

STATE OF CALIFORNIA
State Water Rights Board

1401 21st STREET
P. O. BOX 1892
SACRAMENTO 7, CALIFORNIA

Dr. J. K. Hill
See Geology

Henry Holsinger, Chairman
W. P. Rowe, Member
Ralph J. McGill, Member

L. K. Hill
Executive Officer

March 27, 1958

To: Applicants, Protestants,
and Other Interested Parties

Attached is a copy of Decision D 894 of the State Water Rights Board adopted on March 25, 1958, concerning Applications 17002 and 17003 of Pleasanton Township County Water District and Alameda County Water District, respectively, for a water storage project on Arroyo del Valle in Alameda County.

The Board has found that there is unappropriated water available in Arroyo del Valle to supply the applicants, which may be appropriated without injury to any lawful user of water, and that the proposed project is in the public interest. The Board has approved the applications and ordered that permits be issued to the applicants subject to the terms and conditions set forth on pages 28 to 36 of the decision.

With the objective of providing adequate protection to downstream rights, the Board has ordered that the applicants carry on continuing studies to determine the effects of the project on the ground water basins below the proposed Arroyo del Valle Reservoir. The Board also has retained jurisdiction for a period not to exceed 15 years after construction of the project for the purpose of such reviews, hearings and orders as may be required until a final determination can be made concerning the amounts, timing, and rates of releases of water, in satisfaction of downstream rights, based upon further information to be developed by the continuing studies and investigations.

Very truly yours,

L. K. Hill
L. K. Hill
Executive Officer

Attach.

STATE OF CALIFORNIA
STATE WATER RIGHTS BOARD

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In the Matter of Application 17002)
by Pleasanton Township County)
Water District)
and)
Application 17003)
by Alameda County Water District)

Source: Arroyo del Valle
County: Alameda

Decision No. D 894

Decided: March 25, 1958

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Appearances at hearing conducted at Sacramento on September 11, 1957, and at Oakland on December 2-5, 1957, by Henry Holsinger, Chairman, W. P. Rowe, Member, and John B. Evans, Member, State Water Rights Board.

Pleasanton Township County
Water District

R. L. Miller, Attorney

Alameda County Water District

Morris Hyman, Attorney

City and County of San
Francisco

Thomas W. O'Connor, Attorney

Alameda County Flood Control
and Water Conservation District,
Zone 7

Maury Engel, Attorney

County of Alameda

Richard J. Moore, Attorney

City of Pleasanton

William Struthers, Attorney

Kaiser Sand and Gravel Company

Kenneth M. Robinson, Attorney

California Water Service
Company

Carl H. Mau, Vice President

City of Livermore

Richard M. Callaghan, Attorney

State Department of Water
Resources

A. E. Kuiper, Assistant
Hydraulic Engineer

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DECISION

Substance of the Applications

Application 17002 was filed by Pleasanton Township County Water District for a permit to appropriate 60,000 acre-feet per annum from Arroyo del Valle by storage to be collected between January 1 and December 31 of each year. Water will be impounded in the proposed del Valle (Sanatorium) Reservoir at a point within the SE $\frac{1}{4}$ of NW $\frac{1}{4}$ of Section 3, T4S, R2E, MDB&M*, and later released for recharge of the ground water by spreading along a percolation channel and upon a 200-acre spreading ground within Sections 13, 14, 15, 16, 21, 22 and 23, T3S, R1E, and Sections 19, 29, 30, 32 and 33, T3S, R2E. Some water will be used directly from surface storage for municipal and domestic purposes. Water extracted from ground water storage is to be used for municipal, domestic, irrigation, industrial and recreational purposes. The place of use includes 12,500 acres within the boundaries of Pleasanton Township County Water District, 11,000 acres in Livermore Valley and in the cities of Pleasanton, Livermore, Dublin and Camp Parks.

Application 17003 was filed by Alameda County Water District for a permit to appropriate 60,000 acre-feet per annum from Arroyo del Valle by storage to be collected between January 1 and December 31 of each year. Water will be impounded in the proposed del Valle Reservoir at a point hereinabove described, and rediverted to the district by a pipe and tunnel conduit system for municipal and

* All township references herein are to Mount Diablo Base and Meridian (MDB&M).

domestic use. Water not so rediverted will be released from the dam and allowed to flow down the natural channel of the stream system to a point on Alameda Creek within the SW $\frac{1}{4}$ of SW $\frac{1}{4}$ of Section 15, T4S, R1W, where it will be rediverted onto a 200-acre spreading ground within Sections 15, 17, 18, 19, 21 and 22, T4S, R1W, and Section 24, T4S, R2W, for percolation to underground storage. That portion of the water used from underground storage will be for municipal, domestic, irrigation, industrial and recreational purposes. The place of use includes 18,100 acres within a gross area of 59,000 acres within Alameda County Water District and the cities of Fremont, Newark, Alvarado and Decoto.

Applications 17002 and 17003 expressly state that they are to be equal in priority.

Protests

Twenty-three protests were filed against Application 17002 and/or 17003 by various individuals and public and private entities, the majority of which made no appearance at the hearing. It is unnecessary for the Board to consider individually the protests of those who failed to present evidence at the hearing in support of their claims. The issues raised by them are little different from those presented by the other parties and discussed at length at the hearing and, furthermore, the final disposition of the subject applications will be under terms and conditions adequate to safeguard all prior vested rights.

County of Alameda protests the applications on the basis of riparian rights and License 1983, alleging that injury will

result to the County as the proposed diversions will diminish the amount of water available to the protestant at its point of diversion located within the NE $\frac{1}{4}$ of NE $\frac{1}{4}$ of projected Section 4, T4S,R2E; that it has made use by direct diversion of 0.13 cubic foot per second, year round; that water is used for domestic, irrigation and standby fire protection purposes.

Alameda County Water District claims that the proposed diversion under Application 17002 will diminish the flow of Alameda Creek and deprive it of waters to which it is entitled under prior rights. The protestant alleges that the lands within the district are highly developed for domestic, industrial and irrigation purposes; that there is not sufficient water from local sources to meet the present needs of the district; that since 1951 waters have been put to beneficial use under Permits 8428 and 8429 by diverting from Alameda Creek onto spreading grounds located within the district's lands; that said waters are pumped from the underground aquifers for municipal, domestic, agricultural and industrial use; and that although the amount of water used beneficially varies from year to year, depending upon the flow characteristics of Alameda Creek, approximately 10,000 acre-feet of water per year have been put to beneficial use.

City and County of San Francisco protested the subject applications on the basis of appropriative, overlying and riparian rights, alleging that injury will result to them from the proposed appropriations as most of the water from Arroyo del Valle will be diverted directly from the Sanatorium Reservoir for domestic and municipal use thus leaving insufficient water to enter the gravel

basin to satisfy the protestants rights as well as the rights of others to the basin.

The protestants allege that they have voluntarily refrained from exporting water in order to permit the basin to recharge so that the basin waters will be available as a reservoir for emergency supply as part of the ultimate supply of protestants' customers; that since October 1934, the Hetch Hetchy development on the Tuolumne River has become the major source of water for customers of the protestants' water, and that its Pleasanton wells have been placed on a standby status except for water used on overlying land and within the valley and for water delivered to the City of Pleasanton and other customers within the Pleasanton Valley; that the wells are also used for emergencies and will be used for future use to supply protestants' customers, and that in the future the Pleasanton well field will serve as a major source of supply for the protestants' customers in the Pleasanton area, as a source of supply to satisfy the ultimate demand in the protestants' service area and for irrigation and domestic water for riparian and overlying land owned by protestant.

As to the use of surface flow of Arroyo del Valle, the protestant states that since 1888 the waters flowing down Laguna Creek, of which Arroyo del Valle is the main tributary have been diverted and beneficially used, first by diversion ^{at} and Niles Dam (SW $\frac{1}{4}$ of Section 15, T4S, R1W) and since 1898 at Sonol Dam (SE $\frac{1}{4}$ of Section 7, T4S, R1E), that the proposed appropriations will materially and seriously reduce the flow in Alameda Creek at Niles thus requiring greater releases from protestant's Calaveras Reservoir in

order to satisfy the adjudicated requirement to furnish waters to the Niles Cone gravels such as would percolate to the gravels under natural conditions.

Alameda County Flood Control and Water Conservation District, Zone 7, protests approval of Application 17003 on the basis of riparian and overlying rights of property owners of Zone No. 7. It is alleged that injury will result from the proposed appropriation because:

"1. Diversion by pipeline from Arroyo del Valle will remove surface flow from Arroyo del Valle and reduce percolation into the underground aquifer, thus causing a lower ground water table, greater pumping lifts, and a possible deterioration in water quality.

"2. Exportation of water from the upper basin (Zone No. 7) when a serious ground water deficiency is already existing in this basin is not consistent with the public interest for the orderly development of water resources.

"3. The applicants' proposed project to construct a dam at the Sanatorium site should not be permitted to interfere or prohibit the use of this site by the State Department of Water Resources in connection with a regulating reservoir for the South Bay aqueduct, since the greatest public interest will be served by the construction of the South Bay Aqueduct."

According to the protestant approximately 33,000 acre-feet of water are pumped each year from the Livermore-Amador Valley basin for irrigation, industrial, domestic and municipal uses.

City of Pleasanton claims that there is at the present time an overdraft on the basin underlying Amador Valley, that there are no surplus waters available, and that to approve Application 17003 would result in a further lowering of the water table. The City's protest is based upon use begun prior to December 19, 1914, riparian rights to Arroyo del Valle and rights based on an agreement dated July 15, 1916, between Spring Valley Water Company, et al.

According to the protest, water was first used in 1896 and the amount used varies from 600,000 to 1,200,000 gallons per day, year-round, for domestic, industrial, municipal and agricultural purposes.

Answers to Protests

All of the answers to the protests are substantially identical and in substance allege that the applicants cannot determine the nature of the protestants' claim of rights to the use of water, but that if protestants' claims of overlying riparian or appropriative rights are valid such rights cannot be invaded as any permits issued must be made subject to said vested rights.

Hearing

Applications 17002 and 17003 were completed in accordance with the Water Code and applicable administrative rules and regulations, and were set for public hearing under the provisions of the California Administrative Code, Title 23, Waters, before the State Water Rights Board (hereinafter referred to as "The Board") on Wednesday, September 11, 1957, at ten o'clock a.m., in the Kaiser Building, Sacramento, California, and extended through later sessions convened on December 2, 3, 4, and 5, 1957, in the State Office Building, Oakland, California.

The following portions of this decision include a summary and discussion of information in the record of that hearing.

Description of the Watershed

The Alameda Creek System drains approximately 700 square miles in a zone of light to moderate precipitation. There are

three basins in the system separated by hills and mountains; namely, in downstream order, the Livermore Valley, Sunol Valley, and the Niles Cone area which is a portion of the Southern Alameda Unit as described in SWRB Exh. 5 (Bulletin 13 "Alameda County Investigation" July, 1955, State Water Resources Board). The major portion of the stream flow originates in the hills and mountains to the south of the Livermore Valley and Sunol Valley forming two major stream systems that merge in Sunol Valley near the head of Niles Canyon.

Arroyo del Valle and Arroyo Mocho are the principal tributaries to the Livermore Valley, draining the hills and mountains to the southeast and entering the valley near the City of Livermore, whence they traverse the valley from east to west for about 10 miles. These two streams, along with other minor tributaries, join to form Arroyo de la Laguna which heads at the confluence of Alamo Creek and Arroyo Mocho. The Arroyo de la Laguna then flows in a southerly direction for about six miles, where it discharges into Alameda Creek at the northern end of Sunol Valley.

Alameda Creek bisects Sunol Valley from south to north. Its principal tributaries in downstream order are Calaveras Creek, San Antonio Creek and Arroyo de la Laguna.

The flow of Calaveras Creek is almost entirely regulated at Calaveras Dam and exported by the City of San Francisco. The dam is located about 8 miles south of the confluence of Alameda Creek and Arroyo de la Laguna.

Below its confluence with Arroyo de la Laguna, Alameda Creek flows westerly about four miles through Niles Canyon, traverses the Niles Cone area, and thence discharges into San Francisco Bay.

Water Supply

The climate of the area is typical of central California inland valleys at low elevation, and may be described as semi-arid, with relatively hot, dry summers and cool, wet winters, with a mean seasonal depth of precipitation from 14 to 22 inches, more than 80 per cent of which occurs during the five-month period of November through March.

Runoff records are available at 17 locations along the stream system for various periods of time. The location, drainage area and length of record for each gaging station are given in Table 1, entitled "Runoff records available for gaging stations in the Alameda Creek drainage area".

TABLE 1

Runoff Records Available for Gaging Stations
in the Alameda Creek Drainage Area

Stream	Station	Drainage Area (sq. mi.)	Period of Record
Tassajara Creek	near Pleasanton	27.9	1914-31 1948-50
Arroyo las Positas	near Livermore	69.5	1912-31 1948-50
Arroyo de la Laguna	near Pleasanton at Verona	412 410	1912-29 1948-54
San Antonio Creek	near Sunol	39.7	1912-34 1949-54
Arroyo Mocho	near Livermore	38.3	1912-31 1948-50
Arroyo del Valle	near Livermore	149	1904-08 1912-31 1941-54
Calaveras Creek	near Sunol	100	1898-1908 1910-54
Alameda Creek	near Sunol	33.1	1911-31
Alameda Creek	at Sunol	622	1900-1954
Alameda Creek	near Niles	633	1916-54
Alameda Creek	at Niles Dam	631	1889-1900
Spring Valley Company Aqueduct	near Niles	--	1900-1929
Dry Creek	near Decoto at State Route 9	9.4 9.4	1916-19 1949-54
Alameda Creek	near Decoto	--	1916-19
Paterson Slough	at State Route 17		1950-54
Alameda Creek	near Alvarado		1950-51

Discharge of streams of the Alameda Creek system varies between wide limits from season to season and within season. This is evidenced by the flow of Alameda Creek measured at the gaging station near Niles Dam for the period of record (1891 to 1957), where the maximum recorded seasonal runoff occurred in 1892-93 and amounted to 360,000 acre-feet. The minimum recorded seasonal runoff occurred in 1947-48 and was less than 900 acre-feet. The mean seasonal runoff was 95,710 acre-feet for the 53-year period 1894-95 through 1946-47.

Arroyo del Valle flows in a northwesterly direction for about 30 miles, draining an area of 149 square miles above the gaging station near Livermore, furnishing about 65 per cent of the runoff tributary to the Livermore Valley Unit, and has the same runoff characteristics as Alameda Creek. Records of flow are available from 1904-05 to 1907-08, 1911-12 to 1930-31 and 1943-44 to 1953-54. In instances where records were nonexistent the runoff was estimated by correlation with the flow of Alameda Creek. The estimated maximum flow occurred 1906-07 and was 91,700 acre-feet. The maximum measured flow was 85,400 acre-feet 1913-14. There was no flow during the water year 1923-24. The mean seasonal runoff for the 53-year period 1894-95 through 1946-47 was 26,000 acre-feet.

The estimated mean seasonal outflow to San Francisco Bay from Alameda Creek was 68,600 acre-feet for the same period, based upon present impairments. It is estimated that about 22 per cent of said flow originated in the Arroyo del Valle, (R. T. p. 81) or about 15,000 acre-feet per season.

Sanatorium Project

The project includes as its principal feature an earth-fill dam across Arroyo del Valle at a point about 5 miles south of the City of Livermore, in Section 3, T4S, R2E. The dam will form a reservoir with a capacity of 45,000 acre-feet, constructed so that at a future date it would be possible to incorporate it as a feature of the Feather River Project (Dept. Water Res. Exh. No. 1). The stored water will be discharged down the natural stream channel and/or through conduits to the percolation areas and/or direct to the place of use. The yield developed by the Sanatorium Project and charged into the underground will be recovered by pumping by means of existing and future wells and pumping plants. The safe annual yield of the project when used in conjunction with ground water storage is estimated to be about 12,300 acre-feet (SWRB exh. No. 5, pp. 4-9). This water is to be used for municipal, domestic, industrial, irrigation, and recreational purposes on 12,500 acres within the boundaries and about 7,500 acres outside the boundaries of Pleasanton Township County Water District (R.T. pp. 201 and 222) and/or 18,100 acres of a gross area of 59,000 acres within Alameda County Water District (R.T. p. 38).

It was shown in the testimony that the districts contemplate joint construction of the project. The share each district will receive of the project water will be determined by agreement between the applicants when the project is financed and will be proportional to the share interest contributed, if any (R.T. p. 127).

Said joint or individual construction and operation of a dam and reservoir on Arroyo del Valle at the Sanatorium site as proposed by the applicants under Applications 17002 and/or 17003 and conjunctive operation of this reservoir with the ground-water basins of the Livermore Valley and/or the Niles Cone will provide a new yield to alleviate a portion of the adverse conditions caused by the overdraft of the ground-water basins now present (SWRB Exh. No. 5, pp. 2-48, 2-55).

This project is not the ultimate answer to the water requirements of either district but will be an interim supply until imported water can be brought into the areas (SWRB Exh. 4).

Geology

The three areas of interest insofar as the subject applications are concerned in their order downstream are the ground-water basins of the Livermore Valley in which the cities of Pleasanton and Livermore are located, the Sunol Valley, and the Niles Cone. With the exception of the aforementioned areas, the remainder of the Arroyo del Valle, Arroyo de la Laguna, and Alameda Creek System passes through predominately consolidated impervious deposits.

The intermountain Livermore Valley is an elongated structural depression about 14 miles long and 4 miles wide formed by an east-west plunging asymmetrical syncline. The water-bearing formations therein are the Livermore-Tassajara sands, gravels and clays, averaging 2000 feet in thickness over 120 square miles in area, overlain by the late Quaternary alluvium, averaging 350 feet in thickness over about 60 square miles in area. The alluvium from which most of the water ~~is~~ ^{is} pumped consists of sands, clays, and gravels deposited by the tributary streams, being more gravelly on the south side of the valley. To the west of Pleasanton a series of lake-deposited clays forms a relatively impervious cap over the water-bearing deposits, which, under a favorable piezometric gradient, are artesian.

The natural east to west movement of ground water is retarded by two faults; the NW-SE Livermore fault about a mile west of the City of Livermore, and the NW-SE Pleasanton

fault, immediately west of the City of Pleasanton forming three ground-water basins, the Livermore, Pleasanton, and Amador, respectively. The faults are not complete barriers, but retard the natural east-west movement of ground water, either by formation of clayey gouge in the fault, or by offset of beds. The maximum measured difference in elevation of the ground water across the Livermore fault is 100 feet and the maximum across the Pleasanton fault 50 feet. Under present conditions, there is no known underflow out of the Livermore Valley.

Recharge of the aquifers is by infiltration of precipitation on outcrops and overlying lands and stream flow, and the return of water applied for irrigation and other uses. It is estimated that the present supplemental water requirement for the Livermore Valley Unit is now in excess of 10,000 acre-feet per year (R.T. 4, p.311).

The intermountain Sunol Valley is about 3 miles long and $1\frac{1}{2}$ miles wide and has the same water-bearing formations as Livermore Valley. Ground water occurs principally in the relatively thin alluvium, and movement of this water is in the direction of the surface slope from south to north. Replenishment is by percolation of precipitation and stream flow and by return of water applied for irrigation and other uses. It is depleted by effluent flow into Alameda Creek and by evapotranspiration during periods of high water levels, and by pumping. No estimate of safe ground-water yield was attempted

in the preparation of Bulletin 13 (SWRB Exh. No. 5) because of the operation of the unit by the San Francisco Water Department, wherein the water supply is artificially controlled.

The Niles Cone area is the complex alluvial deposits of Alameda Creek, influenced by the changing tidal deposits of San Francisco Bay, the underlying structure of the nonwater-bearing formations, and movement of the Hayward fault. There are two relatively flat-lying complex aquifers separated by impervious clayey material except near the apex of the cone. The upper aquifer is capped on the western edge by tideland deposits of clays. These clays have natural and possibly man-made openings through which sea water can percolate when a landward piezometric gradient exists. The lower aquifer is thought to be completely confined under the Bay, and unconfined only in the area near the apex of the Niles Cone. There is evidence that there is some interchange of water through defective wells and wells perforated in both aquifers.

The low Coyote Hills lying between the alluvial and tideland areas west of Newark consist of impervious nonwater-bearing deposits and form an effective barrier about 4 miles long in a north-south direction to the movement of ground water. Any movement of ground water in the aquifers must be to the north and south of these hills.

The NW-SE trending Hayward fault forms a barrier to movement of ground water from the upper part of the Niles Cone into its lower part. There are indications that the barrier effect is more deterrent to movement of ground water at depth.

This being the case, movement of ground water would have to be over the fault zone at relatively shallow depths. This is indicated by the line of sag ponds located along the northeast edge of the fault zone and the difference in water level elevations on each side of the fault.

The area near Niles is free of extensive shallow clays and "is the only zone known in the entire Southern Alameda Unit where surface water percolates freely into both the upper and lower aquifers. For this reason Alameda Creek is the only stream in the Southern Alameda Unit (of which Niles Cone is a portion) which is known to contribute water to the lower aquifers" (SWRB Ex. 5). There is some minor recharge of the upper aquifer from the return of irrigation water in areas of permeable surface soils and subsurface flow from nonwater-bearing rocks. It has been estimated that as of 1955 the overdraft in the Southern Alameda County was 16,100 acre-feet per year (R.T. Vol. 2, p. 39, line 9).

Water Quality

The investigation by the State (SWRB Exh. 5) on the quality of surface and ground waters of the Livermore Valley, Sunol Valley, and Niles Cone was limited to consideration of the mineral constituents of the waters, with particular reference to the suitability of the water for irrigation and domestic uses. The four major criteria used as a guide for determining suitability of water for irrigation were:

(1) chloride concentration, (2) specific electrical conductance,

(3) boron concentration, and (4) per cent sodium. Drinking water standards established by the United States Public Health Service for water used on interstate carriers were used as criteria for determining the quality of water for domestic use.

For the most part, the surface flows of all streams at high stages are satisfactory for most beneficial uses. The low flow of the larger stream and most flows of the smaller streams are usually high in boron concentration and dissolved salts and range from poor to unsatisfactory quality for most uses.

The ground waters of the Livermore Valley and Niles Cone are generally of good mineral quality and suitable for most beneficial uses, although in each of the units there are areas wherein waters are unfit or undesirable for domestic or agricultural uses. The principal problem regarding water quality in the Livermore Valley Unit is the high boron concentration of waters from wells located near the northern and eastern boundary and along the two major faults traversing the area. The water quality problem in the Niles Cone area is of serious proportions, involving overdraft with resultant seawater intrusion into fresh water aquifers adjacent to San Francisco Bay.

In Livermore Valley the quality characteristics of surface waters are largely reflected in the quality of the underground reservoir to which they contribute. Ground water in the central and southern portion is replenished principally

from percolation of good quality flood waters of Arroyo del Valle and Arroyo Mocho. The poorer quality ground waters found in the northern and eastern portion of the unit percolate from the smaller streams tributary to that portion of the unit. These streams usually have very low flows and carry a considerable amount of dissolved salts.

There are few wells in the Sunol Valley Unit, and data regarding water quality is confined to analyses of water from three wells. These analyses indicate total dissolved solids ranging from 589 to 1,060 parts per million. Of the three wells checked, one had a nitrate content too high for domestic use and one had a fluoride concentration which exceeded the allowable limit for domestic consumption.

Recharge to the Niles Cone Area is predominately from two sources: (1) percolation of waters from Alameda Creek and (2) percolation of sea water from San Francisco Bay caused by the adverse piezometric gradient due to over-draft of the aquifers.

As previously stated, water is withdrawn from two principal aquifers in the Niles Cone Area. The quality of the water percolating into them from Alameda Creek is of good quality for most beneficial uses. Locally there are areas near the Hayward fault where the ground waters have a high boron concentration.

Sea-water intrusion into the upper aquifer was first noted in 1924 when a steadily increasing irrigation

draft on the upper aquifer, in combination with an almost total lack of recharge, resulted in a lowering of groundwater levels to 30 or 40 feet below sea level. The resultant salt-water intrusion into the upper aquifer forced the abandonment of many wells, and the deepening of wells into the lower aquifer. This adverse condition has continued. for the most part, to date, and the salt-water intrusion has advanced to a location near Centerville.

Available data indicate that sea water had percolated downward near Centerville in 1950, causing degradation of the waters of the lower aquifer. In addition to the foregoing cited degradation of the waters of the lower aquifer, movement of waters of inferior quality from the upper aquifer through wells with defective casings, or with casing perforated in both aquifers, also appears to be a contributing cause of degradation.

It was stated in the testimony that "...the underground reservoir of the Niles Cone could be irrevocably ruined within the next three years unless we do have other outside sources of water" (R. T. p. 210). This statement indicates the rapid degradation of water quality that has been and is occurring in the Niles Cone Area as a result of sea-water intrusion and the necessity for a supplemental source of water for recharge into the aquifers to prevent further degradation of water quality.

Downstream Rights

The only water rights of record in the files of the State Water Rights Board are appropriative rights initiated subsequent to December 19, 1914, the effective date of the Water Commission Act. Appropriative rights initiated prior to that date and riparian or overlying rights are not of record. The records show five active filings as of July 9, 1957, to appropriate from the stream system downstream from the proposed points of diversion on Arroyo del Valle to San Francisco Bay (i.e., Arroyo del Valle, Arroyo de la Laguna, Alameda Creek). Three of these filings are for small quantities of water with a combined total of 1.24 cubic feet per second, which is insignificant when compared to other rights not of record.

Alameda County Water District has two permits to divert water to underground storage, to wit:

Permit 8428 (Application 13279) of Alameda County Water District allows an appropriation of 40,000 acre-feet per annum from Alameda Creek to be collected from October 1 of each year to about June 1 of the succeeding year. Water is diverted at a point within the SW $\frac{1}{4}$ of NW $\frac{1}{4}$ of Section 21, T4S, R1W, for irrigation and domestic purposes.

Permit 8429 (Application 13565) of Alameda County Water District allows an appropriation of 40,000 acre-feet per annum from Alameda Creek to be collected from about

October 1 of each year to about June 1 of the succeeding year. Water is diverted at a point within the SW $\frac{1}{4}$ of NW $\frac{1}{4}$ of Section 21, T4S, R1W, for municipal purposes.

It is not disputed that the natural flow of Arroyo del Valle supplies surface diversions for beneficial use and contributes to ground water by percolation from the channel in the reaches of the stream below the proposed del Valle Dam and on the Niles Cone. Varying estimates of the amount of such contribution have been made as the results of studies conducted by the applicants and the former State Water Resources Board. It is also not disputed that water is being withdrawn from ground-water strata for beneficial use on overlying lands and for export under old appropriative rights, (S.F. Exh. 6 and 9) and that to the extent that such waters originate in Arroyo del Valle under natural conditions the water users are entitled to protection from depletion of the supply as the result of operation of said del Valle Rservoir.

The applicants have announced their intention of releasing sufficient water through del Valle Dam to maintain natural percolation from the stream channel in the Livermore Valley and on the Niles Cone, and to satisfy prior diversions from the surface flow. Allowance of a release of 300 cubic feet per second when the flow of Arroyo del Valle is 300 or more cubic feet per second and the natural flow when under 300 cubic feet per second is proposed by the applicants (R.T. p. 168 Joint Exh. No. 1).

The evidence is not conclusive as to the amount of water which percolates to ground-water basins under natural conditions. There is also concern by some of the parties that the amount of release proposed by the applicants may not be sufficient. However, there is general agreement that there is insufficient data available to enable the Board to safely prescribe permanent terms and conditions to be incorporated in any permits issued pursuant to the application which will adequately safeguard prior rights and at the same time allow the applicants an opportunity to develop the project to its maximum potential.

In recognition of these conflicts and uncertainties in the evidence, the applicants have submitted proposed terms and conditions to be incorporated in the permits, recommending that a trial period of several years be allowed during which intensive studies would be made of the hydrologic phenomena associated with this problem and that the Board retain jurisdiction during the period.

The proposed terms and conditions herein are the final result of a joint effort by the applicants and those protestants who presented evidence at the hearing on December 2-5, 1957, to formulate a method of operation for the Sanatorium project which is believed to be fair to all concerned. A principal feature of said terms and conditions is a trial period not to exceed 15 years, during which investigations, measurements, and studies will be conducted

until a final determination and order can be made concerning the amounts, timing, and rates of releases of water from del Valle Reservoir in satisfaction of downstream vested rights.

The California Water Plan

Pursuant to legislative authorization (Stats. 1947, Ch. 1541) the Department of Water Resources and its predecessors have prepared a general and coordinated plan, known as "The California Water Plan," for the development, utilization and conservation of the water resources of the State. A report presenting this plan has been published as Bulletin 3, Department of Water Resources, "The California Water Plan," May, 1957 (SWRB Exh. No. 4).

Local water development works contemplated as features of The California Water Plan for this area consist of reservoirs on the Alameda Creek system in Alameda County and various developments in the Santa Clara Valley.

Sanatorium Dam and Reservoir, located on Arroyo del Valle, and Mocho Dam and Reservoir on Arroyo Mocho in the Livermore area were considered in the plan to be used in conjunction with downstream ground-water storage.

A portion of the California Water Plan is to use Arroyo del Valle (Sanatorium) Reservoir conjunctively with South Bay Aqueduct to conserve local runoff and to regulate imported waters. The original studies indicated that storage would be limited to 45,000 acre-feet because of permeable gravels.

Further investigation of the dam site by the Department has shown that the above-mentioned gravels are not as permeable as previously thought and a reservoir with a capacity of about 100,000 acre-feet is feasible (R.T. pp. 145-6).

Various diversions and routes have been proposed for the South Bay Aqueduct, which would provide water in amounts sufficient to meet the supplemental water requirements of Alameda County and Santa Clara Valley. The initial construction proposed would be the Alameda-Contra Costa-Santa Clara-San Benito Counties Branch of the authorized Feather River Project Aqueduct. At a future date deliveries would be supplemented by a parallel system. The total contemplated deliveries under ultimate conditions would be about 187,000 acre-feet per season to Livermore Valley and 198,000 acre-feet per season to southern Alameda County coastal plain.

State Department of Water Resources Exhibit No. 1 is an agreement dated November 29, 1957, between that department and the applicants defining the terms of joint use of the Sanatorium Reservoir by the applicants under the subject applications and by the Department of Water Resources for regulation of water imported to Alameda County through the proposed South Bay Aqueduct. The agreement in essence provides that should the State eventually desire to use the reservoir for the aforementioned purposes and upon proper notice as provided therein "the parties shall meet and agree upon the terms and conditions of said use and shall reduce the terms

of their agreement to written form through negotiation...".

Conditions Nos. 3 and 4 of the agreement provide:

"3. The Districts and the State Department of Water Resources will join in requesting the State Water Rights Board to insert in any permits issued pursuant to Applications 17002 and 17003 the following condition: 'This permit is subject to an agreement entered into as of the 29th Day of November, 1957, between the Alameda County Water District, Pleasanton Township County Water District and the State of California, acting through the Department of Water Resources.'

"4. This agreement is made subject to the issuance by the State Water Rights Board of a permit or permits in proceedings under Applications 17002 and 17003 containing a condition therein substantially in the form as the condition expressed in paragraph (No. 3) above."

While providing that certain negotiations will be attempted by the parties at some future date should the State desire to jointly use Sanatorium Reservoir, the agreement contains no assurance that the negotiations will be successfully concluded nor does it include any provision for arbitration or action by a disinterested third party should such an unfortunate event occur. While this Board can, within the limits of its jurisdiction, prescribe in a permit and enforce terms and conditions deemed necessary in the public interest, it must be concluded that the power of this Board would not extend to enforcement of the agreement as couched, and its inclusion in the permits under consideration would be surplusage.

Conclusions

It has been shown that there is lacking sufficient information upon which to base positive and definite conclusions concerning conditions to be imposed at this time in permits issued to the applicants for the adequate protection of downstream vested rights and that the indicated investigations and studies should be carried out. It is concluded that the Board should retain jurisdiction for a period not to exceed 15 years after construction of said project for the purpose of such reviews, hearings, and orders as may be required until a final determination and order can be made concerning the amounts, timing and rates of releases of water, in satisfaction of downstream rights, based upon further information to be developed by the continuing studies and investigations. Except for one permit term proposed by several of the parties which was discussed under the preceding section of this decision, the Board believes that the suggested terms and conditions are proper and necessary.

The Board finds that there is unappropriated water in Arroyo del Valle available to supply applicant or applicants, which water may be appropriated without injury to any other lawful user of water, that the intended uses are beneficial, and that said application should be approved and permits issued to applicants subject to the usual terms and conditions and subject to such additional terms and conditions as deemed necessary for the protection of prior

rights and in the public interest. It is further found that as so conditioned, the appropriations will best develop, conserve, and utilize in the public interest the water sought to be appropriated.

ORDER

Applications 17002 and 17003 for permit to appropriate unappropriated water having been filed with the former Division of Water Resources, protests having been filed, jurisdiction of the administration of water rights including the subject applications having been subsequently transferred to the State Water Rights Board and a public hearing having been held by the Board and said Board now being fully informed in the premises:

IT IS HEREBY ORDERED that Applications 17002 and 17003 be, and the same are, hereby approved, and that permits be issued to the applicants, subject to vested rights and to the following terms and conditions, to wit:

1. The permit issued to the Alameda County Water District under Application 17003 shall have the same priority as the permit issued to the Pleasanton Township County Water District under Application 17002.

2. The amount of water to be appropriated shall be limited to the amount which can beneficially be used.

3. The amount of water to be appropriated under permit issued pursuant to Application 17002 shall not exceed 60,000 acre-feet per annum by storage to be collected between January 1st and December 31st of each year.

4. The amount of water to be appropriated under permit issued pursuant to Application 17003 shall not exceed 60,000 acre-feet per annum by storage to be collected between January 1st and December 31st of each year.

5. The total amount appropriated under the permit issued to Alameda County Water District under Application 17003 and under the permit issued to Pleasanton Township County Water District under Application 17002 shall not exceed 60,000 acre-feet per annum by storage to be collected between January 1st and December 31st of each year.

6. The maximum amount herein stated may in license be reduced if investigation so warrants.

7. Construction work shall be commenced not later than December 1, 1958, and shall be completed on or before December 1, 1965.

8. Complete application of the water to the proposed use shall be made on or before December 1, 1970.

9. Progress reports shall be filed promptly by permittee on forms which will be provided annually by the State Water Rights Board until a license is issued.

10. All rights and privileges under this permit including method of diversion, method of use and quantity of water diverted are subject to the continuing authority of

the State Water Rights Board in accordance with law and in the interest of the public welfare to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of said water.

11. Permittee shall release water into Arroyo del Valle channel from del Valle Reservoir in such amounts and at such times and rates as will be sufficient to supply downstream diversions of the surface flow under rights vested prior to date of application to the extent water would have been available for such diversions from unregulated flow, and sufficient to maintain natural percolation in the same total amount as such percolation would have occurred prior to the date of application from unregulated flow, in order that operation of the project shall not reduce natural recharge of ground water in the Livermore Valley Ground Water Basin attributable to the flow of Arroyo del Valle and shall not reduce that portion of the natural recharge of ground water into the Sunol Valley Ground Water Basin attributable to the flow of Arroyo del Valle, and shall not reduce that portion of the natural recharge of ground water into the Niles Cone attributable to the flow of Arroyo del Valle.

12. Until further order of the Board, permittee shall make or cause to be made, subject to the approval and control of the Board, suitable field investigations, measurements and studies, and shall install necessary measuring facilities, to determine the amount, timing and rate of release of water into the natural channel of the Arroyo del

Valle that are required of permittee in order to comply fully with the provisions of Condition No. 11 in this permit.

Permittee shall submit to the Board and to the parties appearing at the hearing on December 2-5, 1957, to wit: Alameda County Water District, Pleasanton Township County Water District, City and County of San Francisco, Zone 7 of Alameda County Flood Control and Water Conservation District, City of Pleasanton, County of Alameda, upon written request, with the annual progress reports, or at such other times as the Board may require, a report of such investigations, measurements, and studies and the results thereof, including but not limited to the following information:

a. Compute daily inflow to del Valle Reservoir by proper computations of change in storage.

b. Establish and measure daily evaporation, wind movement, temperature and precipitation of one station at or near del Valle Reservoir.

c. Measure daily discharge through and over del Valle Dam.

d. Install proper gaging stations and obtain daily records of discharge of:

Arroyo del Valle above del Valle Reservoir
Arroyo del Valle below del Valle Dam
Arroyo del Valle below Hopyard Road, Pleasanton
Arroyo de la Laguna at Verona Bridge
Arroyo de la Laguna near Sunol
Alameda Creek near Niles
Alameda Creek near Alvarado
Patterson Creek near Alvarado-Centerville Road
Dry Creek near Decoto

e. Maintain ground water studies of the Livermore Valley Ground Water Basin and the Niles Cone with spring and fall observations of wells and monthly observations of six selected wells in each of the two areas.

f. Install continuous water stage recorders and maintain records on two wells in each of the two above mentioned areas adjacent to the stream channels.

g. Make periodic surveys of Arroyo del Valle, Arroyo de la Laguna, and Alameda Creek channels in order to determine consumptive use by native vegetation and by evaporation.

h. Make quarterly water quality analyses of surface water downstream from del Valle Dam and semi-annual water quality analyses of ground water in the Livermore Valley Ground Water Basin and the Niles Cone and surface water at Niles Canyon at locations approved by the Board.

i. Make estimates of augmentation to underground supply each water year from or attributable to Arroyo del Valle in the Livermore Valley Ground Water Basin, the Sunol Valley Ground Water Basin, and the Niles Cone, together with supporting data.

The periods of time, the location and the plans of operation of gaging stations to be used to secure these records shall be subject to the approval of the State Water Rights Board. Said installations shall be constructed and in operation, where practicable, on or before September 1, 1958.

The operation of the required gaging stations shall be subject

to inspection at any time by the Board any any other party appearing at the hearing on December 2-5, 1957. In case it is found that the permittee is not securing records in reasonable conformity with the requirement of the permit, the Board may, after hearing cancel the permit. During the period such records are being secured, the State Water Rights Board, on its own motion or on request of any protestant appearing at the hearing on December 2-5, 1957, may require the permittee to secure such other data as the Board may find is needed to enable operating criteria for the del Valle Reservoir to be defined so that downstream diversions of the surface flow under rights vested prior to the date of application to the extent water would have been available for such diversions from unregulated flow and the amount of the pre-project natural percolation that would have resulted from the pre-project flow of the Arroyo del Valle will be maintained in its total amount and within reasonable conformity with the pre-project time of occurrence and rate of percolation.

Permittee shall make its records of such investigations and measurements available for inspection by the Board and the aforesaid enumerated parties appearing at said hearing, and shall allow authorized representatives of the Board and interested parties reasonable access to its project works and properties for the purpose of gathering information and data.

13. The Board may either upon the request of any of the aforesaid enumerated parties or on its own motion, and

shall, prior to the expiration of a 15-year trial period, said trial period commencing with the beginning of the first year of operation of the del Valle Reservoir, hear, review, and make such further orders as may be required concerning proper releases of water for downstream use and recharge of ground water, and concerning the investigations, measurements and studies to be conducted by permittee, until a final determination and order can be made concerning the amounts, timing and rates of releases of water from the del Valle Reservoir in satisfaction of downstream rights, and the Board retains continuing jurisdiction for such purposes so long as it may deem necessary, but not exceeding the 15-year trial period.

14. Should the permittee desire to proceed to construction of the del Valle Reservoir under the terms of this permit before additional hearings are held for the purpose of setting forth additional criteria for storage operation, then the reservoir so constructed may be operated for a period not in excess of three years, under the following provisions:

a. The reservoir outlets at minimum storage stage shall have a capacity of not less than 300 second feet.

b. The first 300 second feet of natural flow of Attoyo del Valle shall pass through the reservoir outlets without storage until such time as such flow, together with the runoff of the other tributaries of Alameda Creek wastes to San Francisco Bay; provided, however, that during such periods as the flow of other tributaries of Alameda Creek, independently of the flow of Arroyo del Valle, is sufficient to cause

and maintain flow to San Francisco Bay, then that portion of the natural flow of Arroyo del Valle in excess of that required to maintain flow in the channel of Arroyo del Valle into the channel of Arroyo de la Laguna, and with the flow of other tributaries of Arroyo de la Laguna, is in excess of the flow required to maintain flow in Arroyo de la Laguna into Alameda Creek, may be stored by permittee.

c. If, in any year, the percolation from the channel of Arroyo del Valle under the reservoir operation, as defined in paragraph (b) of this Condition (14) results in a total percolation which is less than the volume of water represented by the amount of the first 100 second feet of the daily flow of Arroyo del Valle at the del Valle Reservoir, then permittee shall release from the water it has stored in said reservoir at times and rates of flow which will result in its percolation from Arroyo del Valle, an amount of such stored water which, with the actual percolation which has occurred from the unstored natural flow, will equal in volume the total represented for that year by the first 100 second feet of natural flow on each day of that year. For the purpose of this paragraph, the year shall consist of the period October 1 to September 30 of the succeeding year. On days when the natural flow of Arroyo del Valle is less than 100 second feet, the natural flow shall be the amount to be percolated. The permittee shall make the storage releases that may be required under the provisions of this paragraph at its own expense. Such releases shall be made promptly

after the end of the runoff season at times and rates which will place the released storage in the ground water of the Livermore Ground Water Basin as nearly in accordance with pre-project conditions as may be practicable.

Adopted as the decision and order of the State Water Rights Board at a meeting duly called and held at Sacramento, California, on this 25th day of March, 1958.

/s/ Henry Holsinger
Henry Holsinger, Chairman

/s/ W. P. Rowe
W. P. Rowe, Member

/s/ Ralph J. McGill
Ralph J. McGill,*Member

* John B. Evans, Member, State Water Rights Board, resigned as of January 15, 1958. Ralph J. McGill has been appointed to fill the vacancy created by the resignation of Mr. Evans.