

CHAPTER 2

Project Background

2.1 Introduction

This Chapter presents background for the Project including a brief history of the Project, a summary of relevant existing agreements and easements/rights-of-way, and an overview of the water supply issues in Southern California that led to this Project.

2.2 Overview of Cadiz Properties

Cadiz owns 45,000 acres (approximately 70 square miles) of land in three areas of the Mojave Desert portion of eastern San Bernardino County, California. The primary property is located in the Cadiz and Fenner Valleys (Cadiz Property) on approximately 34,000 acres of largely contiguous land. Cadiz's additional properties, located in the Piute Wash (Piute Property) and near Danby Dry Lake (Danby Property), are 8,500 acres and 1,500 acres respectively. All three properties are underlain by groundwater supplies. The proposed Project would be sited on a portion of the Cadiz Property and involves the Cadiz, Fenner, Bristol, and Orange Blossom Wash Watersheds.

2.2.1 Agricultural Operations

Over the last 20 years, Cadiz has maintained an agricultural operation at its Cadiz Property consisting of approximately 1,600 acres of table grapes, dried-on-the-vine raisins, citrus, and various row crops. The agricultural operation utilizes groundwater for irrigation of all crops in production through a network of seven existing water-production wells.

In 1993, the County of San Bernardino approved a General Plan Amendment and Conditional Use Permit authorizing Cadiz to expand its agricultural operations, to include the withdrawal of groundwater to irrigate agricultural uses on up to 9,600 acres and the construction of worker housing, crop storage, and cooling facilities on adjacent Cadiz-owned lands.¹ The County certified an EIR in 1993 evaluating potential impacts associated with the proposed agricultural expansion including the extraction of 30,000 AFY of groundwater. The County also adopted a Statement of Overriding Considerations, and adopted a Mitigation Monitoring Program (MMP) under CEQA for the Cadiz Agricultural Program. The 1993 EIR included estimates of groundwater drawdown of approximately 200 feet in the wellfield and approximately 10 feet at the edge of Bristol Dry Lake.

¹ County of San Bernardino, *Final Environmental Impact Report for the Proposed Cadiz Valley Agricultural Development*, October 1993, page 1.

As a condition of the application approved in 1993, the County worked with Cadiz to prepare a Groundwater Monitoring Plan (GWMP) in 1997. As required by the GWMP, Cadiz provides annual reports to the County that includes water levels, extraction amounts, electric conductivity sample results, and observed subsidence due to ground water withdrawal. As reported in its annual filings with the County, between 1986 and 1998, Cadiz used an average of 5,000 to 6,000 AFY of groundwater² for its agricultural operations. Most recently it has been using approximately 1,800-1,900 AFY of groundwater due to changes in crop cultivation and increased irrigation efficiency. No land subsidence or any other impact to the environment has been observed since reporting began.³

In addition, on January 31, 2000, the County of San Bernardino approved a Conditional Use Permit (CUP) 95-0015 (as revised) for the Cadiz Agricultural Program. Among the conditions to the CUP, and included in the 1993 MMP is Condition/Mitigation Measure WR6, which sets forth the requirements for groundwater monitoring. In accordance with Measure WR6, Cadiz has filed annual reports every year and also began filing a more extensive five-year monitoring report for the Cadiz Agricultural Program in 2003.

2.2.2 Cadiz Storage and Supply Program with Metropolitan

Cadiz recognized the potential for developing a conjunctive use groundwater storage and supply program on its property in the early 1990s and reached out to water providers, including Metropolitan, seeking project partners. At the same time, forecasted conditions showing dry-year supplies from all existing sources within the Metropolitan service area were projected to fall short of dry-year demands by 2020, even with full implementation of water conservation. To meet this projected demand, Metropolitan and its member agencies developed an integrated approach to obtaining additional dry-year supplies that included water conservation, recycling, groundwater banking, water transfers, and other programs. The Cadiz Program, a joint effort between Metropolitan and Cadiz, was intended to be one element of these efforts to meet dry-year demand.⁴ Between 1999 and 2001, Metropolitan, the lead agency for the Cadiz Program under CEQA, and the U.S. Bureau of Land Management (BLM), the lead agency for the Cadiz Program under the National Environmental Policy Act (NEPA), prepared a joint EIR/EIS that evaluated the feasibility of operating the Cadiz Program.⁵ The Cadiz Program would have transported surplus Colorado River water to the Cadiz site, recharging it through a series of spreading basins, storing it, and then extracting the stored water during times of drought. The Cadiz Program also proposed to extract native groundwater from the groundwater basin underlying part of the Cadiz and Fenner Valleys for transfer to Metropolitan during dry years.

² GEOSCIENCE Support Services, Inc., *Cadiz Groundwater Storage and Dry-Year Supply Program, Environmental Planning Technical Report, Groundwater Resources, Volume 1, Report No. 1163*, November 1999, page 43.

³ Cadiz Inc., *12th Annual Groundwater Monitoring Report, January-December 2009, Cadiz Valley Agricultural Development*, June 2010, page 14.

⁴ PCR Services Corporation, *Technical Memorandum: Assessment for CEQA Compliance – Cadiz Valley Aquifer Storage Project*, October 2006, page 3.

⁵ Metropolitan Water District of Southern California and Bureau of Land Management, *Final Environmental Impact Report and Final Environmental Impact Statement for the Cadiz Groundwater Storage and Dry-Year Supply Program*, September 2001.

The Final EIR/EIS for the Cadiz Program was completed in September 2001. After determining that the Cadiz Program would not cause any significant environmental harm, the United States Department of the Interior (DOI) approved the Final EIS, authorized an amendment to the California Desert Conservation Area (CDCA) Plan, and authorized an ROW grant and temporary use permit for the construction, operation, and maintenance of the water conveyance pipeline and related facilities in a Record of Decision that was issued by the DOI on August 29, 2002.⁶ However, although the feasibility studies completed under the partnership demonstrated a significant potential for water supply development, Metropolitan decided not to pursue the Cadiz Program in October 2002 and declined to accept the ROW grant that had been authorized by the DOI. As a result of Metropolitan's decision, the amendment to the CDCA Plan was not processed and the ROW grant and temporary use permit were not issued.

Following Metropolitan's 2002 decision, Cadiz continued its efforts to implement a groundwater project, given the sustained need for a more reliable, local source of water and groundwater storage in Southern California. Since 2002 the region has confronted an historic drought, an historic wet year, and regulatory restrictions on imported supplies, all of which has led to decreased reliability in the region's water supplies.⁷ The proposed Project evaluated in this EIR is the result of the interest expressed by Southern California water providers in developing a local, reliable water supply in Southern California.

2.3 Existing Agreements and Permits

2.3.1 San Bernardino County Groundwater Management Ordinance

On October 29, 2002, the Board of Supervisors for San Bernardino County adopted Ordinance No. 3872, Groundwater Management Ordinance, in order to provide for the management of groundwater in the unincorporated, un-adjudicated desert region of San Bernardino County. The Desert Groundwater Management Ordinance (Title 3, Division 3, Chapter 6, Article 5, Section 33.06551 of the San Bernardino County Code of Ordinances) imposes permitting requirements and procedures for certain new groundwater extraction wells in the Desert Region of the County. The ordinance requires any new wells to obtain a permit from the County, which is a discretionary action subject to CEQA. The stated purpose of the ordinance is to ensure safe yield and health of aquifers in the relatively undeveloped Desert Region of the County.

The ordinance does not apply to entities that have prepared a County-Approved Groundwater Management, Mitigation and Monitoring Plan (GMMMP) and that have entered into a Memorandum of Understanding (MOU) with the County that "requires the parties to share groundwater monitoring information and data and to coordinate their efforts to monitor groundwater resources in the County;" and "ensures that the measures identified in the AB 3030

⁶ PCR Services Corporation, *Technical Memorandum: Assessment for CEQA Compliance – Cadiz Valley Aquifer Storage Project*, October 2006, page 4.

⁷ California Department of Water Resources, *California Water Plan Update 2009, Integrated Water Management*, December 2009.

Plan or County-approved groundwater management, monitoring and mitigation plan are fully implemented and enforced.”⁸

In November 2002, Cadiz entered into a MOU with the County that exempted its existing Agricultural Operations — including construction of worker housing and related facilities and the withdrawal of groundwater to irrigate agricultural uses on up to 9,600 acres (30,000 AFY of groundwater) — from permitting under the County’s Ordinance. To meet the exemption requirements, the County relied on Cadiz’s existing 1993 and 2000 Agricultural Development Project MMP and GWMP (described above) that provided that Cadiz would monitor its annual groundwater pumping and submit annual and five-year monitoring reports to the County.⁹

The Project includes the approval of a GMMMP developed to guide the long-term groundwater management for the Project consistent with the County’s Ordinance. Pursuant to an additional MOU with the County, the GMMMP will be submitted to the County for approval and will satisfy the requirements for an exclusion from the scope of the Ordinance.

2.3.2 ARZC Lease

Cadiz has acquired a 99-year ROW (longitudinal lease) agreement with ARZC to construct, operate, and maintain a subsurface water-conveyance pipeline and a power line between the Cadiz Property and the CRA within a portion of the ARZC railroad ROW.¹⁰ This segment of the ARZC ROW is 200-foot-wide and runs between mile post 189.0 at Cadiz, California and mile post 144.0 at Freda, California in San Bernardino County. The ARZC ROW extends approximately 100 feet on each side of the railroad centerline.

The agreement between ARZC and Cadiz also provides for ARZC’s use of Project water and facilities as follows:

1. Fire hydrants placed along railroad tracks;
2. Access road to be constructed on leased area for railroad company for maintenance purposes or in case of emergencies such as rail car derailment;
3. Access to 10,000 gallons of water per day for vegetation control, washing rail cars, offices, and other contemplated improvements;
4. Access to power at meters located along the railroad tracks and emergency access to power at any location;
5. Accommodations for passenger terminals and water service associated with the steam-powered locomotives that ARZC is contemplating operating in the future; and

⁸ County of San Bernardino, San Bernardino County Code, Title 3, Division 3, Chapter 6, Article 5, § 33.06552.

⁹ Cadiz Inc., *Cadiz Valley Agricultural Development Project Mitigation Monitoring and Compliance Program*, December 2000.

¹⁰ Cadiz Inc., *Memorandum of Lease Agreement between Cadiz Real Estate, LLC and Arizona & California Railroad Company*, September 2008, page 1.

6. Right to connect and deliver water to any future water production facilities within the ROW to the pipeline and facilities (future delivery of water would be subject to permitting and require monitoring).

A recent opinion from the Solicitor of the DOI holds that as long as new activities derive from or further a railroad purpose, even if those activities have both railroad and commercial purposes, authorization is within the purview of the railroad.¹¹ Accordingly, no federal authorization is required for the construction of the pipeline along the ARZC ROW, because the proposed pipeline (and corresponding water service), access roads, and safety design features would serve both railroad and commercial purposes.

2.3.3 Natural Heritage Institute Agreement

On May 14, 2009, Cadiz and the Natural Heritage Institute (NHI) signed a Memorandum of Understanding for Land Stewardship, referred to as the “Green Compact,” to ensure sustainable management of approximately 70 square miles of Cadiz Property within the Cadiz, Fenner, and Piute Valleys of eastern San Bernardino County.¹² NHI is a non-governmental, non-profit organization founded by a group of conservation lawyers and scientists whose mission it is to restore and protect ecosystems and the services they provide for public benefit and to sustain and enrich human life. Cadiz had committed to manage their property and develop projects in accordance with the Stewardship Principles identified in the Green Compact; NHI has committed to assist Cadiz in designing groundwater banking projects, identifying Project Participants, and auditing the management of Cadiz-owned property in keeping with the Green Compact. The Stewardship Principles are summarized below:

Long-term Sustainability. The property will be managed holistically with due regard for long term sustainability.

Renewable energy. Cadiz will make reasonable best efforts to use renewable energy supplies to support operations.

Protection of Species. Any take of endangered species will be offset through habitat conservation planning.

Conservation Easement. Cadiz will implement conservation easements to offset operational effects.

Groundwater Banking. Cadiz will pursue groundwater banking to support beneficial uses.

Resource Evaluation. Cadiz will conduct technical studies of its properties prior to implementing major projects.

Priority of Use. Cadiz will maintain highest priority of use as beneficial uses for overlying properties.

¹¹ U.S. Department of the Interior, Office of the Solicitor, *Memorandum of Opinion M-37025 Partial Withdrawal of M-36964*, November 2011.

¹² Cadiz Inc., *Memorandum of Understanding for Land Stewardship Between the Natural Heritage Institute and Cadiz*, May 2009, page 1-6.

2.4 Overview of Southern California Water Supply

Southern California receives two-thirds of its water supplies from the Sacramento-San Joaquin Bay Delta (via the SWP), the Colorado River (through the CRA), and the Owens Valley and Mono Basin (through the Los Angeles Aqueduct). The balance of Southern California's demand is supplied by local surface water, groundwater, and recycled water and partly managed through conservation.

Two of these water sources—the SWP and the Colorado River—are subject to a number of challenges, including competing demands, aging infrastructure, regulatory restrictions, and climatic fluctuations, all of which have caused the availability of water supplies to vary from year to year.¹³

The 2010 California Department of Water Resources (DWR) California Water Plan Update, Integrated Water Management found that reliability of supplies of water historically used by water providers in Southern California will continue to vary in the future.¹⁴ Given the inconsistencies in water deliveries, Southern California is continuing to look for more reliable supplies. Southern California water providers are currently seeking ways to overcome these projected supply deficiencies to meet existing and future demand such as through supply diversification.

2.4.1 The State Water Project

The SWP began in 1960 with California voter approval for a statewide distribution system to meet growing water needs south of the Sacramento-San Joaquin River Delta (also known as the Bay Delta). The SWP is the nation's largest state-built water conveyance system and includes reservoirs, lakes, and storage tanks; canals, tunnels and pipelines; and pumping and power plants. The system conveys water to 29 State Water Contractors (contractors). The contractors deliver water directly to agricultural and urban water users or to water wholesalers and retailers.

The amount of water available to the SWP fluctuates widely each year due to factors such as hydrologic conditions, flood management needs, the capacity of SWP storage and conveyance facilities, changing weather-temperature conditions, water quality, and environmental requirements. Water deliveries are based on long-term water supply contracts that DWR has with each of the 29 contractors. The total water supply for each year is estimated based on a variety of factors including storage reservoir levels, surface water flow levels, Delta conditions, contractor delivery requests, environmental conditions, and legal considerations. **Figure 2-1** shows the State Water Project and Colorado River Aqueduct.

¹³ California Department of Water Resources, *The State Water Project Reliability Report 2009*, August 2010; California Department of Water Resources, *California Water Plan Update 2009, Integrated Water Management*, December 2009.

¹⁴ California Department of Water Resources, *California Water Plan Update 2009, Integrated Water Management*, December 2009.



SOURCE: ESRI 2011; State of California GIS; ESA, 2011. Cadiz Valley Water Conservation, Recovery, and Storage Project

Figure 2-1
California State Water Project and Colorado River Aqueduct

Each contractor can request water in an amount not to exceed a previously established ceiling referred to as the “Table A” amount. From 1980 to 1989, DWR was able to meet 100 percent of the contractors’ Table A requests. Between 1990 and 1994, DWR had greater difficulty meeting demand because several years were very dry. Contractors received less than 50 percent of their requests in 1991 and 1992. In recent years, the SWP has been able to deliver full amounts only in wet years; during dry years, SWP deliveries can be substantially less than the full amounts requested. This has been the result of a rise in contractors’ demand levels, more stringent water quality requirements, and environmental constraints. DWR’s most recent reliability estimates indicate the system will have 60 percent reliability for delivering Table A requests, depending on hydrologic and environmental factors.¹⁵ DWR currently estimates 60 percent reliability in the future. This reduced system reliability has incentivized local water providers to identify new water supply sources to make up for water they previously assumed would be supplied by the SWP per their contractual Table A amount agreements.

2.4.2 Metropolitan Water District of Southern California and the Colorado River Aqueduct

Metropolitan is a public agency that was organized in 1928 for the purpose of developing, storing, and distributing water to the residents of Southern California. The first function of Metropolitan was building the CRA to convey water from the Colorado River. Deliveries through the aqueduct began in the early 1940s and supplemented the local water supplies of the original Southern California member cities. In 1960, to meet growing water demands in its service area, Metropolitan contracted for additional water supplies from the SWP via the California Aqueduct, which is owned and operated by DWR. SWP deliveries began in 1972. Metropolitan currently receives imported water from the SWP and the Colorado River via the CRA.

Metropolitan is the primary supplier of water to approximately 19 million people in a six-county Southern California area that includes portions of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura Counties. Metropolitan’s 5,200-square-mile service area covers the Southern California coastal plain; it extends about 200 miles along the Pacific Ocean from the city of Oxnard on the north end to the international boundary with Mexico to the south, and it reaches as far as 70 miles inland from the coast. Metropolitan is composed of 26 member agencies, including 14 cities, 11 municipal water districts, and one county water authority. Metropolitan’s member agencies serve residents in 152 cities and 89 unincorporated communities.¹⁶

The CRA, owned and operated by Metropolitan, has a capacity of 1,800 cubic feet per second, or 1.25 million AFY.¹⁷ California’s allotment of Colorado River water is 4.4 million AFY, plus

¹⁵ California Department of Water Resources, *The 2009 State Water Project Delivery Reliability Report*, August 2010, Table 7.1.

¹⁶ Metropolitan Water District of Southern California, *Regional Urban Water Management Plan 2010*, November 2010, page 1-6.

¹⁷ Metropolitan Water District of Southern California, *Regional Urban Water Management Plan 2010*, November 2010, page A2-13.

available surplus water.¹⁸ Of this amount, Metropolitan's full basic entitlement is 550,000 AFY. Historically, the amount of water conveyed annually through the CRA has varied depending on wet and dry years and local demands, but has always included the basic entitlement plus additional unused or transferred water available in the system. However, as a result of increased diversions by Arizona and Nevada, Metropolitan's diversion of Colorado River water has been substantially reduced compared with historic diversions. Since 2003, Metropolitan has developed agreements with other Colorado River water rights holders to convey water through the CRA. Metropolitan approved the Quantification Settlement Agreement (QSA) in 2003 that provided for additional transfers from agricultural agencies that use Colorado River Water such as the Imperial Irrigation District (IID) and the Coachella Valley Water District (CVWD) to San Diego.¹⁹

Table 2-1 summarizes water supplies within Metropolitan's service area since 1980. As shown in Table 2-1, the CRA has operated under its 1.25 million AFY capacity for most years and water deliveries from the Los Angeles Aqueduct to the Metropolitan service area are affected by dry year restrictions as well as reductions due to environmental restoration programs at Owens Lake.

TABLE 2-1
SOURCES OF WATER SUPPLY FOR THE METROPOLITAN SERVICE AREA (acre-feet)

Calendar Year	Local Supplies	L.A. Aqueduct	Colorado River Aqueduct	State Water Project	Total
1980	1,452,000	515,000	791,000	560,000	3,317,000
1985	1,535,000	496,000	1,018,000	728,000	3,776,000
1990	1,470,000	106,000	1,183,000	1,458,000	4,217,000
1995	1,590,000	464,000	933,000	451,000	3,438,000
2000	1,768,000	255,000	1,217,000	1,473,000	4,714,000
2005	1,590,000	369,000	685,000	1,525,000	4,168,000
2010	1,832,000	243,000	1,150,000	1,500,000	4,725,000

SOURCE: Metropolitan Water District of Southern California, *Regional Urban Water Management Plan*, November 2010, page A. 2-3, Table A. 2-1.

Metropolitan's 2010 *Regional Urban Water Management Plan* (RUWMP) states that as new water banking and transfer programs are developed, water deliveries through the CRA will increase. The RUWMP identifies programs under development that could provide water in excess of the CRA's 1.25 million AFY capacity by the year 2015. However, on a year-to-year basis, actual deliveries will depend on water availability and the successful implementation of the

¹⁸ Metropolitan Water District of Southern California, *Regional Urban Water Management Plan*, November 2010, page 3-4.

¹⁹ Twelve of the QSA agreements are currently the subject of an appeal pending in the Third District Court of Appeal for which oral argument will occur on November 21, 2011. In January 2010, the Sacramento Superior Court found that one of the agreements was invalid because it violated the State constitutional debt limitation. The Superior Court also held that 11 other agreements, including the QSA agreement and various transfer agreements, were invalid because they were inextricably linked to the agreement that the Superior Court found was unconstitutional. The QSA agreements continue to be implemented while the appeal is being decided.

conceptual programs outlined in the RUWMP. The RUWMP recognizes the need to develop storage programs and groundwater management systems within the Southern California region.

2.5 Purpose of the Cadiz Valley Water Conservation, Recovery, and Storage Project

The overall purpose of the Project is to make available a reliable water supply for Southern Californian Project Participants, to supplement or replace existing supplies and enhance dry-year supply reliability. The Project serves as one of several water supply options for Project Participants as documented in their Urban Water Management Plans (UWMPs).

Both the SWP and Colorado River water supplies are experiencing reductions from historic deliveries. As a result, Southern California water providers are looking for affordable new supplies to replace or augment current supplies and enhance dry-year supply reliability. Cadiz recognizes that the groundwater beneath its Cadiz Property is confined within a closed basin that ultimately flows to two saline groundwater sinks (Bristol and Cadiz Dry Lakes) with salinity levels close to ten times greater than that of sea water. Groundwater that flows past the Cadiz Property joins with the saline groundwater where it is wasted to evaporation. The Project would optimize the reasonable and beneficial use of water within the aquifer system in a sustainable fashion—conserving water that would otherwise be wasted—to create a local water supply alternative for Southern California water providers.

Project Participants would also be able to use a flexible water delivery schedule that would make possible the delivery of water only when actually needed, such as in dry years. Water designated for delivery would be stored in what is called carry-over storage, remaining in the aquifer until the Project Participant needs it.

The second phase of the Project, being examined at the programmatic level in this EIR, would create needed water-storage space for Southern California water providers. Given the varying reliability of imported water in Southern California, the ability to store up to 1 million AF of water would greatly enhance water supply reliability. In wet years, when there is more water than is needed, water would be diverted into storage at the Imported Water Storage Component to be used in future dry years. This phase is at the concept development stage and there are no participants at this time.