APPROVED
By the Board of Directors of
The Metropolitan Water District
of Southern California
at its meeting held

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METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

EXECUTIVE SECRETARY

June 13, 1996

To: Board of Directors (Water Planning and Resources--Action)
(Finance and Insurance -- Action)

From: General Manager

Submitted by: Debra Man
Chief of Planning & Resources

Subject: Authorization to Implement Initial Friant-Kern Water Transfer Program

RECOMMENDATION

That the Board certify that it has reviewed and considered the information contained in the Negative Declaration approved by Arvin-Edison under the California Environmental Quality Act, authorize the General Manager to enter into the proposed agreement with the Arvin-Edison Water Storage District for a water transfer program, and authorize expenditure of $12,000,000 from the water transfer fund to implement the proposed agreement.

EXECUTIVE SUMMARY

Staff has completed negotiations with the Arvin-Edison Water Storage District ("Arvin-Edison") for a water transfer program and now needs authorization from the Board to enter into the agreement with Arvin-Edison and to expend the funds necessary to implement the program.

The proposed agreement calls for a minimum of 250,000 acre-feet ("AF") of Central Valley Project ("CVP") water to be acquired by Arvin-Edison for Metropolitan and regulated in the Arvin-Edison groundwater basin. The water will be available on demand by Metropolitan and will be conveyed in a minimum amount of 40,000 AF in any year up to a maximum of 75,000 AF in any year. The first 250,000 AF of water transferred under the program will cost $130 per acre-foot for regulation, plus Central Valley Project Improvement Act ("CVPIA") fees, energy and operations and maintenance ("O&M") costs, etc. This price will allow Arvin-Edison to finance the capital facilities needed for the program. After the initial 250,000 AF has been acquired, the agreement will allow additional water with

Metropolitan's consent to be acquired at $100 per acre-foot (plus CVPIA fees, energy and O&M costs, etc.).

The agreement calls for new facilities to be constructed: spreading basins, wells and a pipeline intertie from Arvin-Edison's system to the California Aqueduct to convey the regulated water. The cost of the additional spreading basins and wells is estimated at $10,000,000 and will be financed by Arvin-Edison. Metropolitan will advance funds for construction of the pipeline and intertie with the California Aqueduct that is estimated at $12,000,000. The advanced funds will be repaid by credits against the $130 per acre-foot price for the regulated water.

In addition to the regulated water to be transferred under the program, the agreement grants Metropolitan a priority for use of the new pipeline intertie which will allow Metropolitan to acquire additional sources of CVP water and to transport that water to the California Aqueduct. Up to 50,000 AF of additional water could be transported to Metropolitan in this manner in any given year from sources previously unavailable to Metropolitan.

The agreement provides legal and financial protections for the funds advanced and for the water acquired through trust provisions. The California Environmental Quality Act ("CEQA") and other implementation costs are shared equally between Metropolitan and Arvin-Edison. In sum, the agreement provides a cost-effective water transfer of up to 75,000 AF in any year with the possibility of additional CVP water to be transported through the pipeline to Metropolitan.

DETAILED REPORT

Metropolitan has identified through the Integrated Resources Plan the need for from 200,000 to 300,000 AF of water transfers by year 2005. To avoid potential supply shortages and ensure reliability, Metropolitan is vigorously pursuing water transfer programs in the Central Valley within several geographic regions. One of the most significant regions, the East San Joaquin Valley served by the Friant unit of the CVP, is projected to supply through new transfer agreements up to approximately 125,000 AF of water to Metropolitan in dry-years. The first Friant-Kern water transfer program to be brought to your Board is with Arvin-Edison, which would provide approximately half of this additional dry-year supply. The new Arvin-Edison program is significantly different from the previous program Metropolitan and Arvin-Edison attempted to implement. The new program allows Metropolitan to acquire an additional supply of water and has a guaranteed delivery of water directly to the California Aqueduct. The former program relied solely on an exchange of water in the California Aqueduct.

The proposed agreement with Arvin-Edison contains a number of significant provisions designed to make the transfer program a win-win for both parties and to protect Metropolitan's investment and acquired water in the event of bankruptcy or other problems. The key components of the agreement are as follows:

- ***Size of Program*** - The program is capped at 350,000 AF of regulated water at any one time. As water is returned to Metropolitan, additional water can be acquired and transferred under the program as long as the 350,000 AF limit is not exceeded. The program is designed to return regulated water to Metropolitan upon Metropolitan's demand in a minimum amount of 40,000 AF up to a maximum amount of 75,000 AF in any year.

- ***Capital Facilities*** - 520 acres of new spreading basins, 15 new extraction wells and a 4.3-mile pipeline and intertie with the California Aqueduct will be constructed to implement the program. Arvin-Edison will finance the cost of the spreading basins and extraction wells at an estimated cost of $10 million and Metropolitan will advance the estimated $12 million for the pipeline.

- ***Cost of Water*** - The initial 250,000 AF of acquired water will cost $130 per acre-foot (plus CVPIA fees, energy and O&M costs, etc.) and all subsequent water acquired will cost $100 per acre-foot (plus CVPIA fees, energy and O&M costs, etc.). For the initial 250,000 AF, Metropolitan will pay $90 per acre-foot at time of acquisition and $40 per acre-foot when the water is returned for a total of $130 (plus CVPIA fees, energy and O&M costs, etc.). Subsequent water will be paid $50 per acre-foot on acquisition and $50 per acre-foot on return for a total of $100 (plus CVPIA fees, energy and O&M costs, etc.).

- ***Advanced Funding Repayment*** - The advanced funding for the pipeline intertie will be repaid through credits against the cost of the first 250,000 AF of transferred water. Out of the $130 per acre-foot price of this water, Metropolitan will receive a credit of $50 towards the advanced funds making the amount paid $80 per acre-foot (Metropolitan will pay $50 when water is acquired and $30 when water is delivered) which will repay Metropolitan for the advanced funds.

- ***Transportation Priority*** - Completion of the pipeline intertie with the California Aqueduct will allow for the conveyance of other available sources of water on the Friant-Kern to Metropolitan. The agreement explicitly grants Metropolitan a priority to transport water through the pipeline subsequent to the needs of Arvin-Edison's service area and the transfer program but ahead of any third parties wishing

to use the facility. Metropolitan will pay for actual transportation costs such as energy and O&M costs plus a $5 per acre-foot management fee to Arvin-Edison.

- ***Bankruptcy Protections*** - Similar to the Semitropic water transfer program, this agreement calls for funds advanced by Metropolitan and all water acquired for Metropolitan to be held in trust by Arvin-Edison. This is intended to allow appointment of a trustee should there be a bankruptcy and will act to safeguard Metropolitan's water and investment.

  However, in the unlikely event of unforeseen extreme financial hardship, and only after Arvin-Edison has first made payments out of its reserves totaling $3,000,000, the agreement calls for Metropolitan to advance funds to Arvin-Edison to cover the financing payments for the capital facilities construction. The advanced funds would be secured by water presently in the Arvin-Edison groundwater basin or by a first call on water to be delivered to Arvin-Edison. Arvin-Edison will repay Metropolitan by either transferring to Metropolitan the secured water or by cash repayment with accrued interest.

- ***Term of Agreement*** - The transfer portion of the agreement will run for 25 years. Metropolitan's transportation priority right will continue through the year 2035 which is when Metropolitan's State Water Project agreement expires. The agreement may be renewed on the mutual consent of the parties.

Arvin-Edison as lead agency under CEQA, prepared a Negative Declaration for the construction and use of the new capital facilities proposed under the program. As a responsible agency under CEQA, Metropolitan must review and consider the information contained in the Negative Declaration approved by Arvin-Edison prior to implementing the proposed agreement. The Negative Declaration cites the initial study in which Arvin-Edison concluded that the proposed project could not have a significant effect on the environment. A copy of the Negative Declaration has been attached.

Further approvals will be needed to implement the program from the State Water Resources Control Board ("SWRCB") and the United States Bureau of Reclamation ("USBR"). There will also be a need for federal environmental review under the National Environmental Policy Act ("NEPA"). These approvals and NEPA review can only be sought after approval of the agreement by the Metropolitan and Arvin-Edison Boards of Directors. After approval of the agreement by Metropolitan and Arvin-Edison, staff will work with the SWRCB and the USBR to complete the necessary approvals.

As outlined above, the agreement provides new sources of water to Metropolitan at cost-effective rates and is within Metropolitan's budgetary objectives. The

agreement provides clear benefits to both Arvin-Edison and Metropolitan and contains protections for Metropolitan in the event of bankruptcy or other problems. Based on the above, staff recommends that the Board certify that Metropolitan has reviewed and considered the information contained in the Negative Declaration approved by Arvin-Edison, grant the General Manager authority to enter into the proposed water transfer agreement with Arvin-Edison, and authorize the budgeting of $12,000,000 to finance the capital improvements needed to implement this agreement.

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1.0 PROJECT DESCRIPTION AND EXISTING CONDITIONS

1.1 Introduction

The Arvin-Edison Water Storage District (Arvin-Edison) was established in 1942 for the purpose of supplying supplemental water within its service area boundaries. Arvin-Edison's service area covers approximately 130,000 acres of highly productive farmland.

To meet the water needs within its service area, Arvin-Edison provides water to its customers either by direct delivery of surface water or through extraction of water previously stored in the underlying groundwater basin. Arvin-Edison has under contract, and has historically received when available, up to approximately 350,000 acre-feet of water annually via the Friant-Kern Canal. This water consists of 40,000 acre-feet of firm (Class I) water and 311,675 acre-feet of non-firm (Class II) water. Arvin-Edison utilizes the entire amount of water under its contract with the U.S. Bureau of Reclamation (USBR) in three ways: (1) providing the water directly to its customers, (2) placing the water into groundwater storage for later use, and (3) exchanging water with other San Joaquin Valley water districts. Water supplies in California vary from abundant supplies during wet periods to extreme shortages during droughts. To regulate this variability in its supplies, Arvin-Edison utilizes its stored groundwater and also has exchanged a portion of its wet-year supplies for dry-year water available from other San Joaquin Valley water districts.

In addition to annual variability, water deliveries for groundwater recharge are also restricted by the need to remove facilities from service periodically for rehabilitation, repair, or maintenance. Consequently, water delivery capability must accommodate supply variability as well as operational service needs. By delivering water to groundwater storage when available, it is possible to decrease the effects of natural and regulated variability in supplies. Critical elements in improving reliability and operational flexibility are water storage and conveyance facilities. These critical elements, especially when utilized in conjunctive-use programs, allow water managers to increase the beneficial use of existing supplies in an environmentally sound manner.

To increase the flexibility of its water supply operations by enhancing the use of its water supplies and to augment its ability to implement conjunctive-use programs and water exchanges, Arvin-Edison has developed the proposed project, referred to as the Arvin-Edison Water Management Project. This project includes improvements to Arvin-Edison's system to increase the peak capacity for groundwater storage and recovery.

This Negative Declaration describes the potential environmental impacts associated with the proposed project and is prepared in accordance with Sections 15063 and 15070-15074 of the California Environmental Quality Act (CEQA) Guidelines. Arvin-Edison is the Lead Agency for this project. Based on the Initial Study, Arvin-Edison has determined that the appropriate CEQA document for the proposed project is a Negative Declaration. Pursuant to Section 15063 of the CEQA Guidelines, this Negative Declaration contains a project description and identification of the environmental setting (this section), an environmental checklist (Section 2), a description of effects (Section 3), and a list of the preparers of the Negative Declaration (Section 4).

1.2 Project Location

Arvin-Edison's service area is located in the southeastern portion of the San Joaquin Valley in Kern County (Figure 1). Arvin-Edison lies approximately 12 miles to the south and east of the rapidly urbanizing suburbs of the city of Bakersfield, approximately 15 miles to the north of the Tehachapi Mountains, and directly west of the El Tejon Mountains (Figure 2). The proposed project facilities are located on the Mettler, Coal Oil Canyon, and Arvin quadrangle maps of the U.S. Geological Survey (USGS).

1.3 Proposed Water Management Project

There are three primary elements of the proposed Arvin-Edison Water Management Project: (1) enhance the reliability and flexibility of the Arvin-Edison water delivery system, (2) improve local groundwater conditions within Arvin-Edison, and (3) optimize the use of available water supplies through groundwater storage and transfer agreements.

1.3.1 Enhance Water Delivery System Reliability and Flexibility

The facilities proposed to be constructed as part of this project would enhance Arvin-Edison's ability to meet its demands in the future, while at the same time allowing Arvin-Edison the flexibility to periodically remove facilities from service for maintenance and rehabilitation.

Arvin-Edison currently operates spreading works and well fields at two locations along its eastern boundary, the Sycamore Spreading Works and the Tejon Spreading Works. The net pond acreage for these two sites is approximately 800 acres, and there are 55 groundwater wells associated with these spreading basins.

Proposed facilities improvements for the project include two new spreading grounds with a total net pond area of approximately 520 acres, approximately 15 new groundwater wells, a pipeline to provide an intertie with the California Aqueduct (at present, the Cross Valley Canal allows delivery of water from the California Aqueduct to Arvin-Edison), and associated pumping facilities.

The additional spreading basins and production wells would increase the peak capacity of Arvin-Edison's system for groundwater storage and recovery. During periods when available surface water supplies exceed immediate irrigation needs, water delivered from the Friant-Kern Canal into the Arvin-Edison distribution system would be diverted to the existing and proposed spreading basins for percolation into the underlying groundwater basin. The connection to the California Aqueduct would increase the capacity to capture and store supplies available through the aqueduct and facilitate delivery of existing exchange water originating in the Shasta system of the Central Valley Project (CVP). Then, during periods when surface water supplies are limited, the existing and proposed production wells would recover water stored in the groundwater basin as needed to meet the irrigation demands of Arvin-Edison's water users or provide water to facilitate

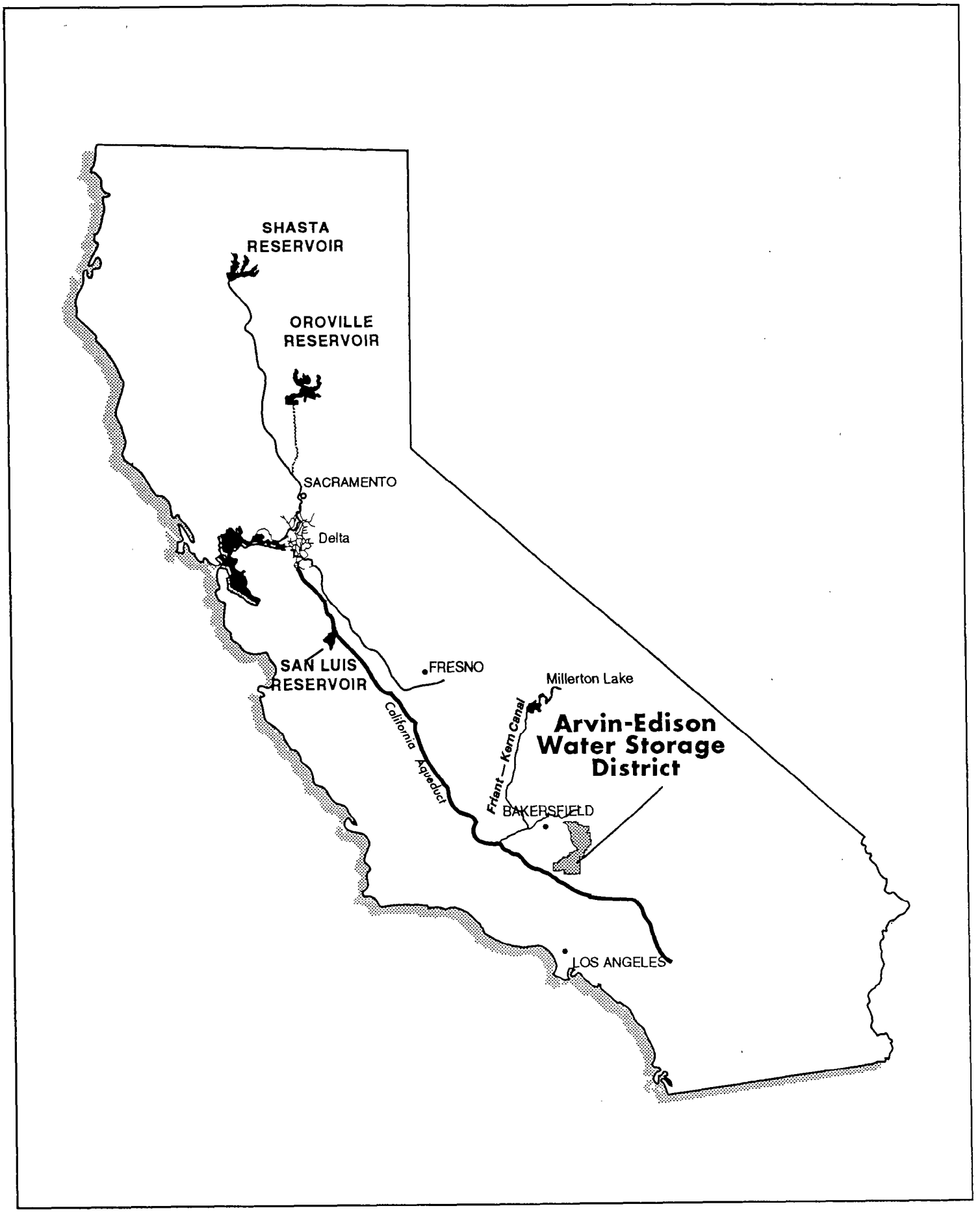

Figure 1 - Arvin-Edison Water Storage District Regional Map

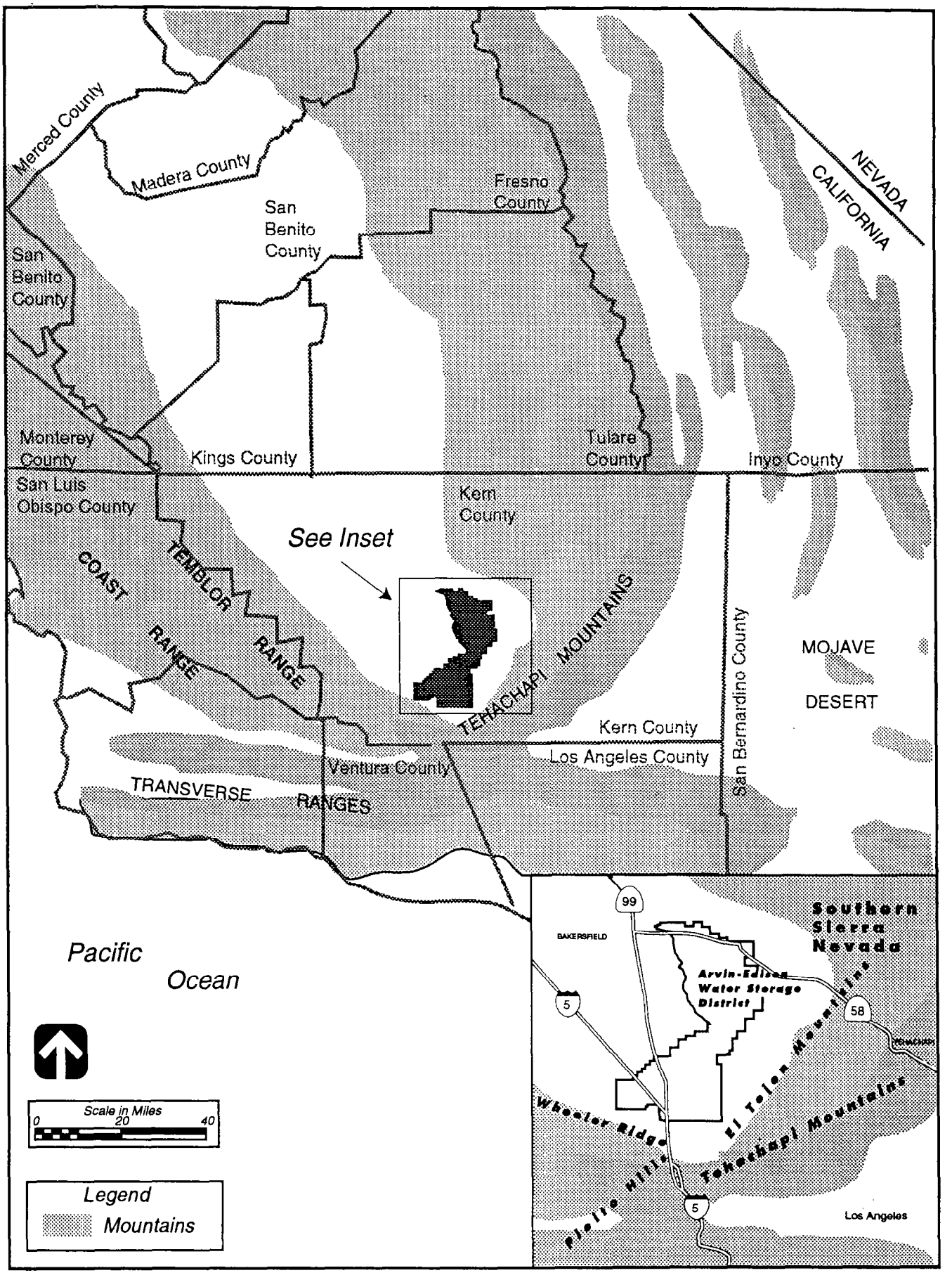

Figure 2 - Principal Physiographic Features in the Vicinity of Arvin-Edison Water Storage District

water transfer agreements with other water agencies. The pipeline connection to the California Aqueduct would also support the transfer or exchange of Arvin-Edison's water supplies to other water agencies served by the California Aqueduct.

The specific facilities included in the project are:

- the North Canal Spreading Works, consisting of new spreading grounds, wells, and a pumping plant located on the west side of the Arvin-Edison North Canal and bounded to the north by DiGiorgio Road, to the west by Comanche Drive, and to the south by Buena Vista Boulevard;

- the South Canal Spreading Works, consisting of new spreading grounds and wells located on the north side of the Arvin-Edison South Canal, east of State Route 99 (SR-99) and south of David Road; and

- the bidirectional Aqueduct Intertie Pipeline and Pumpstations, consisting of approximately 4-1/3 miles of 6-foot-diameter pipeline connecting the California Aqueduct with the South Canal. Included would be a turnout structure at the connection to the California Aqueduct, a booster pumpstation for deliveries to the canal and spreading works, and a pumpback pumpstation to allow deliveries from Arvin-Edison's canal into the California Aqueduct. The booster pumpstation would be located just east of Interstate 5 (I-5). The pumpback pumpstation would be located near the terminus of the South Canal.

Figure 3 indicates the locations of these proposed new facilities. These new facilities are described in detail, along with associated construction and operations activities, in Section 1.4.

Most of the proposed facility improvements are located within Arvin-Edison's boundaries. The remainder of the improvements are located along public rights-of-way within the Wheeler Ridge-Maricopa Water Storage District and the Department of Water Resources' California Aqueduct right-of-way.

1.3.2 Improve Local Groundwater Conditions

One of the objectives of the Arvin-Edison Water Management Project is to improve groundwater conditions within the District. The banking of water in the aquifer underlying Arvin-Edison provides an effective way to reduce short-term groundwater declines. Arvin-Edison currently stores a portion of the water it receives in the underlying groundwater basin. The most effective way for Arvin-Edison to expand groundwater banking opportunities is through the use of additional water spreading facilities. The proposed project would increase Arvin-Edison's net spreading area from approximately 800 acres to nearly 1,300 acres. This two-thirds increase in total spreading ground area would significantly increase the capacity to capture and store available surface water supplies, thus reducing groundwater elevation declines.

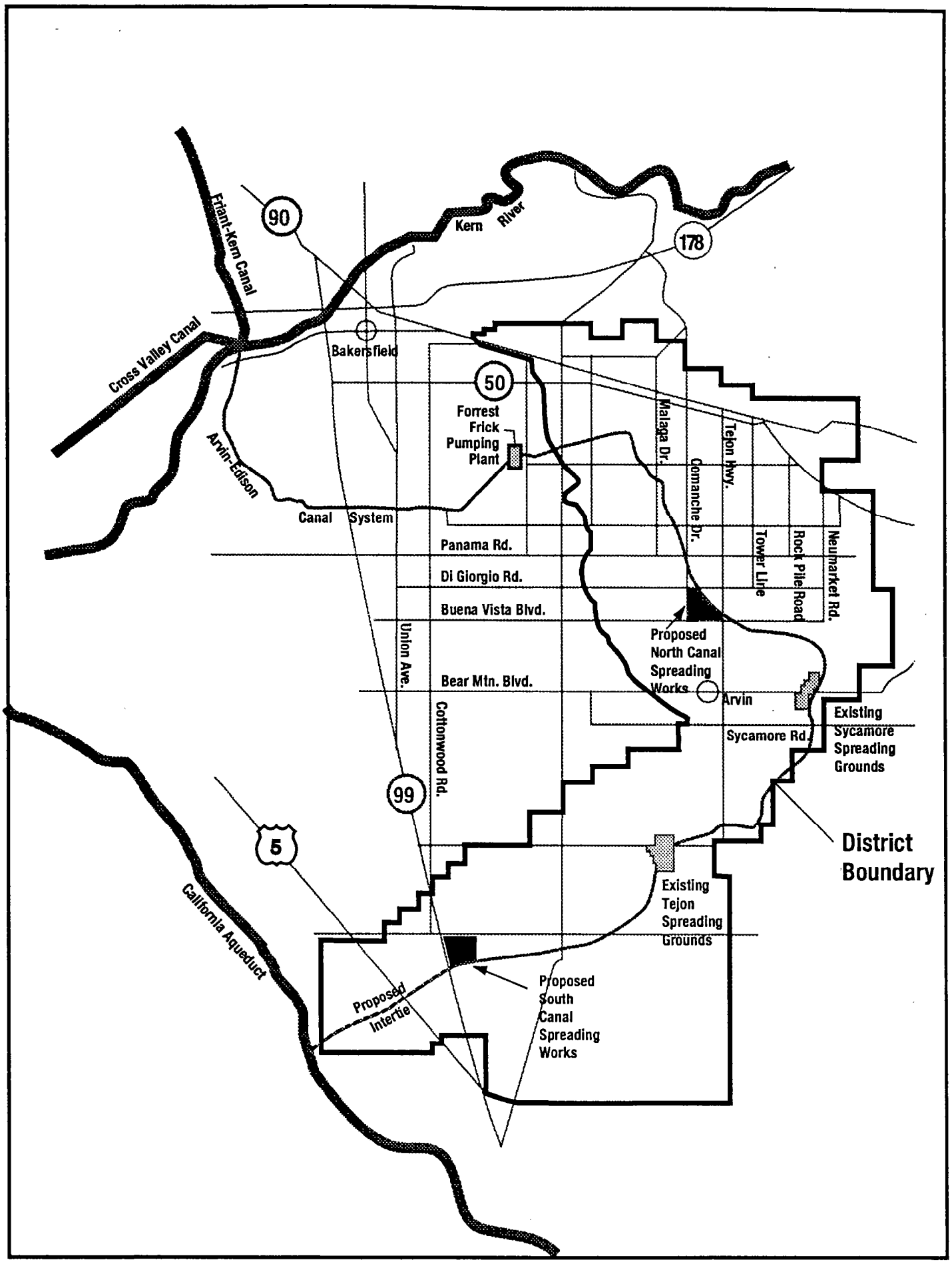

Figure 3 - Proposed Arvin-Edison Water Management Project Facilities

The impact of the proposed project on groundwater conditions was modeled over a 40-year period using historical hydrologic conditions. The selected hydrologic sequence commenced with 1972 and juxtaposed 10 years of the two worst periods of extended drought that have occurred in this century; 4 years of the most recent 1987-1992 drought separated by only a few years from the 1928-1934 drought. The model accounted for projected surface water availability over the period, irrigation demands, groundwater pumping, and spreading facilities. The model also included an assumption for future conjunctive-use and transfer opportunities whereby an additional 350,000 acre-feet would be stored and then subsequently extracted. This was done to evaluate the potential long-term effects to groundwater conditions from expanded conjunctive-use components of the proposed project. Appendix A prepared by Bookman-Edmonston Engineering, Inc. summarizes the groundwater modeling studies. Comparison of expected conditions with and without the project indicate that the project would enhance Arvin-Edison's ability to mitigate groundwater overdrafts compared to the no-project condition.

In addition to potentially improving groundwater elevations in the district, other advantages of expanding the groundwater banking facilities include strengthening drought-year supplies to meet irrigation demand, short-term decrease in pumping costs related to a reduction in pumping lift, improving localized groundwater quality, and providing capacity for transfer and/or exchanges with other water agencies.

1.3.3 Optimize the Use of Available Water Supplies

Arvin-Edison, like many water districts, experiences variations in water supplies from abundant supplies during wet periods to extreme shortages during droughts (Figure 4). Water banking programs such as the proposed project act to decrease the effects of these annual swings. The use of available water supplies can be optimized by managing deliveries to groundwater basins. Storage in Arvin-Edison's groundwater basin is currently available. Through optimized use of available supplies, the proposed project would not only meet Arvin-Edison's supply needs during dry periods but would also provide a way to optimize the use of available water resources by providing Arvin-Edison with alternatives for storage and extraction of water for future conjunctive-use and transfer agreements.

In the 1970s, Arvin-Edison entered into a number of exchange agreements with other water agencies to reduce the fluctuations in the surface supplies available to its service area. As detailed in these agreements, Arvin-Edison has made available a portion of its Friant-Kern water supply to water agencies located on the east side of the San Joaquin Valley in exchange for their federal water available on the California Aqueduct (Figure 5). Over the long term, the exchanges were originally anticipated to balance. However, because of a change in yield of the federal supply from the California Aqueduct, certain of these exchanges became infeasible.

Therefore, a number of these arrangements are no longer viable. Consequently, water previously committed to these transfer agreements is now available for expanded conjunctive-use programs. The proposed Water Management Project has been formulated to accommodate these supplies so that water that has been historically utilized by Arvin-Edison through exchanges with other

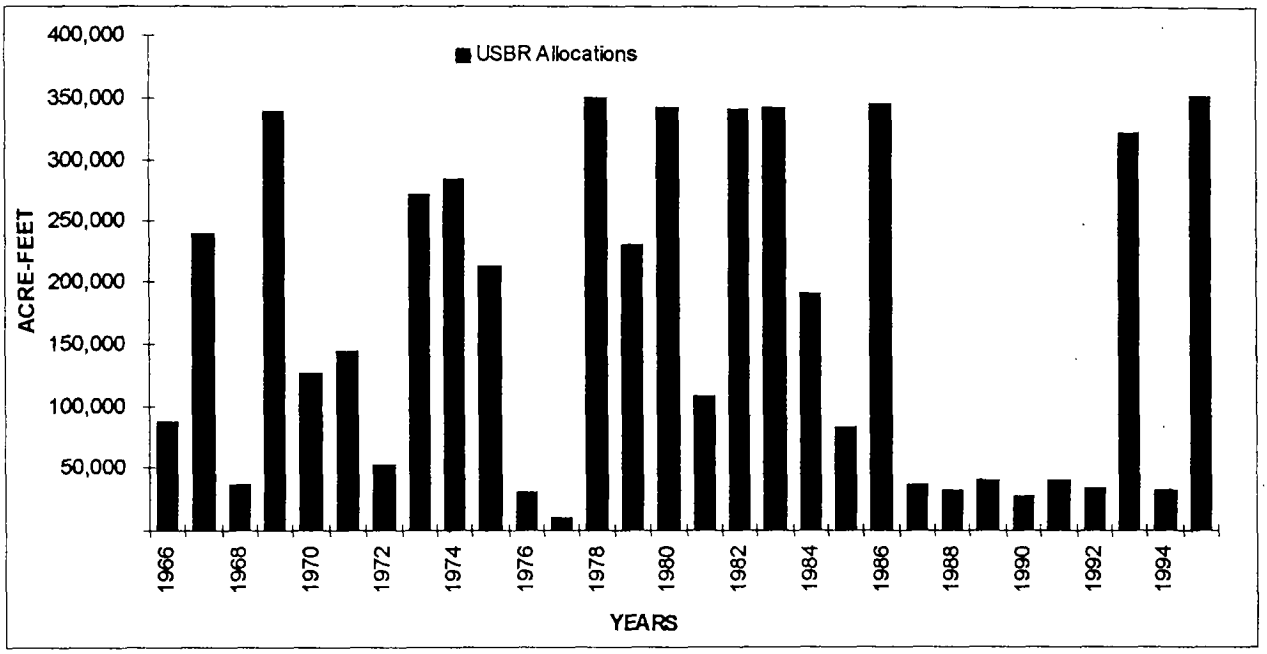

Figure 4. Arvin-Edison Water Allocations

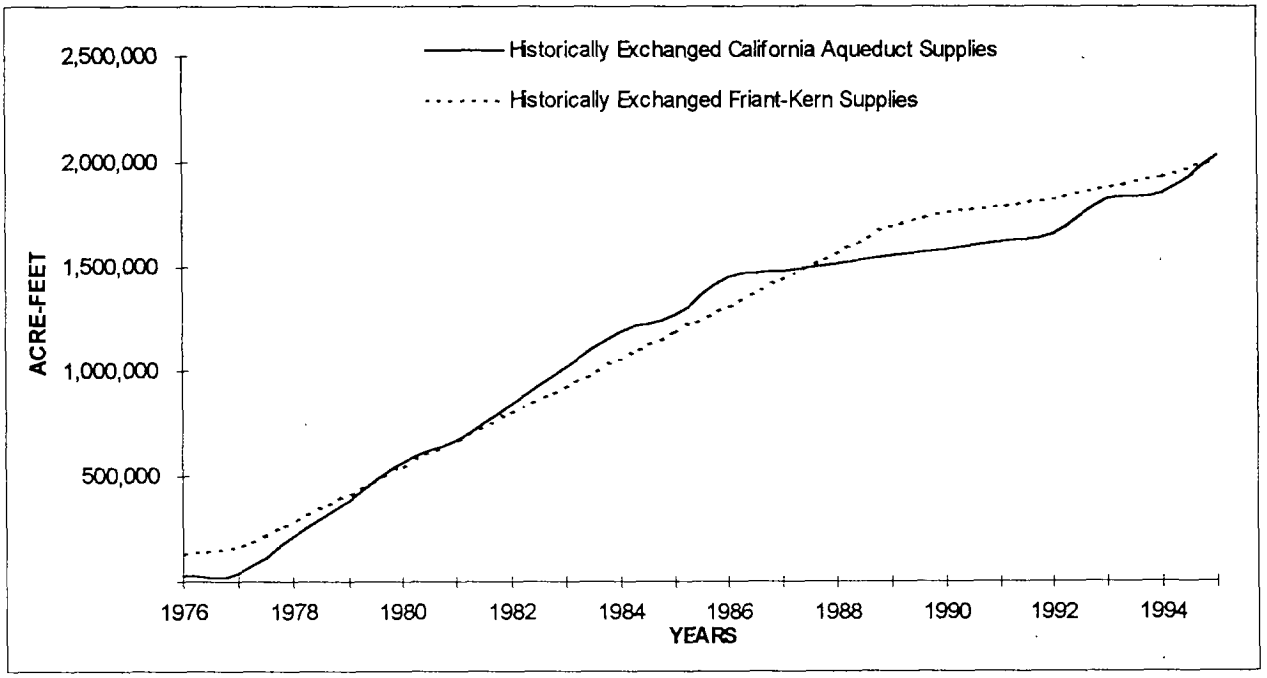

Figure 5. Cumulative Water Exchanges

districts can now be utilized directly by Arvin-Edison and/or for new exchange and transfer arrangements with others.[1]

1.4 Description of the Proposed Facilities

1.4.1 North Canal Spreading Works

The North Canal Spreading Works would be constructed on approximately 530 acres of land on the west side of the Arvin-Edison North Canal between DiGiorgio Road and Buena Vista Boulevard. Arvin-Edison would construct new spreading basins on this parcel as part of this project with an initial net pond area of approximately 300 to 340 acres of the project's total of 520 areas of new spreading basins, along with a canal-side pumpstation to deliver water from the canal to the basins and approximately 7 of the project's total of 15 new production wells to recover stored water and return it to the canal.

The spreading basins at the North Canal site, as well as at the South Canal site, would consist of a series of basins or ponds separated by levees. The proposed new spreading grounds would be very similar in appearance to those on Figure 6, which is an aerial photograph of the existing Arvin-Edison Sycamore Spreading Basins.

Spreading Basins

Individual basins within the new spreading grounds would be interconnected by a series of reinforced concrete interbasin flow control structures. Water control channels would be provided within the individual basins to allow water to drain from basin to basin. Water levels and/or flow between adjacent basins would be controlled by manually adjustable weir boards within each interbasin control structure.

Construction

Development of the spreading grounds would involve construction of a series of interconnected basins or cells by excavation and construction of compacted earthen levees. The levees would be trapezoidal in cross section with a top width of about 10 to 15 feet and would be constructed with on-site materials. The height of the levees would vary, ranging from about 5 to 7 feet above

[1] Arvin-Edison is currently negotiating a water banking arrangement with the Metropolitan Water District of Southern California (Metropolitan) whereby up to 350,000 acre-feet of Arvin-Edison's CVP Friant-Kern Class II water would be transferred to Metropolitan and placed into storage over the next 25 years on a "when available" basis. The Class II water would be transferred to Metropolitan when obtained by Arvin-Edison. This water and/or other Metropolitan supplies would be placed into storage in Arvin-Edison's groundwater basin and held for Metropolitan until such time as Metropolitan requests return of the water. This water would then be conveyed to Metropolitan via the pumpback pipeline to the California Aqueduct or by exchanging for Arvin-Edison CVP exchange water already in the California Aqueduct.

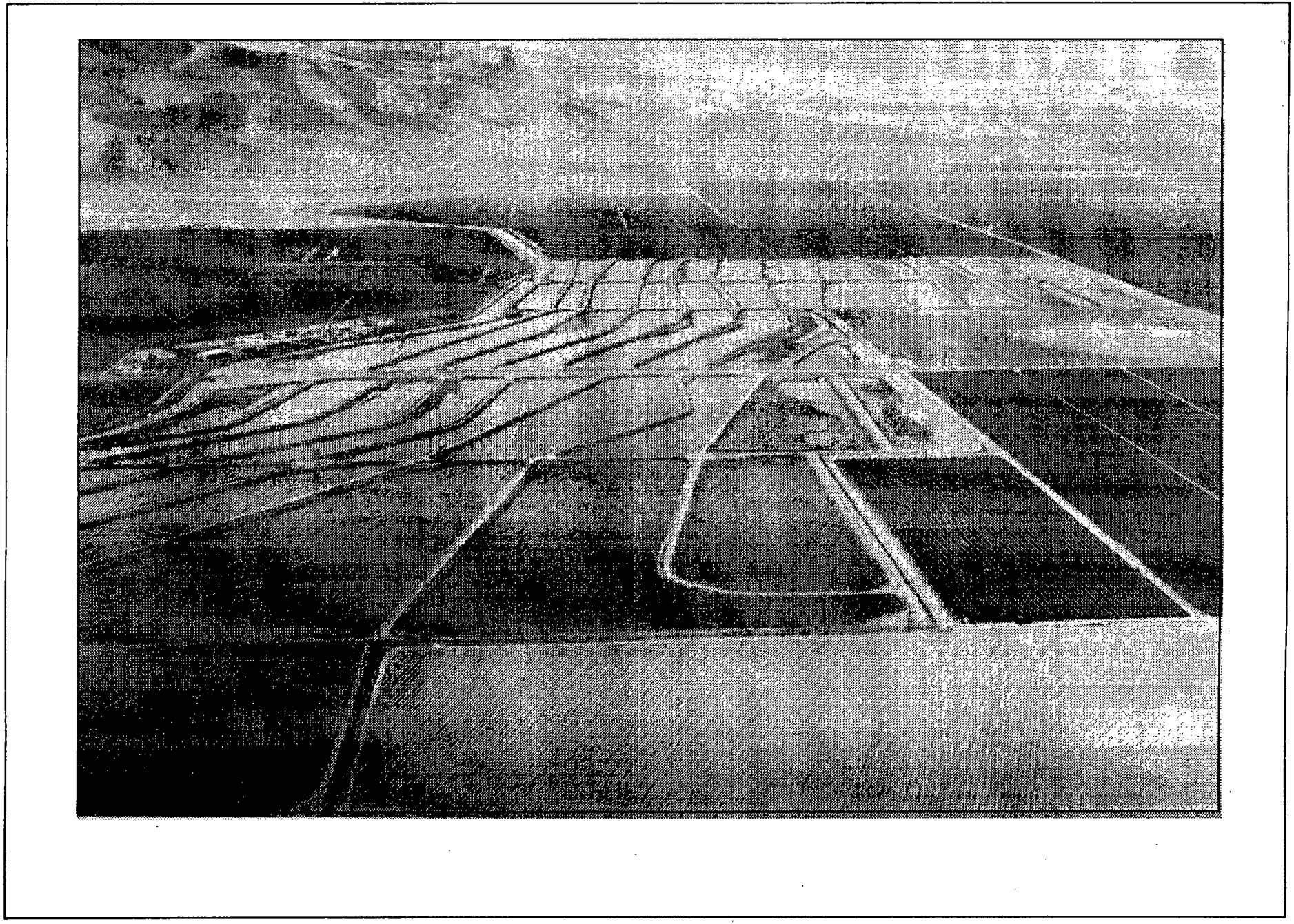

Figure 6 - Aerial View of Sycamore Spreading Basins

original grade levels. During construction of levees, the soils would be watered and compacted to decrease permeability to water and to increase strength.

The basins that make up the spreading grounds would be excavated to sufficient depth to provide all earth material required for levee construction. The construction method would be a "cut-and-fill" operation utilizing self-loading, rubber-tired scrapers augmented by a bulldozer, a motorgrader, and a water truck.

With allowances for the required levees and access roads, the gross area required for construction of spreading works would be approximately 15 to 20 percent greater than the net pond area. Other factors may also increase the total area required, including cross-drainage considerations, current ownership patterns, and allowances for possible future expansion.

The total duration of construction for the North Canal Spreading Works is estimated at about 8 months and includes the spreading basins, canal-side pumpstation and discharge piping, canal turnout structure, and extraction wells. During this time, it is estimated that the workforce would vary from about 10 to a peak of about 55 workers.

Operations

As with similar existing Arvin-Edison facilities, during periods of spreading, water would be delivered into the basins for percolation into the aquifer. In general, the basins would be operated in this "spreading mode" whenever available supplies exceed immediate irrigation demands. Depending on the supply hydrology, these periods could extend from several months to several years. During dry periods, when surplus surface water is not available for spreading, the basins would dry out and maintenance activities would focus on preparing the basins for the next spreading cycle.

During spreading, and due to the relatively high infiltration rates of the soils in the area, standing water would be temporary, ranging from several hours to several days. When water is being delivered to the spreading grounds, Arvin-Edison personnel would monitor operations 24 hours per day.

Grasses and small herbaceous plants would be allowed to grow in the basins to minimize wind erosion when the basins are in the drying cycle and not used for groundwater recharge and to maintain infiltration capacity. Mowing of the levees, and of the basins themselves during a drying cycle, may be undertaken several times a year to reduce water losses due to vegetative evapotranspiration.

During the drying cycle, maintenance activities would be performed within the basins to maintain or restore infiltration. These activities would typically include periodic drying of surface soils, scarification of surface soils by chiseling or discing, and removal of silt accumulations by mechanical means. Typical equipment used in these operations would include a tractor, front-end loader, and dump truck.

Canal-Side Pumpstation

The North Spreading Basins would include both pumped and gravity deliveries from Arvin-Edison's existing North Canal. In general, a canal-side pumpstation and pipeline would deliver water to the north portion of the spreading grounds. The pumping plant structure would also include a gated outlet to effect gravity deliveries to the south portion of the spreading grounds. The canal-side pumpstation would be constructed on the North Canal adjacent to the north spreading grounds.

The canal-side pumpstation would be equipped with electric or natural gas-powered multiple vertical-shaft pumps with a combined rating of approximately 1,000 horsepower and would be capable of pumping up to approximately 40 cubic feet per second (cfs) from the North Canal. These pumps would be manifolded to a steel pipeline with a diameter of approximately 30 inches for delivery to the spreading basins. A typical configuration for the canal-side pumpstation is shown on Figure 7.

Construction

Construction of the canal-side pumpstation would require cutting into the existing concrete lining of the North Canal to construct the reinforced-concrete structures. It is likely that this construction would be scheduled during the fall or winter months to minimize interruptions to water deliveries to Arvin-Edison's water users. If necessary, a cofferdam could be erected within the canal to maintain deliveries through the canal during construction.

Equipment used for construction of the spreading basins such as a bulldozer and backhoe would likely be used for the minor earthwork needed. Excess excavated material would likely be used in the earthwork for construction of the spreading basin levees.

Operations

The canal-side pumpstation would be operated only during periods when water supplies exceed irrigation demands and all gravity-fed spreading basins are in operation and at capacity. Consequently, there may be extended periods of time—up to several years—when the spreading basins are dry and the canal-side pumpstation would sit idle. Also, because the northern portion of the North Canal Spreading Works can be fed by gravity, the canal-side pumpstation would not necessarily be used throughout a spreading cycle. During operation, the canal-side pumpstation may be operated 24 hours per day for periods of up to several months.

Production Wells

Approximately 7 of the project's total of 15 new production wells would be constructed at the North Canal Spreading Works site to recover water percolated into the aquifer. Similar to Arvin-Edison's existing wells now in operation, the new wells would be located within and/or adjacent to the spreading basins and piped to return pumped groundwater to the canal. Also similar to

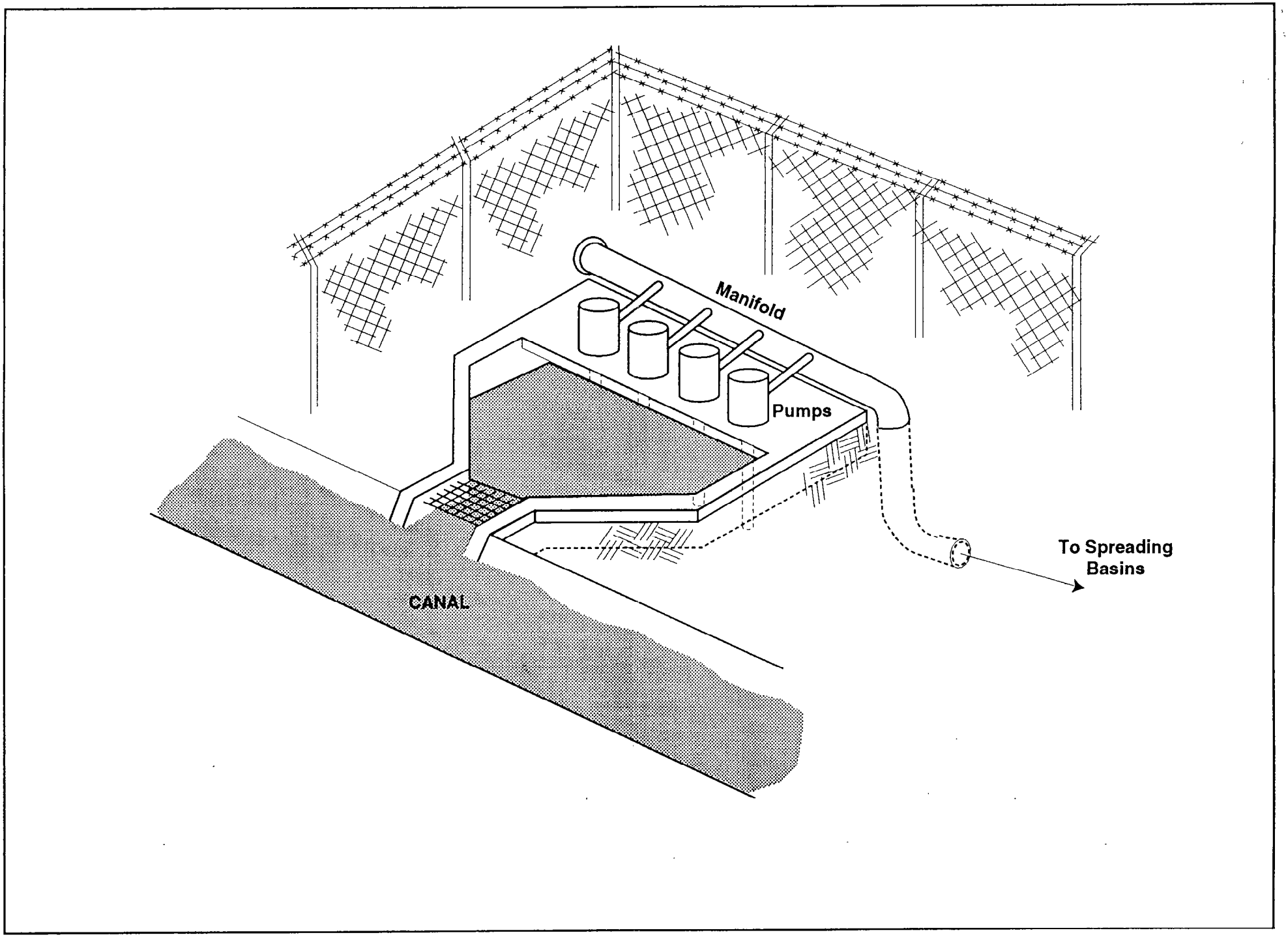

Figure 7 - Typical Canal-Side Pump Station

Arvin-Edison's existing wells, well depth would range from approximately 800 to 1,000 feet, and each well would have a capacity to produce approximately 1,800 gallons per minute (gpm). Each well would be bored to approximately 30 inches in diameter and fitted with blank and perforated casing pipe of approximately 16- inches in diameter. Perforations in the casing pipe, to allow the entrance of water, would extend over about one-half of the well depth.

The pump would likely be of a multi-stage, vertical turbine configuration with a horsepower rating of about 300. The pump would likely be electric, as are Arvin-Edison's existing wells; however, natural gas power is also feasible and is being considered. The motor control equipment and the above-ground equipment arrangement would be similar to that in operation at Arvin-Edison's Sycamore well field, as shown on Figure 8.

The pipelines to convey pumped water back to Arvin-Edison's canal system would be buried and would range from approximately 16 inches in diameter at the wells to up to approximately 30 inches in diameter at the canal.

Construction

Construction would involve drilling the wells and construction of a pipeline system to collect and convey pumped groundwater back to Arvin-Edison's canal system. For construction of each well, a work area approximately 200 feet square would be required. Well construction would begin by using a bulldozer to excavate a sump for the drilling water and drill cuttings. Approximately 50 feet of surface casing would be installed, and the annular space between the casing and the hole would be filled with grout. Using a reverse-circulation rotary drilling rig, the well would be drilled to the required depth, approximately 800 to 1,000 feet, and a well casing would be installed. A gravel envelope would be placed around the outside of the well casing, and annular seals would be placed, if necessary. Following placement of the gravel envelope, the well would be developed by swabbing and pumping. Following development pumping, the well would be test pumped.

After removal of the drill cuttings from the sump, the sump would be backfilled using a bulldozer. A concrete pad would be constructed around the well head, and the permanent pump equipment would be installed. Installation of well head structures typically requires approximately 10 cubic yards of concrete to form the apron around the well casing at the surface.

Assuming one drilling rig is used for well construction, it is estimated that the total duration of this phase of construction would be approximately 8 months and that the workforce would consist of 10 workers for the first 7 months and would peak at 20 workers during the last month of construction.

Access roads to the wells would be required and would likely be constructed along the top of certain spreading basin berms. Electrical power supply (or natural gas) lines for the well pumps would be located within the right-of-way of the spreading ground road system and along berms. Construction of the buried pipelines would be a "cut-and-cover" operation, in which the pipeline

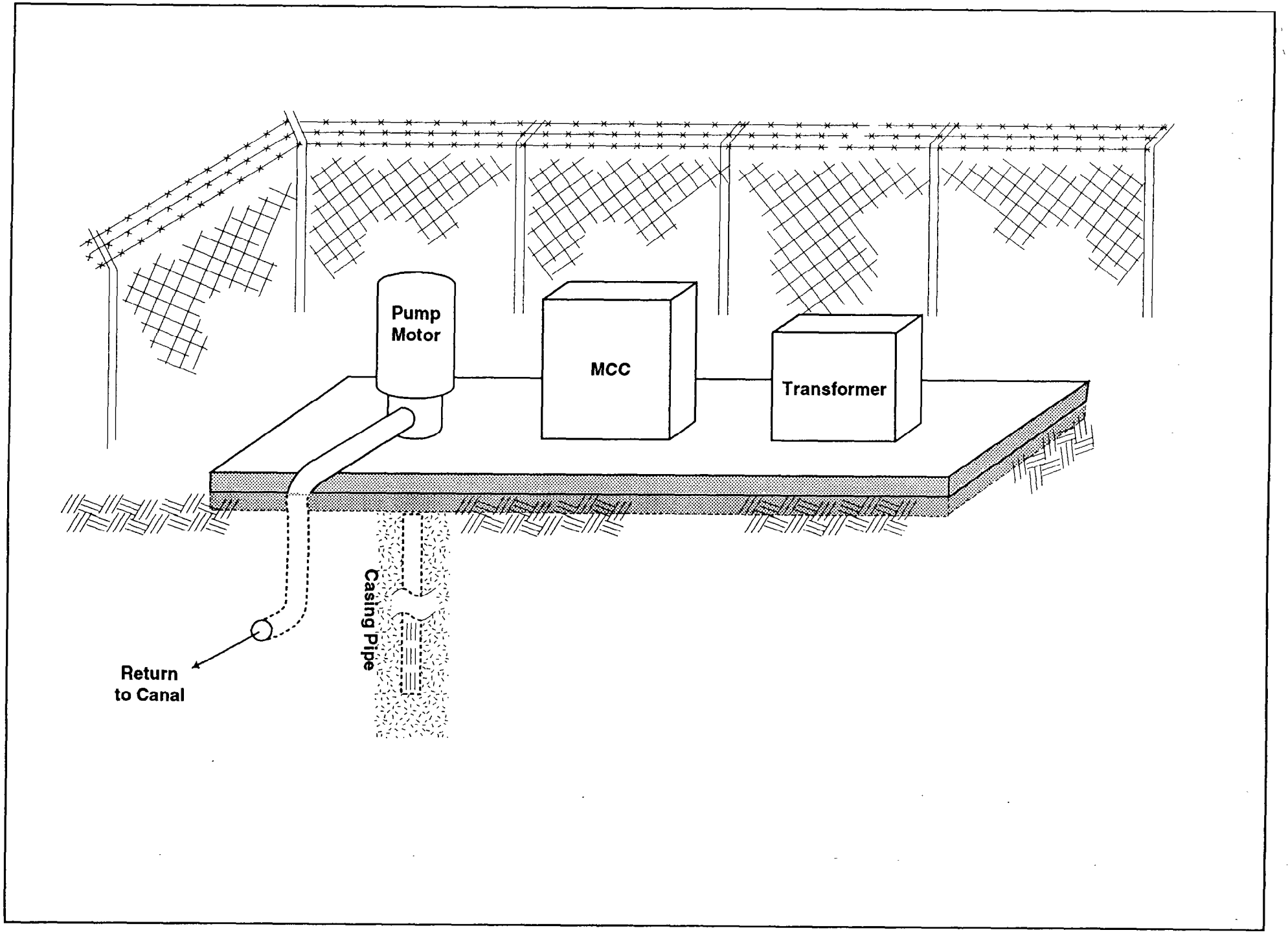

Figure 8 - Typical Well

is laid within an excavated trench and then buried. The principal equipment for this type of operation includes a backhoe to excavate the trench, a loader, a water truck for dust control, and miscellaneous compaction equipment.

Operations

During periods of withdrawal, the pumped groundwater would be returned to Arvin-Edison's distribution system. While the wells could be used at any time, it is likely that well operation would occur predominantly in years of "below-normal" surface water supplies. When the wells are operated, they would typically be operated 24 hours per day for periods of up to several months.

Maintenance activities associated with the wells include periodic visual checks and inspections, replacement of oil in the motor lubrication system, winterizing pump motors and motor control equipment, periodic pump and motor testing, exercising the pump and motor, and repair and replacement of pump and motor equipment. In addition to these maintenance activities, there would be periodic collection of water level measurements and water samples.

1.4.2 South Canal Spreading Works

The South Canal Spreading Works would be constructed on approximately 230 acres of land at the terminus of the South Canal adjacent to an existing spillway. Facilities proposed at this site are spreading basins and approximately eight new wells. Construction, operation, and maintenance activities associated with the spreading basins and wells would be the same as those described in Section 1.4.1, North Canal Spreading Works.

Unlike the North Canal Spreading Works, the South Canal Spreading Works are located such that all deliveries to the spreading basins can be made by gravity; consequently, a canal-side pumpstation would not be required for delivery to the basins. In its place, the South Canal Spreading Works would require the construction of a turnout from the Arvin-Edison South Canal. The turnout would consist of a reinforced-concrete structure cut into the side of the existing canal with a gate to control the delivery of water to the spreading grounds.

Although a canal-side pumpstation is not needed for spreading operations, one is proposed for the project as part of the Aqueduct Intertie Pipeline and Pumpstation facilities, which are described in the following section.

1.4.3 Aqueduct Intertie Pipeline and Pumpstations

The Aqueduct Intertie is proposed to increase the ability of Arvin-Edison to convey its water supplied through the California Aqueduct into its system. Historically, Arvin-Edison has entered into a number of agreements with other water districts to exchange part of its Friant-Kern water supply for CVP water delivered through the California Aqueduct and the Cross Valley Canal.

The proposed Aqueduct Intertie Pipeline would provide Arvin-Edison with a direct connection to the California Aqueduct for exchanged supplies. The Aqueduct Intertie Pipeline would consist of approximately 4-1/3 miles of 6-foot-diameter pipeline capable of conveying up to 150 cfs between the California Aqueduct and Arvin-Edison's South Canal in both directions. This water can then be delivered to meet irrigation demand or percolated into the ground through the South Canal Spreading Works.

As part of the Aqueduct Intertie Pipeline facilities, a turnout structure would be constructed at the connection to the California Aqueduct located approximately 2 miles southwest of the juncture of the I-5 Freeway with State Route 166 (SR-166). From this turnout, the pipeline would travel across agricultural fields north under SR-166, east alongside SR-166 and under the I-5 Freeway, then northeast to the terminus of the South Canal located just east of SR-99.

Because flow to the South Canal is not possible by gravity at maximum flow, a booster pumpstation would be required. This would be located along the proposed alignment just east of the I-5 Freeway. A pumpback pumpstation located near the terminus of the existing South Canal would also be required to permit return deliveries into the California Aqueduct.

The Aqueduct Intertie Pipeline, turnout, and pumpstations would involve construction of up to about 100 acres of temporary construction easement between the California Aqueduct and the South Canal. Following construction, Arvin-Edison would retain approximately 50 acres as permanent right-of-way.

Aqueduct Turnout

The aqueduct turnout structure would be built within the right-of-way of the California Aqueduct and would consist of a reinforced-concrete structure with electric motorized slidegates. The slidegates would regulate flows through the proposed pipeline and into Arvin-Edison's South Canal. The turnout structure would transition from rectangular (to accommodate the required slidegate facilities) to round, where it would transition into a steel manifold section containing a meter vault. The meter vault would house an ultrasonic meter capable of metering water flow in both directions, i.e., from the California Aqueduct into the Arvin-Edison South Canal and water delivered from the Arvin-Edison South Canal to the California Aqueduct. The meter section would connect with the Aqueduct Intertie Pipeline.

The turnout facility would also include a motor control building approximately 15 feet by 20 feet, which would house the metering display equipment and controls and power for the slidegates.

Figure 9 presents a schematic plan and section for the turnout facility.

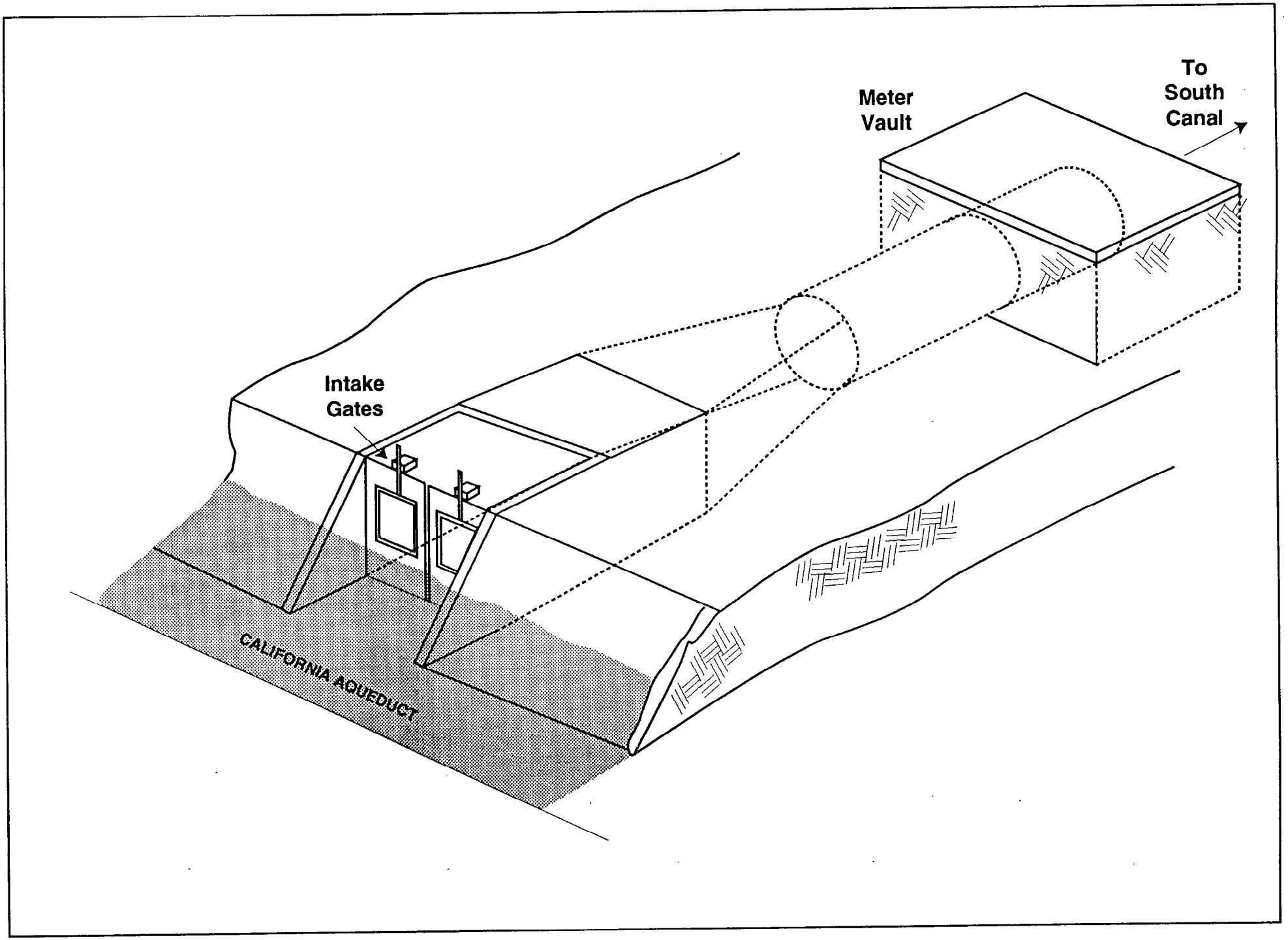

Figure 9 - Typical Aqueduct Turnout

Construction

Construction would involve the use of a portable cofferdam, which has been used successfully in the past on similar construction projects on the California Aqueduct. The cofferdam would allow construction of the turnout without interrupting operation of the California Aqueduct.

Excavation and construction would be accomplished with conventional construction and compaction equipment, including bulldozers, loaders, dump trucks, and a water truck for dust control. The turnout structure and meter vault would be conventional reinforced-concrete construction in accordance with Department of Water Resources requirements. The motor control building would be made of precast block masonry construction. It is estimated that construction would take approximately 3 months and would require a workforce of about 5 to 10 persons.

Operations

Once constructed, the aqueduct turnout would be operated periodically corresponding with water deliveries either to or from the California Aqueduct. When in operation, the turnout structure would have minimal requirements for operations and maintenance activities and would not be manned. Periodic maintenance activities would include visual checks, inspections, routine maintenance, and repair and replacement of equipment.

Aqueduct Intertie Pipeline

The proposed aqueduct turnout would connect with approximately 4-1/3 miles of new 6-foot-diameter pipeline to deliver water to and from Arvin-Edison's South Canal. The pipeline would likely be made of reinforced concrete.

A construction easement of up to 200 feet in width would be obtained over the length of the alignment. Following construction, a permanent easement of about 50 feet centered over the pipeline would be retained. The pipeline right-of-way would parallel some unimproved farm roads and SR-166 for approximately 0.5 mile through planted agricultural areas. The balance of the right-of-way is across active agricultural areas currently planted in wheat, cotton, and alfalfa.

The pipeline would cross beneath SR-166, I-5, SR-99, and Valpredo Road. The pipeline would also cross the following facilities:

- Department of Water Resources access road to the John Teerink Pumping Plant
- Other major pipelines:
  - Mojave Pipeline
  - All American Pipeline
  - PG&E Pipeline
  - Mobil Oil Pipeline

  - Possibly other petrochemical pipelines that have not been identified to date
  - Arvin-Edison water distribution pipelines
  - Water distribution pipelines for Wheeler Ridge/Maricopa Water Storage District

- Buried cable crossings
  - AT&T transcontinental cable
  - Telephone cables at various locations, primarily adjacent to roadways

- Aerial power/telephone and cable crossings
  - PG&E transmission lines
  - PG&E distribution facilities
  - Telephone lines
  - Cable lines

- On-farm irrigation facilities
  - Pipelines
  - Ditches

Construction

Pipeline installation would consist of seven major categories of work activities:

1. Clearing of vegetation from the area to be excavated for the pipeline trench, typically accomplished with a motorgrader.

2. Trenching, usually with an excavator, creating a temporary spoil pile to one side of the trench. The nominal trench depth would be approximately 12 feet with a bottom width of about 9 feet.

3. Pipe hauling and delivery, typically via flat-bed semitrailers.

4. Pipe unloading and storage in the right-of-way alongside the trench using forklifts or cranes.

5. Pipe placement and fitting, typically involving a trackhoe crane hoisting each pipe length from its storage alongside the trench, placing it within the trench, and connecting it to the previously installed pipe sections.

6. Trench backfilling, which consists of placing and compacting spoil material to the springline of the pipe followed by placing the balance of the spoil material to original grade. These activities could include using rubber-tired front-end loaders, bulldozers, excavators, and motorgraders.

7. Cleanup and restoration of disturbed right-of-way. Landowners often excavate a "V" ditch about 18 inches deep along the center of the backfilled trench and fill it with water to speed up the settlement process in preparation for resuming farming operations. For areas where the pipeline right-of-way lies within existing roadways, restoration activities may include repaving or revegetation of road shoulder areas using native seed mixes that do not require irrigation.

It is estimated that the total area disturbed during construction of the pipeline could be up to approximately 200 feet wide. This area would be necessary to temporarily stockpile trench spoil and to have a working area to string the pipe adjacent to the trench and to have room for a trackhoe crane to install the piping.

The pipeline would cross beneath SR-166, I-5, SR-99, and Valpredo Road. Crossings beneath I-5 and SR-99 would be accomplished by tunnel construction, while the SR-166 crossing would be accomplished by a direct bore type of construction. California Department of Transportation (Caltrans) encroachment permits would be required for these crossings. These crossings would not entail any physical impacts to Caltrans facilities and would not interrupt or affect traffic flow on these roadways in any way.

Utility relocation work is not anticipated. The pipeline would be adjusted to either offset from existing facilities or go underneath such facilities when crossings are necessary.

Piping would probably be manufactured either in Shafter, California, about 20 miles northwest of Bakersfield, or Fresno, California, about 120 miles north of Bakersfield. Pipe manufacture is estimated to require 8 to 9 months. Field construction of the pipeline is estimated to require 3 months. The workforce required for pipeline installation is estimated at 20 to 25 persons.

Operations

Once constructed, the pipeline would not require regular operations and maintenance activities. Any activities along the alignment would be limited to occasional preventive maintenance associated with the surface components of the system (such as air and vacuum release valves) and periodic inspection of those surface components.

Booster Pumpstation

The booster pumpstation would be located at approximately the midpoint of the Aqueduct Intertie Pipeline on the east side of the I-5 crossing. While water would flow by gravity out of the California Aqueduct and into the Intertie Pipeline, the elevation difference between the California Aqueduct and the Arvin-Edison South Canal is limited, which would necessitate the construction of a low-head booster pumping plant. Piping and valving would be included to bypass the booster plant when water is being delivered from the Arvin-Edison South Canal to the California Aqueduct. Multiple vertical turbine pumping units with electric motor (or natural gas) drivers, with a combined pumping capacity of 150 cfs, would be installed at this location. A standpipe and

hydropneumatic pressure tank would also be included. The facility would be graded and fenced upon completion. Figure 10 is typical of the proposed booster pumpstation.

Construction

Construction would include steel discharge piping and manifolding, pumps and motors, and motor control equipment and would disturb an area approximately 100 feet by 100 feet. The permanent fenced area would be approximately 50 feet by 50 feet. It is estimated that construction would require a workforce of approximately five persons and would be accomplished in about 1 month.

Operations

Flows up to about 50 cfs from the California Aqueduct through the proposed Aqueduct Intertie Pipeline and into Arvin-Edison's system can be made by gravity. Consequently, it would not be necessary to operate the booster pumpstation under these conditions. If flows from the California Aqueduct into Arvin-Edison's system fall between about 50 cfs and 150 cfs, operation of the booster pumpstation would be required. During operation, the booster pumpstation may be operated 24 hours per day for periods up to several weeks.

Maintenance activities associated with the booster pumpstation would include periodic visual checks and inspections, replacement of oil in the motor lubrication system, winterizing pump motors and motor control equipment, periodic pump and motor testing, exercising the pump and motor, and repair and replacement of pump and motor equipment.

Pumpback Pumpstation

The pumpback pumpstation, a canal-side pumpstation, would be located near the terminus of the Arvin-Edison South Canal and would lift water out of that canal into the Aqueduct Intertie Pipeline. The pumpback pumpstation would be used to reverse flows in the Aqueduct Intertie for delivery into the California Aqueduct. The pumpback pumpstation would be operated during dry periods and at other times when deliveries are being made to exchange and banking partners.

The pumpback pumpstation would consist of a multiple pump structure located adjacent to the canal, electric- or natural gas-driven vertical turbine pumping units, pump discharge piping, and a discharge manifold connecting to the Aqueduct Intertie Pipeline. It would be very similar to the canal-side pumpstation associated with the North Canal Spreading Works described in Section 1.4.1 and shown on Figure 7.

1.5 Existing Conditions

The Arvin-Edison service area consists of approximately 130,000 acres (150 square miles) located approximately 12 miles southeast of Bakersfield in the southern San Joaquin Valley. The entire Arvin-Edison service area lies within Kern County, the third most productive agricultural county

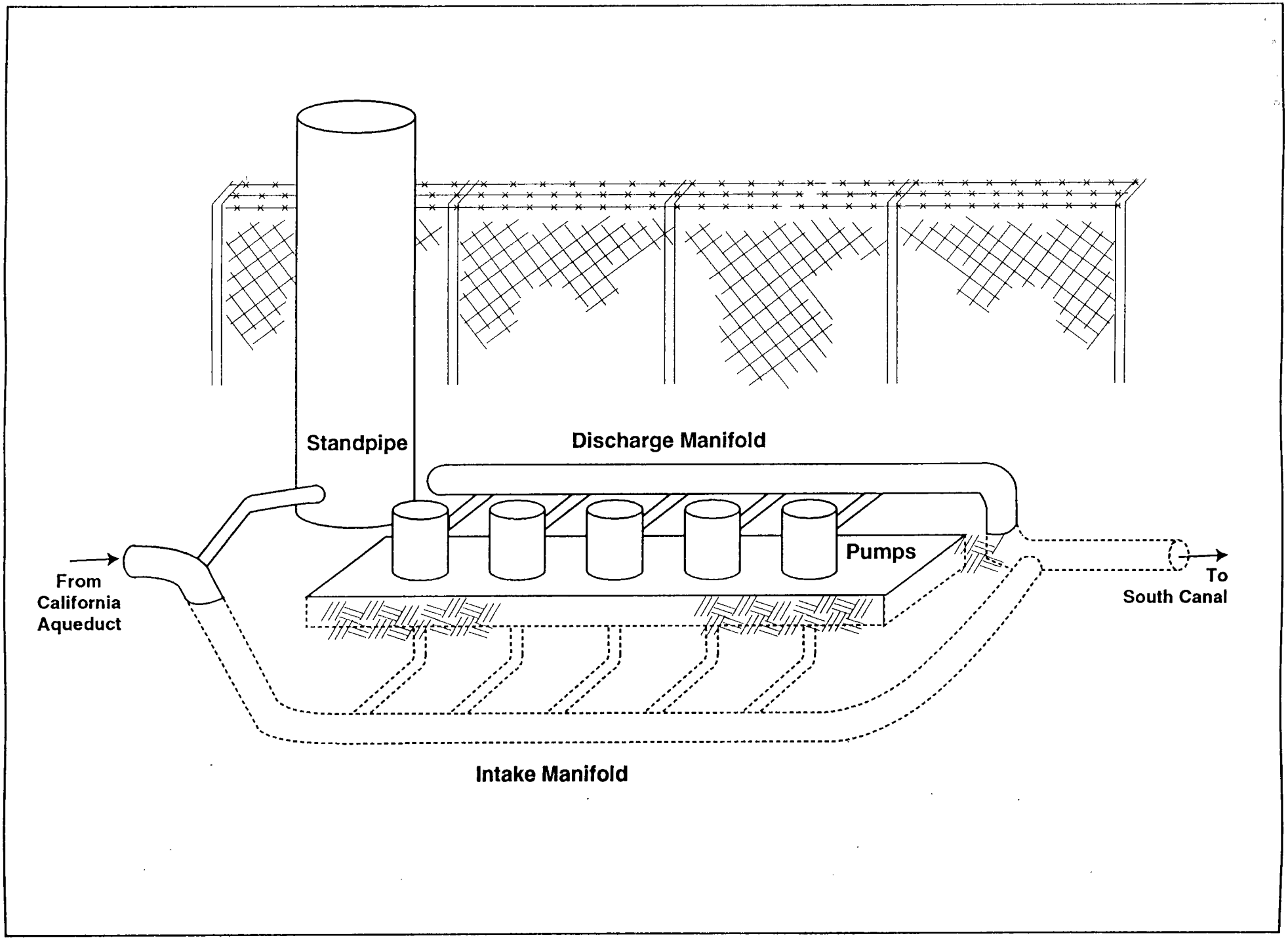

Figure 10 - Typical Booster Pumpstation

in the nation. Arvin, Edison, Mettler, Lamont, and DiGiorgio are small towns within the district on the valley floor. This portion of the San Joaquin Valley is relatively flat, with elevations ranging from 500 feet above mean sea level at DiGiorgio, sloping gently to 450 feet at Mettler, and climbing slowly to 500 feet at the California Aqueduct at the foot of Wheeler Ridge and the Tehachapi Mountains, which border the Arvin-Edison service area to the south and east.

1.5.1 Land Use and Agricultural Resources

Agriculture, in the form of row crops, orchards, and vineyards, is the primary land use in the region. The Kern County General Plan designates most areas within the Arvin-Edison service area as "intensive agriculture." The majority of lands within Arvin-Edison are used for the production of irrigated crops, such as row crops, orchards, and vineyards, or have the potential for such use. Supplemental irrigation is required for these activities because the area receives an average of only 8.5 inches of rainfall per year.

Other agricultural uses, while not directly dependent on irrigation for production, are also consistent with the intensive agriculture designation. The minimum parcel size is 20 acres. The permitted uses in this designation include, but are not limited to, irrigated cropland, orchards, vineyards, horse ranches, beekeeping, ranch and farm facilities, and related uses. One single-family dwelling unit is permitted per 20-acre parcel.

Forty-one percent of employment in the city of Arvin is related to agriculture. Approximately 92,000 acres of irrigated farmland in the Arvin-Edison service area occur on nearly level to moderately sloping terrain. The main crops are cotton, grapes, potatoes, citrus, almonds, and a variety of vegetables. The hilly areas at the north and east fringes of the Arvin-Edison service area are primarily used for grazing cattle and sheep.

The California Department of Conservation (CDC) coordinates state agricultural land use planning through its Farmland Mapping and Monitoring Program. The vast majority of farmland in the Arvin-Edison service area is classified as Irrigated Farmland by the CDC. The second main farmland classification in the Arvin-Edison service area is Non-irrigated Farmland. These classifications are assigned to agricultural lands when there are no modern soil survey data available for those lands. Irrigated Farmland is defined as land that has been used for production of irrigated crops within 2 years prior to the classification date and has a developed irrigation water supply that is dependable and of adequate quality. Non-irrigated farmland is land on which agricultural commodities are produced on a continuing or cyclic basis utilizing stored soil moisture.

The Arvin-Edison service area also includes Prime Farmland. This is land for which modern soil survey information is available and is defined as land with "the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed, including water management, according to current farming methods" (Farmland Mapping and Monitoring Program, 1984). To be considered Prime Farmland, these lands must have been used for production of irrigated crops within the last 3 years. Prime Farmland is land that is best suited

and available for producing food, feed, forage, fiber, and oilseed crops. This designation includes cropland, pastureland, rangeland, forestland, or other undeveloped land but not open water or urban developed areas.

1.5.2 Population and Housing

Arvin-Edison includes the city of Arvin and is located in the proximity of the unincorporated communities of Edison, Lamont, Mettler, and DiGiorgio. The population of these communities is primarily Hispanic. Population in the vicinity is estimated by the Kern County Planning Department to have increased by nearly 31 percent between 1980 and 1990. Population in the Arvin-Edison service area is projected to grow approximately 18 percent by the year 2010.

Most employed residents in the Arvin-Edison service area work in the agricultural sector. The area's population and farm employment fluctuates with seasonal demand for labor, but the base estimate of employment in the Arvin-Edison area increased over 36 percent between 1980 and 1990.

According to the Kern County Planning Department, much of the local housing in the Arvin-Edison area is made up of mobile home units. The number of occupied housing units in this area grew about 20 percent between 1980 and 1990. Occupied units in the city of Arvin grew by 22 percent during the 1980-1990 period. The housing stock in the Arvin-Edison area is projected to grow by approximately 23 percent between 2000 and 2010. Most of this growth is likely to be located in the town of Lamont.

1.5.3 Geology and Seismicity

The Arvin-Edison service area is located within the Tulare Basin of the Central Valley of California. The Central Valley is a low, predominantly flat-bottomed trough that has a north-south trend and lies between the mountain ranges of the Sierra Nevada to the east and the Coast Ranges to the west. The Tulare Basin, at the southern end of the Central Valley, is underlain by a thick layer of sedimentary rock deposited primarily as marine, stream, and lake sediments during the Cretaceous and Tertiary periods.

Soils in the Arvin-Edison service area consist primarily of very thick, sandy loam and fine, sandy loam on nearly level to moderate slopes of alluvial fans, floodplains, and stream terraces. In particular, soils in the area include Hesperia Sandy Loam, 2 to 5 percent slopes; Arvin Sandy Loam, 2 to 5 percent slopes; Whitewolf loamy sand, 2 to 5 percent slopes; and Psamments-Xerolls complex, nearly level.

These soils are well drained to somewhat excessively drained and have formed in moderately coarse- to coarse-textured alluvium derived from granitic rock. These soils are neutral to acidic and may be deficient in plant nutrients. Erodible soils and subsequent airborne material create a moderate hazard.

This portion of the Tulare Basin is bounded on the southeast by the Garlock Fault and on the southwest by the San Andreas Fault. Epicenters of known earthquakes with Richter magnitudes of 5 or greater occur within 75 miles.

Earthquake faults within the Arvin-Edison service area include the White Wolf Fault and the Edison Fault. The White Wolf Fault is short, active, and located entirely within Kern County. This fault extends from north of Caliente Creek to south of the city of Mettler and roughly parallels the toe of the Tejon Foothills and the Arvin-Edison South Canal. The maximum expected earthquake magnitude on this fault is 7.75. This fault produced the magnitude 7.7 Tehachapi/Arvin earthquake of July 1952, which resulted in 13 deaths and millions of dollars in damage.

The Edison Fault extends from Edison southeast across Caliente Creek and Sand Ridge. It may cross the White Wolf Fault and continue to the southeast.

Portions of the White Wolf Fault fall within an Alquist-Priolo Special Studies Zone. Alquist-Priolo special studies zones indicate potentially active faults that show evidence of surface displacement during the last two million years and have a relatively high potential for ground rupture. This state designation requires special geological studies prior to building structures for human occupancy within such zones. However, the White Wolf Fault is not zoned through the alluvial deposits where project facilities may be located. The Edison Fault does not fall within an Alquist-Priolo zone.

1.5.4 Surface Water

The natural surface waters in the Arvin-Edison service area are Caliente, Sycamore, Comanche, and Tejon Creeks. These creeks are part of the internal drainage system of the lower San Joaquin Valley. These are all intermittent in that they carry water primarily during the winter rainy season from November through April and occasionally for brief periods after summer thunderstorms in their mountainous headwaters. Winter rainstorms deliver approximately 90 percent of the annual precipitation, and the creeks carry little or no flow from mid-June to mid-October. Caliente Creek is the major contributor to runoff on the valley floor in Arvin-Edison.

The creeks originate in the foothills north of the Arvin-Edison service area or in the Tejon Hills to the east. Stream courses in the foothills tend to be moderately steep through rocky gorges without heavy vegetative cover. Historically, when the creeks reached the flat valley floor, their floodplains spread out into wide, sandy washes. Major creeks like Caliente Creek drained westward to Kern and Buena Vista Lake Beds. Agricultural development has altered the original drainage system so that the valley portions of many creeks are now confined to narrow channels within levees.

The portions of these creeks that are contained within the Arvin-Edison service area are the flat wash areas of the valley floor. Caliente Creek follows the eastern side of Sand Ridge, a narrow rise that projects southward from the Sierra Foothills. At Mountain View Road, the ridge stops

abruptly and Caliente Creek is directed southwesterly toward Malaga Road, mostly through a system of levees.

Sycamore and Tejon Creeks drain westward from Bear Mountain and the Tejon Hills towards the existing Arvin-Edison Sycamore and Tejon Spreading Works on the valley floor. These creeks are routed through or around the spreading grounds between raised levees. Their runoff is not used for recharge in the spreading grounds because of its relatively high content of fine silt that would clog the basin surfaces in a short period of time. Comanche Creek quickly loses definition on the valley floor once it exits the Tejon Hills.

Under normal conditions, creek flows percolate into the creeks' channels and recharge the underlying groundwater basin. After heavy rains, the creeks may cause flooding in the Arvin-Edison service area before draining into the Kern Lake Bed. The U.S. Army Corps of Engineers is studying the feasibility of a flood control project for the Caliente Creek floodplain within the Arvin-Edison service area.

Flooding may result from summer and fall thunderstorms or sustained winter and spring storms. The cloudbursts that result from thunderstorms in summer and fall usually have high peak flows, short duration, and small volumes. Because these cloudbursts are usually contained within a small area, only one stream at a time will carry runoff of flood magnitude.

Winter and spring storms are usually of longer duration and distributed across a wider drainage area. During these storms, the foothill sections of the creeks' watersheds experience considerable erosion, with much of the material being deposited near the canyon mouths and on the valley floor. The sediment-laden floodwaters overflow their existing confined channels and cover surrounding agricultural fields and parts of small towns such as Arvin, Lamont, and Weed Patch. As the flood flow subsides, the remaining water collects in depressions where it evaporates or eventually percolates into the underlying groundwater basin.

1.5.5 Groundwater

The Arvin-Edison service area is underlain by the Edison-Maricopa Front unit of the southeastern portion of the San Joaquin Valley. This unit is a J-shaped area of approximately 1,000 square miles at the southern end of the San Joaquin Valley. The major sources of groundwater replenishment to this unit are:

- seepage from streams, chiefly Caliente Creek, that discharge to the valley floor;
- seepage losses from irrigation canals within the area;
- return flow of imported water in excess of crop requirements; and
- subsurface flow of water from the adjoining Kern River unit.

The Edison-Maricopa Front unit consists of two groundwater bodies:

- a body of unconfined and semiconfined water in the upper part of the saturated deposits and
- confined water generally tapped by wells deeper than approximately 500 feet.

The two bodies differ greatly in head and direction of movement. Furthermore, fault barriers impede or prevent the movement of groundwater and thus break up the area into several blocks, each with a different hydraulic system.

The confinement of groundwater at depth seems to be related to a thick section of generally poorly sorted, fine-grained deposits rather than a single, thick layer of lacustrine clay as in other portions of the valley. In some areas, wells shallower than 500 feet register the water table, whereas wells deeper than 500 feet register a piezometric surface, indicating that these deeper wells have penetrated a confined layer. Groundwater moves downgradient from areas of recharge to areas of discharge. Before the widespread use of irrigation in the valley, the direction of groundwater movement was generally from recharge areas along the edges of the valley toward the Kern and Buena Vista Lake Beds, which are areas of natural discharge.

The USGS has concluded that extraction of water from the Edison-Maricopa groundwater basin during dry periods and recharging the basin with surface water during wet years is feasible. The methods of recharge considered practical include excess application of water for irrigation, seepage from stream channels and canals, and spreading of water in artificial ponds. The feasibility has been confirmed by the existing Sycamore and Tejon Spreading Works, which have been operated by Arvin-Edison with no adverse effect for the past 30 years. Replenishment through these facilities has helped to mitigate depletion of the groundwater reserves.

1.5.6 Air Quality

Climate in the Arvin-Edison area is characterized by hot, dry summers and cooler, more humid winters. Mean maximum temperatures range from a low of about 57°F in December, with occasional frosts, to a high of about 99°F in July. Precipitation averages approximately 8.5 inches annually, with most of the rain falling between November and April. Fog is common in winter and may last for 2 to 3 weeks at a time. During the summer, the winds blow primarily out of the northwest at 6 to 10 miles per hour. During winter months, winds blow out of the southeast at 5 to 9 miles per hour.

Buildups of air pollution in the Arvin-Edison region are caused by the simultaneous occurrence of emissions and poor atmospheric dispersion. Dispersion is frequently limited by inversions. The inversion layer averages between 1,000 and 4,500 feet in altitude in the Arvin-Edison area in the morning and afternoon, respectively.

The Arvin-Edison service area is located in the San Joaquin Valley Air Basin (SJVAB). The two major air quality problems in the SJVAB are ozone and particulate matter. Ozone is not emitted directly from pollutant sources but forms in the atmosphere through a complex series of photochemical reactions involving reactive organic compounds (ROC) and nitrogen oxides (NO_x) emissions. ROC and NO_x emissions are attributed to many sources throughout the basin. Ozone

is considered a regional pollution problem, as it takes several hours to reach peak concentrations in the atmosphere. Elevated concentrations of ozone are not particularly sensitive to any one localized source of ROC or NO_x. In contrast, concentrations of particulate matter tend to be highest in the immediate vicinity of the source.

The closest air quality monitoring stations are located in Arvin, Bakersfield, and Edison. The Arvin and Bakersfield stations are located approximately 15 miles from the project area, and the Edison station is located approximately 20 miles from the project area. Because the Arvin station monitors only ozone, the other stations' data have been included to provide a more complete understanding of the air quality in the area. Monitoring data from these three stations for the last three years for which data are available (1991-1993) show that the federal 1-hour ozone standard was exceeded 13 times in Arvin in 1993 and that the state standard was exceeded 86 times in that year. Annual average 24-hour PM_{10} concentrations at the Bakersfield station exceeded both state and federal standards during the 1991-1993 period. Concentrations of CO, NO_x, and SO_x were below state and federal standards during this time period.

1.5.7 Traffic and Circulation

Bakersfield is the closest large city to the Arvin-Edison service area. Bakersfield is served by I-5, SR-99, State Route 58 (SR-58), and Union Avenue, which leads south into the Arvin-Edison area. The other major roads in Arvin-Edison are:

- Tejon Highway, which runs north-south through the eastern edge of Arvin;
- Bear Mountain Boulevard, which runs east-west through Arvin; and
- Route 184 (Weed Patch Highway), which runs north-south through Lamont.

Other roadways serving the Arvin-Edison service area are primarily rural, two-lane roads. These roads vary in traffic volume, but most are used primarily by local agricultural businesses, workers, and their families. Table 1.5.7-1 provides the average daily trips data on the major roads in the Arvin-Edison service area for the years 1992 through 1994. The data for 1995 will not be available until approximately June 1996. According to the Kern County Roads Department, all of these roads currently operate at Level of Service A or B, indicating free flow of traffic with no significant delays due to traffic volume.

1.5.8 Biological Resources

Cultivated Lands

Most of the land within the Arvin-Edison service area is devoted to irrigated agricultural production. Because the irrigated fields are intensively managed, very little to no native vegetation exists, and little volunteer vegetation is allowed to grow. Cultivation often occurs up to the very margins of fields, roads, or ditches. Herbicides are routinely used to control unwanted vegetation, which typically includes all non-crop species. Occasionally, cultivated land is allowed to lie fallow, and ruderal plant associations take over. Ruderal habitats are subject to frequent

TABLE 1.5.7-1

AVERAGE DAILY TRIPS ON MAJOR ROADS IN THE ARVIN-EDISON SERVICE AREA, 1992-1994

	1994	1993	1992
Tejon Highway north of Bear Mountain Blvd.	2,950	3,250	3,800
Tejon Highway south of DiGiorgio Road	1,950	2,250	2,550
Bear Mountain Road east of the city of Arvin	800	NA*	NA
Weed Patch Highway north of Panama Lane	8,500	NA	NA
Panama Road west of Comanche Drive	1,000	1,050	920
Rock Pile Road south of DiGiorgio Road	130	130	130
Sunset Blvd. east of Weed Patch Highway	1,400	1,600	1,650
Sunset Blvd. east of Tejon Highway	1,500	1,250	1,350
Sycamore Road. west of Tower Line Road	260	260	240
Edison Road north of Muller Road	1,050	1,050	1,000
Malaga Road south of Panama Lane	430	430	430
Comanche Drive south of Bear Mountain Blvd.	4,050	4,100	3,650
Comanche Drive north of Bear Mountain Blvd.	6,600	7,300	5,900
DiGiorgio Road west of Weed Patch Highway	4,500	4,500	4,050
DiGiorgio Road east of Weed Patch Highway	4,700	5,150	4,600
Mountain View Road west of Comanche Drive	200	200	200
Tower Line Road north of Bear Mountain Blvd.	340	340	340
Valpredo Road west of Wheeler Ridge Road	180	180	220
David Road east of SR-99	1,400	1,400	1,550
Buena Vista Blvd. west of Comanche Drive	1,200	1,200	620
Buena Vista Blvd. west of Weed Patch Highway	2,800	2,800	2,850

Source: Kern County's 1994 Annual Traffic Census
* NA = Not Available

disturbance and are quickly colonized by non-native, and to a lesser extent native, plant species. Species composition varies greatly depending on the location, type, and frequency of disturbance and proximity of natural habitats. In addition to fallow agricultural fields, roadsides within the southern San Joaquin Valley area often support ruderal plant communities. Row crops and orchards provide minimal food and cover for wildlife. Some bird species such as the yellow-billed magpie (*Pica nuttallii*), common crow (*Corvus brachyrhynchos*), Brewers' blackbird (*Euphagus cyanocephalus*), and American kestrel (*Falco sparverius*) may use the trees for perching and nesting. Grain crops provide food and nesting sites for waterfowl, ring-necked pheasants (*Phasianus colchicus*), California quail (*Callipepla californicus*), short-eared owl (*Asio flammeus*), and various small mammals. Black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus bachmani*), valley pocket gopher (*Thomomys umbrinus*) and California ground squirrel (*Spermophilus beecheyi*) may be present, especially on ditch-side berms surrounding fields.

Grazing occurs in some areas of the valley floor and on the surrounding hillsides. Pasturelands consist primarily of alfalfa with some annual grasses. Wildlife values are similar to those described below for grasslands. Rows or small groves of non-native tamarisks (*Tamarix tetranda*) and eucalyptus trees (*Eucalyptus* spp.) have been planted in a few locations to provide shade and wind breaks or to control overflow waters. As the only overstory in the area, these trees provide roosting sites for several bird species, including house finches (*C. mexicanus*), song sparrows (*Melospiza melodia*), and lesser goldfinches (*S. psaltria*).

Indigenous Plant and Wildlife Communities

The indigenous habitat types in the southern San Joaquin Valley are grassland, alkaline sink, and shrubland. Coupled with the infrequency of freezing temperatures, the moist winters allow growth of herbaceous, annual vegetation and small, woody shrubs despite the area's overall aridity. The open vegetative cover provides seed and insect forage yet is sparse enough to allow good visibility of approaching predators. Consequently, the dominant animals are burrowing rodents, which are water-conserving and may be inactive or dormant during the hottest and/or coldest periods of the year or when food supplies are scarce. Reptiles also use the rodent burrows. Predators attracted by the rodent and reptile populations include raptors, gray fox (*Urocyon cinereoargenteus*), and coyote (*Canis latrans*).

Small areas within the Arvin-Edison service area contain remnants of several indigenous plant communities, including valley saltbush scrub, valley sink scrub, and grasslands. Their limited extent is primarily due to conversion to agriculture, although mining and off-road vehicle use have also reduced the extent of native vegetation.

Valley saltbush scrub contains widely spaced, low shrubs that are tolerant of summers that are long, hot, and dry. In the Arvin-Edison service area, allscale and other saltbushes of the genus *Atriplex* are the most conspicuous plants of this vegetative community. Western jimson weed (*Datura meteloides*), tree tobacco (*Nicotiana glauca*), bush buckwheat (*Eriogonum fasciculatum*), deerweed (*Lotus scoparius*), and locoweed (*Astragalus* spp.) are also common.

Wildlife typically found in the saltbush scrub community include black-tailed jackrabbit, California ground squirrel, coyote, side-blotched lizard (*Uta stansburiana*), red-shouldered hawk (*Buteo lineatus*), turkey vulture (*Cathartes aura*), greater roadrunner (*Geococcyx californianus*), and savanna sparrow (*Passerculus sandwichensis*).

Valley sink scrub is a similar shrubland community that generally occurs on saline or alkaline soils. It is often found on shallow interior floodplains or playas where seasonal flooding is followed by a dry, hot summer. Dominant plants include iodine bush (*Allenrolfea occidentalis*), red brome (*Bromus rubens*), and saltgrass (*Distichlis spicata* var. *stricta*). Wildlife species are similar to those described above for valley saltbush scrub.

Grasslands occur on the hill slopes above the agricultural plain and in a few uncultivated patches in the valley. The grasses are primarily red brome and annuals such as lupines (*Lupinus* spp.), blue dicks (*Dichelostemma pulchella*), and California poppy (*Eschscholzia californica*) in the spring. Western meadowlark (*Sturnella neglecta*), mourning dove (*Zenaidura macroura*), and sparrows are common birds in the grasslands. Raptors will often be seen foraging over these grasslands for small rodents such as western harvest mice (*Reithrodontomys megalotis*) or Heermann's kangaroo rats (*Dipodomys heermanni*).

Special-Status Species

With the conversion of much of the valley floor to agriculture, suitable habitat for special-status species has become scarce, and these species are becoming less common. Other reasons for their decline include sand mining operations, use of rodenticides, and off-road vehicle use. Few natural botanical resources are present within the project areas because they are located in active agricultural lands and other frequently disturbed areas.

A number of plant species that are listed as federally or state-threatened or endangered potentially occur in the general Arvin-Edison area. These are Bakersfield smallscale (*Atriplex tularensis*), California jewelflower (*Caulanthus californicus*), Hoover's eriastrum (*Eriastrum hooveri*), and San Joaquin wooly threads (*Lembertia congdonii*).

Seven species of animals that have some federally protected status or are listed by California as endangered, threatened, or species of concern potentially occur in the general Arvin-Edison area. These include the blunt-nosed leopard lizard (*Gambelia sila*), San Joaquin coachwhip (*Masticophis flagellum ruddocki*), burrowing owl (*Athene cunicularia*), Tulare grasshopper mouse (*Onychomys torridus tularensis*), short-nosed kangaroo rat (*Dipodomys nitratoides brevinasus*), San Joaquin antelope squirrel (*Ammospermophilus nelsoni*), and the San Joaquin kit fox (*Vulpes macrotis mutica*).

1.5.9 Energy Resources

No hydroelectric power is generated by Arvin-Edison. Power is required by the following Arvin-Edison facilities:

- the Forrest Frick Pumping Plant,
- pumps along the surface water distribution system, and
- pumps associated with groundwater wells.

Arvin-Edison has a contract with the Western Area Power Administration (WAPA) for a maximum simultaneous integrated rate of delivery of 30 megawatts (MW) which is carried over PG&E transmission lines. Arvin-Edison uses approximately 100,000,000 kilowatt-hours (kWh) per year.

The Arvin-Edison service area is underlain by the Edison and Mountain View oil fields. There is a total of 824 producing wells and 679 shut-in wells within these two oil fields. There are no producing oil wells located within any of the proposed project areas, and preliminary surface inspections suggest that there are also no abandoned oil wells.

1.5.10 Health Hazards

San Joaquin Valley Fever has its highest incidence in central California. The coccidioidomycosis fungus that causes "Valley Fever" (*Coccidioides immitis*) is very prevalent in the soils of the San Joaquin Valley, particularly in Kern County. The Lamont-Arvin area is one of the areas with the highest incidence rate within Kern County. This fungus can cause problems at any time but is most potent when a long, hot summer results in a layer of dry, nearly weightless fungal spores beneath the surface. Once the soil surface is broken, the spores can become airborne.

1.5.11 Noise

Federal, state, and local agencies have developed guidelines for evaluating the compatibility of different land uses and various noise levels. In general, noise is not considered a nuisance unless humans are exposed to excessive levels. The Kern County General Plan Noise Element provides land use guidelines. The county has established noise standards for three land use categories:

- Insensitive Land Uses, for which noise levels do not affect successful operation of activities. Included in this category are transportation and agriculture. With the exception of urbanized portions of the city of Arvin, the vast majority of the Arvin-Edison service area is included in this category.

- Moderately Sensitive Land Uses, for which some degree of noise control must be exercised if activities are to be successfully carried out. General business and recreation are included in this category.

- Sensitive Land Uses, for which lack of noise control results in annoyance impacts. This category primarily includes residential uses.

The main sources of noise in the Arvin-Edison service area are farm machinery, railroads, and automobiles. In general, noise levels are low in this sparsely populated, rural area. A short-term measurement of the energy equivalent sound level (Leq) was conducted at the South Canal Spreading Works site to determine typical daytime noise levels. The Leq for this site was 47 A-weighted decibels (dBA). The daytime average ambient noise level throughout most of the project area is estimated to range from 45 dBA to 50 dBA except near localized noise sources such as I-5, SR-99, and agricultural activity where higher noise levels occur. This range of daytime noise levels is consistent with land predominantly in agricultural production with a low residential population density.

1.5.12 Cultural Resources

A review of records on file with the California Historical Resources File System (CHRFS) was conducted at the Southern San Joaquin Valley Archaeological Information Center, California State University, Bakersfield. Several cultural resource surveys have been conducted in the project vicinity. Survey reports on file for the area include Dames and Moore 1987; Levuletter 1982; Chavez 1978; and Schiffman 1979, 1986a, 1986b, and 1987. All of the surveys that were conducted on the valley floor reported no observable cultural resources.

There are known cultural resource sites located within the Arvin-Edison service area. Sites CA-KER-279, -2179, and -2181 are known to exist in the foothills south of the Sycamore Spreading Works, well outside the potential project impact area. These sites typically consist of bedrock mortars (for seed grinding) situated along intermittent streams.

There are no known National Register of Historic Places sites located within 5 miles of the Arvin-Edison service area. There are no listed properties on the California Historical Landmarks, the California Inventory of Historic Resources, or California Points of Historical Interest within the project areas. California Historical Landmark #371 is located on State Route 223 in the city of Arvin. It is the southernmost point of the San Joaquin Valley visited by the missionary Father Pedro Garces in April 1776. Remnants of a canal levee structure, designated State Primary #P-15-004741, are located 1.5 miles north of the proposed North Canal Spreading Works.

2.0 ENVIRONMENTAL CHECKLIST

1. **Project Title:** Arvin-Edison Water Management Project

2. **Lead Agency Name and Address:**
   Arvin-Edison Water Storage District
   20401 Bear Mountain Blvd.
   Mailing Address: P.O. Box 175
   Arvin, California 93203

3. **Contact Person and Phone Number:**
   Mr. Steven C. Collup, (805) 854-5573

4. **Project Location:** Within the Arvin-Edison Water Storage District service area.

5. **General Plan Designation:** Predominantly intensive agriculture.

6. **Description of Project:** The proposed project involves construction of new spreading basins with a total net pond area of approximately 520 acres, associated groundwater wells, approximately 4-1/3 miles of local conveyance pipeline, and an intertie with the California Aqueduct. Proposed facility improvements would improve operational flexibility and reliability, increase the capacity to store water regulated under the project, increase the capacity to extract stored water, and provide a means to convey Arvin-Edison supplies directly to and from the California Aqueduct.

7. **Other Agencies Whose Approval is Required:** California Department of Water Resources, State Water Resources Control Board

Environmental Factors Potentially Affected:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Land Use and Planning	☐ Transportation/Circulation	☐ Public Services
☐ Population and Housing	☐ Biological Resources	☐ Utilities and Service Systems
☐ Geological Problems	☐ Energy and Mineral Resources	☐ Aesthetics
☐ Water	☐ Hazards	☐ Cultural Resources
☐ Air Quality	☐ Noise	☐ Recreation
☐ Groundwater Problems	☐ Mandatory Findings of Significance	

Determination

On the basis of this initial evaluation:

I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared. ☒

I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because a mitigation measure has been added to the project. A MITIGATED NEGATIVE DECLARATION will be prepared. ☐

I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required. ☐

I find that the proposed project MAY have a significant effect(s) on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets, if the effect is a "potentially significant impact" or "potentially significant unless mitigated." An ENVIRONMENTAL IMPACT REPORT is required, by it must analyze only the effects that remain to be addressed. ☐

I find that although the proposed project could have a significant effect on the environment, there WILL NOT be a significant effect in this case because all potentially significant effects (a) have been analyzed adequately in an earlier EIR pursuant to applicable standards and (b) have been avoided or mitigated pursuant to that earlier EIR, including revisions or mitigation measures that are imposed upon the proposed project. ☐

Steve Collup
Signature

5/17/96
Date

Steven C. Collup
Printed Name

Arvin-Edison Water Storage District
For

Evaluation of Environmental Impacts

Environmental Impacts:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
I. LAND USE AND PLANNING. Would the proposal:				
a) Conflict with general plan designation or zoning?	☐	☐	☐	☒
b) Conflict with applicable environmental plans or policies adopted by agencies with jurisdiction over the project?	☐	☐	☐	☒
c) Be incompatible with existing land use in the vicinity?	☐	☐	☐	☒
d) Affect agricultural resources or operations (e.g., impacts to soils or farmlands, or impacts from incompatible land uses)?	☐	☐	☒	☐
e) Disrupt or divide the physical arrangement of an established community (including a low-income or minority community)?	☐	☐	☐	☒
II. POPULATION AND HOUSING. Would the proposal:				
a) Cumulatively exceed official regional or local population projects?	☐	☐	☐	☒
b) Induce substantial growth in an area either directly or indirectly (e.g. through projects in an undeveloped area or extension of major infrastructure)?	☐	☐	☐	☒
c) Displace existing housing, especially affordable housing?	☐	☐	☐	☒
III. GEOLOGICAL PROBLEMS. Would the proposal result in or expose people to potential impacts involving:				
a) Fault rupture?	☐	☐	☐	☒
b) Seismic ground shaking?	☐	☐	☐	☒
c) Seismic ground failure, including liquefaction?	☐	☐	☐	☒
d) Seiche, tsunami, or volcanic hazard?	☐	☐	☐	☒
e) Landslides or mudflows?	☐	☐	☐	☒
f) Erosion, changes in topography or unstable soil conditions from excavation, grading, or fill?	☐	☐	☒	☐
g) Subsidence of the land?	☐	☐	☐	☒

Environmental Impacts (continued):	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
h) Expansive soils?	☐	☐	☐	☒
l) Unique geologic or physical features?	☐	☐	☐	☒
IV. WATER. Would the proposal result in:				
a) Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff?	☐	☐	☐	☒
b) Exposure of people or property to water related hazards such as flooding?	☐	☐	☐	☒
c) Discharge into surface waters or other alteration of surface water quality (e.g. temperature, dissolved oxygen or turbidity)?	☐	☐	☐	☒
d) Changes in the amount of surface water in any water body?	☐	☐	☐	☒
e) Changes in currents, or the course or direction of water movements?	☐	☐	☐	☒
f) Change in the quantity of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations, or through substantial loss of groundwater recharge capability?	☐	☐	☒	☐
g) Altered direction or rate of flow of groundwater?	☐	☐	☒	☐
h) Impacts to groundwater quality?	☐	☐	☒	☐
i) Substantial reduction in the amount of groundwater otherwise available for public water supplies?	☐	☐	☐	☒
V. AIR QUALITY. Would the proposal:				
a) Violate any air quality standard or contribute to an existing or projected air quality violation?	☐	☐	☐	☒
b) Expose sensitive receptors to pollutants?	☐	☐	☐	☒
c) Alter air movement, moisture, or temperature, or cause any change in climate?	☐	☐	☐	☒
d) Create objectionable odors?	☐	☐	☐	☒
VI. TRANSPORTATION/CIRCULATION. Would the proposal result in:				
a) Increased vehicle trips or traffic congestion?	☐	☐	☒	☐

Environmental Impacts (continued):	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Hazards to safety from design features (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
c) Inadequate emergency access or access to nearby uses?	☐	☐	☐	☒
d) Insufficient parking capacity on-site or off-site?	☐	☐	☐	☒
e) Hazards or barriers for pedestrians or bicyclists?	☐	☐	☐	☒
f) Conflicts with adopted policies supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☒
g) Rail, waterborne or air traffic impacts?	☐	☐	☐	☒
VII. BIOLOGICAL RESOURCES. Would the proposal result in impacts to:				
a) Endangered, threatened, or rare species or their habitats (including but not limited to plants, fish, insects, animals, and birds)?	☐	☐	☐	☒
b) Locally designated species (e.g., heritage trees)?	☐	☐	☐	☒
c) Locally designated natural communities (e.g., oak forest, coastal habitat, etc.)?	☐	☐	☐	☒
d) Wetland habitat (e.g., marsh, riparian, and vernal pool)?	☐	☐	☐	☒
e) Wildlife dispersal or migration corridors?	☐	☐	☐	☒
VIII. ENERGY AND MINERAL RESOURCES. Would the proposal:				
a) Conflict with adopted energy and conservation plans?	☐	☐	☐	☒
b) Use non-renewable resources in a wasteful and inefficient manner?	☐	☐	☐	☒
c) Result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the State?	☐	☐	☐	☒
IX. HAZARDS. Would the proposal involve:				
a) A risk of accidental explosion or release of hazardous substances (including, but not limited to: oil, pesticides, chemicals, or radiation)?	☐	☐	☐	☒
b) Possible interference with an emergency response plan or emergency evacuation plan?	☐	☐	☐	☒

Environmental Impacts (continued):	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
c) The creation of any health hazard or potential health hazard?	☐	☐	☐	☒
d) Exposure of people to existing sources of potential health hazards?	☐	☐	☒	☐
e) Increased fire hazard in areas with flammable brush, grass, or trees?	☐	☐	☐	☒
X. NOISE. Would the proposal result in:				
a) Increases in existing noise levels?	☐	☐	☒	☐
b) Exposure of people to severe noise levels?	☐	☐	☐	☒
XI. PUBLIC SERVICES. Would the proposal have an effect upon, or result in a need for new or altered government services in any of the following areas:				
a) Fire protection?	☐	☐	☐	☒
b) Police protection?	☐	☐	☐	☒
c) Schools?	☐	☐	☐	☒
d) Maintenance of public facilities, including roads?	☐	☐	☐	☒
e) Other governmental services?	☐	☐	☐	☒
XII. UTILITIES AND SERVICE SYSTEMS. Would the proposal result in a need for new systems or supplies, or substantial alterations to the following utilities:				
a) Power or natural gas?	☐	☐	☒	☐
b) Communications systems?	☐	☐	☐	☒
c) Local or regional water treatment or distribution facilities?	☐	☐	☐	☒
d) Sewer or septic tanks?	☐	☐	☐	☒
e) Storm water drainage?	☐	☐	☐	☒
f) Solid waste disposal?	☐	☐	☐	☒
g) Local or regional water supplies?	☐	☐	☐	☒
XIII. AESTHETICS. Would the proposal:				
a) Affect a scenic vista or scenic highway?	☐	☐	☐	☒
b) Have a demonstrable negative aesthetic effect?	☐	☐	☐	☒
c) Create light or glare?	☐	☐	☐	☒

Environmental Impacts (continued):	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV. CULTURAL RESOURCES. Would the proposal:				
a) Disturb paleontological resources?	☐	☐	☐	☒
b) Disturb archaeological resources?	☐	☐	☐	☒
c) Affect historical resources?	☐	☐	☐	☒
d) Have the potential to cause a physical change which would affect unique ethnic cultural values?	☐	☐	☐	☒
e) Restrict existing religious or sacred uses within the potential impact area?	☐	☐	☐	☒
XV. RECREATION. Would the proposal:				
a) Increase the demand for neighborhood or regional parks or other regional facilities?	☐	☐	☐	☒
b) Affect existing recreational opportunities?	☐	☐	☐	☒
XVI. MANDATORY FINDINGS OF SIGNIFICANCE.				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	☒
b) Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?	☐	☐	☐	☒
c) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☐	☐	☒
d) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒

3.0 DESCRIPTION OF EFFECTS

This section evaluates the potential for environmental impacts associated with the proposed Arvin-Edison Water Management Project. The 16 categories discussed in this section are taken from the Initial Study and Environmental Checklist Form found in Section 2.0 of this document. The determination that a Negative Declaration is appropriate for the proposed project can also be found in Section 2.0.

3.1 Land Use and Planning: *Would the proposed project:*

(a) Conflict with general plan designation or zoning?

The proposed project would not conflict with general plan designations or zoning. The proposed project areas are within the Kern County General Plan. The areas that would be affected by the project are designated as "intensive agriculture." Buried pipelines would not affect land uses, and the spreading basins and wells are consistent with the General Plan land use designations.

(b) Conflict with applicable environmental plans or policies adopted by agencies with jurisdiction over the project?

The proposed project would not conflict with any environmental plans or policies adopted by agencies with jurisdiction over the project. The proposed project is an improvement to an existing water delivery system operated by Arvin-Edison.

(c) Be incompatible with existing land use in the vicinity?

The proposed project would enhance reliability in supplying water to existing lands within Arvin-Edison's service boundaries and therefore would not be incompatible with the existing land uses in the vicinity.

(d) Affect agricultural resources or operations (e.g., impacts to soils or farmlands, or impacts from incompatible land uses)?

The proposed project would not have a significant effect on agricultural resources or operations. Acquisition of the North and South Canal Spreading Works sites and construction of the spreading basins would remove up to approximately 760 acres (the total combined site acreage) of existing agricultural croplands from production (currently almonds, potatoes, wheat, alfalfa, and cotton). Construction of the Aqueduct Intertie Pipeline could affect one or two rows of permanent crops (orange trees). Other impacts to farmland associated with the proposed project would be temporary. These impacts are not considered significant because they constitute a negligible reduction in the approximately 92,000 acres of agricultural lands within the Arvin-Edison service area.

The farmland that would be taken out of active production and used for the spreading basins is designated as Irrigated Farmland. Of this, approximately 530 acres of land are classified as Prime Farmland. This area is within the proposed North Canal Spreading Works and is located to the east of Comanche Drive, south and west of the Arvin-Edison North Canal, and south of DiGiorgio Road.

The removal of this land from active production is not considered an adverse impact on the status of Prime Farmlands because it represents a negligible reduction in the amount of Prime Farmland within the Arvin-Edison service area that is farmed. In addition, construction of the proposed spreading basins does not preclude the return of the lands to agriculture since the soil would remain onsite. Since an objective of the project is to enhance the reliability and flexibility of the Arvin-Edison water delivery system, the incremental conversion of Prime Farmland associated with construction of the spreading basins to non-agricultural use is offset by the fact that the project enhances the reliability of the water supply to the other Prime Farmlands in Arvin-Edison's service area.

(e) Disrupt or divide the physical arrangement of an established community (including a low-income or minority community)?

The proposed project is located on existing agricultural lands and would not disrupt or divide the physical arrangement of an established community.

3.2 Population and Housing: *Would the proposed project:*

(a) Cumulatively exceed official regional or local population projections?

The proposed project would generate no new housing and would result in no new permanent population growth that would exceed official regional or local population projections. The proposed project would generate temporary employment over a period of about 12 months for a construction workforce of about 10 workers per month to a maximum of about 65 workers. Since this number of workers and period of employment is so small, the proposed project would not affect population and consequently would not cumulatively affect official regional or local population projections.

(b) Induce substantial growth in an area either directly or indirectly (e.g., through projects in an undeveloped area or extension of major infrastructure)?

Because of the relatively small amount of workers and period of employment expected to be associated with the project, the proposed project would generate no new housing and would not result in significant new infrastructure that would encourage the development of new housing. The nature of the project is to provide operational flexibility to Arvin-Edison in providing existing service to existing agricultural uses.

(c) Displace existing housing, especially affordable housing?

There are no inhabited structures located within the project site. Therefore, no existing housing, including affordable housing, would be displaced.

3.3 Geologic Problems: *Would the proposed project result in or expose people to potential impacts involving:*

(a) Fault rupture?

No proposed project facilities fall within an Alquist-Priolo Special Study Zone. Although the White Wolf Fault is located within the Arvin-Edison service area, it is not known to underlie the proposed project site. The proposed facilities would not result in or expose people to potential additional impacts involving fault rupture.

(b) Seismic ground shaking?

Although the White Wolf Fault is located within the Arvin-Edison service area, it does not underlie the proposed project site. The proposed facilities are subject to seismic activity from the faults in and around the Arvin-Edison service area, as are the existing facilities. To minimize or eliminate the possibility of structural damage, the proposed project elements would be designed and constructed in accordance with accepted engineering standards and methods. As a result, the proposed facilities would not result in or expose people to potential additional impacts involving seismic shaking.

(c) Seismic ground failure, including liquefaction?

The project would not result in or expose people to potential impacts involving seismic ground failure. Soils in the proposed project impact area consist of sandy loam on nearly level to moderate slopes.

(d) Seiche, tsunami, or volcanic hazard?

The proposed project is not situated in or near known volcanic sources and is, therefore, not subject to volcanic hazards. The proposed project site is not near any large inland body of water and is inland of the coast. As a result, the project is not subject to hazards related to seiches or tsunamis.

(e) Landslides or mudflows?

There are no known landslides or mudflows in the vicinity of the proposed project, and the facilities would be constructed on nearly level ground. The proposed project is not expected to result in or expose people to potential impacts involving landslides or mudflows.

(f) Erosion, changes in topography, or unstable soil conditions from excavation, grading, or fill?

Because the proposed project would be constructed on level to nearly level ground, any soil erosion would be minor and localized. The predominant soil types in the area are classified as slightly to very slightly erodible by wind. In addition, any soil erosion by water at excavation sites and spoil piles would be temporary, occurring during construction. Measures to reduce the potential for increased wind and water erosion of soils on site would include watering exposed surfaces during construction activities and returning disturbed areas associated with pipeline construction to agriculture as appropriate as soon as possible.

Disruption and displacement of soil due to construction would be temporary. All slopes would be stabilized. Pipeline construction may require shoring and construction of shallow side slopes. Therefore, the proposed project would minimize the risk of exposure of people to unstable soil conditions.

(g) Subsidence of the land?

The proposed water storage and transfer project would not increase the risk of subsidence. Arvin-Edison has never experienced any subsidence problems associated with water level fluctuations at the existing Sycamore and Tejon Spreading Grounds. Since the water to be withdrawn under the proposed project is the water banked in the groundwater basin and since the spreading grounds would be operated in the same manner as those currently existing, no subsidence associated with the proposed project is expected.

(h) Expansive soils?

Expansive soils are not known to occur on the proposed project site. Therefore, no impacts pertaining to expansive soils are expected to occur.

(i) Unique geologic or physical features?

There are no known unique geologic or physical features on the spreading ground sites or within the pipeline construction areas. Therefore, no impacts to unique geologic or physical features would occur as a result of the proposed project.

3.4 Water: *Would the proposed project result in:*

(a) Changes in the absorption rates, drainage patterns, or the rate and amount of surface runoff?

The proposed project would not result in changes in the absorption rates, drainage patterns, or the rate and amount of surface runoff. Pipelines would be buried, and the proposed spreading basins are not within surface water drainage courses.

(b) Exposure of people or property to water-related hazards such as flooding?

The proposed project would not expose people or property to water-related hazards such as flooding. The design and operation of the pipelines and spreading basins would be the same as for existing facilities. The North Canal Spreading Works would be constructed within the 100-year floodplain of Caliente Creek. Spreading basins are designed according to standard engineering design practices to limit the potential for exposure of people or property to water-related hazards such as flooding.

(c) Discharge into surface waters or other alteration of surface water quality (e.g., temperature, dissolved oxygen, or turbidity)?

The proposed project would not involve the discharge of any substance into surface waters or other alteration of surface water quality.

(d) Changes in the amount of surface water in any water body?

The proposed project involves storing water that Arvin-Edison has historically recharged into the groundwater basin, and no changes to any surface water body would occur as a result of the proposed project.

(e) Changes in currents or the course or direction of water movements?

The proposed project would not change currents or the course of direction of water movements.

(f) Change in the quantity of groundwaters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations, or through substantial loss of groundwater recharge capability?

Historically, Arvin-Edison's banking program has greatly assisted correcting groundwater overdraft. These additional facilities will further that benefit. In the short term, groundwater levels in comparison to conditions without the project would rise through direct additions during groundwater recharge. During recovery of stored groundwater, levels would fall, especially near the extraction wells, but in general are expected to remain higher than would occur without the project. The increase in groundwater levels is considered a beneficial impact because of its effect in decreasing the cost of pumping to the landowners and helps mitigate groundwater quality degradation.

(g) Altered direction or rate of flow of groundwater?

During spreading operations, there would be a localized raising of groundwater levels and a resultant change in groundwater movement as stored water moves outward from the new spreading basin sites. Conversely, during extraction there would be localized drawdown at

the site of the production wells and a localized change in groundwater movement toward the well sites. These localized effects would diminish with distance from the new spreading basins and well sites and would not adversely affect regional groundwater movement.

(h) Impacts to groundwater quality?

Water quality of Arvin-Edison's sources, including the Friant-Kern Canal and production wells at the existing Sycamore and Tejon spreading basins and the proposed North and South Canal sites, was analyzed for all drinking water parameters in March 1996. The Friant-Kern Canal water met all drinking water standards and is generally of a superior quality than the local groundwater. While the local groundwater is of good quality, it is generally higher in total dissolved solids, nitrates, boron, and other constituents.

While the project would not increase the amount of Friant-Kern Canal water that has historically been used within Arvin-Edison's service area, the additional spreading basin capacity would increase the amount of Friant-Kern Canal water that can be delivered to the groundwater basin. Consequently, because the Friant-Kern water is of better quality than the groundwater, the project would have a beneficial impact to groundwater quality. Extraction of stored water through the new wells would have no impact to groundwater quality.

(i) Substantial reduction in the amount of groundwater otherwise available for public water supplies?

Because the proposed project is designed to utilize only a portion of that water that has been previously stored in the groundwater basin, the proposed project would not reduce the amount of groundwater otherwise available for public water supplies.

3.5 Air Quality: *Would the proposed project*:

(a) Violate any air quality standard or contribute to an existing or projected air quality violation?

The primary air quality concerns in the Arvin-Edison area are ozone and PM_{10}. Construction of the proposed project facilities would include clearing, earth-moving, and vehicle travel on unpaved surfaces. These activities would not significantly increase the generation of ozone but would create fugitive dust during construction. Any fugitive dust created as a result of the proposed project would be less than the dust created due to current farming activities on the project site. A temporary increase in the concentrations of total suspended particulates and particulate matter less than 10 microns in size (PM_{10}) would occur from these construction activities.

Air quality impacts related to project operation are expected to occur from the periodic operation of pump motors when water is being extracted from the groundwater and from the periodic desilting of the new spreading basins. Increases in the emissions of CO, ROG, NO_x,

and SO_x would represent a small incremental increase in the inventory and are not significant. The desilting operation would occur during periods when the spreading basins have been completely emptied of water and is generally required every 3 to 5 years.

To reduce dust during construction and operation activities, Arvin-Edison would comply with the San Joaquin Valley Unified Air Pollution Control District's Rule 8020 -- *Fugitive Dust Requirements for the Control of Fine Particulate Matter (PM_{10}) from Construction, Demolition, Excavation, and Extraction Activities.*

(b) Expose sensitive receptors to pollutants?

The proposed project is not projected to use or create significant pollutants. Therefore, the proposed project would not expose sensitive receptors to pollutants.

(c) Alter air movement, moisture, or temperature or cause any change in climate?

The proposed project would not alter air movement, moisture, or temperature or cause a change in climate. Water in the spreading basins would not be of sufficient quantities to affect the atmosphere around them.

(d) Create objectionable odors?

No objectionable odors are anticipated as a result of the proposed project. Arvin-Edison has operated spreading basins for 30 years with no complaints of odors.

3.6 Transportation/Circulation: *Would the proposed project result in:*

(a) Increased vehicle trips or traffic congestion?

Installation of wells and pipelines and construction of the spreading grounds during the construction period would create temporary construction traffic on roadways within the vicinity of the project. Traffic volumes generated by the project are not expected to have a significant impact on local roadways, intersections, or highways. The volume and composition of this traffic would vary throughout the construction period and would include construction workers' vehicles, construction equipment, delivery of materials, and the transport of soil and rock to and from construction sites. The maximum number of workers is anticipated to be about 65 persons during the peak month. The resultant increase in vehicle trips is less than significant. The roads which could be affected in the vicinity of the project operate at Level of Service (LOS) A. In general, these are rural roads that do not receive heavy commuter traffic. Pipeline construction within the right-of-way of SR-166 could result in minor traffic delays, primarily due to construction traffic and spectator slowing. However, the roadway would not be closed to traffic. Therefore, it is not anticipated that significant traffic congestion would occur on these roads as a result of the proposed project.

(b) Hazards to safety from design features (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

The proposed project would not create hazards to safety from design features. The pipelines would be buried, and the spreading basins would be on existing agricultural lands and would not lead to traffic hazards. If road closures are necessary, the closures would be limited to one lane. Flagmen would be positioned on the road to route traffic safely in the event of closures. The proposed project would not generate hazards related to incompatible uses.

(c) Inadequate emergency access or access to nearby uses?

The proposed project would not result in inadequate emergency access or access to nearby uses. The presence of flagmen on roads that may be closed would ensure that one lane is always open for emergency access or for access by property owners or residents. Therefore, the proposed project would not result in inadequate emergency access or access to nearby uses.

(d) Insufficient parking capacity onsite or offsite?

Construction of the proposed project would involve a maximum of about 65 workers per month during the peak month. There would be a temporary increase in parking demand in the vicinity of construction activities. Adequate parking space would be developed for construction workers' vehicles and construction equipment at both the North and South Canal Spreading Works sites and along the alignment of the Aqueduct Intertie Pipeline.

(e) Hazards or barriers for pedestrians or bicyclists?

No hazards or barriers for pedestrians or bicyclists would occur as a result of the proposed project.

(f) Conflicts with adopted policies supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

The proposed project would not conflict with adopted policies supporting alternative transportation.

(g) Rail, waterborne, or air traffic impacts?

No alterations to waterborne, rail, or air traffic would occur as a result of the proposed project.

3.7 Biological Resources: *Would the proposed project result in impacts to:*

(a) Endangered, threatened, or rare species or their habitats (including but not limited to plants, fish, insects, animals, and birds)?

The proposed project would not result in impacts to endangered, threatened, or rare species or their habitats (including but not limited to plants, fish, insects, animals, and birds). Plant and animal surveys conducted in the proposed project locations revealed no endangered, threatened, or rare species or their habitats in these areas.

Land use within the proposed spreading basins and along most of the pipeline alignment is active agriculture. Surveys for biological resources were not conducted in these areas because the land was already extremely disturbed by the farming activities and the potential for sensitive species to occur in these areas is extremely low to nonexistent. Surveys for biological resources were, however, conducted in the area where the proposed intertie would connect with the California Aqueduct.

Plants

Surveys for sensitive plants were conducted by Ms. Pam Lindsay of Impact Sciences, Inc. in February and March 1996. Some ruderal vegetation occurs along the California Aqueduct right-of-way at the proposed connection point for the proposed Aqueduct Intertie Pipeline. This ruderal vegetation is dominated by non-native annual grasses (*Bromus* spp.) and tocalote (*Centaurea melitensis*) interspersed with the native shrubs allscale (*Atriplex polycarpa*) and goldenbush (*Hazardia squarrosa* var. *squarrosa*). This site was surveyed for the sensitive plants listed in Section 1.5.8 of this document. No sensitive plants were found to occur on the site.

Wildlife

Surveys for special-status wildlife species known to occur in the vicinity were conducted in March 1996 by Dr. David Germano at the proposed California Aqueduct turnout. No surveys were conducted at the proposed locations of the spreading grounds nor along the pipeline alignment because it was determined that these areas are all actively farmed and do not provide any potential habitat for protected species.

Of the seven special-status species listed in Section 1.5.8 of this document, specific surveys were deemed necessary for the San Joaquin kit fox, short-nosed kangaroo rat, San Joaquin antelope squirrel, and burrowing owl. These surveys were necessary only at the California Aqueduct turnout location.

Live traps were set in the area of the California Aqueduct turnout from March 13 through 17, 1996. No short-nosed kangaroo rats were found during four nights of trapping. Species that

were captured were Heermann's kangaroo rat, California spiny pocket mice, house mice, and deer mice.

Diurnal surveys for San Joaquin antelope squirrels were performed on March 11 and March 27 through 29, 1996. No San Joaquin antelope squirrels were found at the site. The only animals seen during these surveys were side-blotched lizards, western meadowlarks, white-crowned sparrows, and ravens.

Searches were made for dens of San Joaquin kit fox at the California Aqueduct turnout location, and none were found. Five scent stations were set up in the area to attract kit foxes, but no tracks of kit fox or any other canids were recorded at any of these stations. Spotlight surveys were conducted in the evenings March 12 through 17, 1996, by a team of three people driving at slow speeds along roads for 1 mile east and west of the site using two 400,000-candle power spotlights. No carnivores of any kind were seen during these surveys. Black-tailed jackrabbits were abundant. Also common were western toads, kangaroo rats (probably Heermann's), and desert cottontails. The only other species seen during these surveys was a burrowing owl, seen twice about 0.5 mile east of the project site in natural vegetation.

(b) Locally designated species (e.g., heritage trees)?

The proposed project would not affect any locally designated species.

(c) Locally designated natural communities (e.g., oak forest, coastal habitat)?

The proposed project would not affect locally designated natural communities.

(d) Wetland habitats (e.g., marsh, riparian, and vernal pool)?

The proposed project would not affect wetland habitats.

(e) Wildlife dispersal or migration corridors?

The proposed project would not affect wildlife dispersal or migration corridors.

3.8 Energy and Mineral Resources: *Would the proposed project:*

(a) Conflict with adopted energy conservation plans?

The proposed project would not conflict with adopted energy conservation plans. Arvin-Edison is currently implementing two programs in association with the California Energy Commission. The first program involves the installation of energy-saving devices on pumps throughout the district. The second program is a load management program in which Arvin-Edison monitors the instantaneous demand for energy in order to maintain efficient use of

energy in its system. Operation of the proposed project would be consistent with these programs.

(b) Use non-renewable resources in a wasteful and inefficient manner?

Energy to operate the well pumps, pumpback pumping plant, and reverse-flow booster plant would be supplied through existing 12-kV power distribution facilities in the area. Arvin-Edison has a contract with the Western Area Power Administration (WAPA) for a maximum simultaneous integrated rate of delivery of 30 megawatts, which is provided over PG&E transmission lines. The additional power demand of the proposed new and improved facilities can be served within this existing power contract with WAPA.

(c) Result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the State?

There would be no loss of availability of a known mineral resource that would be of future value to the region and the residents of the state.

3.9 Hazards: *Would the proposed project involve:*

(a) A risk of accidental explosion or release of hazardous substances (including but not limited to oil, pesticides, chemicals, or radiation)?

Construction activities could increase the risk of explosion or fire associated with operation of heavy equipment or spills of gasoline, diesel fuel, or other petroleum products. In accordance with standard construction practices, all heavy equipment would be maintained to manufacturer's specifications. Fueling and lubricating activities would be limited to designated maintenance areas, contractor laydown areas, and the pipeline right-of-way. Any accidental oil or fuel spills would be cleaned up immediately and contaminated soils disposed of in an appropriate manner consistent with all local, state, and federal regulations.

b) Possible interference with an emergency response plan or emergency evacuation plan?

Construction and operation of the proposed project would not interfere with any emergency response plan or emergency evacuation plan. All activities would be designed to be consistent with any existing emergency response and evacuation plans.

(c) The creation of any health hazard or potential health hazard?

With the implementation of standard construction practices, construction workers and farmers would not be exposed to any new health hazard or potential health hazard created by the proposed project.

(d) Exposure of people to existing sources of potential health hazards?

Fugitive dust generation during the construction phase of the project and during discing of the spreading basins may release spores of the coccidioidomycosis fungus which causes "Valley fever." As a result, construction activities could increase the risk of infection to the human population in the area. The potential risk is greatest to construction workers. The measures applied to minimize the generation of PM_{10} described in Section 3.5(a) would reduce the potential for exposure of people to the coccidioidomycosis fungus.

(e) Increased fire hazard in areas with flammable brush, grass, or trees?

The proposed project would not affect areas with flammable brush, grass, or trees. Currently the project location consists of actively farmed fields. The ruderal area on the California Aqueduct right-of-way does not pose a fire hazard since it is very small in area and adjacent to a water source.

3.10 Noise: *Would the proposed project result in:*

(a) Increases in existing noise levels?

Existing ambient noise levels are dominated by traffic and agricultural equipment noise. Traffic noise would not be significantly increased by the incremental addition of trucks hauling materials to the sites over a period of approximately 2 to 3 months nor by construction equipment used in excavating pipeline trenches and spreading ground basins and berms. In accordance with standard construction practices, all heavy equipment would be muffled and construction activity would be confined to daylight hours to the maximum extent practicable. At a distance of approximately 250 feet from construction activities, average noise levels would be less than the 65 dBA CNEL levels deemed compatible with sensitive land uses such as residential areas. For construction areas located between 250 feet and 100 feet from residences, heavy construction equipment operation would be limited to no more than 3 hours per day. Construction activity would not occur closer than approximately 100 feet from noise-sensitive land use. Operations noise generated by well pumps and motors would also drop below 65 dBA CNEL levels at a distance of 100 feet or more. Since there are no residences within approximately 100 feet of the locations of any of the well fields, there would be no significant noise impacts associated with operations of the wells.

(b) Exposure of people to severe noise levels?

No persons would be exposed to severe noise levels as a result of the proposed project.

3.11 Public Services: *Would the proposed project have an effect upon or result in a need for new or altered government services in any of the following areas:*

(a) Fire protection?

The proposed project would not have an effect upon or result in a need for new or altered fire protection services.

(b) Police protection?

The proposed project would not have an effect upon or result in a need for new or altered police protection services.

(c) Schools?

The proposed project would not have an effect upon or result in a need for new or altered school services.

(d) Maintenance of public facilities, including roads?

The proposed project would not have an effect upon or result in a need for new or altered maintenance of public facilities.

(e) Other governmental services?

The proposed project would not have an effect upon or result in a need for any other new or altered governmental services.

3.12 Utilities and Service Systems: *Would the proposed project result in a need for new systems or supplies or substantial alterations to the following utilities:*

(a) Power or natural gas?

The proposed project would require electric power or natural gas for proposed pump facilities. However, this amount would not result in a need for new power or natural gas systems or a significant increase in supplies.

(b) Communications systems?

The proposed project would not result in a need for new communication systems.

(c) Local or regional water treatment or distribution facilities?

The proposed project involves the construction and operation of water distribution facilities for untreated agricultural water.

(d) Sewer or septic tanks?

The proposed project would not result in a need for new sewer or septic tanks.

(e) Storm water drainage?

The proposed project would not result in a need for storm water drainage systems.

(f) Solid waste disposal?

The proposed project would not result in a need for new solid waste disposal systems.

(g) Local or regional water supplies?

The proposed project would not result in a need for new local or regional water supplies.

3.13 Aesthetics: *Would the proposed project:*

(a) Affect a scenic vista or scenic highway?

The proposed facilities improvements would not obstruct any scenic vistas nor create any aesthetically offensive sites. The facilities are compatible with the existing facilities in the area. The proposed project would not affect any views along scenic highways.

(b) Have a demonstrable negative aesthetic effect?

The proposed project would not have a demonstrable negative aesthetic effect.

(c) Create light or glare?

The proposed project would not create any significant new light or glare. Pipelines would be buried, and the spreading basins would not create a significant increase in glare over the existing conditions in the area.

3.14 Cultural Resources: *Would the proposed project:*

(a) Disturb paleontological resources?

No known significant paleontological resources occur in the vicinity of the proposed project that could be affected by the construction and operation of the facilities. If previously undiscovered paleontological resources are discovered during construction of the project facilities, work in the area would immediately cease and a qualified paleontologist would be retained to examine the discovery and recommend appropriate data recovery measures.

(b) Disturb archaeological resources?

No known significant archaeological resources occur in the vicinity of the proposed project that could be affected by the construction and operation of the facilities. If previously undiscovered archaeological resources are discovered during construction of the project facilities, work in the area would immediately cease and a qualified archaeologist would be retained to examine the discovery and recommend appropriate data recovery measures.

(c) Affect historical resources?

No known significant historical resources occur in the vicinity of the proposed project that could be affected by the construction and operation of the facilities. The proposed project would not affect historical resources.

(d) Have the potential to cause a physical change which would affect unique ethnic cultural values?

No known significant ethnic cultural sites occur in the vicinity of the proposed project that could be affected by the construction and operation of the facilities. The proposed project does not have the potential to cause a physical change that would affect unique ethnic cultural values.

(e) Restrict existing religious or sacred uses within the potential impact area?

The potential impact area does not support religious or sacred uses. The proposed project does not have the potential to restrict existing religious or sacred uses within the potential impact area.

3.15 Recreation: *Would the proposed project:*

(a) Increase the demand for neighborhood or regional parks or other recreational facilities?

The proposed project would not increase the demand for neighborhood or regional parks or other recreational facilities.

(b) Affect existing recreational opportunities?

The proposed project would not affect existing recreational opportunities.

3.16 Mandatory Findings of Significance:

(a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?

The proposed project does not have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory. No sensitive or special-status species or their habitats would be disturbed by the proposed project, and no cultural resources that are important examples of the major periods of California history are currently known to exist within the project vicinity.

(b) Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?

The proposed project would not have the potential to achieve short-term to the disadvantage of long-term environmental goals.

(c) Does the project have impacts that are individually limited but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

The proposed project does not have impacts that are individually limited but cumulatively considerable.

(d) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

The proposed project does not have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly.

4.0 REFERENCES

Farmland Mapping and Monitoring Program, California Department of Conservation, map overlays for the Arvin, Edison, Mettler, and Weed Patch USGS 7-1/2 minute topographic quadrangle maps.

Farmland Mapping and Monitoring Program, personal communication, Blake Rushworth, April 19, 1996.

Guide to the Farmland Mapping and Monitoring Program, California Department of Conservation, November, 1994.

Kern County Roads Department, personal communication, Barry Hayslett, April 3 and 15, 1996 regarding Average Daily Traffic levels and Levels of Service on roadways in the Arvin-Edison service area.

Kern County 1994 Annual Traffic Census, Department of Transportation Management, 1994.

San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD), personal communication, Joe O'Bannon, April 15, 1996 regarding Rule 8020 -- *Fugitive Dust Requirements for the Control of Fine Particulate Matter (PM_{10}) from Construction, Demolition, Excavation, and Extraction Activities.*

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