San Francisco and the wholesale customer agencies collectively. The IWSAP distributes water between two customer classes based on the level of shortage:

Level of System Wide Reduction in Water Use Required	Share of Available Water	
	SFPUC Share	Suburban Purchasers Share
5% or less	35.5%	64.5%
6% through 10%	36.0%	64.0%
11% through 15%	37.0%	63.0%
16% through 20%	37.5%	62.5%

The Tier Two component of the IWSAP allocates the collective wholesale customer share among each of the 28 wholesale customers. This allocation is based on a formula that takes three factors into account, the first two of which are fixed: (1) each agency's Supply Assurance from SFPUC, with certain exceptions, and (2) each agency's purchases from SFPUC during the three years preceding adoption of the Plan. The third factor is the agency's rolling average of purchases of water from SFPUC during the three years immediately preceding the onset of shortage.

The IWSAP allows for voluntary transfers of shortage allocations between SFPUC and any wholesale customer and between wholesale customer agencies. Also, water "banked" by a wholesale customer, through reductions in usage greater than required, may also be transferred.

The IWSAP will expire in June 2009 unless extended by San Francisco and the wholesale customers. The projected amount of water which ACWD expects to receive from SFPUC (as shown in Table 3-4) has been calculated by SFPUC on the assumption that the Plan will in fact be extended.

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. Alameda Creek annual runoff at the USGS Alameda Creek near Niles stream gage (located near ACWD's recharge facilities) has varied from a recorded minimum of 650 AF/Yr in 1960-1961, to a recorded maximum in 1982-1983 of 360,000 AF/Yr. Typically, ACWD diverts only a small portion of the local runoff flowing in Alameda Creek. The majority of local runoff flows downstream through the

Alameda Creek Flood Control Channel to San Francisco Bay. To a lesser extent, infiltration of rainfall and applied water 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 pumped the 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.

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. Chapter 6 provides additional information on ACWD's existing and planned desalination facilities.

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 between 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.

Local Water Supply Availability

A summary of the estimated water supply availability from ACWD's local supplies is provided in Tables 3-1 and 3-2. As indicated in these tables, the amount of local water supplies available to ACWD from Del Valle Reservoir and fresh groundwater sources varies widely from year to year, depending primarily on hydrologic conditions and availability of local runoff. In general, desalination of brackish groundwater provides a more reliable water source than other local supplies. However, there may be limitations to this source if groundwater levels are lowered to the extent that a reduction in Aquifer Reclamation Program pumping is required to prevent new seawater intrusion. Other potential factors that may affect local supply availability include: (1) competition for local water supplies with environmental needs, such as the on-going efforts to restore a steelhead fishery to the Alameda Creek Watershed and (2) concerns regarding groundwater levels and land development in the western service area. ACWD is currently working to address both of these issues. However, it is not clear whether or not these issues will ultimately impact ACWD's local supplies. Any future changes to ACWD's local water supplies due to these or other currently unforeseen factors will be reflected in future updates to this Urban Water Management Plan.

3.2 MANAGEMENT AND DISTRIBUTION OF WATER SUPPLIES

With local water and two sources of imported water, the District has the flexibility to change the timing and use of supplies to best meet its water management objectives, which include:

- Maximizing total usable supply
- Maximizing water quality/providing uniform water quality
- Protecting groundwater resources from degradation due to previously intruded seawater
- Protecting groundwater resources from further seawater intrusion

District customers receive water from one or more production sources: the San Francisco Regional Water System, the District's Mission San Jose Water Treatment Plant (MSWTP), the District's Water Treatment Plant Number 2 (WTP 2), the District's Blending Facility which blends local groundwater (from the Mowry and Peralta-Tyson Wellfields) with San Francisco Regional supplies, and the Newark Desalination Facility.

Flow from the SBA and releases from Del Valle Reservoir may be diverted into either of the two treatment plants, diverted into Alameda Creek, or both. Depending on the water quality and flow in Alameda Creek, water can also be diverted into percolation ponds for groundwater recharge. San Francisco Regional Water System supplies are either routed to the Blending Facility for blending with local groundwater supplies or, under certain conditions, directly supplied to users.

Groundwater Management and Protection

Groundwater is an important component of the District's supply, as demonstrated in Tables 3-1 and 3-2. ACWD has had a Groundwater Management Policy in place since 1989. This management policy outlines the District's protection and management activities for the Niles Cone Groundwater Basin to ensure a reliable supply of high quality water that satisfies current and future water needs in the ACWD service area. Chapter 4 in this UWMP describes the District's groundwater management and protection policy in more detail.

Groundwater Recharge

During wet periods, local runoff from the Alameda Creek Watershed is diverted into the groundwater percolation ponds. When local runoff is not available, water may be released from either Del Valle Reservoir or from the SBA for groundwater recharge. Currently, the District operates three inflatable dams to capture and divert Alameda Creek flow into the percolation ponds. Diversions typically take place when Alameda Creek flow at the diversion point is less than about 700 cubic feet per second (cfs). The dams are deflated for protection from debris when creek flow is above 700 cfs and no off-stream diversions occur during these high flow conditions.

The District is currently pursuing fish passage improvement projects that will eliminate the need for some of these groundwater recharge structures; however, these projects are not anticipated to adversely affect the District's groundwater recharge capability.

Del Valle Supplies

Typically, all stored Del Valle water is used by the fall to maximize the capture of local runoff during the winter and spring seasons. In decreasing order of priority, Del Valle water is delivered to ACWD:

- Via the SBA to the District's treatment facilities (MSJWTP and WTP2).
- Via the SBA and released into Alameda Creek at Vallecitos Takeoff for groundwater recharge.
- Into Arroyo Del Valle Creek, where it flows to Arroyo de la Laguna and eventually into Alameda Creek for groundwater recharge.

State Water Project Water

Water from the SWP (delivered via the SBA) can either be taken at Vallecitos Takeoff and discharged to Alameda Creek for groundwater basin recharge or taken at the Alameda-Bayside Takeoffs for delivery to the treatment plants. By October 1 of every year, the District must submit its anticipated requests for monthly water deliveries for the upcoming year. The State confirms the District's request or provides the District with the anticipated percentage allocation by December 1. The estimated percentage delivery is then adjusted during the spring based on estimated runoff.

Blending of San Francisco Regional System Water with Groundwater

San Francisco Regional Water System supplies can be taken at any of nine takeoffs throughout the District's distribution system. This water supply is significantly lower in hardness than ACWD's local groundwater supplies. The District blends the San Francisco Regional water with higher hardness groundwater at ACWD's Blending Facility with the objective of providing a uniform water quality with hardness levels similar to those of other sources of supply. Since the Blending Facility has come on-line, most of the San Francisco Regional System water has been taken at the Fremont connection for direct delivery to the Blending Facility. The New United Motors Manufacturing, Inc. (NUMMI) plant and a few industrial, business and residential customers receive San Francisco Regional water directly.

3.3 SOURCE WATER QUALITY

As required by law, Drinking Water Source Assessments are conducted to determine the vulnerability of ACWD's drinking water sources to contamination. As described below, assessments have been completed for all of ACWD's water sources:

- The San Francisco Public Utilities Commission, which administers the San Francisco Regional Water System, completed its assessment in 2000. It was found that the SFPUC's watersheds are vulnerable to contaminants associated with wildlife and, to a limited extent, human recreational activity. Historically, the levels of contamination have been very low in the watersheds.

- The South Bay Aqueduct Source Assessment was completed in 2002 to evaluate potential vulnerabilities to ACWD's State Water Project supplies. This source is most vulnerable to agricultural drainage, wastewater treatment plant discharges, urban runoff, recreational usage of the water, and cattle grazing. In addition, seawater intrusion in the Delta contributes salt and bromide to the water supply.

- ACWD's assessment of local groundwater sources was also completed in 2002. This assessment concluded that local groundwater is most vulnerable to gas stations, known contaminant plumes, confirmed leaking underground storage tanks, dry cleaners, metal plate/finishing/fabricating, and sewer collection. The potential for saltwater intrusion into the aquifer system is also of concern to ACWD.

Although ACWD raw water sources are vulnerable to potentially contaminating activities, ACWD treatment and blending facilities ensure that all potable water delivered by ACWD meets the strict standards set by state and federal regulatory agencies. In addition, ACWD's groundwater management program (see Chapter 4) has been developed to protect the local groundwater supplies from contamination. As such, under most future scenarios, it is not anticipated that future changes to source water quality will adversely impact the long-term availability or reliability of these supplies. However, catastrophic events (i.e. levee failures in the Delta resulting in seawater intrusion impacts on Delta supplies) or other unforeseen circumstances may impact ACWD supplies and their reliability, resulting in water supply shortages. Chapter 9 (Water Shortage Contingency Plan) addresses potential future shortages.