

# **Chino Basin Watermaster Status Report No. 10**

**(Covering December 2003 through February 2004)**



**March 2004**



## 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 10 is filed pursuant to this revised schedule and reports on the period from December 1, 2003 to February 29, 2004.*

### 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 (MZ1).

Back  
Ground

The final round of the semiannual 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 semiannual program, Watermaster staff collected groundwater 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 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.

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PERIOD

In the last quarter, 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 this quarter implemented a simplified groundwater level monitoring program consisting of two elements:

- Manually recording groundwater levels in 330 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 35 wells outfitted with automated pressure transducers.

### Groundwater-Quality Monitoring

BACK-  
GROUND

**Prioritizing Wells to Serve Multiple Purposes.** The wells chosen for the 2003-04 water quality monitoring program are located primarily between Interstate 60 and the Santa Ana River (SAR). Selected wells from the 2003-04 monitoring program are being preserved 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

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- All groundwater samples are analyzed for general mineral and general physical parameters.
- Wells within or near the two Volatile Organic Compound (VOC) plumes south of the Ontario and Chino Airports 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, and the concerns expressed by appropriators because of the cost of ion exchange treatment.

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**Revised Sampling Program of Selected Private Wells.** During this quarter, Watermaster implemented a simplified water quality sampling program in which approximately 110 private "key wells" are sampled bi-annually (i.e. once every two years) in the Southern Zone. The wells are distributed geographically to give thorough aerial coverage. In addition, Watermaster participates in a cooperative monitoring program described in the Maximum Benefit Implementation Plan. For example, Watermaster obtains data every six months from the Department of Health Services (DHS) for 114 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 timeliness 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 this period, Watermaster counted about 517 active agricultural wells and equipped 401 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.



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

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**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 March 23, 2004 meeting, Watermaster will initiate discussions of the need for this form with the Water Quality Committee.

### 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 20 distinct basins: Upland, DeClez, Etiwanda Spreading Grounds, Victoria, Hickory, 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.

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PERIOD

Immediately following the staff storm events of December 26-28, 2003; February 1-2, 2004; and February 18-23, 2004, Watermaster staff sampled the storm water captured in thirteen of the twenty basins.

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 SAR and, in some reaches of the River, to increase recharge from the SAR into the Chino Basin. Watermaster developed a surface water monitoring program for the SAR 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 SAR is occurring. A conceptual monitoring plan involving Inland Empire Utilities Agency (IEUA), Orange County Water District (OCWD), the RWQCB, 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 SAR have begun.

BACK-  
GROUND

During the summer, Watermaster consultants worked with U.S. Geological Survey (USGS) staff to conduct stream gauge measurements at four stations on the 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.

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Watermaster now measures the SAR flow and selected water quality parameters as key elements of the HCMP. Watermaster collects water quality samples and measures flow at the four Santa Ana River stations, plus another eight locations on tributaries, on a bi-weekly basis from January through December. In addition, Watermaster obtains discharge data from permanent USGS and OCWD stream gauge locations on the SAR 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 is located in the southern portion of MZ1, an area that has experienced concentrated and differential land subsidence and ground fissuring. A 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.

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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, during "on/off" pumping cycles at active production wells. The California Institution for Men (CIM) and Watermaster signed an access agreement that allows groundwater level and production monitoring at CIM wells. Six monitoring wells on CIM property are instrumented with transducers and are collecting groundwater level data. Six nearby production wells are also instrumented, thereby completing the monitoring network 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, have 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.

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**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.

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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 by the MZ1 Technical Committee.

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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 semiannual 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 continues to develop a wellhead protection program and makes recommendations on closure of abandoned wells.

ON  
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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**

Completed

Bid Package No. 1, which included major earthwork 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 was delayed while awaiting delivery of sluice gates and their actuator assemblies. At the end of this quarter, work on this Bid Package was complete, and a final "punch list" of corrections was prepared.

#### **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 DeClez Basin, Ely Basin, and 8<sup>th</sup> Street Basin. This package was awarded to Banshee Construction with work beginning on July 16, 2003. The contract required that work in the storm channels be completed by October 15, 2003 and that the rubber dams be operational by December 31, 2003. Work on this contract was scheduled to be completed by March 15, 2004; however rain delays have slowed completion of excavation and soil cement berms.

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Work in the flood control channels was completed in accordance with the schedule, and work is underway towards making the rubber dams operational. A delay occurred as a result of electrical change orders, but that issue has been resolved. The goal is to complete work by March 15, 2004 except for the excavation (8<sup>th</sup> Street) and soil cement berms (DeClez and Ely Basins) which are rain delayed.



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### **Bid Package No. 3 – Jurupa Basin to RP-3 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.

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### **Bid Package No. 4 – Jurupa Basin to RP-3 Pump Station**

Bid Package No. 4 consists of construction of the Jurupa Pump Station, 100 feet of 48 inch pipeline, and 400 feet of 36 inch CML&C steal force minimum. The package was awarded to LT Engineering with work beginning on February 19, 2004. The Contractor anticipates a contraction period of 9 ½ months with completion in November 2004.

### **Bid Package No. 5 – SCADA System**

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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 in January 2004. Because of the poor response, the package was rebid in February 2004, and was awarded to Denboer Engineering on February 24, 2004.

### **Bid Package No. 6 – MWD Turnout Design**

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PERIOD

This bid package covers the construction of three MWD turnouts: 11TB and 15T on the Rialto Pipeline, and new turnout 211+ 47 on the Etiwanda Pipeline near San Sevaine Channel. MWD provided various drawings, specifications, and other information needed to complete the three designs. This package was awarded to Griffith Construction with work beginning on February 4, 2004. The contractor anticipates a construction period of five months with completion in June 2004.

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### **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:

- Habitat Mitigation Area at RP-3
- Upland Basin Improvements
- Victoria Basin Improvements
- Hickory Rubber Dam, Pump Station and Force Main
- 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.

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### **Groundwater Recharge Coordinating Committee (GRCC)**

The GRCC met monthly to monitor and coordinate the Recharge Facilities Improvement Project, focusing on design issues, construction management, and operations manuals. Watermaster's FY2003-04 budget provides \$440,000 for current 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 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.

ON  
GOING

The U.S. Forest Service, U.S. Fish and Wildlife Service (FWS), Eastern Valley Water District (EVWD), and the Cucamonga Valley Water District (CVWD) 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 caps 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 appropriators 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 concerns. Appropriative production in this area therefore requires water treatment, an issue addressed through the construction of desalter facilities.*

### **The Chino I/II Desalters**

BACK-  
GROUND

The Chino I Desalter was originally constructed by SAWPA to provide 8.1 million gallons per day (MGD) of product water using reverse osmosis treatment. The project also included extraction wells, raw water pipeline, and product water pipelines and pump stations.

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PERIOD

Chino I Expansion/Chino II Desalter. This expansion includes the construction of an additional 4.9 MGD of parallel treatment capacity (nitrate removal via ion exchange) at Chino I and 10 MGD of similar ion exchange at the Chino II Desalter. Because of bid discrepancies and high costs, the designs for both facilities were modified and re-bid a second time. The new bids are due in March 2004, with construction completion in January 2005.

ON  
GOING

Chino I Desalter Other Improvements. Other facilities either under design or construction include three new extraction wells (construction completed), a raw water pipeline (design completed), a Chino Hills pump station and product water pipeline (construction underway), and a volatile organic compound (VOC) treatment system (design completed) ahead of the ion exchange treatment.

ON  
GOING

Chino II Desalter Other improvements. Other facilities either under design or construction include nine new extraction wells (five under construction, four wells in design), two raw water pipelines (design phase), two product water pipelines (one under construction, one in design), and site improvements (construction underway).

Pending acceptance of the revised designs in March 2004, the projects underway to expand the Chino I/II Desalters should be completed by February 2005.

### **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.*



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**The MZ1 Technical Committee Meeting – January 14, 2004.** 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 results of the aquifer stress test begun on October 1, 2003. The meeting focused 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.

The elevation of the starting benchmark at the extensometer was established by Associated Engineers (AE) through the use of GPS receivers, and from there established the horizontal and vertical position of 24 monuments in the area of greatest subsidence. AE will continue to perform and report on their semi-annual survey of the 24 monuments. These horizontal and vertical displacements will provide two dimensional profiles of land surface deformation then can be related to the vertical distribution of aquifer system compaction and expansion recorded by the extensometers.

Vexcel provided a cost estimate and schedule for a decade (1992-2002) of InSAR data. As a “proof of concept”, Watermaster directed that Vexcel analyze the data for a single year (1993) and provide the information prior to contracting for a full decade of analysis.

Data from the extensometer from July 15, 2003 through December 15, 2003 were presented; and appeared to show excellent correlation with piezometric data from PA-7. A stress-strain diagram was developed for the drawdown (July 15-Nov 1, 2003) and recovery (after Nov, 2003) periods. The pump test appears to show elastic compaction, but complete results will not be available until July 15, 2004. Data from piezometer B recording at a depth of 500-1200’ logs, are sporadically irregular, and our concern centers on possible leaking joints which allow water from the well column to leak out into the gravel layers at shallower elevations. Suggestions for correcting the situation will be presented at the next MZ1 Technical Group Meeting on March 10, 2004.

**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 February 2004, the City of Chino submitted documentation of pumping reductions of 859 acre-feet toward its forbearance goal of 1,500 acre-feet for 2003/2004. The City of Chino Hills submitted documentation of forbearance of 667 acre-feet through January 2004.

Agency	Forbearance through February 2004	Forbearance Goal 2003/2004
City Of Chino	859 acre-feet	1,500 acre-feet
City Of Chino Hills	667 acre-feet	1,500 acre-feet

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**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. The hearing regarding the City of Chino’s Paragraph 15 Motion concerning subsidence was continued by the court until September, 2004.



**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 monitoring surface water quality and with the DTSC to develop a monitoring program to track perchlorate in groundwater in the Fontana area.

**Water Quality Committee Meeting February 5, 2004.**

Because of widespread concern, Watermaster arranged for R. Rhodes Trussell, PhD, to make a detailed presentation on the status of perchlorate regulation and the proven means for perchlorate removal. Dr. Trussell discussed the health effects of perchlorate; the EPA, DHS, and National Academy of Sciences (NAS) efforts to set a perchlorate action level; and current applications of ion exchange for perchlorate removal. Research in possible treatment methods was discussed.



Watermaster consultants received the results of the EDR query of state and federal databases to identify known users and dischargers of potentially hazardous chemicals in the following GW basins: Chino, Claremont, Pomona, Spadra, Cucamonga, Rialto, and a portion of Riverside. The huge database is currently being integrated into the CBWM GIS system. Preliminary results were presented for perchlorate sources; with our computer model being used to demonstrate how the perchlorate sources could contribute to known perchlorate hot spots/plumes.

Watermaster staff located and partially rehabilitated two particularly valuable monitoring wells for the Kaiser plume; MP2 and KOFS. MP2 was located, secured with a new vault, and prepared for sampling by removing the existing pumps and sample piping. KOFS was located and secured.

Watermaster staff prepared a cost estimate of \$25,000 to assist the RWQCB in preparing Cleanup and Abatement Orders (CAO) for PRPs at the Ontario Airport. Expenditure of the funds has been approved by the respective Pools and the Watermaster Board.

In October 2003, Tetra Tech produced their "Draft Groundwater Assessment Report for the Chino Airport," which summarized their analytical results from the first quarterly groundwater monitoring of the VOC plume immediately southwest of the airport property. In their report, Tetra Tech attributed the observed VOC levels to an offsite source to the west of the airport, possibly the California Institute for Men (CIM). Their data interpretation was biased by the lack of historical water level and water quality data, which would have greatly helped in interpretation. At a meeting with Tetra Tech and the SBC Department of Airports in January 2004, Watermaster agreed to provide historical water level data, historical groundwater flow data, and groundwater quality data to the extent their release would not violate confidentiality agreements.

In subsequent Agricultural Pool and Water Quality Committee meetings, the Watermaster has attempted to develop a sanitized version of the water quality data that will protect the confidentiality of the private well owners, while at the same time making these data useful to investigators such as Tetra Tech. Watermaster staff is currently proposing that well identification numbers be replaced with a sequential listing (1,2,3, etc.) that in turn will be plotted on a map scale suitable for providing regional guidance as to contaminant plumes, but imprecise enough for identification with a particular property owner. The sequential numbers will be associated with their respective well construction data, water quality data, and water elevation data.

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

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 anti-degradation 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 sub-basin 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.

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PERIOD

The Basin Plan Amendment incorporating the sub-basin boundaries and maximum beneficial use concept was adopted by the RWQCB on January 24, 2004, (RWQCB Basin Plan Amendment, Attachment to Resolution No. R8-2004-001). Watermaster staff immediately developed and submitted surface water and groundwater monitoring programs to the RWQCB on February 21, 2004. These monitoring programs will measure the progress of CBWM and IEUA in achieving the "maximum benefit" goal for TDS/TIN in the Chino and Cucamonga Basins.

BACK-  
GROUND

**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

In addition to being a core element of the OBMP, hydraulic control is a requirement of the Basin Plan Amendment. Watermaster, OCWD, and RWQCB staffs developed 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 nine new multi-piezometer wells during fiscal year 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 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.

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During the period, Watermaster and IEUA prepared plans and specifications for the new multi-piezometer monitoring wells; and began the site selection process for the first six wells (Phase 1). In addition, these agencies prepared and signed an "Agreement for Cooperative Efforts in Support of the Hydraulic Control Monitoring Program."



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During the 4<sup>th</sup> Quarter of 2003-2004, Watermaster/IEUA will obtain final approval by OCWD and RWQCB for the Phase 1 well sites, perform site acquisition, prepared bid documents, and select a driller for the first six wells. Concurrently, planning will be underway for the final three wells (Phase 2).

### **Salt Budget Tool Was Used To Establish TDS Objectives**

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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.

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Watermaster consultants prepared a letter report (February 20, 2004) describing the salt budget and the Chino Basin Maximum Benefit Commitment. The commitments require Watermaster and IEUA to take specific actions triggered by ambient water quality and other time-certain conditions. An implementation schedule is specified, with the RWQCB responsible for overseeing compliance.

### **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.*

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GROUND

**Completed Preliminary Design Report.** The first draft of the DYY Preliminary Design Report was completed in July 2003 and submitted to Watermaster. 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.



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**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 MWDSC 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 Valley Water District (CVWD)	• 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.

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**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.

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**Final Approval of DYY Storage Account.** Pursuant to Article X of Watermaster's Rules and Regulations, IEUA submitted an Application to enter into a Storage and Recovery Program Storage Agreement. This Application was approved unanimously by all Pools and received unanimous approval from the Advisory Committee and Board on October 23, 2003. Watermaster and IEUA are currently developing a storage agreement pursuant to the Application and expect to process that agreement through the Watermaster approval process in March 2004. The agreement will then be submitted to the Court for approval. Prior to this approval Metropolitan is utilizing its existing Trust Storage Account with the intention of transferring its water stored in the Trust Account into the DYY account upon approval of the Storage Agreement.

BACK-  
GROUND

**Groundwater Modeling.** The new Chino Basin groundwater model was completed and the draft 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. (See Wildermuth, Analysis of Supplemental Water Recharge Pursuant to the Peace Agreement. To be filed with the Court.)
- Evaluate the cumulative effects of transfers among the Parties as described in Section 9.3 of the Watermaster Rules and Regulations. (See Wildermuth, Evaluation of the Cumulative Effects of Transfers Pursuant to the Peace Agreement. To be filed with the Court.)
- 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, and the final report was submitted in September 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.

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**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.

## CONCLUSION

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

- Construction on Bid Packages 1 and 2 of the Recharge Facilities Improvement Project progressed in accordance with the construction schedule. Imported water recharge should begin in the new basins in the 4<sup>th</sup> Quarter FY 2003-04.



- The GW level and quality monitoring programs have been reorganized to better support new initiatives, such as MZ1, HCMP, and Desalter Expansion. Actual field sampling and laboratory analysis are transitioning to the new monitoring program.
- Updated status reports were developed for Chino Basin plumes at Kaiser, GE Flat Iron, GE Test Cell, Ontario Airport and Chino Airport. An initial evaluation of potential perchlorate sources and plumes was undertaken based on an EDR database.
- Data from the Ayala Park Extensometer indicated elastic compaction during the fall 2003 pumping test. New test protocols are being developed for FY2004-05.