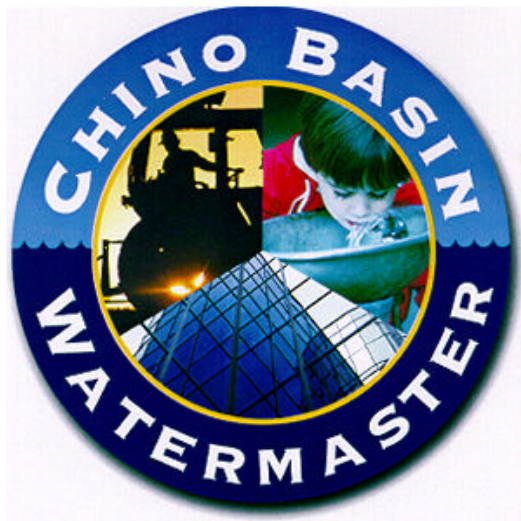


Chino Basin Watermaster Status Report No. 9

(Covering September 2003 through November 2003)



December 2003



OPTIMUM BASIN MANAGEMENT PROGRAM

In its Order of September 28, 2000, extending the term of the nine-member Watermaster Board, the Court ordered Watermaster to provide semiannual reports regarding the progress of OBMP implementation. In Status Report Number 4, filed with the Court on September 30, 2002, Watermaster notified the Court that Watermaster intended to accelerate voluntarily the reporting schedule because of the rapid pace of OBMP implementation. By a subsequent Order of October 17, 2002, the Court added additional reporting items to the quarterly report.

This Status Report Number 9 is filed pursuant to this revised schedule and reports on the period from September 1, 2002 to November 30, 2003.

PROGRAM ELEMENT 1 – DEVELOP AND IMPLEMENT COMPREHENSIVE MONITORING PROGRAM

Groundwater-Level Monitoring

BACK-
GROUND

Watermaster had three active groundwater-level monitoring programs operating in the Chino Basin – a semiannual Basinwide program, a monthly program associated with the Chino-I and Chino-II desalter well fields, and an intensive groundwater-level monitoring program associated with land-surface subsidence (see Land-Surface Monitoring below) in Management Zone 1.

THIS
PERIOD

The final round of the semi-annual program began in October 2003 and was completed in November 2003, and consisted of measuring the water levels in approximately 490 active agricultural wells on a twice per year basis. In conjunction with the semi-annual program, Watermaster staff collected ground water level data at about 240 wells around the Chino I and Chino II Desalter well fields on a twice per month basis. Similarly, Watermaster consultants collected groundwater level data at about 40 wells in the southern portion of Management Zone 1 (MZ1). Data were collected manually at MZ1 wells on a once per month basis, and automatically using pressure transducers on a once per 15 minutes basis.

THIS
PERIOD

Watermaster staff completed their analysis of hydrogeology, well construction, and existing groundwater level data to develop sampling frequencies for the active agriculture wells and for key wells used in support of the Hydraulic Control Monitoring Program (HCMP), the Chino I/II Desalter development, and the MZ1 land subsidence monitoring. As a result of this review, Watermaster has simplified its groundwater level monitoring program to consist of two elements:

- Manually recording groundwater levels in 340 active agricultural wells on a twice per year frequency
- Recording groundwater levels in 120 key wells used to support the HCMP, MZ1 Subsidence, and Chino I/II Desalter programs on a once per month frequency.



Virtually continuous monitoring can be obtained in those wells outfitted with automated pressure transducers.

Groundwater-Quality Monitoring

BACK-
GROUND

Prioritizing Wells to Serve Multiple Purposes. The wells chosen for the 2002-03 water quality monitoring program were located primarily between the Chino I Desalter well field and the Santa Ana River. Selected wells from the 2002-03 monitoring program are being preserved for development of a monitoring program to demonstrate hydraulic control in the southern portion of Chino Basin. (See the Cooperative Effort to Determine State of Hydraulic Control discussion in Program Elements 6 and 7.)

Extensive Range of Substances Being Tested

ON-
GOING

- All groundwater samples are analyzed for general mineral and general physical parameters.
- Wells not previously sampled and analyzed for constituents added to the evolving groundwater-quality monitoring program (e.g., hexavalent chromium, silica, barium, etc.) in 1999-2001 are now being sampled for those constituents.
- Wells within or near the two Volatile Organic Compound (VOC) plumes are being analyzed for VOCs, in addition to the usual parameters.
- All wells are being analyzed for perchlorate because of its widespread occurrence in the 1999-2001 sampling program.
- Analysis for 1, 2, 3-trichloropropane (1, 2, 3-TCP) has been added to the monitoring program for all wells. This chemical was detected in several wells above 50 parts per trillion (old detection limit). In the 2002-03 monitoring program, a new analytical methodology for 1, 2, 3-TCP was used to achieve a detection limit of 5 parts per trillion, which is its California Action Level.

THIS
PERIOD

Three-Year Sampling Program of all Accessible Private Wells. During this quarter, Watermaster completed the third year of a three year water quality sampling program in which all accessible private wells in the Southern Zone were sampled (about 200 wells each year). With the completion of this program, water quality sampling will be reduced to approximately 105 key wells per year, with the key wells selected to yield data on water quality anomalies. In addition, Watermaster participates in a cooperative monitoring program described in Implementation Plan. For example, Watermaster obtains data every six months from the Department of Health Services (DHS) for wells pumped by municipal water agencies and from the Department of Toxic Substance Control (DTSC) and the Regional Water Quality Control Board (RWQCB) for wells pumped in accordance with Cleanup and Abatement Orders (CAO).

TO
COME

Watermaster is in the process of transferring the water quality database from its consultants to in-house storage. This process will also entail obtaining water quality data directly from the Appropriator Pool members, thereby enhancing the quality and timelines of the Watermaster's database.



Groundwater-Production Monitoring

BACK -
GROUND

Monitoring of Agricultural Production Wells. Initially production monitoring involved the installation of meters on wells operated by members of the Agricultural Pool. As of the end of the period, Watermaster counted about 511 active agricultural wells and equipped 395 of these wells with operating meters. The other 116 wells have or will become inactive within 18-24 months because of urban development in the south Chino area.

ON
GOING

All Producing Wells Are Monitored Quarterly. Watermaster staff reads the newly installed and/or rehabilitated meters on the agricultural wells quarterly. An estimate method appropriate to the Chino Basin area is used to measure production at agricultural wells that do not have meters.

TO
COME

Need For Water Use/Disposal Form To Be Reviewed. The OBMP Implementation Plan includes a provision that requires the agricultural producers to submit a water use/disposal form describing the sources of water used by each producer and how that water is disposed of after each use. Filling out the water use and disposal form and reporting the results have not been implemented, because much of the information is being collected already as elements of other monitoring activities and analyses. In the later half of fiscal 2003-2004, Watermaster anticipates discussions regarding the need for this form.

Surface-Water Monitoring

BACK-
GROUND

Measure Water Quality and Water Levels In Recharge Basins. Watermaster conducts a surface-water monitoring program to measure the water quality of water in recharge basins and the water levels in some of these basins. The purpose of this program is to estimate the volume and quality of recharge. This information will be used in subsequent years to estimate the safe yield of the Basin and for other management purposes.

ON
GOING

Currently, Watermaster monitors the water quality in 21 distinct basins: Upland, DeClez, Etiwanda Spreading Grounds, Victoria, Hickory, Lower Day Upper, Lower Day Lower, Banana, Ely 1, Ely 3, Wineville, San Sevaine 1, San Sevaine 5, Turner 1, Princeton, Montclair 1, Montclair 2, Montclair 3, Montclair 4, Brooks, and Grove. Generally, the water quality samples are taken after storm events, i.e., during the period from November 1 through March 30; however, monitoring of nuisance flows also occurs. Each basin is sampled 3-5 times each year.

THIS
PERIOD

Immediately following the first storm event of 2003/2004, which occurred on November 10-11, 2003, Watermaster sampled the recharge waters captured in six basins: Victoria, Grove, Ely 3, Wineville, Banana, and De Clez.

BACK-
GROUND

Surface-Water Monitoring for Santa Ana River Began In June 2003. One of the goals of the OBMP is to maximize Chino Basin yield. A key component in maximizing yield is to minimize groundwater discharge into the Santa Ana River and, in some reaches of the River, to increase recharge from the Santa Ana River into the Chino Basin. Watermaster developed a surface-water monitoring program for the Santa Ana River that, in conjunction with Watermaster groundwater-monitoring programs, is used to characterize those reaches of the River that are gaining water from the Basin, and to determine if



significant discharge of Chino Basin groundwater to the Santa Ana River is occurring. A conceptual monitoring plan involving Inland Empire Utilities Agency, Orange County Water District, the Regional Water Quality Control Board, and Watermaster was finalized. These agencies determined that the conceptual monitoring plan was adequate and developed a detailed work plan to implement a surface-water and groundwater-monitoring program. The work plan was completed in June 2003, and year round water quality sampling and flow monitoring in the Santa Ana River has begun.

THIS PERIOD During the summer, Watermaster consultants worked with U.S. Geological Survey (USGS) staff to conduct stream gauge measurements at four stations on the Santa Ana River (SAR): Van Buren, Etiwanda, Hamner, and River Road, and at eight tributary locations. Watermaster also obtained discharge data from permanent USGS and OCWD stream gauge locations on the SAR, and from privately owned treatment works (POTW's) which discharge into SAR. Flow and water quality data were recorded on a biweekly basis.

Watermaster proposes to continue the SAR flow and water quality measurements indefinitely as a key element of the HCMP.

Watermaster will collect water quality samples and measure flow at the four Santa Ana River stations, plus another eight locations on tributaries, on a bi-weekly basis from January through June 2004. In addition, Watermaster will obtain discharge data from permanent USGS and OCWD stream gauge locations on the Santa Ana River and its tributaries. Discharges from POTWs are also quantified.

Land-Surface Monitoring

BACK-GROUND **Multifaceted Approach.** Watermaster staff developed a multifaceted land-surface monitoring program to develop data for a long-term management plan for land subsidence in Management Zone 1 (MZ1). The monitoring program consists of three main elements:

1. An aquifer-system monitoring facility located in the southern portion of MZ1, an area that has experienced concentrated and differential land subsidence and ground fissuring. One major component of the aquifer system monitoring facility is a cluster of multiple-depth piezometers that measure water level and pressure changes at 11 different depths. Another major component is a dual borehole extensometer that measures deformation within the aquifer system at deep and shallow levels. Together, the two components correlate the hydraulic and mechanical responses of the aquifer system to different aquifer stresses, such as pumping at wells.
2. Synthetic aperture radar interferometry (InSAR) will measure land surface deformation across the entire Chino Basin.
3. Benchmark surveys along selected profiles of the Chino Basin. The benchmark surveys (1) establish a datum from which to measure future land surface deformation, (2) "ground-truth" the InSAR data, (3) allow determination of historical subsidence at any historical benchmarks that can be recovered, and (4) evaluate the effectiveness of the long-term management plan.



THIS
PERIOD

Depth-Specific Data. Permanent transducers and data logging equipment are recording depth-specific groundwater-level data at the Ayala Park piezometers. Transducers also are recording groundwater-level data at wells owned by the cities of Chino and Chino Hills, and are recording groundwater-level data and “on/off” pumping cycles at active production wells. The California Institution for Men (CIM) and Watermaster have signed an access agreement that allows groundwater level and production monitoring at CIM wells. On July 15, 2003, six monitoring wells on CIM property were instrumented with transducers and began collecting groundwater-level data. Six nearby production wells were inspected and transducers installed, thereby completing the transducer installation effort at wells surrounding Ayala Park.

Observations From Water Level Data. The following observations can be made from analysis of all water-level data from the piezometers and from the surrounding wells:

- The two shallowest piezometers (PA-10 and PA-11) have a separate and distinct water level response to nearby pumping, as compared to the deeper piezometers, confirming the existence of distinct shallow and deep aquifer systems.
- Pumping at surrounding wells, screened in both the shallow and deep aquifer-systems, has lowered water levels in all piezometers – particularly in piezometers PA-7 (438-448 ft-bgs) and PB-6 (502-522 ft-bgs). These two piezometers are exhibiting a typical response to pumping within a confined aquifer system.

THIS
PERIOD

Comprehensive Pumping Tests. During the October-November 2003 period, Watermaster Consultants, with the assistance of the cities of Chino Hills and Chino, CA conducted aquifer stress tests (pumping tests) while monitoring water levels and groundwater production at nearby monitoring wells, production wells, and the Ayala Park piezometers. In addition, during the pumping test, the dual extensometer measured elastic/inelastic compaction of the aquifer system. Data from these aquifer stress tests are currently being analyzed.

THIS
PERIOD

InSAR. Watermaster staff has initiated contact with Vexcel Corporation of Boulder, CO to conduct the InSAR element of the Interim Monitoring Program. An initial meeting was held on September 4, 2003, with Vexcel to define the scope of work. Vexcel is generating a cost estimate and schedule for consideration for the MZ1 Technical Committee.

THIS
PERIOD

Benchmark Evaluation, Via GPS. During this reporting period, the elevation (ft-msl) was established at the starting benchmark at the extensometer from remote NGS (National Geodetic Survey) published NGVD-29 or NAVD-88 datum control monuments. AE performed this work by occupying several NGS vertical control stations in stable locations with GPS receivers, as well as at the starting benchmark. The established elevation at the starting benchmark is accurate to within two or three centimeters, which then becomes the basis for future monitoring events. A side product from this GPS survey is the very good horizontal position for the starting benchmark in NAD-83 LAT/LON or UTM coordinates. The established horizontal position at the starting benchmark was the basis for the September, 2003 horizontal-displacement monitoring event across the fissure zone.



A key element of the MZ-1 benchmark network is the array of closely spaced benchmarks that have been established across the historic fissure zone in the immediate vicinity of the Ayala Park extensometers (Ayala Park array). At this array, located along Edison and Eucalyptus Avenues, the IMP work plan calls for the semi-annual measuring of both vertical and horizontal displacements. These horizontal and vertical displacements are expected to define two-dimensional profiles of land-surface deformation that can be related to the vertical distribution of aquifer-system compaction and expansion that is being recorded continuously at the extensometers. For the reasons stated in the above paragraph, Watermaster conducts these surveys on a semi-annually basis during the late spring and early fall (periods of highest and lowest water levels).

Well Construction, Abandonment, and Destruction Monitoring

BACK-
GROUND

Watermaster staff monitors the condition of wells on a regular basis. Wells that may be improperly abandoned/destroyed are reported to Riverside and San Bernardino Counties as they are discovered.

Watermaster staff inspected 150 suspect wells during a 2002-03 field inspection and determined that 113 of these wells were properly abandoned and 37 wells would require some modification to meet the standard for a properly abandoned well. A well repair/abandonment program was prepared and approved by Watermaster. Watermaster is continuing to develop a wellhead protection program and will make recommendations on closure of abandoned wells.

ON
GOING

Field repair began in September 2003, with completion in six months. Riverside and San Bernardino Counties will be advised of the results. Ongoing land development will require continued well abandonment activity by Watermaster.

PROGRAM ELEMENT 2 – DEVELOP AND IMPLEMENT COMPREHENSIVE RECHARGE PROGRAM

A centerpiece of the OBMP is enhancement of the Basin recharge capacity, so that high quality storm water and available recycled water can be retained in the Basin.

Recharge Facilities Improvement Project (Seven Bid Packages)

Bid Package No. 1—Reconfiguration of Banana, College Heights, Lower Day, RP3 and Turner Basins

ON-
GOING

Bid Package No. 1, which includes improvements at Banana, College Heights, Lower Day, RP-3, and Turner Basins, was awarded to LTE Excavating on March 24, 2003. Work was scheduled for completion by November 15, 2003, but is currently delayed while awaiting delivery of sluice gates and their actuator assemblies.

The present schedule calls for delivery of these elements to LTE by December 15, 2003 and completion of their installation and other minor items by December 22, 2003.



Bid Package No. 2 – Basin Improvements (3 ea), Drop Inlets (4 ea), and Rubber Dams (4 ea)

BACK-
GROUND

Bid Package No. 2 consists of construction of the drop inlet structures for Brooks Street Basin, Turner Basin; and Victoria Basin; rubber dams for College Heights/Upland Basins, Turner No. 1 Basin, Lower Day Basin, and RP-3 Basin; and various improvements at Declz Basin, Ely Basin, and 8th Street Basin. This package was awarded to Banshee Construction with work beginning on July 16, 2003. The contract required that work in storm channels be completed by October 15, 2003 and that the rubber dams be operational by December 31, 2003. All work for this contract must be completed by March 15, 2004.

ON
GOING

Work in the flood control channels has been completed in accordance with the schedule, and work is underway towards making the rubber dams operational. A delay occurred as a result of electrical charge orders, but that issue has been resolved. Work in the basins not impacted by the electrical charge order is proceeding in accordance with the construction schedule.

THIS
PERIOD

Bid Package No. 3 – Jurupa Basin to RP3 Force Main

Bid Package No. 3 involves construction of approximately 11,000 linear feet of 36-inch CML&C force main between Jurupa Basin and RP-3 Basin. The force main will be used to convey storm water, imported water, and recycled water between the pump station at Jurupa Basin and the RP-3 Basin. This package was awarded to W. A. Rasic Construction Company with work beginning on August 6, 2003. The Contractor anticipates a construction period of 10 ½ months with completion of the pipeline in June 2004.

THIS
PERIOD

Bid Package No. 4 – Jurupa Basin to RP3 Pump Station

Bid Package No. 4 consists of construction of the Jurupa Basin Pump Station. The Engineers' estimate was \$2.5 million. IEUA received eight bids, with a low bid of \$2.1 million by LT Engineering. After a review of bids, IEUA expects to award the winning bid in December 2003.

THIS
PERIOD

Bid Package No. 5 – SCADA System

This bid package includes the SCADA system and electrical improvements at all the basins. The 100 percent design was submitted, reviewed, and sent out for bid this period. The bid opening is scheduled for January, 2004; and bid award for February 2004.

TO
COME

Bid Package No. 6 – MWD Turnout Design

This bid package covers the construction of three MWD turnouts: 11TB and 15T on the Rialto Pipeline, and new turnout 211 and 47 on the Etiwanda Pipeline near San Sevaine Channel. MWD has provided various drawings, specifications, and other information needed to complete the three designs. The 100 percent design submittal is anticipated for December 2003, and the contract is expected to be awarded in February 2004.



TO
COME

Bid Package No. 7 – Priority, Funding and Scope of Misc. Projects

This bid package will complete miscellaneous projects not included in the previous bid packages. Among the projects being considered for this bid package are:

- Mitigation Area at RP-3
- Pre-Treatment Areas at Jurisdictional Basins
- Upland Basin Improvements
- Completion of Victoria Basin Improvements
- Hickory Rubber Dam, Pump Station and Force Main
- Etiwanda Conservation Ponds
- Miscellaneous Projects

The various projects will be prioritized and those that offer the greatest benefits to groundwater recharge will be included in the bid package depending on available funding after construction of the other six bid packages. The scope of work is currently under development. Bid Package No. 7 is expected to be awarded by second quarter 2004.

THIS
PERIOD

Groundwater Recharge Coordinating Committee

The GRCC met bi-weekly to monitor and coordinate the Recharge Facilities Improvement Project, focusing on defining additional operational and maintenance costs. Watermaster's 2003-2004 budget provides \$440,000 for the operation and maintenance activities.

In addition to design review, the GRCC has initiated work on individual operations and maintenance plans for all the recharge basins, as well as obtaining regulatory agency approvals and permits.

BACK-
GROUND

Santa Ana River Fully Appropriated Stream (FAS) Petition and Application

Watermaster's Santa Ana River Application to Appropriate, which was filed by Watermaster in trust for the Parties to the Judgment, is reported under Program Element 2. This is because the water referenced under Watermaster's Application is seasonal storm flow that has been and will be recharged pursuant to this Program Element.

ON
GOING

On May 20, 2003, the SWRCB provided formal notice to all the participants in the Santa Ana River process of protests that have been filed to the various applications. A 30-day period was provided for responses to the protests.

The U.S. Forest Service, California Fish and Wildlife Service (FWS), Eastern Valley Water District (EVWD), and the Cucamonga County Water District (CCWD) have protested Watermaster's Application. As previously reported, the Forest Service has informally agreed to withdraw its protest. FWS has general concerns about the impacts of various



diversion schemes on the fish and wildlife in the Santa Ana River. EVWD has questioned whether there is water available in the Santa Ana River for appropriation, while CCWD requests recognition of its pre-1914 water rights.

**PROGRAM ELEMENT 3 –
DEVELOP AND IMPLEMENT WATER SUPPLY PLAN FOR THE IMPAIRED AREAS OF
THE BASIN; AND**

**PROGRAM ELEMENT 5 –
DEVELOP AND IMPLEMENT REGIONAL SUPPLEMENTAL WATER PROGRAM**

These program elements focus on the shift of production in the southern end of the Basin away from agricultural uses and toward urban uses. Without the OBMP, this land use conversion would result in a decrease in production in the southern end of the Basin, ultimately leading to rising water levels. If groundwater levels in the southern end of the Basin rise too high, then water may “spill” out of the Basin into the Santa Ana River. Such uncontrolled spillage could reduce the overall Safe Yield of the Basin. The Basin can be managed to avoid this possibility.

Directly tied to the threat of rising water levels in the southern area is the diminished desire of producers in the southern end of the Basin to pump water because of impaired water quality. The ability to compensate for the loss of agricultural production with increased appropriative production is inhibited because of these water quality concern. Appropriative production in this area therefore requires water treatment, an issue addressed through the construction of desalter facilities.

The Chino I Desalter Expansion Project.

BACK-
GROUND

Chino I Expansion Underway. The Chino I Desalter was originally constructed by SAWPA to provide a total of 9,200 acre-feet per year of product water deliveries. This expansion of the Chino I Desalter includes construction of an additional 4.9 million gallons per day (mgd) of expanded treatment capacity (nitrate removal via ion exchange) in parallel with the existing treatment facilities, as well as associated raw water and product water delivery facilities. The product water will have TDS and nitrate concentrations less than 350 mg/L and 25 mg/L, respectively.

ON
GOING

Revised Bids For Ion Exchange Under Review. May Redesign. CDA received bids for the Ion Exchange Treatment System for both Chino I and Chino II Desalters in April 2003. Because of discrepancies in the low bid, all bids were rejected and the projects were rebid. The rebids were received on August 19, 2003 and are currently under review. The design of additional onsite facilities was completed in July 2003 and advertised for bidding in August 2003. However, CDA staff is currently considering redesign of onsite facilities to cut the cost of delivering treated water to its member agencies.



The Chino II Desalter Project.

ON
GOING

This project includes 10 mgd of reverse osmosis/ion exchange treatment capacity, as well as raw water and product water delivery facilities. All these facilities are in their design phase, as summarized in the following table.

Summary of Design/Construction Progress on Chino I/II Desalters

Project/Item	Chino I Desalter Expansion Design	Chino II Desalter Design
Well Drilling	Constructed	75%
Well Equipping	99%	65%
Raw Water Pipeline	99%	50%
By Pass Piping/VOC Treatment	99%	---
IX Treatment	99%	99%
Ontario Pump Station	5%	80%
Chino Hills Pump Station	Construction Contract Awarded	---
Product Water Pipeline	---	80%

Site Acquisition For Chino II Wells Underway. The sites for nine Chino II raw water supply wells have been identified and CDA staff is negotiating their acquisition with property owners. CDA staff is coordinating with the City of Ontario for two of the sites, which are located in a proposed development.

ON
GOING

**PROGRAM ELEMENT 4 – DEVELOP AND IMPLEMENT COMPREHENSIVE
GROUNDWATER MANAGEMENT PLAN FOR MANAGEMENT ZONE 1**

Program Element 4 details the steps undertaken by Watermaster to reduce or abate subsidence and fissuring in Management Zone 1.

The MZ1 Technical Committee Meeting –September 24, 2003. Committee representatives were informed of the status of the various efforts to implement the monitoring program (see Land-Surface Monitoring section of Program Element 1), and were briefed on the anticipated results of the aquifer stress test began on October 1, 2003. The next meeting is tentatively scheduled for January 14, 2004, and will focus on the GPS survey of the extensometer location, the Associated Engineers (AE) semi-annual survey of the Ayala Park benchmarks, the Vexcel cost estimate and schedule for the InSAR studies, and the extensometer results from the Comprehensive Pumping Test.

THIS
PERIOD

Voluntary Forbearance. The City of Chino and the City of Chino Hills submitted certifications documenting their respective voluntary participation in forbearance of groundwater production. Through the end of November 2003, the City of Chino submitted documentation of pumping reductions toward its forbearance goal of 1,500 acre-feet for 2003/2004. The totals through November are detailed below:



Agency	Forbearance through November 2003	Forbearance Goal 2003/2004
City Of Chino	525 acre-feet	1,500 acre-feet
City Of Chino Hills	0 acre-feet	1,500 acre-feet

TO
COME

Pending Legal Actions Regarding Subsidence. In its October 17, 2002 Order, the Court ordered Watermaster to keep the Court apprised of any legal actions that could question the Court’s jurisdiction over subsidence. Watermaster is not aware at this time of any such actions.

**PROGRAM ELEMENT 6 –
DEVELOP AND IMPLEMENT COOPERATIVE PROGRAMS WITH THE REGIONAL
WATER QUALITY CONTROL BOARD, SANTA ANA REGION (REGIONAL BOARD)
AND OTHER AGENCIES TO IMPROVE BASIN MANAGEMENT; AND**

**PROGRAM ELEMENT 7 –
DEVELOP AND IMPLEMENT SALT MANAGEMENT PROGRAM**

The “water quality committee” as envisioned in the OBMP Implementation Plan has been formally constituted. Since the development of the OBMP, Watermaster has worked closely with the Regional Water Quality Control Board, the Department of Toxic Substances Control, and others to define water quality challenges and to refine the water quality management criteria in the Chino Basin. Watermaster continues to review water quality conditions in the Basin and to consider future water quality management activities beyond the Chino Basin desalting program.

BACK-
GROUND

Water Quality Management. In response to the results of RWQCB and Watermaster’s groundwater-quality monitoring programs (Program Element 1) Watermaster has refined its water-quality monitoring to focus on the following key areas:

- Watermaster is identifying and characterizing water-quality anomalies, such as the VOC anomaly north of the Chino I Desalter well field. Status Reports on each of the anomalies are being developed by Watermaster and are presented to the Water Quality Committee for their review.
- Watermaster staff continues to participate in the process of developing TMDLs for Reach 3 of the Santa Ana River and other water bodies in the lower Chino Basin. No progress has been made during the last quarter because of the State budget crisis and the staffing issues at the RWQCB.
- Watermaster staff is coordinating with the RWQCB with regard to surface water quality and the DTSC with regard to developing a monitoring program to track perchlorate in groundwater in the Fontana area.



Water Quality Committee Meeting September 24, 2003.

Watermaster consultants focused attention on three identified water quality anomalies and one basin-wide problem contaminant-perchlorate. With respect to the three anomalies.

- The Kaiser TDS/TOC/VOC plume has not been monitored in a decade, so recommendations were made to rehabilitate former monitoring wells to monitor the plume movement.
- A large body of evidence exists on potential responsible parties (PRPs) for the VOC plume south of Ontario Airport, however the RWQCB lacks the resources to prepare investigative orders to the PRPs. Watermaster will develop recommendations for the WQC on alternatives for proceeding against PRPs.
- The VOC plume south of the Chino Airport is currently being sampled by consultants to the San Bernardino County Department of Architecture and Engineering (SBCDAE). The sampling was required by a CAO issued in 1990 by the RWQCB.

With respect to the perchlorate contamination, Watermaster was tasked to determine the extent Colorado-River Aqueduct (CRA) water was recharged historically into groundwater recharge basins, thereby contributing perchlorate to the Chino Basin.

Water Quality Committee Meeting November 12, 2003.

Watermaster revisited the issues raised in the September 24, 2003 meeting and provided a status report on two GE plumes located in Ontario, CA. (See WQC Quarterly Progress Report, Third Quarter 2003).

- Two particularly valuable monitoring wells for the Kaiser plume: MP2 and KOFS have been located and will be rehabilitated for incorporation in a work plan for monitoring the Kaiser plume.
- The SBCDAE consultant completed the first round of quarterly sampling, and concluded that the VOCs present in wells in the southwestern portion of the airport were caused by off-site sources. This controversial conclusion is being challenged by Watermaster staff.
- Watermaster requested that MWD utilize available funds to investigate whether CRA water applied as artificial recharge and/or irrigation water could be a source of perchlorate contamination. Thus far, MWD has declined to fund these investigations. Watermaster has contracted with Environmental Records Search to do a query of state and federal databases of known users and dischargers of potentially hazardous chemicals into the groundwater basin.
- Watermaster will work with the RWQCB to determine a sequence of events, and level of commitment, needed to document a CAO for PRPs at the Ontario Airport. This work effort will be reviewed with the WQC.



- The GE Flat Iron remedial action plan will be restarted this quarter with the following actions: pump and treat of the contamination plume, soil vapor extraction (SVE) of the residual VOCs and proper abandonment of the City of Ontario well #33.
- The GE Test Cell remedial action plan is scheduled to restart this quarter with the following actions: deep SVE for on-site VOC removal, design of treatment and disposal facilities for contaminated groundwater.

Watermaster and Regional Board Propose TDS and Nitrogen Objectives to Promote Maximum Benefit of Waters Available to the Chino Basin

THIS
PERIOD

Watermaster staff has been working with the Total Dissolved Solids/ Nitrogen Task Force to revise the subbasin boundaries, and the TDS and N objectives for the Chino Basin to promote maximum beneficial use of waters in the Basin (as opposed to the Regional Board's current, more rigid antidegradation-based objectives). The maximum beneficial use approach will increase water supplies and lower costs over time while meeting water quality requirements. In December 2002, Watermaster proposed specific subbasin boundaries, and N and TDS objectives for the Chino Basin to the RWQCB at a workshop regarding the Basin Plan update. The TDS/N Task Force and the RWQCB have reacted favorably to the Watermaster proposal and have incorporated Watermaster recommendations in the TDS/Nitrogen Basin Plan Amendment dated November 21, 2003. Watermaster believes that the modified Watermaster proposal will be included in the Basin Plan update that will occur later in fiscal year 2003-2004.

Cooperative Effort to Determine State of Hydraulic Control. One outstanding issue regarding the Basin Plan changes is to develop a monitoring plan to evaluate the state of hydraulic control in the southern end of the Basin. Hydraulic control is one tool that can be used to maximize the safe yield of the Basin. Watermaster staff developed a monitoring program for OBMP purposes and described this effort in the Initial State of the Basin report (October 2002). The execution of this monitoring program is included in Program Element 1. Watermaster is collaborating with OCWD and IEUA in an investigation to select existing wells and to site new multi-piezometer wells that will be used to monitor and assess the state of hydraulic control

Hydraulic control will become a commitment of Watermaster if the proposed subbasin boundaries, and N and TDS objectives for the Chino Basin, are adopted. Watermaster, OCWD, and RWQCB staffs are working to develop a monitoring program to assess the state of hydraulic control and to provide information to Watermaster to manage future production and recharge. The initial phase of the monitoring program began in June 2003. This program will change over time as new information is developed and will last for several years. The coordination and review of the hydraulic control monitoring data and the development of management programs to maintain hydraulic control have been added to Program Elements 6 and 7.

Watermaster and IEUA have committed to the construction of a total of nine new multi-piezometer wells during fiscal years 2003-04 and 2004-05. Watermaster filed an



application for \$250,000 from the Local Groundwater Assistance Fund, sponsored by the California Department of Water Resources (DWR). Watermaster received notice during this period that the DWR will award the full \$250,000 to Watermaster. This funding will support construction of two piezometric monitoring wells that, in addition to some existing wells, would be used for monitoring and assessing the state of hydraulic control. In addition to the DWR funding, IEUA and Watermaster have secured \$270,000 from the U.S. Bureau of Reclamation for two new monitoring wells for the hydraulic control monitoring program.

Watermaster staff prepared a detailed draft work plan for hydraulic control monitoring and assessment during this period. The OCWD and RWQCB are reviewing the draft work plan.

Salt Budget Tool Was Used To Establish TDS Objectives

BACK-
GROUND Watermaster has developed a salt budget tool to estimate the current and future salt loads to the Basin and the salt benefits of the OBMP. This tool was used to establish TDS objectives for the northern part of the Basin based on maximum beneficial use of water available to the region. These projections were based on the water supply plan in the Implementation Plan and include alternative recycled water and State Project water recharge scenarios.

TO
COME Watermaster consultants are currently preparing a letter report describing the salt budget. Originally, this letter was to be submitted to Watermaster in December 2003 but has been deferred pending discussions with the RWQCB regarding methods and the ongoing Basin Plan update. A report to Watermaster will likely be made in the next quarter.

PROGRAM ELEMENT 8 – DEVELOP AND IMPLEMENT GROUNDWATER STORAGE MANAGEMENT PROGRAM; AND

PROGRAM ELEMENT 9 – DEVELOP AND IMPLEMENT STORAGE AND RECOVERY PROGRAM

This section summarizes the work accomplished to date and the work planned over the next few months for the Chino Basin Dry Year Yield (DYY) and Storage and Recovery Programs. The DYY Program is a conjunctive use program between the Metropolitan Water District of Southern California (MWDSC) and several Basin appropriators, which would develop a maximum of 100,000 acre-feet of storage. These Programs also explore the potential for using up to 500,000 acre-feet of storage capacity.

BACK-
GROUND **Completed Preliminary Design Report.** The first draft of the DYY Preliminary Design Report was completed in July 2003 and submitted to Watermaster. It is currently under review by all of the participating agencies. The DYY Program documentation is organized into four volumes: Volumes I and II, prepared by Black & Veatch, comprise the Preliminary Design Report (PDR). Volume I describes the background information and design objectives of the Program, while Volume II describes the facilities to be designed to



help the agencies meet their shift obligation. Volume III presents the groundwater modeling report developed by Wildermuth Environmental, Inc., and Volume IV contains the CEQA Findings of Consistency environmental documentation prepared by Tom Dodson and Associates.

ON
GOING

DYY Shift Obligation. Participants in the DYY Program will be required to reduce (shift) their imported water usage by a predetermined amount during a dry year. Each participating agency will have a specific shift obligation that, when added together, will provide Metropolitan with 33,000 acre-feet of dry-year yield. The shift obligations were determined through meetings and correspondence among IEUA, Watermaster, Black & Veatch, and representatives from each participating agency.

The nine participating agencies are as follows:

• City of Chino	• Monte Vista Water District (MVWD)
• City of Chino Hills	• City of Ontario
• Cucamonga County Water District (CCWD)	• City of Pomona
• Fontana Water Company (FWC)	• City of Upland
• Jurupa Community Services District (JCSD)	

Facility Requirements and Site Selection. A preliminary screening of potential sites identified the most feasible locations for the DYY Program facilities. The information was presented to the agencies and a final selection was made. The Program facilities consist of five new ion exchange (IX) facilities, expansion of two existing IX facilities, construction of seven new non-water quality impaired wells, and two new perchlorate wellhead treatment facilities. The new wellhead IX facilities would contribute approximately 18,000 acre-feet of dry-year yield, while the new well facilities would contribute approximately 15,000 acre-feet of additional yield. The total capital cost for the facilities is estimated to be \$38 million. MWDSC will contribute approximately \$27 million. The Groundwater Storage Program Funding Agreement between MWDSC, IEUA, Three Valleys Municipal Water District (TVMWD), and Watermaster was signed in July 2003.

ON
GOING

Final Design of PDR Facilities. The designs for the facilities outlined in the PDR are either under way, completed, or will commence shortly. All design documents are scheduled to be completed by September 2004.

BACK-
GROUND

Groundwater Modeling. The new Chino Basin groundwater model was completed and the modeling report was submitted to Watermaster in July 2003. In addition to evaluating the effects of the DYY program on the Basin, the model was used to:

- Develop draft future replenishment and wet-water recharge criteria based on requirements described in the Section 7.1b of the Watermaster Rules and Regulations regarding the balance of recharge and discharge.
- Evaluate the cumulative effects of transfers among the Parties as described in Section 9.3 of the Watermaster Rules and Regulations.
- Describe pumping patterns in Management Zone 1 that will not reduce piezometric levels below current conditions.



These management criteria were incorporated into the DYY program. The results of this work were presented to the Pool Committees, Advisory Committee, and the Watermaster Board in June and August 2003.

BACK-
GROUND

Engineering Review and Determination of the Operational Storage Requirement and Safe Storage. The Operational Storage Requirement was defined in the Peace Agreement as part of the storage in the Chino Basin “necessary to maintain the safe yield” of the Basin (Peace Agreement, Exhibit B – Implementation Plan, page 37). Safe storage is the maximum storage in the Basin that can occur without significant water quality and high groundwater related problems. The draft results of this work were presented to the Pool Committees, Advisory Committee, and the Watermaster Board in August 2003.

ON-
GOING

Other Uses of the Groundwater Model in the OBMP Implementation. The groundwater model is also being used to assess the balance between recharge and discharge throughout the Basin, operational storage requirements and safe storage, and the cumulative physical impacts of transfers. Draft results from this work were submitted to Pool Committees, Advisory Committee, and the Watermaster Board, starting in April 2003.

ADMINISTRATIVE UPDATE

THIS
PERIOD

New Office Location. Regarding physical facilities, Watermaster relocated to the former Cucamonga County Water District facilities at 9641 San Bernardino Road in Rancho Cucamonga on September 12, 2003.

CONCLUSION

THIS
PERIOD

This has been an active reporting period for Watermaster, with major activities on a number of issues:

- The Ayala Park Extensometer became operational and began recording data on ground subsidence during a planned pumping test.
- Construction on Bid Packages 1 and 2 of the Recharge Facilities Improvement Project progressed in accordance with the construction schedule.
- The GW level and quality monitoring programs have been reorganized to better support new initiatives, such as MZ1, HCMP, and Desalter Expansion.
- Updated status reports were developed for Chino Basin plumes at Kaiser, GE Flat Iron, GE Test Cell, Ontario Airport and Chino Airport.