CHAPTER 6 GROUNDWATER MANAGEMENT PROGRAMS

6.1 CHINO BASIN GROUNDWATER MANAGEMENT

Chino Basin groundwater is the only water source for the CDA. Chino Basin is one of the largest groundwater basins in Southern California. Management of the Chino Basin is guided by the 1978 Judgment, the "Peace Agreement" (2000) and the "Optimum Basin Management Program" (2008 OBMP) (updated every five years). Region-wide implementation of recharge and conjunctive use projects is vital to the enhancement and protection of the safe yield and water quality of the Chino Basin.

1978 Chino Basin Judgment

The Chino Basin Watermaster (CBWM) was established in 1978 under a Judgment entered in the Superior Court of the State of California for the County of San Bernardino. The Judgment adjudicated the groundwater rights in Chino Basin and required that the basin be operated in accordance with the provisions of the Judgment under the direction of a court-appointed Watermaster (See Appendix D). The 1978 Judgment and subsequent agreements, require ensuring of adequate water supplies in times of severe drought. In addition, basin-wide groundwater recharge capability, enhanced storage of higher quality water, and increased pumping capacity to extract the groundwater are critical elements to basin management. The extraction of saline groundwater in the south portion of the Chino Basin is a key element of the groundwater management strategy. The Judgment mandated that the CBWM develop an Optimum Basin Management Plan (OBMP)[1].

Optimum Basin Management Plan (OBMP)

Four primary management goals for the OBMP (See Appendix E) were developed during a series of meetings to address the issues, needs and interests of the water producers in the Chino Basin. They were:

- **Goal No. 1 - Enhance Basin Water Supplies**
  This goal applies not only to local groundwater, but also to all sources of water available for the enhancement of the Chino Groundwater Basin;
- **Goal No. 2 - Protect and Enhance Water Quality**
  This goal will be accomplished by implementing activities that capture and dispose of contaminated groundwater, treat contaminated groundwater for direct high-priority beneficial uses, and encourage better management of waste discharges that impact groundwater.
- **Goal No. 3 - Enhance Management of the Basin**
  This goal will be achieved by implementing activities that will lead to optimal management of the Chino Basin.
- **Goal No. 4 - Equitably Finance the OBMP**
  This goal will establish an equitable financing plan among the groundwater

producers for each individual project required in the OBMP.

[1] Chino Basin Watermaster, Optimum Basin Management Program, Phase I Report, WEI, August 19, 1999

Peace Agreements

As part of the development of the OBMP, a historic Chino Basin Peace Agreement[2] (Peace Agreement) between all affected stakeholders in the Basin was finalized in June 2000. As described in Chapter 1, Article VII of the Chino Basin Peace Agreement, the Peace Agreement sets forth various terms and conditions for the construction and operation of Chino Basin desalters and a general template for the purchase and sale of desalted water. With finalization of the Peace Agreement, the CBWM developed the Chino Basin Recharge Master Plan[3] (in the 2010 the Recharge Master Plan was updated) to identify and prioritize opportunities for groundwater recharge within the Chino Basin. In response to this, IEUA completed a Recycled Water Feasibility Study[4] in 2002 and is presently developing a Recycled Water Implementation Plan[5] (in 2007 IEUA developed a Recycled Water Business Plan that called for expansion of the program much sooner than originally lined out) to fully integrate its recycled water program into the CBWM's goals and objectives for the OBMP and the Chino Basin Recharge Master Plan. A Final Peace Agreement was entered on October 25th, 2007, titled "Party Support for Watermaster's OBMP Implementation Plan"

To administer the construction, management and operations of the desalters, the CDA was formed under a Joint Exercise of Powers Agreement (JPA), creating the "Chino Basin Desalter Authority" (CDA) on the September 25th, 2001. The CDA is administered by and among the Jurupa Community Services District (JCSD), the Santa Ana River Water Company (SARWC), the Western Municipal Water District, the cities of Chino, Chino Hills, Norco, Ontario and the Inland Empire Utilities Agency.

In addition, in January 2004, the Regional Water Quality Control board (RWQCB) amended the Water Quality Control Plan (Basin Plan) so that the Basin is operated under the RWQCB's "Maximum Benefit" concept, hydraulic control must be achieved and demonstrated. The concept includes an updated Total Dissolve Solids (TDS) and Nitrogen Management Plan. A more thorough discussion of Chino Basin groundwater management is contained in the 2008 Status of the Basin report.

[2] Chino Basin Watermaster, Peace Agreement, June 29, 2000

[3] Chino Basin Recharge Master Plan, August 2001

[4] Recycled Water Feasibility Study, January 2002

[5] IEUA, Recycled Water Implementation Plan (DRAFT), July 2005

6.2 MAXIMUM BENEFIT

The "Maximum benefit" concept of groundwater quality management is included as part of the 2004 Basin Plan update (See Appendix J-1). CBWM and IEUA proposed that the TDS and nitrate-nitrogen objectives in the Chino North Management Zone be established based on "maximum benefit" and not on anti-degradation. Accordingly, the Regional Board requires proof that raising the TDS objective to 420 milligrams per liter (mg/L) and the nitrate-nitrogen objective to 5 mg/L will not adversely impact the quality of the Santa Ana River for downstream beneficial uses. Demonstrating "hydraulic control" will show that downstream beneficial uses are not impaired by management activities in the Chino North Management Zone.[6]

6.3 HYDRAULIC CONTROL

The main benefits of the CDA are:

1. A reliable, local source of drinking water is produced by desalination;
2. Improved water supply reliability through enhanced local supplies and less dependency on MWD imported supplies;
3. Salt and nitrates are removed from the groundwater basin; and,
4. Hydraulic control of groundwater is enhanced by the location of groundwater extraction wells. This helps prevent groundwater that is high in salinity and nitrates from "spilling over" the Chino Basin southern barrier into the Santa Ana River.

The Hydraulic Control Program established in the 2004 Basin Plan Update is being implemented through the CDA, IEUA and CBWM. These agencies will fine tune groundwater production and recharge in the Basin to maximize yield and prevent outflow. The 22 raw water supply wells for Chino I and II Desalters provide for hydraulic control in the lower Chino Basin and are described below.

A major investment has been made in the redevelopment and new development of groundwater recharge basins and facilities in the Chino Basin are being operated to better balance the water quality of water blended in the lower 1/5 of the Chino Basin. The lower portion of the Chino Basin encompasses the CDA area for hydraulic control and groundwater quality improvement.

[6] Chino Basin OBMP, State of the Basin Report 2004, July 2005, p 8-1

Hydraulic Control Wells – Chino I Desalter and Expansion

The Chino I Desalter is located at 6905 Kimball Avenue, just west of Euclid Avenue, in the City of Chino, CA. A total of eleven Chino I Desalter extraction wells (2000) were drilled to extract brackish water from the lower Chino Basin. Since that time, an additional three wells have been drilled in conjunction with the Chino I Expansion (2005), bringing the total number of wells extracting and delivering water to Chino I Desalter to fourteen wells. The fourteen wells are all located west of Haven Avenue spanning the lower basin to Euclid Avenue and are located near the San Bernardino and Riverside county line.

Hydraulic Control Wells – Chino II Desalter

Chino II Desalter is located at 11201 Harrel Street adjacent within the JCSD campus in Mira Loma, CA. The Chino II Desalter (2005) has a total of 8 extraction wells. Six of the wells are located along the San Bernardino / Riverside county line from Haven Avenue on the west to just east of Wineville Avenue, with two being located south of the county line along Wineville Avenue. The locations of groundwater extraction wells for Chino I and II Desalters is shown on Figure 3-1 and the characteristics of these wells are summarized in Tables 3-3 through 3-5 of Chapter 3.

Hydraulic Control Monitoring Wells

To verify the establishment of hydraulic control, IEUA and the US Bureau of Reclamation (USBR) installed nine "nested" groundwater monitoring wells ("piezometers") to provide supplemental information to the existing groundwater monitoring network. To assure hydraulic control in the Chino Basin, the nine groundwater monitoring wells were strategically located south of the hydraulic control extraction wells of both Chino I and II Desalters. The location of the nine monitoring wells, desalter extraction wells and groundwater elevation contours is shown in Figure 6-1a through 6-1d.

(The reader is directed to the IEUA's 2010 UWMP Chapter 6 and the Chino Basin OBMP, 2008 State of the Basin Report for more detail on Groundwater storage and management within the Chino Basin; and California Regional Water Quality Control Board, Santa Ana Region, Order No. R8-2005-0033, Water Recycling Requirements for IEUA and CBWM, Phase I, Chino Basin Recycled Water Groundwater Recharge Project, San Bernardino County, dated April 18, 2005)

Figure 6-1a State of the Hydraulic Control - Spring 2000

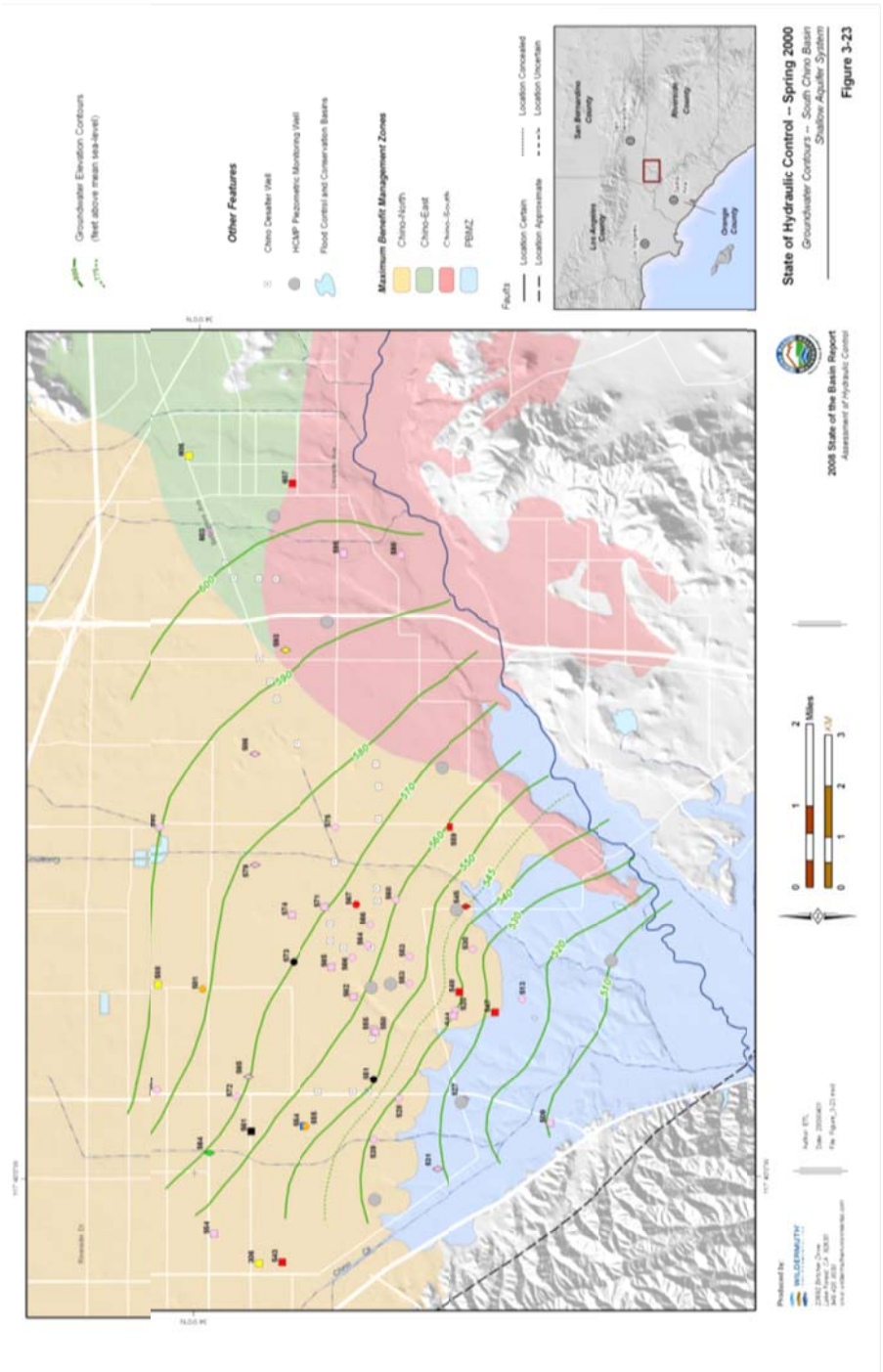

Figure 6-1b State of the Hydraulic Control - Spring 2006

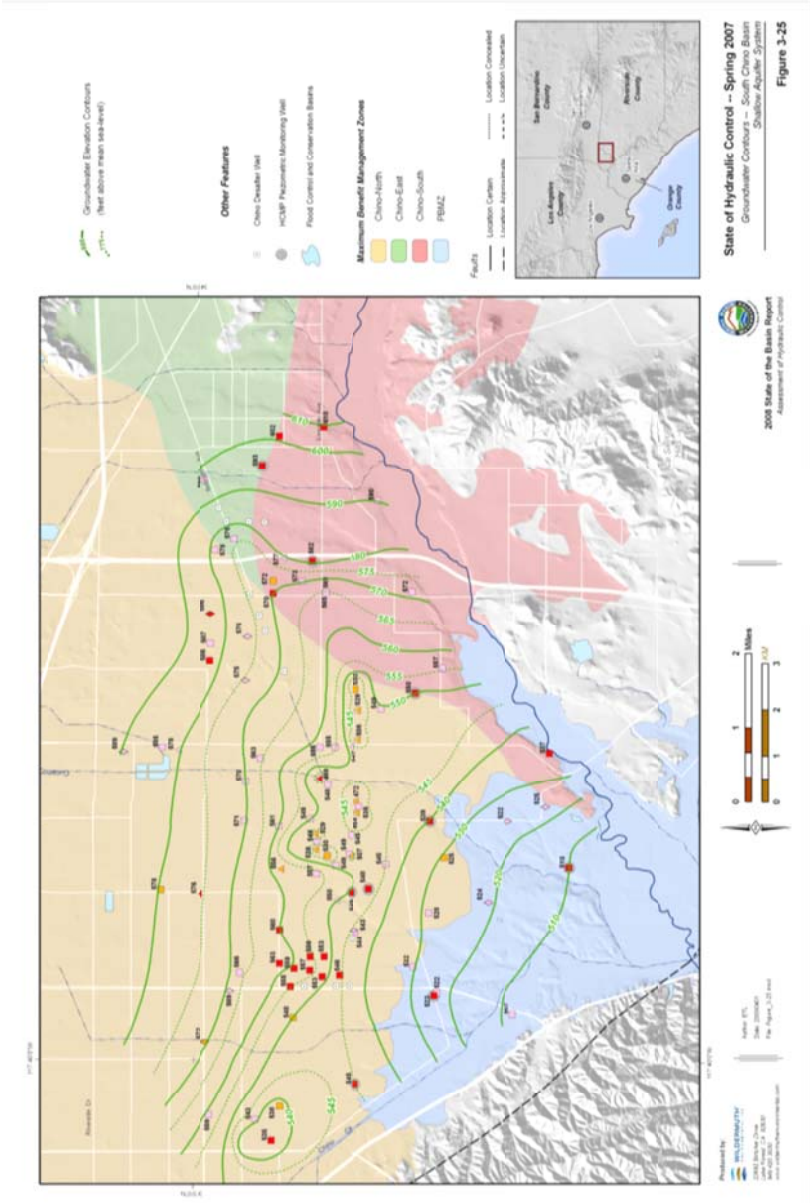

Figure 6-1c State of the Hydraulic Control - Spring 2008