

1 SANTA CLARA VALLEY WATER DISTRICT
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5 BEFORE THE
6 CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
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10 IN RE CALIFORNIA WATERFIX
11 CALIFORNIA DEPARTMENT OF
12 WATER RESOURCES AND U.S.
13 BUREAU OF RECLAMTION PETITION
14 FOR CHANGES IN WATER RIGHTS,
15 POINT OF DIVERSION/RE-DIVERSION

**WRITTEN TESTIMONY OF CINDY
KAO**

15 1. I am the Imported Water Unit Manager in the Water Supply Management Division
16 at the Santa Clara Valley Water District ("Santa Clara"). I am responsible for managing Santa
17 Clara's State Water Project ("SWP"), Central Valley Project ("CVP") and other imported water
18 supplies, including water transfers, exchanges, and supplies banked in the Semitropic
19 Groundwater Banking Program ("Semitropic") in Kern County. I have worked for Santa Clara for
20 18 years, and have been in my current position for six years. I am a registered Civil Engineer in
21 California and hold a Bachelor of Science degree in Civil Engineering, a Masters degree in Civil
22 Engineering, and a Ph.D., in Civil and Environmental Engineering. I am familiar with operations
23 of the SWP and CVP as they relate to meeting the water supply needs for Santa Clara County
24 ("County") and with operation and management of Santa Clara's water supply system to meet
25 those needs.

26 2. Santa Clara was created by an act of the California Legislature, and operates as a
27 state of California Special District, with jurisdiction throughout Santa Clara County. Its principal
28 office is located in San Jose, California.

1 3. Santa Clara’s mission is to provide Santa Clara County with safe, clean water for a
2 healthy life, environment, and economy. Located in the southern San Francisco Bay Area, the
3 County includes over 1.9 million residents and the vital high-tech economy known as “Silicon
4 Valley.” Santa Clara County has been called the “economic engine” of the Bay Area. An
5 estimated 200,000 workers from other parts of the Bay Area and San Joaquin Valley commute
6 daily to Santa Clara County for employment. Santa Clara also serves agricultural water users in
7 the southern portion of the County. **Exhibit SLDMWA-16** is a brief video that summarizes Santa
8 Clara’s sources and uses of water.

9 4. Santa Clara County’s historical annual water demands total approximately 350,000
10 acre-feet. Approximately 45% of the County’s water supply, on average, is from locally developed
11 surface water and groundwater. The remaining 55%, on average, is imported by Santa Clara from
12 the Central Valley Project (“CVP”) and the State Water Project (“SWP”) and by San Francisco
13 Public Utilities Commission (SFPUC) from the Hetch-Hetchy system. Santa Clara has two
14 primary imported water supply contracts: one with Department of Water Resources (“DWR”) for
15 100,000 acre-feet from the SWP and one with United States Bureau of Reclamation (“USBR”) for
16 152,500 acre-feet from the CVP. CVP project water is Santa Clara’s largest source of imported
17 water, and is invaluable in meeting Santa Clara County’s water supply needs.

18 5. Santa Clara manages the groundwater resources within Santa Clara County. Santa
19 Clara augments natural recharge with a managed recharge program to offset groundwater
20 pumping, to maintain storage reserves for use during water shortages and emergency outages, and
21 to minimize the risk of land subsidence. As Santa Clara County developed in the early 1900’s, the
22 Santa Clara Valley subbasin was substantially overdrafted and land subsidence occurred.
23 Downtown San Jose land surface elevations sank about 13 feet, despite development of local
24 conservation reservoirs and an aggressive recharge program. This trend was stopped only after
25 Santa Clara began importing water. With the infrastructure in place today in downtown San Jose
26 and surrounding urban areas of Silicon Valley, the impacts of even a small amount of land surface
27 subsidence could significantly impair infrastructure, including homes, commercial and industrial
28 buildings, many miles of roads, bridges, overpasses, flood control levees, the San Jose

1 International Airport, and the San Jose-Santa Clara Regional Wastewater distribution system. In
2 1999, the USGS estimated direct costs of subsidence in Santa Clara Valley to be approximately
3 \$300,000,000 in 1998 dollars (Circular 1182). This cost estimate was based primarily on a limited
4 evaluation of flood control levees, and it is likely that total impacts including existing
5 transportation and other infrastructure would be substantially greater. On average, Santa Clara
6 actively recharges about 110,000 acre-feet to County groundwater basins annually.

7 6. Santa Clara operates three drinking water treatment plants with a combined
8 capacity of 210 million gallons per day. Approximately 90% of the water treated at Santa Clara's
9 three treatment plants is supplied from SWP and CVP. Santa Clara has contracts to supply treated
10 water to nine retail water agencies within the County. Through its rate structure, Santa Clara
11 encourages local retail water agencies to use treated surface water from Santa Clara rather than
12 pumping local groundwater supplies in order to prevent overdraft of the groundwater basins and a
13 return of land subsidence, and to reserve groundwater supplies for years when surface water
14 supplies are less available.

15 7. When CVP and SWP water supplies are reduced, Santa Clara typically relies on
16 some combination of increased groundwater pumping, reduced recharge of groundwater basins,
17 additional short-term transfers and exchanges, and demand reduction measures. These actions
18 result in greater pressure on Santa Clara's groundwater basin, increased risk of overdraft and land
19 subsidence, and a reduction in available storage reserves for use in future years; especially if
20 groundwater reserves cannot be replenished before the next water shortage. Significant reductions
21 in groundwater reserves increase public health and safety risks in the event of an earthquake or
22 other emergency that results in inability to distribute treated surface water, and reduce Santa
23 Clara's ability to manage the effects of a continuing drought. These actions also result in a greater
24 financial burden for Santa Clara. For example, when CVP and SWP allocations are reduced, Santa
25 Clara must still pay substantial fixed costs assigned under its contracts, Santa Clara incurs
26 additional costs to secure replacement supplies, and Santa Clara has reduced revenues.

27 8. Reductions in imported supplies, including CVP, SWP, and SFPUC water, may
28 result in local environmental impacts. Of the 163 miles of local streams used by Santa Clara for

1 instream groundwater recharge, 129 miles are considered to be habitat for threatened and
2 endangered species. Santa Clara County supports a wide variety of environmental resources,
3 including at least 7 aquatic species listed as special status species under State and federal law,
4 including 3 amphibians, 1 reptile, and 3 fish. Local reservoirs, streams and artificial recharge
5 ponds provide habitat for at least 14 native species and 26 nonnative species of fish. Populations
6 of steelhead trout are known to exist in Coyote Creek, Guadalupe River, Stevens Creek, and San
7 Francisquito Creek and their tributaries, and Santa Clara has undertaken a Fisheries and Aquatic
8 Habitat Collaborative Effort (FAHCE) to improve habitat conditions. Reduced imported supplies
9 could result in potential impacts to riparian resources and listed species by reducing Santa Clara's
10 ability to make releases to streams and ponds for groundwater recharge.

11 9. CVP and SWP supplies have recently been reduced by increasingly stringent
12 restrictions imposed by legal and regulatory actions. Each incremental reduction in Santa Clara's
13 CVP and SWP supplies in all years exacerbates the already adverse effects associated with
14 drought, and other water shortages. During wet periods, Santa Clara's ability to restore the reserve
15 supplies it needs to respond to future water shortages or emergencies, and its ability to carryover
16 surface water supplies in case the following year is dry, is diminished. During dry periods and
17 other water shortages, Santa Clara needs to respond to reduced CVP and SWP supplies by a)
18 increasing groundwater pumping, b) reducing groundwater recharge, c) reducing local surface
19 storage, d) locating and purchasing replacement supplies, e) calling for increased conservation
20 efforts, or f) some combination of these actions. Each of the options available to Santa Clara
21 comes at a cost. Increasing local groundwater pumping decreases local groundwater reserves that
22 would otherwise be available for future shortages and emergencies and decreases groundwater
23 levels, thereby, increasing the risk of land subsidence. Reducing groundwater recharge may
24 impact riparian resources and listed species within the streams used for that recharge, and may
25 result in a net depletion of groundwater supplies if groundwater extraction outpaces groundwater
26 recharge. Reducing local surface storage reduces reserves that would otherwise be available for
27 future shortages and may impact riparian resources and listed species by reducing supplies
28 otherwise available for instream releases. Locating adequate short-term replacement supplies

1 during drought conditions is expensive and difficult due to increased competition for limited
2 available supplies. Increased conservation results in reduced water sales and revenues and could
3 lead to demand hardening, making response to future shortages more difficult.

4 10. Each increment of water shortage increases economic and financial hardship for
5 Santa Clara and its local water users due to increased cost to acquire short-term replacement
6 supplies, reduced water sales and revenues, and no relief from fixed charges under its CVP and
7 SWP contracts. During the recent drought, replacement supplies cost as much as \$700 per acre-
8 foot from willing sellers north of the Delta. If losses across the Delta are taken into account, the
9 cost per acre-foot of water delivered increases to about \$1000 per acre-foot. This is several times
10 more expensive than SWP and CVP supplies. At the same time, Santa Clara is obligated to
11 continue paying fixed charges under its SWP and CVP contracts regardless of the amount of water
12 actually delivered under those contracts. During water shortages, calls for additional water
13 conservation result in reduced water sales and revenues, exacerbating the economic impacts of
14 shortages in Santa Clara and its water retailers.

15 11. Santa Clara is aggressively pursuing efforts to reduce reliance on SWP and CVP
16 supplies to meet future demands through development and expansion of recycled and purified
17 water. Santa Clara's 2012 Water Supply and Infrastructure Master Plan (Water Master Plan),
18 **Exhibit SLDMWA-17**, identifies purified water as a significant water supply source, and the
19 District's goal has been to expand recycled water to meet at least 10 percent of the total county
20 demand by 2025. Recycled water is currently about 5 percent (or about 20,000 acre-feet per year)
21 of the county's supply and is distributed for non-potable uses such as landscape and agricultural
22 irrigation. In July 2014, the District achieved a major milestone toward this goal with the opening
23 of the Silicon Valley Advanced Water Purification Center, and in April 2015, the Santa Clara
24 Board directed staff to expedite recycled and purified programs. Santa Clara's Expedited Purified
25 Water Program is currently evaluating an expanded and expedited potable reuse program that
26 could include up to a total of 45,000 acre-feet per year of potable reuse capacity. However, there
27 are several constraints on development of potable reuse that need to be addressed, including
28 reverse osmosis concentrate management, public acceptance, permitting, hydrogeologic

1 conditions, collaboration with recycled water producers, and costs.

2 12. Santa Clara has been and continues to be a leader in water conservation with
3 innovative, effective, and comprehensive-in-scope programs as documented in Santa Clara's FY
4 2016 Water Conservation Report, **Exhibit SLDMWA-18**. As a result of the combined efforts
5 between Santa Clara and the community, nearly 70,000 acre-feet of water was saved in FY
6 2015/16 through our long-term conservation program. This savings is, for the most part, in
7 addition to short-term reductions (as much as 80,000 acre-feet in 2016) that were achieved
8 primarily in response to the drought. Because of the investments Santa Clara has made in
9 conservation since 1992, water use in Santa Clara County has remained relatively consistent,
10 despite a 25 percent increase in population over the same time period. Water Master Plan
11 implementation is designed to meet future growth in the county's water demands through
12 conservation and recycling, reducing the county's reliance on Delta-conveyed imported water.
13 However, even if Santa Clara's water conservation and recycling efforts result in additional
14 sustainable alternative supplies, Santa Clara will still be reliant on SWP and CVP supplies for, on
15 average, 30 percent of the county's total water supply and approximately 90 percent of the water
16 for Santa Clara's three drinking water treatment plants.

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