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FEE EXEMPT
SUPERIOR COURT OF THE STATE OF CALIFORNIA
COUNTY OF SAN BERNARDINO
RANCHO CUCAMON RUCAMON DISTRICT

AUG 22 2007

BY [Signature] DEPUTY

8 SUPERIOR COURT OF THE STATE OF CALIFORNIA
9 FOR THE COUNTY OF SAN BERNARDINO

10 CHINO BASIN MUNICIPAL WATER
11 DISTRICT

12 Plaintiff,

13 vs.

14 CITY OF CHINO, ET AL.

15 Defendant.

Case No. RCV 51010

[Assigned for All Purposes to the Honorable
MICHAEL GUNN]

NOTICE OF MOTION FOR APPROVAL
OF WATERMASTER'S LONG TERM
PLAN FOR THE MANAGEMENT OF
SUBSIDENCE

Date: Sept 13, 2007
Time: 1:30 pm
Department: R8

18 TO ALL PARTIES AND THEIR ATTORNEYS OF RECORD:

19 PLEASE TAKE NOTICE that on Sept 13, 2007 @ 1:30 pm in Department R8, Chino
20 Basin Watermaster will request the Court to issue an Order directing Watermaster to proceed with
21 the MZ1 Long Term Plan for the Management of Subsidence and to report to the Court regarding
22 implementation under the plan as part of its regular OBMP implementation status reporting. The
23 Motion will be based upon this Notice, the attached Points and Authorities in Support of the Motion,
24 and on the Exhibits and Declaration attached thereto.

25 DATED: August 1, 2007

HATCH & PARENT, A LAW CORPORATION

26 BY [Signature]

27 Scott S. Slater
Michael T. Fife
Attorneys for Chino Basin Watermaster

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FILED
SUPERIOR COURT
COUNTY OF SAN BERNARDINO
RANCHO OF CAMONIA DISTRICT

AUG 08 2007

Attorneys for CHINO BASIN WATERMASTER

BY J. J. [Signature] DEPUTY

8 SUPERIOR COURT OF THE STATE OF CALIFORNIA
9 FOR THE COUNTY OF SAN BERNARDINO

11 CHINO BASIN MUNICIPAL WATER
12 DISTRICT,

13 Plaintiff,

14 vs.

15 CITY OF CHINO, ET AL.,

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Case No. RCV 51010

Assigned for All Purposes to the
Honorable J. MICHAEL GUNN

POINTS AND AUTHORITIES IN
SUPPORT OF MOTION FOR APPROVAL
OF WATERMASTER'S LONG TERM
PLAN FOR THE MANAGEMENT OF
SUBSIDENCE; EXHIBITS AND
DECLARATION THEREOF

17 Date: Sept 13, 2007
18 Time: 1:30 pm
19 Place: R-8

20 I. Introduction

21 In 2002, the Chino Basin Watermaster ("Watermaster") embarked on an ambitious plan to
22 address subsidence in Management Zone 1 ("MZ1"). That plan involved the installation and use of
23 state of the art monitoring equipment, extensive technical analysis, and the modification of pumping
24 patterns that allowed for empirical testing of theories about aquifer system behavior. Subsidence in
25 the area of investigation is now well understood and has been generally brought under control. The
26 challenge that remains is to put a plan in place that will allow this success to continue on a
27 permanent basis. With the advice of the MZ1 Technical Committee, Watermaster has developed a
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1 Long Term MZ1 Subsidence Management Plan (“Long Term Plan”) that Watermaster believes will
2 accomplish this goal. A copy of the Long Term Plan is attached to this Motion as Exhibit “A.”

3 Watermaster respectfully requests the Court to issue an Order that makes findings consistent
4 with section VII of this pleading.

5
6 **II. Jurisdiction**

7 Watermaster is before the Court with the Long Term Plan pursuant to a process that began
8 with the filing of Motions by the Cities of Chino Hills and Chino pursuant to Paragraph 15 of the
9 Judgment. While the completion of the Long Term Plan is intimately related to these Motions, it is
10 properly a separate Watermaster activity implementing Program Element 4 of the Optimum Basin
11 Management Program (“OBMP”). Court review of the Long Term Plan is thus most properly
12 conducted under Paragraph 31 of the Judgment.

13 According to Paragraph 31, the Court’s review shall be de novo. Watermaster’s findings or
14 decision, if any, may be received in evidence at the hearing, but shall not constitute presumptive or
15 prima facie proof of any fact in issue. (Judgment Paragraph 31(d).)

16
17 **III. Planning Background of Subsidence Management**

18
19 In implementing the physical solution for the Chino Basin, Watermaster must consider that
20 the Basin is a “common supply” for all stakeholders that rely upon the Basin. Exhibit “I” to the
21 Judgment provides that it is a management objective that no party be deprived of access to
22 groundwater because of unreasonable pumping patterns or regional or localized Recharge or
23 Replenishment, “insofar as such result may be practically avoided.” (Judgment, Exhibit “I”;
24 Watermaster Rules and Regulations 5.3(a).) In addition, financial feasibility, economic impact and
25 the physical facilities of the parties is of equal importance to water quantity and water quality
26 considerations. (Judgment Exhibit “I”; Watermaster Rules and Regulations 5.3(c).)

27
28 The Peace Agreement was executed by the Parties to the Judgment in June of 2000 in

1 furtherance of the Physical Solution. Although Watermaster is not a signatory to the Peace
2 Agreement it approved it and agreed to act in accordance with its terms. Watermaster was
3 subsequently ordered to proceed in accordance with its terms by the Court on July 13, 2000. The
4 OBMP Implementation Plan was Exhibit "B" to the Peace Agreement.

5
6 Subsidence management in the Chino Basin is a recognized component of the OBMP.
7 Program Element 4, *Develop and Implement Comprehensive Groundwater Management Plan for*
8 *Management Zone 1 (MZ1)* is the central locus for subsidence management issues in the OBMP,
9 though Program Element 1, *Develop and Implement a Comprehensive Monitoring Program* is also
10 a significant component of Watermaster's activities relating to subsidence management.

11 As early as the OBMP Phase I Report (August, 1999), the relationship between deep zone
12 pumping and subsidence was recognized as a management issue of concern. The Phase I Report
13 said that:

14 Unless certain actions are taken, piezometric levels in the deep
15 aquifers of Management Zone 1 will continue to decline adding to the
16 potential for additional subsidence and fissures, lost production
17 capability and water quality problems. This impediment speaks to a
18 localized subsidence and fissuring problem within the City of Chino
19 and to a potentially larger and similar problem in the southern end of
20 Management Zone 1 in the former artesian area. This part of the
21 Basin contains a higher fraction of fine-grained materials that
22 originated from sedimentary deposits in the Chino and Puente Hills.
23 This area also consists of a multiple aquifer system. The upper
24 aquifer(s) are moderately high in TDS and are often very high in
25 nitrate. The City of Chino Hills has drilled a series of wells into the
26 deeper aquifer(s) to obtain better quality water. The storage and
27 hydraulic properties of the deeper aquifers are quite limited relative to
28 the upper aquifer. The correlation of the recent groundwater
production in the deep aquifers and the timing of the subsidence and
fissuring, and a review of the hydrogeologic data from the area very
strongly suggest that deep aquifer production is the likely cause of the
subsidence.

(Phase I Report, p. 4-25.)

One of the impediments to achievement of the goals of the OBMP identified by the Phase I
Report was that, "existing production patterns are not balanced, cause losses, can cause local
subsidence, and water quality problems." (Phase I Report, Table 3-8, p.6.) One of the action items

1 intended to resolve this impediment was to, “develop new production patterns that maximize yield
2 and beneficial use; and develop incentive programs and policies that encourage (or rules that
3 enforce) new production patterns.” (Id.)

4 Toward this end, Watermaster has been working with the producers in MZ1 for many years
5 to develop a voluntary program that will resolve the issues identified in the Phase I Report.

6
7 **IV. Chronology of Interim Plan and Long Term Plan**

8 On December 7, 2001, the City of Chino Hills filed a Petition for Writ of Mandate against
9 the City of Chino. Chino Hills requested: (1) a judicial declaration related to the City of Chino’s
10 encroachment permit process; (2) a preemptory writ requiring Chino to permit Chino Hills to enter
11 its right of ways to allow completion of a pipeline project known as the “Monte Vista Interconnect
12 Transmission Main”; (3) invalidation of Chino’s Urgency Ordinance 2001-08 and Regular
13 Ordinance 2001-09 related to Chino’s encroachment permit process. (Petition, pp. 26-28.) The
14 Petition specifically requested that it be assigned to the Hon. J. Michael Gunn under his continuing
15 jurisdiction of the Chino Basin adjudication. (Chino Hills Petition, p. 3.)

16 On December 19, 2001, the Supervising Judge of the San Bernardino Superior Court
17 determined that the Petition encompassed two separate matters. (Dec. 19, 2001 Order, p. 2.) The
18 first matter was construed as a mandamus proceeding brought under the Public Utility Code. The
19 second matter was construed as a motion brought under Paragraph 15 of the Judgment which
20 encompasses all claims pertaining to the rights and obligations of the parties with respect to the
21 production of water in the Chino Basin, including any issues relating to subsidence. This matter
22 was assigned to Judge Gunn.

23 Also on December 19, 2001, Judge Gunn ordered all parties to report on the status of the
24 technical work performed by Watermaster and others concerning subsidence and related issues, and
25 set a hearing for February 28, 2002 on those issues. (December 19, 2001 Order, p. 2.)

26 In response, on January 31, 2002, the City of Chino filed a motion pursuant to Paragraph 15
27 requesting the Court to assume jurisdiction over its dispute with Chino Hills regarding water
28 production and subsidence. (Chino Motion, p. 4.) The purpose of this request was to resolve the

1 following issues: (1) whether Chino Hills' production of water from the deep aquifers within the
2 City of Chino is causing land subsidence and if so, to fashion a remedy to abate the land subsidence;
3 and (2) whether Chino Hills' proposed purchase of groundwater from the Monte Vista Water
4 District will have the potential to degrade the quantity or quality of water that Chino extracts from
5 its northerly wells and if so, to fashion a remedy. (Chino Motion, pp. 3-4.)

6 On January 29, 2002, Watermaster filed its *Report of Watermaster Activities Regarding*
7 *Subsidence and Request for Finding and Further Order*. This Report was accompanied by a
8 Declaration from Mr. Wildermuth. On February 14, 2002, Monte Vista Water District filed a
9 Motion to Strike portions of the City of Chino's Motion. Similarly, on February 18, 2002, the City
10 of Chino Hills filed an objection to the City of Chino's Motion. Chino Hills joined in Monte Vista's
11 Motion and also joined in Watermaster's Motion.

12 Following these filings, Watermaster filed a Motion for a Continuance asking the Court to
13 defer ruling on the pleadings that had been filed and to direct the parties to convene a stakeholder
14 process in order to develop a consensus-based Interim Plan to address subsidence. Twelve parties,
15 including Chino and Chino Hills, joined in this Motion. On February 25, 2002, the Special Referee
16 filed a *Report and Recommendation Concerning Motions Filed Related to Subsidence*. This Report
17 recommended granting Watermaster's Motion. On February 28, 2002, the Court continued the
18 hearing in order to allow a stakeholder process to convene. Watermaster was asked to report back
19 on any consensus that had been achieved, and a hearing was set for June 19, 2002.

20 On May 1, 2002, Watermaster filed a *Report on Progress of the Interim Plan Stakeholder*
21 *Process*. On June 17, 2002, Watermaster transmitted the Interim Plan to the Court and requested the
22 Court to schedule a workshop on the Interim Plan. On June 19, 2002, the Court granted this
23 request, and on August 29, 2002 the workshop was held.

24 On September 18, 2002, the Special Referee filed her report titled *Special Referee's Report*
25 *on Interim Plan Workshop and Recommendation Concerning Subsidence Issues*. Oppositions and
26 comments to the Referee's Report were filed by several parties. On September 30, 2002,
27 Watermaster filed its comments to the Referee's Report and asked the Court for an order to proceed
28 in accordance with the Interim Plan. Watermaster's Motion was accompanied by a revised version

1 of the Interim Plan.

2 On October 17, 2002, the Court ordered Watermaster to implement the Interim Plan, to
3 continue reporting regularly to the Court, and to begin the process of developing the Long Term
4 Plan.

5 The initial term of the Interim Plan was three years, and involved the development of an
6 extensive monitoring program and a forbearance program to reduce pumping in the area of concern.
7 Since then, the Cities of Chino and Chino Hills have annually elected to participate in the
8 forbearance program. On April 28, 2005, Watermaster approved continuation of the forbearance
9 program for the fourth year (2005/2006).

10 Near the end of the three-year period another workshop was held on May 25, 2005. The
11 scope of the workshop was limited to a presentation of the technical data and analysis that had been
12 completed. On June 16, 2005 the Special Referee filed her *Report on Progress Made on*
13 *Implementation of the Watermaster Interim Plan for Management of Subsidence*. The Referee's
14 Report recommended that Watermaster prepare a Summary Report on the technical work
15 completed, and issue Guidance Criteria in order to formally alert the parties about the technical
16 determination that drawdown below a certain level in the MZ1 area is likely to cause inelastic
17 compaction. (June 16, 2005 Referee Report, pp. 6-7.)

18 The MZ-1 Summary Report and Guidance Criteria were completed in February 2006 and
19 submitted to the Appropriative Pool in March 2006. At the Appropriative Pool meeting, the City of
20 Chino Hills expressed reservation about the Summary Report and Guidance Criteria. Action on
21 these items was delayed in order to allow the development of an alternate proposal that would
22 resolve the expressed concerns. (March 9, 2006 Appropriative Pool Meeting Minutes, attached to
23 this pleading as Exhibit "B.") By the next month's regularly scheduled meeting no alternative was
24 proposed, and so the Appropriative Pool approved the Summary Report and Guidance Criteria at
25 the April meeting with one dissenting vote from Chino Hills. (April 13, 2006 Appropriative Pool
26 Meeting Minutes, attached to this pleading as Exhibit "C.") The Non-Agricultural Pool and
27 Agricultural Pool unanimously approved the Summary Report and Guidance Criteria at their April
28 meetings.

1 The Advisory Committee unanimously approved the Summary Report and Guidance
2 Criteria at its April meeting, with Chino Hills absent from the meeting. (April 27, 2006 Advisory
3 Committee Meeting Minutes, attached to this pleading as Exhibit "D.") In order to allow additional
4 time to resolve Chino Hills' concerns, the Board voted to delay action on the item to allow for
5 further attempts to engage Chino Hills in a dialogue regarding their concerns. (April 27, 2006 Board
6 Meeting Minutes, attached to this pleading as Exhibit "E.")

7 During the month of May the Watermaster Board Chair, Mr. Willis, met with
8 representatives from the City of Chino Hills and reported at the May 2006 Board meeting that
9 Chino Hills was in the process of preparing a document that would provide guidance concerning
10 how the Long Term Plan should be formulated. (May 25, 2006 Board Meeting Minutes, attached to
11 this pleading as Exhibit "F.") Comments by the representative from Chino Hills at this meeting
12 indicated that the City of Chino Hills was concerned about the method of compensation or
13 assistance for any loss of production that the City of Chino Hills might experience due to
14 subsidence concerns. (Id.) At this meeting the Board also authorized staff to submit the Non-
15 Binding Term Sheet through the Watermaster process for approval. (Id.)

16 Following the May Board meeting, the MZ1 Technical Committee suspended its meetings in
17 order to allow Chino Hills the opportunity to submit a proposal before work on the Long Term Plan
18 continued.

19 On July 26, 2006, another Special Referee workshop was held in order to present the Non-
20 Binding Term Sheet to the Special Referee and her technical assistant. At that meeting, Counsel for
21 Chino Hills expressed reservations about the Non-Binding Term Sheet. (Reporter's Transcript July
22 26, 2006 p. 40:6-24.) On July 28, 2006, Watermaster Counsel wrote to Chino Hills' Counsel and
23 requested clarification concerning Chino Hills' concerns. (Watermaster General Counsel Letter of
24 July 28, 2006, attached to this pleading as Exhibit "G.") Watermaster Counsel also noted that no
25 proposal had yet been forthcoming from Chino Hills and that the Technical Committee was not
26 meeting in anticipation of such a proposal. (Id.) There was no reply to this correspondence.

27 Watermaster received no proposal from Chino Hills and eventually reconvened the
28 Technical Committee in October 2006, in order to resume work on the Long Term Plan.

1 Watermaster has formulated and proposed a complete Long Term Plan.

2 The Long Term Plan that has been proposed by Watermaster follows the spirit of the Interim
3 Plan. It is *Watermaster's* plan that specifies those activities that Watermaster will perform in its
4 attempt to maintain the status quo that has been established under the Interim Plan. The Long Term
5 Plan was approved unanimously by the Appropriative Pool and the Non-Agricultural Pool on June
6 14, 2007, and by the Agricultural Pool on June 19, 2007. On June 28, 2007, the Advisory
7 Committee and Board took action to adopt the findings contained in the June 28, 2007 Staff Report,
8 approve the MZ1 Long Term Plan on the basis of the findings, and to have counsel file this
9 transmittal in accordance with the instructions of the Board. A copy of the June 28, 2007 Staff
10 Report is attached here as Exhibit "H," and a copy of the Advisory Committee and Board minutes
11 are attached here as Exhibit "I."

12
13 **V. Development of the Interim Plan was consistent with the Phase I Report and**
14 **Implementation of the Plan has accomplished the goals identified for the Plan.**

15 The Phase I Report said that:

16 The continued occurrence of subsidence and fissuring in Management
17 Zone 1 is not acceptable and must be reduced to tolerable levels or
18 completely abated. However, there is some uncertainty as to the
19 causes of subsidence and fissuring and more information is necessary
20 to distinguish among potential causes. An interim management plan
21 must be developed and implemented to:

- 22 • Minimize subsidence and fissuring in the short-term;
- 23 • Collect the information necessary to understand the extent and
24 causes of subsidence and fissuring; and
- 25 • Formulate and effective long-term management plan

26 The interim management plan would consist of the following
27 activities:

- 28 • Voluntarily modify groundwater production patterns in
Management Zone 1 for a five-year period. For example, there is
some indication that deep aquifer production beneath the City of
Chino contributed to recent subsidence and fissuring in the area.
Reduction or elimination of deep aquifer production beneath the
area of subsidence and fissuring is a logical short-term mitigation
strategy.

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- Balance recharge and production in Management Zone 1. Based on preliminary engineering investigations with RAM tool, it appears that current levels of pumping and recharge are balanced. However, increases in pumping should be balanced with increases in recharge.
- Determine gaps in existing knowledge. Primarily, there is a lack of understanding of Management Zone 1 hydrogeology, of the nature and extent of subsidence and fissuring, and of the exact causes of subsidence and fissuring.
- Implement a process to fill the gaps in existing knowledge. This would include hydrogeologic, geophysical, and remote sensing investigations of Management Zone 1, as well as certain monitoring programs, such as piezometric, production, water quality, ground level, and subsidence monitoring.
- Formulate a long-term management plan. The long-term management plan will include goals, activities to achieve those goals, and a means to evaluate the success of the plan.

(Phase I Report pp. 4-25 – 4-26.)

Similarly, the OBMP Implementation Plan identified the following activities as components of the Interim Plan:

- Voluntary modifications to groundwater production patterns.
- Monitoring of long term balance of recharge and production on MZ1.
- Determine gaps in existing knowledge.
- Implement a process to fill the gaps in existing knowledge.
- Formulate a long-term management plan.

(OBMP Implementation Plan, pp.26-27.)

To date, the participation in the Interim Plan, on the Technical Committee, as well as in the Forbearance Program has been completely voluntary. Staff sees no evidence to suggest that the voluntary participation by the parties is unsuccessful. To the contrary, the outcome of implementation of the Interim Plan is that the parties have been able to collectively prevent water levels from dropping below a level that is projected to cause inelastic subsidence. The five years of data gathering and experimentation have produced a better and more comprehensive understanding of the groundwater system. For example, Watermaster is now able to measure very small amounts of inelastic subsidence and the measures that have been taken over the last several years have

1 brought the subsidence problem under control.

2 According to an April 4, 2007 , technical memorandum from Wildermuth Environmental
3 analyzing the potential for Material Physical Injury from a proposed transfer of production rights,

4 . . . during the spring 2005 to spring 2006 period, [two of the
5 benchmarks in MZ1] recorded a light rebound of the land surface.
6 The rebound in the MZ-1 Managed Area is closely tied to the
7 recovery of groundwater levels in the deep aquifer . . . which is due to
8 decreased pumping from the deep aquifer. This conclusion is
9 supported by the data that was collected and analyzed as part of the
10 MZ-1 Interim Management Program.

11 The causes of rebound in Central MZ-1 are not as well understood
12 due to the lack of a comprehensive land subsidence monitoring
13 program in that area. This rebound does however appear to coincide
14 with the resumption of wet-water recharge in MZ-1 since the Peace
15 Agreement (with significant increases occurring in 2003/04 through
16 2005/06), with decreases in production associated with MZ-1
17 producers participation in in-lieu recharge through the Metropolitan
18 DYY program, and with general water level recovery throughout MZ-
19 1.

20 (April 4, 2007 Technical Report p.4, attached to this pleading as Exhibit "J.")

21 Further, the Summary Report says that: "The current state of aquifer –system deformation in
22 south MZ-1 (in the vicinity of Ayala Park) is essentially elastic. Little, if any, inelastic (permanent)
23 compaction is now occurring in this area, which is in contrast to the past" (Summary Report p.
24 ES-1; See also Summary Report p. 2-1.) Additionally, the Long Term Plan says that: "The current
25 state of aquifer-system deformation in south MZ-1 (in the vicinity of Ayala Park) is essentially
26 elastic. Very little inelastic (permanent) compaction is now occurring in this area" (MZ-1
27 Plan, p. 1-1.)

28 As implemented, the Interim Plan turns out to have charted exactly the right course to
accomplish the goals of the plan: to bring subsidence under control, to come to understand the
mechanisms of subsidence in the Chino Basin, and to determine what needs to happen on a long
term basis. Accordingly, the challenge presented for the Long Term Plan is to maintain the
effectiveness of the solution that has been established by the parties through voluntary cooperation
rather than trying to remediate an existing problem.

1 **VI. The Long Term Plan is consistent with the Phase I Report, the Judgment, and the**
2 **Peace Agreement**

3 The Phase I Report said:

4 The long-term management plan will be formulated during the interim
5 management plan based on investigations, monitoring programs and
6 data assessment. It will likely include modifications to groundwater
7 pumping rates and the locations of pumping, recharge, and
8 monitoring. The long-term management plan will be adaptive in
9 nature – meaning monitoring and periodic data assessment will be
10 used to evaluate the success of the management plan to modify the
11 plan, if necessary.

12 The subsidence and fissuring problem appears to be currently focused
13 in the City of Chino and the California Institution for Men (CIM).
14 However, it is reasonable given the current knowledge, to expand the
15 minimum area of concern to the entire former artesian area . . . and
16 slightly beyond that area. Changes in pumping and recharge patterns
17 in Management Zone 1, and more generally the area of concern, will
18 most likely be part of the management plan. The producers in the
19 area include the cities of Chino, Chino Hills, Ontario, Pomona and
20 Upland, the Monte Vista Water District (MVWD), San Antonio
21 Water Company (SAWC), Southern California Water Company
22 (SCWC) the State of California (CIM) California Institution for
23 Women [CIW]), and SAWPA. Watermaster may need to have
24 entities that increase their production to provide for the recharge of an
25 equivalent amount of water to maintain the balance of pumping and
26 recharge. Watermaster will take the leadership role in the
27 development and implementation of the Management Zone 1
28 management plan.

(Phase I Report p.4-26.)

Similarly, the OBMP Implementation Plan says that:

The long-term management plan will be formulated while the interim
management plan is in-place based on investigations, monitoring
programs and data assessment. It may include modifications to
groundwater pumping rates and the locations of pumping, recharge,
and monitoring. The long-term management plan will be adaptive in
nature – meaning monitoring and periodic data assessment will be
used to evaluate the success of the management plan and to modify
the plan, if necessary.

(OBMP Implementation Plan, p.27.)

The Summary Report and Guidance Criteria were adopted by the Watermaster Board on
May 25, 2006, and are included in the Long Term Plan as Appendix A. The Summary Report
provided a summation of the results of the technical investigations by the Technical Committee.

1 Based on the results of these technical investigations, the Summary Report also included Guidance
2 Criteria for the MZ1 Producers. (Summary Report Table 4-1.) The Guidance Criteria articulated a
3 Guidance Level which is the physical point where drawdowns of water below that level create the
4 risk of causing inelastic subsidence. The Guidance Criteria state that:

6 The Guidance Level is a specified depth to water measured in
7 Watermaster's PA-7 piezometer at Ayala Park. It is defined as the
8 threshold water level at the onset of inelastic compaction of the
9 aquifer system as recorded by the extensometer, minus 5 feet. The 5-
10 foot reduction is meant to be a safety factor to ensure that inelastic
11 compaction does not occur. The Guidance Level is established by
12 Watermaster based on the periodic review of monitoring data
13 collected by Watermaster. The Initial Guidance Level is 245 feet
14 below the top of the PA-7 well casing.

11 If the water level in PA-7 falls below the Guidance Level,
12 Watermaster recommends that the Parties curtail their production
13 from designated Managed Wells as required to maintain the water
14 level in PA-7 above the Guidance Level.

14 (Summary Report, Table 4-1, items 3 and 4.)

15 Thus, while the Guidance Level is something that is established by Watermaster, it is based
16 purely on the results of the technical data and what that data says about the mechanisms of
17 subsidence. The Guidance Level is not a policy-based regulation by Watermaster, it is rather the
18 articulation of the physical properties of the aquifer system. The Guidance Criteria then represents
19 Watermaster's recommendations to the parties about how best to respond to these physical facts. At
20 this point in time Watermaster has no reason to believe that the parties will not make prudent
21 management decisions based on the information provided to them by Watermaster.

23 The Summary Report noted that in a sense, the Guidance Criteria were the first draft of the
24 Long Term Plan. (Summary Report p. 4-2.) Indeed, the Guidance Level is incorporated into the
25 Long Term Plan and forms the heart of the plan. (Long Term Plan p. 2-1.) Since the Summary
26 Report and Guidance Criteria were adopted Watermaster has been working with the affected parties
27 to develop the Long Term Plan. Based on this outreach and the numerous meetings held with the
28

1 MZ1 parties, Watermaster has formulated a proposal which also recommends the continuation of
2 the monitoring and technical work established during the Interim Plan.

3 The Summary Report also identified other areas in MZ1 and MZ2 that have experienced
4 subsidence in the past, but were not the focus of the Interim Plan. As such, the proposed Long
5 Term Plan recommends additional monitoring and technical work to further Watermaster's
6 understanding of the mechanisms of subsidence in these other areas of MZ1 and MZ2. Watermaster
7 believes that the affected parties in MZ1 are sufficiently concerned with the potential to cause
8 subsidence that the continuation of a voluntary program consistent with the approach utilized by the
9 Interim Plan is the most efficient and effective means to manage subsidence in MZ1 on a long-term
10 basis.

11 Thus, Watermaster will continue and expand its monitoring efforts to other areas in MZ1,
12 and within the previous area of concern, will ensure that the parties are aware of changes in
13 groundwater levels, will provide direct electronic access to real time groundwater levels, and are
14 clearly alerted if groundwater levels begin to approach the control point. Similarly, the parties are
15 requested to maintain accurate records of the operation of the Managed Wells, including production
16 rates and periods of operation. The parties are requested to provide these records to Watermaster
17 monthly. The parties are further requested to promptly notify Watermaster of all operational
18 changes made to maintain the water level in PA-7 above the Guidance Level. (MZ-1 Plan p. 2-2.)
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22 **A. The Long Term Plan Is Adaptive**

23 Consistent with the Phase I Report and the OBMP Implementation Plan as described above,
24 the Long Term Plan as presented is intended to be adaptive in nature. (MZ-1 Plan, Section 3.) This
25 means that while the Plan sets out a set of actions to be taken by Watermaster, this plan of activities
26 may change through time as additional information is obtained and analyzed.

27 Watermaster will not presume that any of the producers operating within MZ-1 will
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1 disregard the guidance criteria for extended periods or in a manner that will cause unmitigated
2 harm. To the contrary, the essence of the proposed Long Term Plan is to reserve the day to day
3 operational discretion to the operators – not the Watermaster as a regulator. However, if conditions
4 change, Watermaster has reserved whatever discretion it may have under the Judgment to make
5 constructive improvements.

6 **B. The Long Term Plan is Adequate without an Alternative Water Supply**
7 **Proposal**

8 Consistent with the intention to reserve operational discretion to the producers within MZ-1
9 with regard to whether to produce groundwater, in which locations and in which quantities, the
10 proposed Long-Term Plan will also reserve to each of the producers the right to evaluate
11 supplemental water supply options that may be right for them. To date, the Technical Committee
12 has not advocated the relocation of any wells or any specific supplemental water strategy.

13 It is the opinion of Watermaster staff and consultants that the existing wells in MZ1 can
14 continue to be operated. So long as the aggregate pumping does not cause water levels to drop
15 below the control point, there is no reason why the existing wells cannot continue to be used in
16 order to make use of the economic value remaining in the wells. Moreover, the decision as to
17 whether to operate outside of the Guidance Criteria is the producer's alone, given their respective
18 balancing of competing considerations. Of course, the success of the Long Term Plan is likely
19 dependent upon whether operations vary from the Guidance Criteria as temporary excursions or the
20 rule.
21

22 Staff does note that it has been nearly eight years since deep zone pumping was identified in
23 the Phase I Report as the potential source of subsidence in MZ-1 and it is reasonable to conclude
24 that if parties had concerns regarding the provision of supplemental water to off-set groundwater
25 production, that they would take whatever actions required to redress the problem. On other hand,
26 if Watermaster should subsequently determine that it is necessary to make the provision for
27
28

1 supplemental water to offset production as a part of the Long Term Plan, the Plan can be amended
2 accordingly.

3
4 Likewise, if a producer demonstrates that their operations have become constrained by
5 subsidence, then it can make a supplemental water proposal for Watermaster's consideration. If
6 appropriate, the Long Term Plan can be amended to add the proposal to the Plan.

7 **C. Long Term Plan Costs**

8 The management of subsidence was recognized by the OBMP as an important management
9 element for the entire Basin, and Program Element 4 (Develop and Implement Comprehensive
10 Groundwater Management Plan for Management Zone 1) emphasizes management specifically in
11 order to minimize subsidence. Some of the action items included in Program Element 4 include the
12 development of a comprehensive groundwater level and quality monitoring program in MZ1, and
13 development of a groundwater management program for MZ1 consisting of increased stormwater
14 and supplemental water recharge, management of production to minimize subsidence, and the
15 increased use of supplemental water in MZ1.

16 Thus, measures to address subsidence are an established component of the overall OBMP. In
17 recognition of this, the parties throughout the Basin incur OBMP costs associated with subsidence
18 management. The parties as a whole pay for the monitoring efforts relating to subsidence and have
19 in the past incurred costs associated with increased supplemental water recharge into MZ1. Indeed,
20 since July of 2000, the parties, through Watermaster, have incurred direct costs of nearly \$3.4
21 million for the management of subsidence in MZ1. (See Declaration of Sheri Rojo attached to this
22 pleading as Exhibit "K.")

23 The Peace Agreement also addressed costs associated with subsidence. Section 5.4(d) says:

24 Watermaster shall adopt reasonable procedures to evaluate requests
25 for OBMP credits against future OBMP assessments or for
26 reimbursement. Any Producer or party to the Judgment, including but
27 not limited to the State of California, may make application to
28 Watermaster for reimbursement or credit against future OBMP
Assessments for any capital or operations and maintenance expenses
incurred in the implementation of any project or program, including
the cost of relocating groundwater Production facilities, that carries

1 out the purposes of the OBMP including but not limited to those
2 facilities relating to the prevention of subsidence

3 Thus, the Peace Agreement contemplated potential reimbursement to parties for costs
4 associated with facilities relating to the prevention of subsidence. Such reimbursement is obtained
5 through an Application to Watermaster in advance of construction. One of the considerations with
6 regard to such an Application will be the availability of alternate funding sources, and such an
7 Application will not be approved where the Producer was otherwise legally compelled to make the
8 improvement. It is potentially relevant in this regard that no party has a right to cause Material
9 Physical Injury to other parties or to the Basin.

10 It is notable that under the Stakeholder Non-Binding Term Sheet, section 5.4(d) of the Peace
11 Agreement is proposed to be deleted.

12 Furthermore, the Peace Agreement section 5.4(e) says that:

13 Any Producer that Watermaster compels to move a groundwater
14 Production facility that is in existence in the Date of Execution shall
15 have the right to receive a credit against future Watermaster
16 assessments or reimbursement up to the reasonable cost of the
17 replacement groundwater Production facility.

18 This provision is not invoked by the proposed Long Term Plan because the proposed plan is
19 voluntary. No Producer is compelled by Watermaster to move a groundwater production facility. In
20 fact, Watermaster has seen no evidence to date suggesting any necessity to move any groundwater
21 production facilities.

22 **VII. Proposed Findings and Order**

23 Watermaster respectfully requests the Court to find as follows:

- 24 1. The OBMP requires Watermaster to address subsidence in the Chino Basin, but it
25 does not specify particular actions to be taken.
- 26 2. The Interim Plan has successfully addressed subsidence on a short term basis.
- 27 3. The Long Term Plan proposes a reasonable approach to the issue of subsidence on a
28 Long Term basis.
4. The Long Term Plan is consistent with the Judgment, the OBMP and the Peace

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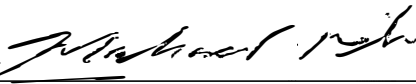
Agreement.

5. The Long Term Plan does not trigger the reimbursement provision of section 5.4(e) of the Peace Agreement.

Based on these Findings, Watermaster respectfully requests the Court to direct Watermaster to proceed in accordance with the Long Term Plan as presented and to report to the Court regarding implementation under the plan as part of its regular OBMP implementation status reporting.

Dated: August 1, 2007

HATCH & PARENT

By: 

SCOTT S. SLATER
MICHAEL T. FIFE
Attorneys for CHINO BASIN
WATERMASTER

EXHIBIT "A"

1. PROBLEM DESCRIPTION AND MANAGEMENT GOALS

One of the earliest indications that land subsidence was occurring in Chino Basin was the appearance of ground fissures in the City of Chino. These fissures appeared as early as 1973, but an accelerated occurrence of ground fissuring ensued after 1991 and resulted in damage to existing infrastructure. The scientific studies that followed attributed the fissuring phenomenon to differential land subsidence caused by pumping of the underlying aquifer system and the consequent drainage and compaction of aquitard sediments.

In 1999, the Phase I Report of the Optimum Basin Management Program (OBMP) identified pumping-induced drawdown and subsequent aquifer-system compaction as the most likely cause of the land subsidence and ground fissuring observed in MZ-1. Program Element 4 of the OBMP – *Develop and Implement a Comprehensive Groundwater Management Plan for Management Zone 1* called for the development and implementation of an interim management plan for MZ-1 that would:

- Minimize subsidence and fissuring in the short-term
- Collect information necessary to understand the extent, rate, and mechanisms of subsidence and fissuring
- Formulate a management plan to reduce to tolerable levels or abate future subsidence and fissuring

In 2000, the Implementation Plan in the Peace Agreement called for an aquifer-system and land subsidence investigation in the southwestern region of MZ-1 to support the development of a management plan for MZ-1 (second and third bullets above). This investigation was titled the *MZ-1 Interim Monitoring Program (IMP)*. From 2001-2005, Watermaster developed, coordinated and conducted the IMP under the guidance of the MZ-1 Technical Committee, which is composed of representatives from all major MZ-1 producers and their technical consultants. Specifically, the producers represented on the MZ-1 Technical Committee include: the Agricultural Pool, City of Chino, City of Chino Hills, City of Ontario, City of Pomona, City of Upland, Monte Vista Water District, Southern California Water Company, and the State of California (CIM).

As of October 2005, the main conclusions derived from the investigation were:

1. Groundwater production from the deep, confined aquifer system in this area causes the greatest stress to the aquifer system. In other words, pumping of the deep aquifer system causes water level drawdowns that are much greater in magnitude and lateral extent than drawdowns caused by pumping of the shallow aquifer system.
2. Water level drawdowns due to pumping of the deep aquifer system can cause inelastic (permanent) compaction of the aquifer-system sediments, which results in permanent land subsidence. The initiation of inelastic compaction within the aquifer system at the Ayala Park Extensometer was identified during this investigation when water levels fell below a depth of about 250 feet in the PA-7 piezometer at Ayala Park.
3. The current state of aquifer-system deformation in south MZ-1 (in the vicinity of Ayala Park) is essentially elastic. Very little inelastic (permanent) compaction is now occurring in this area, which is in contrast to the recent past when about 2.2 feet of land subsidence occurred, accompanied by ground fissuring, from about 1987-1995.
4. Through this study, a previously undetected barrier to groundwater flow was identified. The barrier is located within the deep aquifer system and is aligned with the historical zone of ground fissuring. Pumping from the deep aquifer system is limited to the area west of the barrier, and the resulting



SECTION 1
PROBLEM DESCRIPTION AND MANAGEMENT GOALS

drawdowns do not propagate eastward across the barrier. Thus, compaction occurs within the deep system on the west side of the barrier, but not on the east side, which causes concentrated differential subsidence across the barrier and creates the potential for ground fissuring.

5. InSAR and ground level survey data indicate that permanent subsidence in the central region of MZ-1 (north of Ayala Park) has occurred in the past and continues to occur today. The InSAR data also suggest that the groundwater barrier extends northward into central MZ-1. These observations suggest that the conditions that very likely caused ground fissuring near Ayala Park in the 1990s are also present in central MZ-1, and should be studied in more detail.

The investigation methods, results, and conclusions (listed above) are described in detail in the MZ-1 Summary Report (October 2005), which is included as Appendix A. The investigation provided enough information for Watermaster to develop Guidance Criteria for the MZ-1 producers in the investigation area that, if followed, would minimize the potential for subsidence and fissuring during the completion of the MZ-1 Subsidence Management Plan (this document). The Guidance Criteria are the basis for the MZ-1 Subsidence Management Plan (hereafter, the MZ-1 Plan) and are included in Section 4 of the MZ-1 Summary Report (Appendix A).

The goal of the MZ-1 Plan is:

To develop a pumping and recharge plan to reduce to tolerable levels or abate future land subsidence and ground fissuring.

This initial version of the MZ-1 Plan is specific to southwestern MZ-1 where:

1. Historical subsidence was accompanied by ground fissuring
2. The aquifer-system and land subsidence investigation was focused

However, the investigation also has shown that land subsidence has occurred (or could possibly occur) in other regions of MZ-1, and possibly in other regions of the Chino Basin. In addition, the hydrogeologic conditions that very likely caused ground fissuring in southwestern MZ-1 are also likely present in other regions of MZ-1. For these reasons, the Watermaster conducts aquifer-system and subsidence monitoring efforts in other regions of Chino Basin.

A key element of the MZ-1 Plan is its *adaptive* nature. As new data are collected and periodically analyzed to evaluate the on-going effectiveness of the plan, the plan will be revised accordingly and approved through the Watermaster process.

Section 2 of this plan describes the current version of the MZ-1 Plan. Section 3 addresses the evaluation and periodic update of the MZ-1 Plan.



2. MZ-1 SUBSIDENCE MANAGEMENT PLAN

Managed Wells within the Area of Subsidence Management

Table 2-1 lists the existing wells (hereafter the Managed Wells) and their owners (hereafter the Parties) that are currently subject to the MZ-1 Plan. The Parties are the City of Chino, the City of Chino Hills, and the State of California. Figure 2-1 shows the Area of Subsidence Management (hereafter, the Managed Area). Within the boundaries of the Managed Area, other existing wells and/or newly-constructed wells are subject to being classified as Managed Wells.

The Managed Area was delineated based on:

- Measurements of historical land subsidence
- Proximity to historical ground fissuring
- Areal extent of intensive investigation of the MZ-1 Interim Monitoring Program (IMP)

The Managed Well designations were based upon the observed and/or predicted effects of their pumping on groundwater levels and aquifer-system deformation. Managed Well designations for wells that pumped during the IMP were based on effects measured at the Ayala Park Piezometer/Extensometer Facility. Managed Well designations for wells that were not pumped during the IMP were based on analysis of well construction, geology, and their water level responses to nearby pumping.

Definition of Managed Well: Any production well (regardless of current status) located within the Managed Area that has casing perforations deeper than 400 feet below the ground surface.

The Guidance Level

The IMP showed that water-level drawdowns due to pumping from the deep aquifer system within the Managed Area can cause inelastic (non-recoverable) compaction of the aquifer-system sediments, which results in permanent land subsidence. The initiation of inelastic compaction within the aquifer system was identified during the IMP at the Ayala Park Extensometer when water levels fell below a depth of about 250 feet in the PA-7 piezometer at Ayala Park.

Definition of the Guidance Level: The Guidance Level is a specified depth to water measured in Watermaster's PA-7 piezometer at Ayala Park. It is defined as the threshold water level at the onset of inelastic compaction of the aquifer system as recorded by the extensometer, minus 5 feet. The 5-foot reduction is meant to be a safety factor to ensure that inelastic compaction does not occur. The Guidance Level is established by Watermaster and subject to change based on the periodic review of monitoring data collected by Watermaster. The initial Guidance Level is 245 feet below the top of the well casing (ft-btoc) in PA-7.

Watermaster recommends that the Parties manage their groundwater production so that the water level in PA-7 remains above the Guidance Level. If the water level in PA-7 falls below the Guidance Level, Watermaster recommends that the Parties curtail their production from the Managed Wells as required to (1) allow for water-level recovery and (2) maintain the water level in PA-7 above the Guidance Level.

The magnitude of water level drawdown at which aquifer compaction is initiated in areas other than at the Ayala Park Extensometer has not been directly evaluated. Therefore, caution is recommended when pumping from Managed Wells in order to minimize water level drawdown within the Managed Area.



SECTION 2
MZ-1 SUBSIDENCE MANAGEMENT PLAN

Guidance Levels for wells and/or piezometers in addition to PA-7 may be specified in the future as a result of ongoing monitoring and evaluation of groundwater production, groundwater levels, and land subsidence.

Data Exchange between Watermaster and the Parties

Watermaster will provide the Parties with current water level data from PA-7 beginning on Oct 1, 2007.

The Parties are requested to maintain accurate records of the operation of the Managed Wells, including production rates and on-off dates and times. The Parties are requested to provide these records to Watermaster monthly. The Parties are requested to promptly notify Watermaster of all operational changes made to maintain the water level in PA-7 above the Guidance Level.

Continued Monitoring within the Managed Area

Watermaster will continue the scope and frequency of monitoring that was implemented during the IMP within the Managed Area. These monitoring efforts are necessary to:

- Supply the Parties with the requisite information to comply with the MZ-1 Plan
- Assess the Parties' compliance with the MZ-1 Plan
- Evaluate the effectiveness of the MZ-1 Plan to reduce to tolerable levels or abate future land subsidence and ground fissuring.

Watermaster will continue the monitoring of:

Piezometric Levels. Watermaster recommends that the Parties allow Watermaster to continue monitoring piezometric levels at their wells listed in Table 2-2. Currently, a pressure-transducer/data-logger is installed at each of these wells and records one water level reading every 15 minutes. In addition, Watermaster will continue to record depth-specific water levels at the piezometers located at the Ayala Park Extensometer facility every 15 minutes.

Watermaster will maintain all pressure-transducers/data-loggers in good working order in an effort to collect a continuous and reliable record of piezometric levels within the Managed Area.

Aquifer-System Deformation. Watermaster will continue to record aquifer-system deformation at the Ayala Park Extensometer facility. At this facility, two extensometers, completed at 550 ft-bgs and 1,400 ft-bgs, will continue to record the vertical component of aquifer-system compression and/or expansion once every 15 minutes (synchronized with the piezometric measurements).

Watermaster will maintain the Ayala Park Extensometer facility in good working order in an effort to collect a continuous and reliable record of aquifer-system deformation at Ayala Park.

Vertical Ground-Surface Deformation. Watermaster will continue the monitoring of vertical ground-surface deformation via ground level surveying and remote sensing (Synthetic Aperture Radar Interferometry [InSAR]) techniques that were established during the IMP.



SECTION 2
MZ-1 SUBSIDENCE MANAGEMENT PLAN

Currently, Watermaster is attempting to collect synchronous ground-level survey and InSAR data on a semi-annual frequency (Spring/Fall) over a two-year period. By the end of Fall 2007, Watermaster will analyze and compare the survey and InSAR data sets, and recommend a new scope and frequency of data collection for both ground-level surveys and InSAR. Factors that will be considered during the comparative analysis and recommendation will be accuracy, reliability, areal extent, and cost.

Horizontal Ground-Surface Deformation. Watermaster will continue the monitoring of horizontal ground-surface displacement across the eastern side of the subsidence trough and the adjacent area east of the barrier/fissure zone. These data, obtained by electronic distance measurements (EDMs), are used to characterize the horizontal component of land surface displacement caused by groundwater production on either side of the fissure zone. Currently, Watermaster is collecting EDMs on a semi-annual frequency (Spring/Fall) between east/west-aligned benchmarks on Eucalyptus, Edison, and Schaefer Avenues.

Contemplated Testing and Monitoring within the Managed Area

Currently, Watermaster and the MZ-1 Technical Committee are contemplating additional testing and monitoring within the Managed Area. During FY 2007/08, the MZ-1 Technical Committee will consider for future implementation the following activities:

- *Detailed monitoring of horizontal strain across the fissure zone by installing high-resolution instrumentation or by experimental InSAR.* The high-resolution instrumentation will comprise three measurement technologies that function over a range of spanned distances (12 - 400 ft) and strain resolutions (1e-5 to 1e-8). Data from the highest-resolution, short-span strain gages and tiltmeters would be quasi-continuous, and, when plotted against quasi-continuous water level (stress) measurements in wells, would reveal stress-strain relationships at work in and immediately adjacent to the fissure zone. This work is contemplated to occur just south of Schaefer Avenue across the historic zone of fissuring.

As an alternate or supplement to the high-resolution monitoring, InSAR could be used to measure horizontal deformation. The use of InSAR to monitor horizontal deformation is experimental, but holds the promise of monitoring over large areas and at a finer spatial resolution than the EDMs.

Monitoring and evaluation of horizontal ground-surface deformation across the fissure zone will improve the current understanding of the stress conditions in this area; particularly as groundwater production and associated drawdowns increase to the east (e.g. in MZ-2). Understanding the stress-strain relationships over a larger area will be important to effectively managing groundwater production to minimize strain and potential future fissuring. Results of the evaluation would be used to update management options in the MZ-1 Plan.

- *An injection feasibility study at a production well within the Managed Area.* This test would help determine if aquifer injection is a viable tool to manage subsidence within the Managed Area while maximizing the use of existing infrastructure (i.e. wells). The Technical Committee will develop a scope and a budget for the proposed project by April 2008. The proposed project would construct improvements to an existing well to allow injection of



SECTION 2
MZ-1 SUBSIDENCE MANAGEMENT PLAN

water from the City of Chino Hills distribution system into the aquifer during off peak demand periods, and recovery of the stored water through the same well for municipal use during peak periods.

By the end of April 2008, the MZ-1 Technical Committee will have discussed and evaluated the above activities, and for the activities that the Committee recommends for implementation, will have composed specific scope(s) of work and detailed cost estimates. These recommendations and supporting documentation will be forwarded to Watermaster for inclusion in the budgeting process for FY 2008/09.

Expanded Monitoring in Areas of Subsidence Concern

The results of the IMP showed that land subsidence and ground fissuring concerns are not spatially limited to the Managed Area. Specifically, the IMP showed that:

- Hydrogeologic conditions conducive to land subsidence are present in other areas of MZ-1 and the Chino Basin
- Land subsidence is occurring (or has occurred in the past) in other regions of MZ-1 and the Chino Basin
- Hydrogeologic conditions that presumably caused ground fissuring in southwestern MZ-1 are also present in other areas of MZ-1
- Groundwater production (and associated drawdowns) is active, planned, and/or proposed within or near these areas that are susceptible to subsidence and fissuring

For these reasons, Watermaster conducts limited monitoring of the aquifer system and land subsidence outside of the Managed Area (hereafter, Areas of Subsidence Concern). Figure 2-2 shows the three Areas of Subsidence Concern: Central MZ-1, Southeast Area, and Northeast Area.

Central MZ-1. All available data collected and analyzed during the IMP (including historical InSAR [1992-2000] and recent ground level surveys [2003-2005]) indicate that permanent subsidence in the central parts of MZ-1 (north of Ayala Park) has occurred in the past. The InSAR data also suggest that the groundwater barrier extends northward into central MZ-1. These observations suggest that the conditions that very likely caused ground fissuring near Ayala Park in the 1990s are also present in Central MZ-1.

Currently in Central MZ-1:

- In fiscal year 2005/06, Watermaster installed pressure-transducers/data-loggers in about 10 existing production wells within Central MZ-1 to record water levels once every 15 minutes. This initial data collection effort is a Watermaster attempt to better understand the relationships between nearby groundwater production, water levels, and the observed subsidence in Central MZ-1.
- Watermaster monitors vertical ground-surface deformation via ground level surveying and InSAR techniques as part of the same program that is conducted for the Managed Area. These data have revealed the extent, rate, and spatial distribution of land subsidence in Central MZ-1, and has revealed a zone of potential future ground fissuring.
- Watermaster conducts monitoring of horizontal ground-surface displacement across the zone of potential future ground fissuring (near the intersection of Central Avenue and Philadelphia Street).



SECTION 2
MZ-1 SUBSIDENCE MANAGEMENT PLAN

These data, obtained by EDMs on a semi-annual frequency (Spring/Fall) between east/west-aligned benchmarks on Philadelphia Street, are used to characterize the horizontal component of land surface displacement caused by groundwater production in the region. The data collected as part of this effort can be used to design a program for *detailed* monitoring of horizontal strain across this zone of potential ground fissuring, if deemed necessary by Watermaster.

Watermaster will continue the above listed monitoring efforts. If future data from existing monitoring efforts in this area indicate the potential for adverse impacts due to subsidence, Watermaster will revise the MZ-1 Plan pursuant to the process outlined in Section 3.

Southeast Area. All available data collected and analyzed during the IMP (including historical InSAR [1992-2000] and recent ground level surveys [2003-2005]) indicate that very little permanent subsidence has occurred in the Southeast Area (east of Ayala Park) since the early 1990s. However:

- the historical InSAR data is incoherent (absent) across much of this area
- the geologic conditions that are necessary for land subsidence and ground fissuring are present in this region
- Watermaster's historical records indicate that very little groundwater production has occurred within the deep aquifer system in this region, which would suggest that new groundwater production from the deep aquifer system could cause permanent land subsidence and ground fissuring
- some MZ-1 producers have plans to produce groundwater from the deep aquifer system in this region
- very little is known about the site-specific controls on subsidence and fissuring that are unique to this region, such as the drawdown threshold that would initiate inelastic compaction in the aquifer system, or the effects that land subsidence in this region would have on the historic fissure zone within the adjacent Managed Area

Currently in the Southeast Area:

- Watermaster monitors vertical ground-surface deformation via ground level surveying and InSAR techniques as part of the same program that is conducted for the Managed Area. These data reveal the extent, rate, and spatial distribution of land subsidence across a portion of the Southeast Area.
- Watermaster has installed pressure-transducers/data-loggers in about 16 existing production wells and monitoring wells within the Southeast Area to record water levels once every 15 minutes as part of the MZ-1 and HCMP monitoring programs.

Watermaster will continue the above listed monitoring efforts. If future data from existing monitoring efforts in this area indicate the potential for adverse impacts due to subsidence, Watermaster will revise the MZ-1 Plan pursuant to the process outlined in Section 3.

Northeast Area. All available data collected and analyzed during the IMP (including historical InSAR [1992-2000] and recent ground level surveys [2003-2005]) indicate that minor but persistent permanent subsidence has occurred in the Northeast Area since the early 1990s. The available data does not indicate that any areas are experiencing focused differential subsidence that would indicate the threat of ground fissuring.

Currently in the Northeast Area:



SECTION 2
MZ-1 SUBSIDENCE MANAGEMENT PLAN

- Watermaster monitors vertical ground-surface deformation via ground level surveying and InSAR techniques as part of the same program that is conducted for the Managed Area. These data reveal the extent, rate, and spatial distribution of land subsidence across a portion of the Northeast Area.

Watermaster will continue the above listed monitoring efforts. If future data from existing monitoring efforts in this area indicate the potential for adverse impacts due to subsidence, Watermaster will revise the MZ-1 Plan pursuant to the process outlined in Section 3.

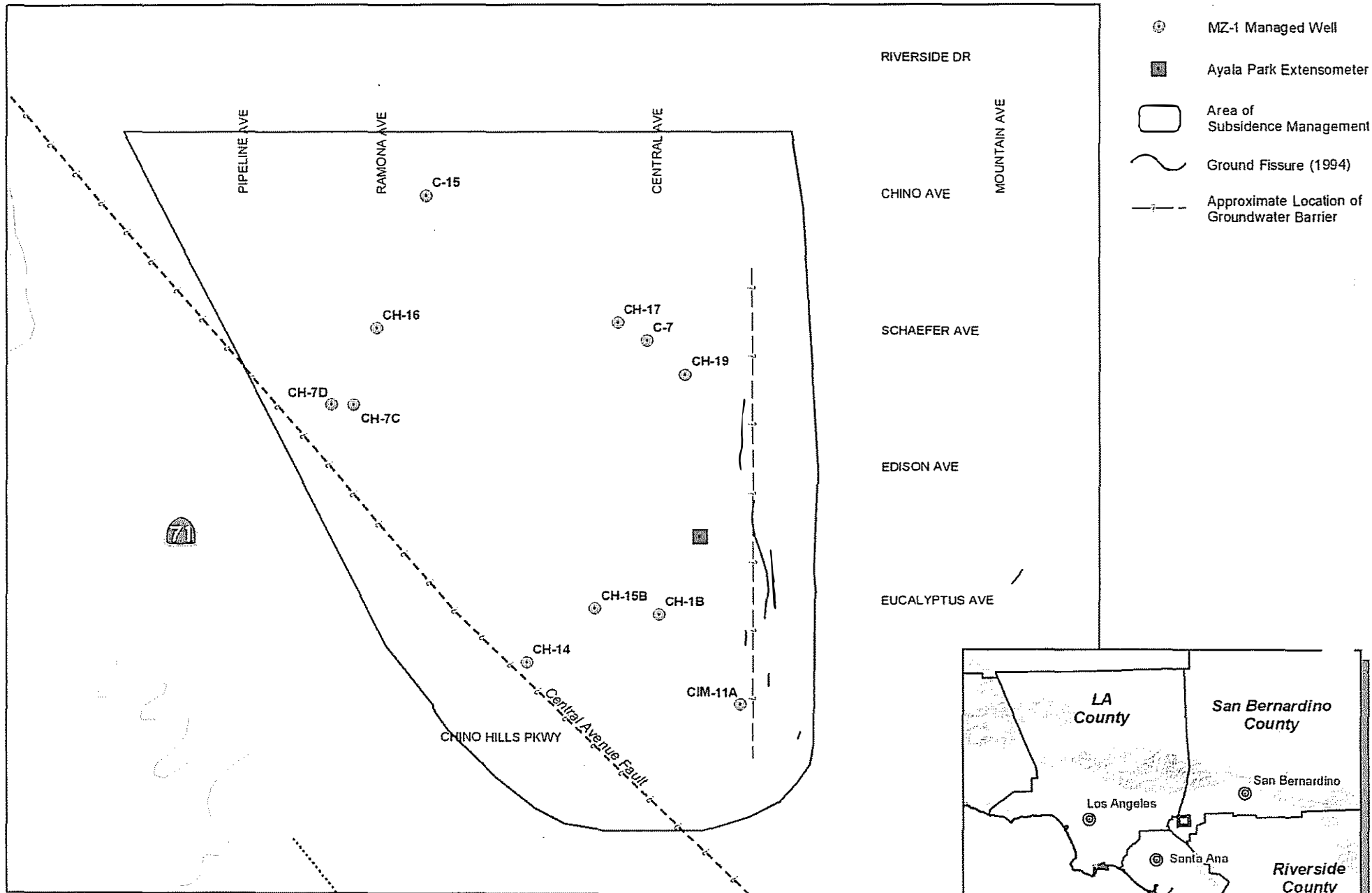


**Table 2-1
MZ-1 Managed Wells**

CBWM_ID	Owner	Well Name	Status	Screened Interval	Capacity
				ft-bgs	gpm
600487	Chino Hills	1B	Inactive	440-470, 490-610, 720-900, 940-1180	up to 1200
600687	Chino Hills	7C	Not Equipped	550-950	--
600498	Chino Hills	7D	Inactive	320-400, 410-450, 490-810, 850-930	400
600495	Chino Hills	14	Inactive	350-860	300-400
600488	Chino Hills	15B	Active	360-440, 480-900	1500
600489	Chino Hills	16	Inactive	430-940	800
600499	Chino Hills	17	Inactive	300-460, 500-980	700
600500	Chino Hills	19	Active	340-420, 460-760, 800-1000	1100-1500
3600461	Chino	7	Not Equipped	180-780	
600670	Chino	15	Not Equipped	270-400, 626-820	
3602461	CIM	11A	Active	135-148, 174-187, 240-283, 405-465, 484-512, 518-540	500-600

**Table 2-2
Wells Used for Water Level Monitoring
During the MZ-1 Interim Monitoring Program**

CBWM_ID	Owner	Well Name	Status	Screened Interval	Capacity
				ft-bgs	gpm
	Chino Hills	1A	Active	166-317	700-800
	Chino Hills	1B	Inactive	440-470, 490-610, 720-900, 940-1180	up to 1200
	Chino Hills	7C	Not Equipped	550-950	--
	Chino Hills	5	Active		
	Chino Hills	14	Inactive	350-860	300-400
	Chino Hills	15A	Not Equipped	190-310	--
	Chino Hills	15B	Active	360-440, 480-900	1500
	Chino Hills	16	Inactive	430-940	800
	Chino Hills	17	Inactive	300-460, 500-980	700
	Chino Hills	18	Not Equipped	420-460, 480-980	--
	Chino Hills	19	Active	340-420, 460-760, 800-1000	1100-1500
	Chino	4	Active	160-200, 200-275	350-750
	Chino	6	Active	200-375	500-750
	Chino	7	Not Equipped	180-780	
	Chino	15	Not Equipped	270-400, 626-820	
	Chino	Schaefer	Abandoned		
	Chino	YMCA	Abandoned		
	Chino	12th&G	Abandoned		
	CIM	1A	Active	160-213, 484-529	1100-1200
	CIM	11A	Active	135-148, 174-187, 240-283, 405-465, 484-512, 518-540	500-600
	CIM	MW-22DR	Monitoring	514.5-528.9	
	CIM	MW-24S	Monitoring	94-103.6	
	CIM	MW-24I	Monitoring	157.1-171.7	
	CIM	MW-33S	Monitoring	97.3-107	



- MZ-1 Managed Well
- Ayala Park Extensometer
- Area of Subsidence Management
- Ground Fissure (1994)
- Approximate Location of Groundwater Barrier

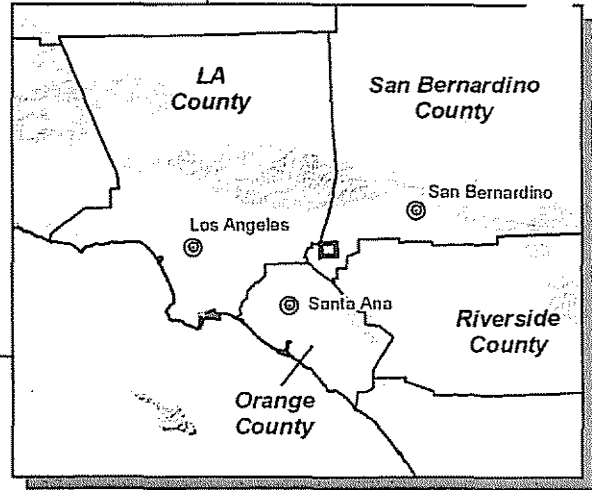
MZ-1 Managed Area and Managed Wells
Figure 2-1

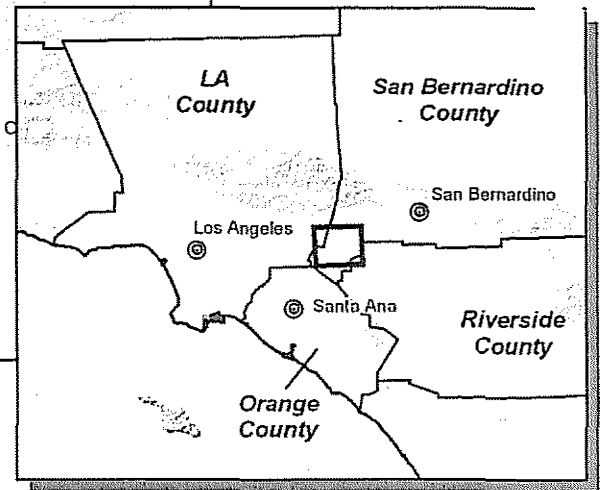
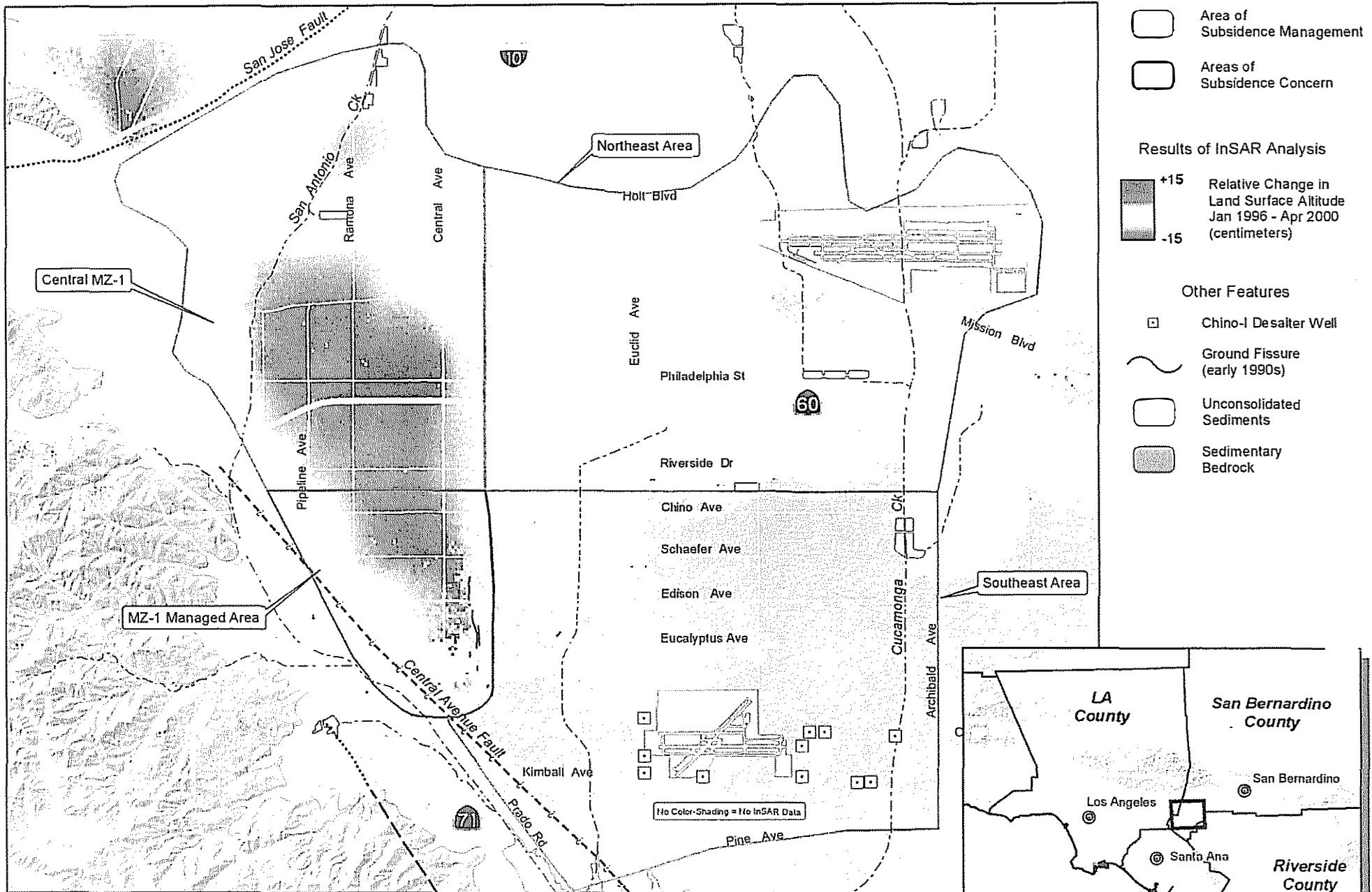
MZ-1 Subsidence Management Plan



Author: AEJ.1
 Date: 20060318
 File: Figure_2-1.mxd

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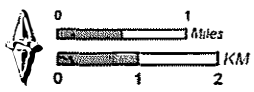




Subsidence Management Areas

Figure 2-2


 Chino Basin OBMP
 MZ-1 Subsidence Management Plan



Author: AEM
 Date: 20060321
 File: Figure_2-2.mxd

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 WILDERMUTH ENVIRONMENTAL INC.

3. EVALUATION AND UPDATE OF THE MZ-1 SUBSIDENCE MANAGEMENT PLAN

A key element of the MZ-1 Plan is the verification of the protective nature of the plan as related to permanent land subsidence and ground fissuring. This verification is accomplished through continued monitoring and reporting by Watermaster and revision of the MZ-1 Plan when appropriate. In this sense, the MZ-1 Plan is adaptive.

Within the Managed Area, Watermaster recommends that all¹ deep aquifer-system pumping cease for a continuous 2- to 6-month period between October 1 and March 31 of each year. The recovery period will begin with 6 months the first year of the program, 4 months the second year, 3 months the third year, 2 months the fourth year, and 6 months for the fifth year of the program. The cessation of pumping is intended to allow for sufficient water level recovery at PA-7 to recognize inelastic compaction, if any, at the Ayala Park Extensometer.

During April of each year, the MZ-1 Technical Committee will convene to review all available data collected and analyses performed over the past year, and to formally recommend revisions or additions to the MZ-1 Plan. Following the fifth year of the program, the effectiveness of the recovery period duration will be assessed and an appropriate annual recovery period will be recommended for the MZ-1 Plan. These recommendations will be run through the Watermaster process during May and, if approved, will be budgeted for and implemented during the following fiscal year.

At the conclusion of each fiscal year (June 30), Watermaster will produce a MZ-1 Annual Report that will include:

- Stress-strain diagrams from the Ayala Park Extensometer facility with interpretation
- Maps of ground surface deformation as measured by the ground level surveys and/or InSAR
- The revised MZ-1 Plan, that may include changes to:
 - The delineation of the Managed Area
 - The list of Managed Wells
 - Definition of the Guidance Level
 - On-going monitoring of the aquifer system and ground surface

¹ Well 11A will be exempt from this recommendation. This is based on the small amount of water pumped from the deep zone by this well and the impracticability to shut down this well due to permitting requirements. This exemption shall be subject to continuous review by the Technical Committee to ensure that continued pumping from this well does not interfere with water level recovery.

APPENDIX A – MZ-1 SUMMARY REPORT (OCTOBER 2005)



CHINO BASIN WATERMASTER

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KENNETH R. MANNING
Chief Executive Officer

STAFF REPORT

DATE: April 13, 2006
April 18, 2006
April 27, 2006

TO: Committee Members
Watermaster Board Members

SUBJECT: MZ-1 Summary Report

SUMMARY

Issue – Pursuant to the Special Referee's report dated June 16, 2005, Watermaster staff prepared a report titled *Management Zone 1 Interim Monitoring Program, MZ-1 Summary Report*. This report presents a summary of all the data collected as part of the MZ-1 monitoring program (through September 2005) and the conclusions reached from the analysis of the monitoring data. The report also includes MZ-1 Guidance Criteria, which are a recommended groundwater management criteria for the management of subsidence in the southern part of MZ-1 (Chino). These guidance criteria will be the basis of the long-term subsidence management plan.

Recommendation – Approve the February 2006 MZ-1 Summary Report.

Fiscal Impact – To be determined. The MZ-1 Summary Report recommends the continuation of the monitoring activities that have been implemented to date. The cost to Watermaster to provide this monitoring and reporting will be about \$175,000 per year in 2006 dollars.

BACKGROUND

The Implementation Plan of the Optimum Basin Management Program (OBMP) called for an aquifer-system investigation of suspected pumping-induced land subsidence and ground fissuring that has occurred in the southern region of Management Zone 1 (MZ-1). Watermaster has coordinated and conducted the investigation under the guidance of the MZ-1 Technical Committee, which is composed of representatives from all major MZ-1 producers and their technical consultants. The results of the investigation are being used in the development of a long-term plan to minimize or abate future land subsidence and ground fissuring.

To date, the main conclusions derived from the investigation are:

1. The current state of aquifer-system deformation in south MZ-1 (in the vicinity of Ayala Park) is essentially elastic. Little, if any, inelastic (permanent) compaction is now occurring in this area, which is in contrast to the past when about 2.2 feet of land subsidence occurred, accompanied by ground fissuring, from about 1987-1995.
2. Groundwater production from the deep, confined aquifer system in this area causes the greatest stress to the aquifer system. In other words, pumping of the deep aquifer system causes water level drawdowns that are much greater in magnitude and lateral extent than drawdowns caused by pumping of the shallow aquifer system.
3. Water level drawdowns due to pumping of the deep aquifer system can cause inelastic (permanent) compaction of the aquifer-system sediments, which results in permanent land subsidence. The initiation of inelastic compaction within the aquifer system was identified during this investigation when water levels fell below a depth of about 250 feet in the PA-7 piezometer at Ayala Park.
4. Through this study, a previously undetected barrier to groundwater flow was identified. The barrier is located within the deep aquifer system and is aligned with the historical zone of ground fissuring. Pumping from the deep aquifer system is limited to the area west of the barrier, and the resulting drawdowns do not propagate eastward across the barrier. Thus, compaction occurs within the deep system on the west side of the barrier, but not on the east side, which causes concentrated differential subsidence across the barrier and creates the potential for ground fissuring.
5. InSAR and ground level survey data indicate that permanent subsidence in the central region of MZ-1 (north of Ayala Park) has occurred in the past and continues to occur today. The InSAR data also indicate that the groundwater barrier extends northward into central MZ-1. These observations suggest that the conditions that very likely caused ground fissuring near Ayala Park in the 1990s are also present in central MZ-1, and should be studied in more detail.

A workshop was held May 25, 2005 to update the Special Referee on progress of the investigation and development of the long-term plan for MZ-1. After the workshop, the Special Referee issued a report to the Court that summarized the workshop and requested that Watermaster:

- produce a MZ-1 Summary Report that describes the investigation results and conclusions to date
- notify the Court of the schedule for the completion of the long-term plan
- provide "guidance criteria" to the MZ-1 producers in an effort to minimize the potential for future subsidence and fissuring, pending completion of the long-term plan

The MZ-1 Summary Report contains the guidance criteria, which consist mainly of setting a "guidance" water level – 245 feet below the reference point for the PA-7 piezometer at Ayala Park – and recommends that groundwater production from a selected list of wells in MZ-1 not cause water levels to fall below the guidance level.

The report also outlines the process and schedule for developing a long-term management plan by June 2006. The primary objective of the long-term plan is to prevent additional permanent land subsidence that could initiate additional ground fissuring. A developing secondary objective is to optimize the use of existing groundwater production infrastructure. A key element of the long-term plan will be its adaptive nature, as new data are collected and periodically analyzed to evaluate the effectiveness of the long-term plan.

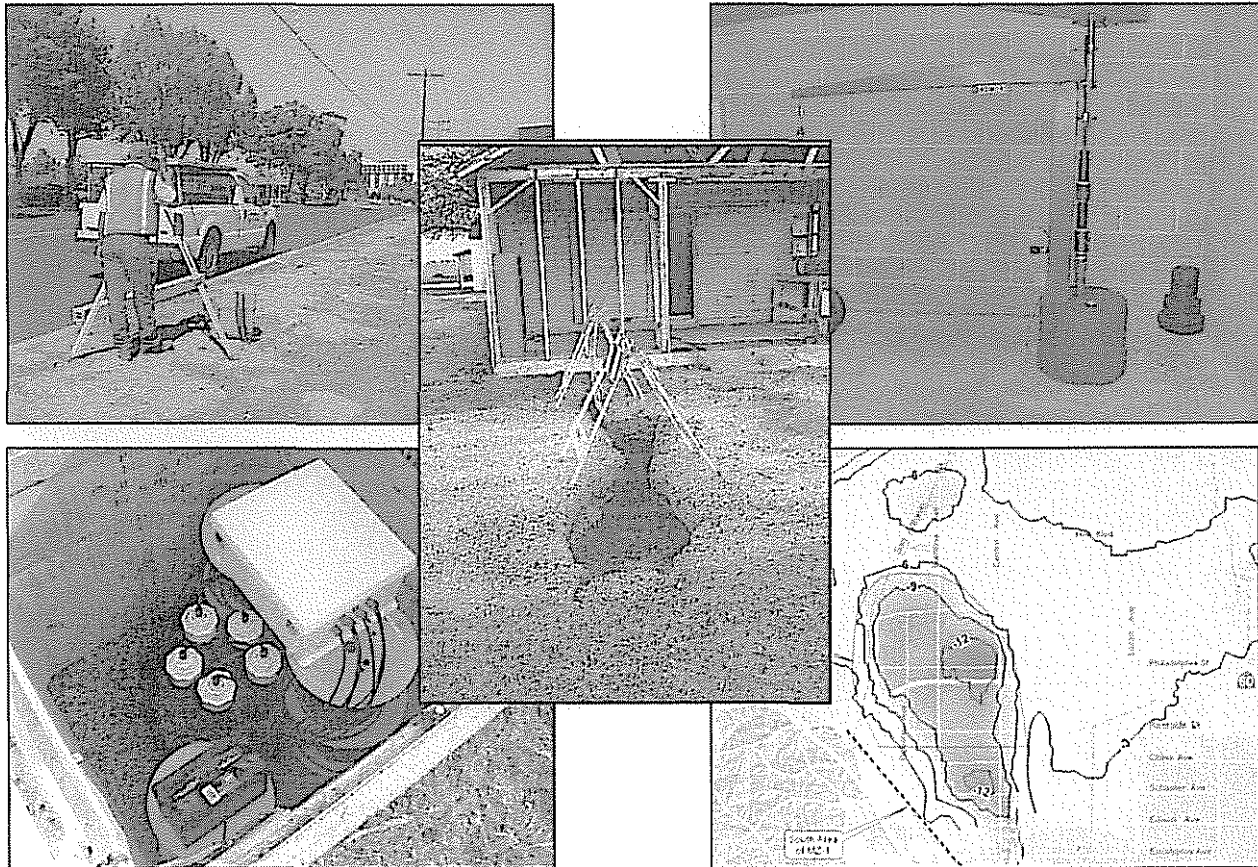
The guidance criteria and the long-term plan discussed above relate to the management of pumping-induced subsidence within the southern region of MZ-1, where associated ground fissuring damaged infrastructure in the early 1990s. However, this investigation has also revealed that the central region of MZ-1 has experienced in the past, and is currently experiencing, measurable land subsidence. This discovery has initiated an additional effort by Watermaster to characterize the subsidence mechanisms in this region through a slightly expanded monitoring effort. The adaptive nature of the long-term plan should accommodate the results that will emerge from the expanded monitoring effort in central MZ-1, so as to minimize the risk of future ground fissuring in this heavily urbanized region of Chino Basin.

The MZ1 Summary Report is best viewed in color which may be done by downloading this document from:
<http://citrix.wildermuthenvironmental.com/MZ1>

CHINO BASIN OPTIMUM BASIN MANAGEMENT PROGRAM

Management Zone 1 Interim Monitoring Program

MZ-1 Summary Report



Prepared for
MZ-1 Technical Committee

Prepared by
Wildermuth Environmental, Inc.

February 2006

CHINO BASIN
OPTIMUM BASIN MANAGEMENT PROGRAM

Management Zone 1
Interim Monitoring Program

MZ-1 Summary Report

Prepared for

MZ-1 Technical Committee

Prepared by

Wildermuth Environmental, Inc.

February 2006

TABLE OF CONTENTS

EXECUTIVE SUMMARY	ES-1
1. BACKGROUND	1-1
Groundwater Withdrawals and Land Subsidence	1-1
History of Ground Fissuring and Land Subsidence in Chino Basin	1-3
Potential Causes of Land Subsidence	1-5
Development of the MZ-1 Interim Monitoring Program	1-6
2. MZ-1 INTERIM MONITORING PROGRAM	2-1
Results and Interpretations	2-1
Conclusions	2-6
3. ONGOING AND RECOMMENDED WORK	3-1
Continued Monitoring	3-1
Development of Analytical and Numerical Models	3-1
Expanded Monitoring	3-2
4. DEVELOPMENT OF THE LONG-TERM MANAGEMENT PLAN FOR MZ-1	4-1
Guidance Criteria to Minimize Subsidence and Fissuring	4-1
Development and Schedule of the Long-Term Plan	4-2
5. REFERENCES	5-1
 APPENDICES	
A. Special Referee's Report on Progress Made on Implementation of the Watermaster Interim Plan for Management of Subsidence	



LIST OF TABLES

- 1-1 Applicability of Potential Causes of Subsidence in Chino Basin
- 4-1 Guidance Criteria for MZ-1 Producers
- 4-2 MZ-1 Managed Wells

LIST OF FIGURES

- 1-1 Land Surface Deformation in Management Zone 1 – *Leveling Surveys and InSAR*
- 1-2 Land Surface Deformation in Chino, CA – *Leveling Surveys and InSAR*
- 1-3 Groundwater Level History in Southern MZ-1 (Shallow Wells)
- 1-4 Piezometric Monitoring Network – *MZ-1 Interim Monitoring Program*
- 1-5 Benchmark Survey Monuments – *MZ-1 Interim Monitoring Program*
- 2-1 Piezometric and Extensometer Data – *Ayala Park Piezometer/Extensometer Facility*
- 2-2 Stress-Strain Diagram – *PA-7 vs. Deep Extensometer*
- 2-3 MZ-1 Groundwater Barrier – *Evidence from Pumping Test*
- 2-4 Water Level Responses at Nearby Wells to Pumping at CH-19
- 2-5 Ground Level Survey Results – *April 2003 to April 2004*
- 2-6 Horizontal Displacement at Ayala Park Array of Monuments – *April 2003 to November 2003*
- 2-7 Horizontal Displacement at Ayala Park Array of Monuments – *November 2003 to April 2004*
- 2-8 InSAR Analysis of Subsidence – *1992 to 1995*
- 2-9 InSAR Analysis of Subsidence – *1996 to 2000*
- 4-1 MZ-1 Managed Wells – *MZ-1 Long-Term Monitoring Program*



ACRONYM AND ABBREVIATIONS LIST

AE	Associated Engineers
CA	California
CBWM	Chino Basin Watermaster
CIM	California Institution for Men
IMP	Interim Monitoring Program
MZ-1	Management Zone 1
OBMP	Optimum Basin Management Program
CH	Chino Hills
InSAR	Synthetic Aperture Radar Interferometry
MSL	mean sea level
PA	Piezometer A at Ayala Park Piezometer/Extensometer Facility
USGS	United States Geological Survey
WEI	Wildermuth Environmental Inc



EXECUTIVE SUMMARY

The Implementation Plan of the Optimum Basin Management Program (OBMP) called for an aquifer-system investigation of suspected pumping-induced land subsidence and ground fissuring that has occurred in the southern region of Management Zone 1 (MZ-1). Watermaster has coordinated and conducted the investigation under the guidance of the MZ-1 Technical Committee, which is composed of representatives from all major MZ-1 producers and their technical consultants. The results of the investigation are being used to develop management tools (models) that will assist in the development of a long-term plan to minimize or abate future land subsidence and ground fissuring.

To date, the main conclusions derived from the investigation are:

1. The current state of aquifer-system deformation in south MZ-1 (in the vicinity of Ayala Park) is essentially elastic. Little, if any, inelastic (permanent) compaction is now occurring in this area, which is in contrast to the past when about 2.2 feet of land subsidence occurred, accompanied by ground fissuring, from about 1987-1995.
2. Groundwater production from the deep, confined aquifer system in this area causes the greatest stress to the aquifer system. In other words, pumping of the deep aquifer system causes water level drawdowns that are much greater in magnitude and lateral extent than drawdowns caused by pumping of the shallow aquifer system.
3. Water level drawdowns due to pumping of the deep aquifer system can cause inelastic (permanent) compaction of the aquifer-system sediments, which results in permanent land subsidence. The initiation of inelastic compaction within the aquifer system was identified during this investigation when water levels fell below a depth of about 250 feet in the PA-7 piezometer at Ayala Park.
4. Through this study, a previously undetected barrier to groundwater flow was identified. The barrier is located within the deep aquifer system and is aligned with the historical zone of ground fissuring. Pumping from the deep aquifer system is limited to the area west of the barrier, and the resulting drawdowns do not propagate eastward across the barrier. Thus, compaction occurs within the deep system on the west side of the barrier, but not on the east side, which causes concentrated differential subsidence across the barrier and creates the potential for ground fissuring.
5. InSAR and ground level survey data indicate that permanent subsidence in the central region of MZ-1 (north of Ayala Park) has occurred in the past and continues to occur today. The InSAR data also indicate that the groundwater barrier extends northward into central MZ-1. These observations suggest that the conditions that very likely caused ground fissuring near Ayala Park in the 1990s are also present in central MZ-1, and should be studied in more detail.

A workshop was held May 25, 2005 to update the Special Referee on progress of the investigation and development of the long-term plan for MZ-1. After the workshop, the Special Referee issued a report to the Court that summarized the workshop and requested that Watermaster:

- produce a MZ-1 Summary Report (this report) that describes the investigation results and conclusions to date
- notify the Court of the schedule for the completion of the long-term plan
- provide "guidance criteria" to the MZ-1 producers in an effort to minimize the potential for future subsidence and fissuring, pending completion of the long-term plan

This report contains the guidance criteria, which consist mainly of setting a "control" water level – 245 feet below the reference point for the PA-7 piezometer at Ayala Park – and recommend that groundwater production from a selected list of wells in MZ-1 not cause water levels to fall below the control level.



EXECUTIVE SUMMARY
MZ-1 SUMMARY REPORT

This report also outlines the process and schedule for developing a long-term management plan by June 2006. The primary objective of the long-term plan is to prevent additional permanent land subsidence that could initiate additional ground fissuring. A developing secondary objective is to optimize the use of existing groundwater production infrastructure. A key element of the long-term plan will be its *adaptive* nature, as new data are collected and periodically analyzed to evaluate the effectiveness of the long-term plan.

The guidance criteria and the long-term plan discussed above relate to the management of pumping-induced subsidence within the southern region of MZ-1, where associated ground fissuring damaged infrastructure in the early 1990s. However, this investigation has also revealed that the central region of MZ-1 has experienced in the past, and is currently experiencing, measurable land subsidence. This discovery has initiated an additional effort by Watermaster to characterize the subsidence mechanisms in this region through a slightly expanded monitoring effort. The adaptive nature of the long-term plan should accommodate the results that will emerge from the expanded monitoring effort in central MZ-1, so as to minimize the risk of future ground fissuring in this heavily urbanized region of Chino Basin.

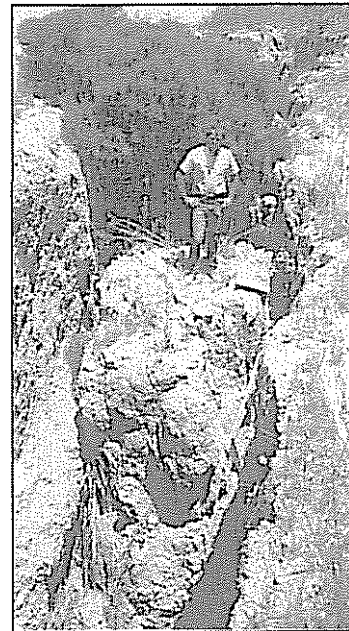
The monitoring and analyses associated with this investigation dovetail nicely with other Watermaster efforts associated with basin re-operation and hydraulic control.



1. BACKGROUND

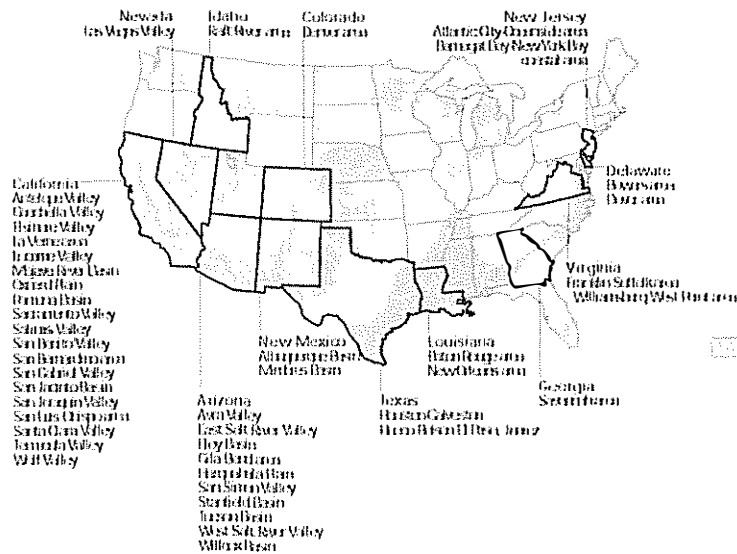
Groundwater Withdrawals and Land Subsidence

Land subsidence is the sinking of the Earth's surface due to the rearrangement of subsurface Earth materials. In the United States alone, over 17,000 square miles in 45 states have experienced land subsidence (USGS, 1999). In many instances, land subsidence is accompanied by adverse impacts at the land surface, such as sinkholes, earth fissures, encroachment of adjacent water bodies, modified drainage patterns, and others. In populated regions, these subsidence-related impacts can result in severe damage to man-made infrastructure and costly remediation measures.



This earth fissure near Mesa, Arizona formed as a result of differential compaction of the aquifer system (USGS, 1999).

Over 80% of all documented cases of land subsidence in the United States have been caused by groundwater extractions from the underlying aquifer system (USGS, 1999). Subsidence due to groundwater extraction is especially well-documented in the arid southwestern United States, where the aquifer systems are typically composed of unconsolidated sediments that are susceptible to permanent compaction when groundwater is extracted. Some infamous examples include the San Joaquin and Santa Clara Valleys in California, the Las Vegas Valley in Nevada, the Houston-Galveston area in Texas, and



This graphic shows areas in the U.S. where subsidence has been linked to aquifer-system compaction due to groundwater pumping (USGS, 1999).



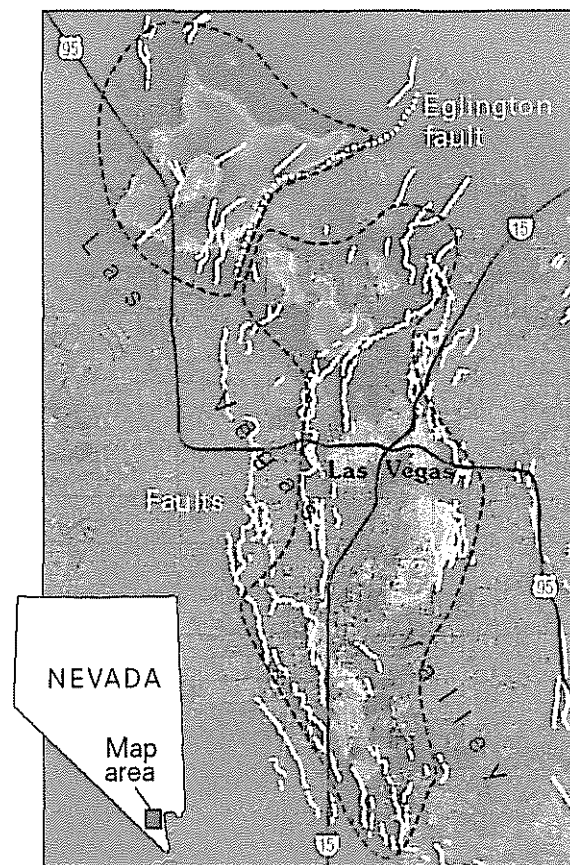
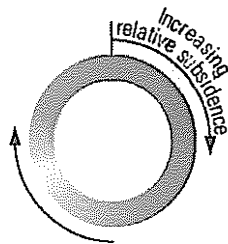
SECTION 1 – BACKGROUND
MZ-1 SUMMARY REPORT

several basins in Arizona. In many of these regions, earth fissuring occurred in areas of differential subsidence (*i.e.* where rates and accumulated magnitudes of subsidence vary over short horizontal distances).

Although drawdown of water levels is the driving force that causes land subsidence due to groundwater pumping, the geology of a groundwater basin also plays an important role in this process. Clay layers within the aquifer-system are relatively compressible materials. Therefore, aquifer-systems that contain thick and/or numerous clay layers are most susceptible to permanent compaction and land subsidence when groundwater is extracted. In addition, faults that act as groundwater barriers can focus and augment drawdown in the aquifer-system when pumping wells are located near these faults. When pumping and drawdown are concentrated on one side of a fault barrier, then differential land subsidence and ground fissuring are a common result (see Las Vegas, as an example).

This map graphic depicts land subsidence in the Las Vegas Valley that occurred from April 1992 to December 1997. The subsidence, attributed to aquifer-system compaction caused by groundwater production, was measured by remote sensing techniques (InSAR). Geologic faults (shown in white) appear to control the location of subsidence, and have been the focal point of earth fissure formation (USGS, 1999).

One color cycle represents about 4 inches of subsidence.



The scientific model that describes the phenomenon of pumping-induced land subsidence is termed the *aquitard-drainage model*. This model has been successfully applied to numerous cases of land subsidence world-wide. It has been incorporated into the industry-standard computer models of groundwater flow and is increasingly recognized as critical to the understanding of aquifer-system hydraulics (flow and storage) and mechanics (deformation). A brief summary of the aquitard-drainage model is below:



SECTION 1 -- BACKGROUND
MZ-1 SUMMARY REPORT

Aquitard-Drainage Model. Simply stated, an aquifer system consists of permeable sand and gravel layers (the aquifers) interbedded with less-permeable silt and clay layers (the aquitards). Pumping wells cause water-level drawdowns in the aquifers which, in turn, cause the aquitards to slowly drain into the aquifers. The draining allows aquitard pore pressures to decay toward equilibrium with the reduced heads in the adjacent aquifers. Since the pressure of the pore water provides some internal support for the sedimentary structure of the aquitards, this loss of internal support causes the aquitards to compress, resulting in a small amount of subsidence at the land surface. When the pumping wells turn off, and water levels recover in the aquifers, groundwater migrates back into the aquitards and they expand, resulting in a small amount of rebound at the land surface. Over a limited range of seasonal water level fluctuations this process can occur in a purely elastic fashion. That is, a recovery of water levels to their original values causes the land surface to rebound to its original elevation. However, when drawdown falls below a certain "threshold" level, elastic compression transitions to a non-recoverable inelastic compaction of the aquitards, resulting in permanent land subsidence. The "threshold" water level, referred to as the *preconsolidation stress*, is taken to be the maximum past stress to which the sedimentary structure had previously equilibrated under the gradually increasing load of accumulating sediments. [Note: The probable value of the virgin preconsolidation stress in the Chino Basin has not been documented, but studies in similar areas suggest that drawdowns in the range of 40 to 100 feet will typically exceed the initial threshold value.]

Drawdowns exceeding a previous threshold water level result in an increase in the value of maximum past stress, and thus the establishment of a deeper threshold, accompanied by an increment of inelastic aquitard compaction. Concomitantly, the compaction results in the one-time irreversible mining of groundwater from the aquitards. The benefits of this process include not only the obvious economic value of the water produced but also the often overlooked fact that, by establishing deeper thresholds, it increases the volume of confined groundwater storage available for cyclical drawdown and replenishment under strictly elastic conditions. The cost, of course, is the resulting deformation of the land surface and its impact on vulnerable infrastructure.

History of Ground Fissuring and Land Subsidence in Chino Basin

Ground Fissuring. One of the earliest indications that land subsidence was occurring in Chino Basin was the appearance of ground fissures in the City of Chino. These fissures appeared as early as 1973 (Fife et al., 1976), but an accelerated occurrence of ground fissuring ensued after 1991. Figure 1-1 shows the location of the fissures within the larger context of Management Zone 1 (MZ-1) and the Chino Basin. Figure 1-2 shows a detailed view of this area.

Surface expression of earth fissure that developed in a field north of CIM in February 1991.

Photo source: Geomatrix Consultants



SECTION 1 – BACKGROUND
MZ-1 SUMMARY REPORT

Subsequent studies of the fissuring attributed the phenomenon to land subsidence (Fife et al., 1976; Kleinfelder, 1993, 1996; Geomatrix, 1994). The evidence to support this cause-and-effect relationship between the subsidence and fissuring is shown in Figure 1-2. In this figure, and as pointed out by Geomatrix (1994), the north-south trend of fissuring is located on the steep eastern limb of the main trough of subsidence that was mapped by ground level surveying (discussed below) – an area where east-west directed extensional stress should be associated with subsidence to the west. These observations and conclusions prompted efforts to quantify the magnitude of historical subsidence and to monitor the rates of on-going subsidence. These efforts included:

- Compilation and analysis of leveling survey data to estimate historical subsidence
- Compilation and analysis of remote sensing data to estimate historical subsidence
- Initiation of monitoring efforts to track on-going subsidence

Through these efforts, the history of land subsidence near the area of ground fissuring was characterized in good detail for the period after 1987, and in lesser detail for the period prior to 1987.

Recent Land Subsidence (Post-1987). Repeated leveling surveys were conducted within the City of Chino from 1987-1999 (Kleinfelder, 1993, 1996, 1999). Figure 1-1 shows the location and extent of the surveys within the larger context of MZ-1 and the Chino Basin. Figure 1-2 shows a close-up view of this area, and subsidence contours of the survey data. These contours delineate a subsidence trough generally aligned north-south with maximum subsidence during the 12-year period of 2.4 feet along Central Avenue between Eucalyptus and Schaefer Avenues (the trough axis). The subsidence trough extends approximately from Pipeline Avenue on the west to Benson Avenue on the east, and from Merrill Avenue on the south to the edge of the survey area on the north (Riverside Drive). The contours suggest that the subsidence trough extends further north of Riverside Drive, but the surveys did not include benchmarks north of Riverside Drive.

Remote sensing studies of subsidence were conducted (Peltzer, 1999a, 1999b) to further analyze subsidence in MZ-1. These studies employed Synthetic Aperture Radar Interferometry (InSAR), which utilizes radar imagery from an Earth-orbiting spacecraft to map ground surface deformation. Figures 1-1 and 1-2 show the results of these InSAR studies that independently confirmed the location and relative magnitude of subsidence in MZ-1 as defined by the leveling surveys, and indicated the occurrence of subsidence north of the area monitored by the leveling surveys (north of Riverside Drive).

The leveling surveys and the InSAR analyses both indicated that subsidence rates have slowed significantly since about 1995. In fact, the leveling surveys indicated that about 90% of the total subsidence measured along Central Avenue from 1987-1999 occurred prior to 1996.

Historical Land Subsidence (Pre-1987). Much less data is available to estimate regional subsidence prior to 1987. Geomatrix (1994) and Geoscience (2002) compared the leveling survey data (post-1987) to elevation data published on USGS 7.5-minute quadrangle maps (1933 and 1967). Geomatrix (1994) estimated as much as 3-4 feet of subsidence from 1967-1993 in some areas shown on Figure 1-2. Geoscience (2002) estimated a maximum of 3.7 feet of subsidence from 1933-1987 at the intersection of Pipeline Avenue and Riverside Drive. These subsidence estimates and their assumptions and limitations are currently being reviewed by Watermaster. If generally accurate, these estimates combined with the post-1987 survey data suggest that as much as 4-5 feet of subsidence has occurred during 1933-1999 in some areas of Chino south of State Highway 60.



SECTION 1 – BACKGROUND
MZ-1 SUMMARY REPORT

Potential Causes of Land Subsidence

The main studies that were commissioned subsequent to the fissuring events in the early 1990s (Kleinfelder, 1993, 1996; Geomatrix, 1994) attributed the subsidence and fissuring phenomenon to the aquitard-drainage model. Watermaster arrived at the same conclusion (WEI, 1999) based on the presence of all requisite elements of the aquitard-drainage model in the southern portion of MZ-1 and other supporting evidence:

- **Presence of aquitards.** Geophysical and lithologic logs from numerous wells in the region indicate that the aquifer-system sediments that underlie the area of subsidence in MZ-1 contain many interbedded aquitard layers, which are susceptible to permanent compaction under reduced piezometric heads. In addition, during the early 1900s, much of the southern part of MZ-1 was an area of flowing-artesian wells (Mendenhall, 1908), indicating the existence of fine-grained confining layers (aquitards) at depth.
- **Reduced pore pressures within the aquifer-system.** The flowing-artesian groundwater conditions in southern MZ-1 also indicate that piezometric heads were at or above the land surface during the early 1900s. Water level histories at numerous relatively shallow wells in the region demonstrate that the piezometric heads (water levels) declined by about 140 feet from about 1940 to 1977, but then recovered by about 40 feet by 1999 (see Figure 1-3).

In addition, the accelerated occurrence of fissuring that commenced in 1991 was preceded by the completion and initial operation of a number of the deep production wells in 1989-1990. These wells are owned by the City of Chino Hills. Water level histories at these wells indicate that drawdowns within the deeper portions of the aquifer system caused by pumping these wells have exceeded 300 feet.

In both the shallow and deep zones of the overall aquifer system, the historical drawdowns were substantially greater than probable maximum value of the virgin threshold of inelastic compaction.

- **Other evidence.** The axis of maximum subsidence along Central Avenue, as delineated by ground level surveys (1987-1999), is aligned with the locations of several deep production wells owned by Chino Hills—suggesting a cause-and-effect relationship.
- **Similarity to other subsidence case studies.** There are numerous examples throughout the western United States where ground fissures have accompanied aquifer-system compaction and land subsidence within alluvial groundwater basins (Holzer, 1984). Geomatrix (1994) studied the ground fissures on CIM property and also reviewed case histories of fissuring throughout the southwestern United States. Their study noted similarities between the physical structure of the CIM fissures and the fissures described in the literature that were associated with areas of subsidence due to groundwater pumping and aquifer-system compaction.

There exist other potential causes of land subsidence that have been documented in other locations worldwide. Most of these causes can be immediately dismissed as explanations for the subsidence observed in Chino Basin, but others can not. Table 1-1 lists all potential causes of land subsidence, and a qualitative description of their applicability to subsidence and fissuring in Chino Basin.

Even though some of these potential subsidence mechanisms cannot be immediately dismissed as contributing to subsidence in Chino Basin, they are not likely. The aquitard-drainage model is based on physical laws of nature—namely, gravity and the compressibility of materials under load. And when the requisite elements of this model are all present (*i.e.* presence of aquitards, piezometric head declines, *etc.*), the question is not whether subsidence occurred, but rather, how much is the inevitable result of the aquitard-drainage mechanism?



SECTION 1 – BACKGROUND
MZ-1 SUMMARY REPORT

By comparison, other potential causes of subsidence were reduced to unlikely and, at the most, minor contributory factors in Chino Basin, and as such, were never directly investigated by Watermaster.

Development of the MZ-1 Interim Monitoring Program

In the Optimum Basin Management Program (OBMP) Phase I Report (WEI, 1999), Watermaster identified the aquitard-drainage model as the most likely cause of the land subsidence and ground fissuring observed in MZ-1. Program Element 4 of the OBMP – *Develop and Implement a Comprehensive Groundwater Management Plan for Management Zone 1* called for the development and implementation of an interim management plan for MZ-1 that would:

- Minimize subsidence and fissuring in the short-term
- Collect information necessary to understand the extent, rate, and mechanisms of subsidence and fissuring
- Formulate a long-term management plan to reduce to tolerable levels or abate future subsidence and fissuring

The main part of the interim management plan was to develop and implement a monitoring and testing program in MZ-1 that would answer certain questions to enable the development of a long-term plan to minimize or abate subsidence and fissuring. These questions included:

1. How much subsidence is currently occurring in MZ-1?
2. How much of the current subsidence is an elastic, reversible process that will restore the land surface to its original elevation if water levels recover to their original values; or, in the alternative phraseology, how much, if any, is irreversible (permanent subsidence)?
3. How much subsidence did historical pumping cause in MZ-1?
4. How much of the historical subsidence was an elastic, reversible process, and how much, if any, was irreversible?
5. These questions give rise to the most critical questions: What was the historical threshold value of head decline at which the deformation of the sedimentary structure would have changed from an elastic compression to inelastic compaction? And additionally, what is that threshold value of head decline today?

In an attempt to minimize subsidence and fissuring in the short-term, the cities of Chino and Chino Hills agreed to jointly reduce groundwater production in MZ-1 by 3,000 acre-feet per year for the duration of the interim management plan. This agreement between the cities was termed the *Forbearance Agreement*.

Formation of the MZ-1 Technical Committee. The MZ-1 Technical Committee was formed to serve as a clearing house for technical information, as well as the source for full professional discussion, input and peer review by its members, for the benefit of Watermaster. The Technical Committee provides comment and assists Watermaster in the development of recommendations for consideration and potential action by Watermaster under the Interim Management Plan. In addition, the Technical Committee provides similar assistance to Watermaster in its effort to develop a long-term plan as provided in Program Element 4. The Technical Committee consists of representatives (and their technical consultants) from those parties to the Judgment that are presently producing groundwater within MZ-1. Each of the following producers is entitled to representation on the Committee: Chino, Chino Hills, Ontario, Upland, Pomona, Monte Vista



SECTION 1 – BACKGROUND
MZ-1 SUMMARY REPORT

Water District, San Antonio Water Company, Southern California Water Company, CIM and the Agricultural Pool. Figure 1-1 shows the locations of wells owned by the producers listed above. The MZ-1 Technical Committee first convened on March 6, 2002, and has continued to meet once every 1-3 months.

Composition of the MZ-1 Interim Monitoring Program. The MZ-1 Technical Committee approved the scope and schedule for the MZ-1 Interim Monitoring Program (IMP) at the January 29, 2003 meeting. The IMP was developed and implemented by Watermaster to collect the information necessary to answer the five questions listed above. The data collected and analyzed as part of this effort are being utilized to develop effective management tools and, ultimately, a long-term management plan that will minimize or completely abate ground fissuring and subsidence in MZ-1.

The IMP is described in detail in the IMP Work Plan dated January 8, 2003 (WEI, 2003), but generally consists of three main elements: benchmark survey, InSAR, and aquifer-system monitoring. The benchmark surveys and the InSAR analyses monitor deformation of the land surface. Aquifer-system monitoring measures the hydraulic and mechanical changes within the aquifer-system that cause the land surface deformation. The methods involved in the implementation of each element are briefly described below:

Methods: Aquifer-System Monitoring. This work involves the measuring of stresses within the aquifer system (water-level changes) that cause land surface deformation as measured by benchmark surveys, InSAR, and the extensometers (described below). The objective is to establish the relationships between water-level changes in the aquifer system (stress) and aquifer-system deformation (strain).

Figure 1-4 shows location of the centerpiece of the aquifer-system monitoring program – the Ayala Park Extensometer – a highly sophisticated monitoring facility consisting of two multi-piezometers and a dual-extensometer. As the aquifer system undergoes various stresses due to groundwater production and recharge, the facility monitors the hydraulic response of the aquifer system at the piezometers and the mechanical response of the aquifer system at the extensometers. The facility is equipped with pressure transducers to measure water levels in the piezometers, linear potentiometers to measure the vertical aquifer-system deformation at the extensometers, and data loggers to record the data at frequent intervals (e.g. 15 minutes).

Piezometer construction and instrumentation was completed in mid-November 2002, at which time collection of piezometric data commenced. Dual-extensometer construction and instrumentation was completed in mid-July 2003, at which time collection of aquifer-system deformation data commenced.

Figure 1-4 also shows the nearby wells owned by CIM and the cities of Chino and Chino Hills that were equipped with pressure transducers and data loggers to record (1) water-level data and (2) the specific timing of pumping cycles at production wells.

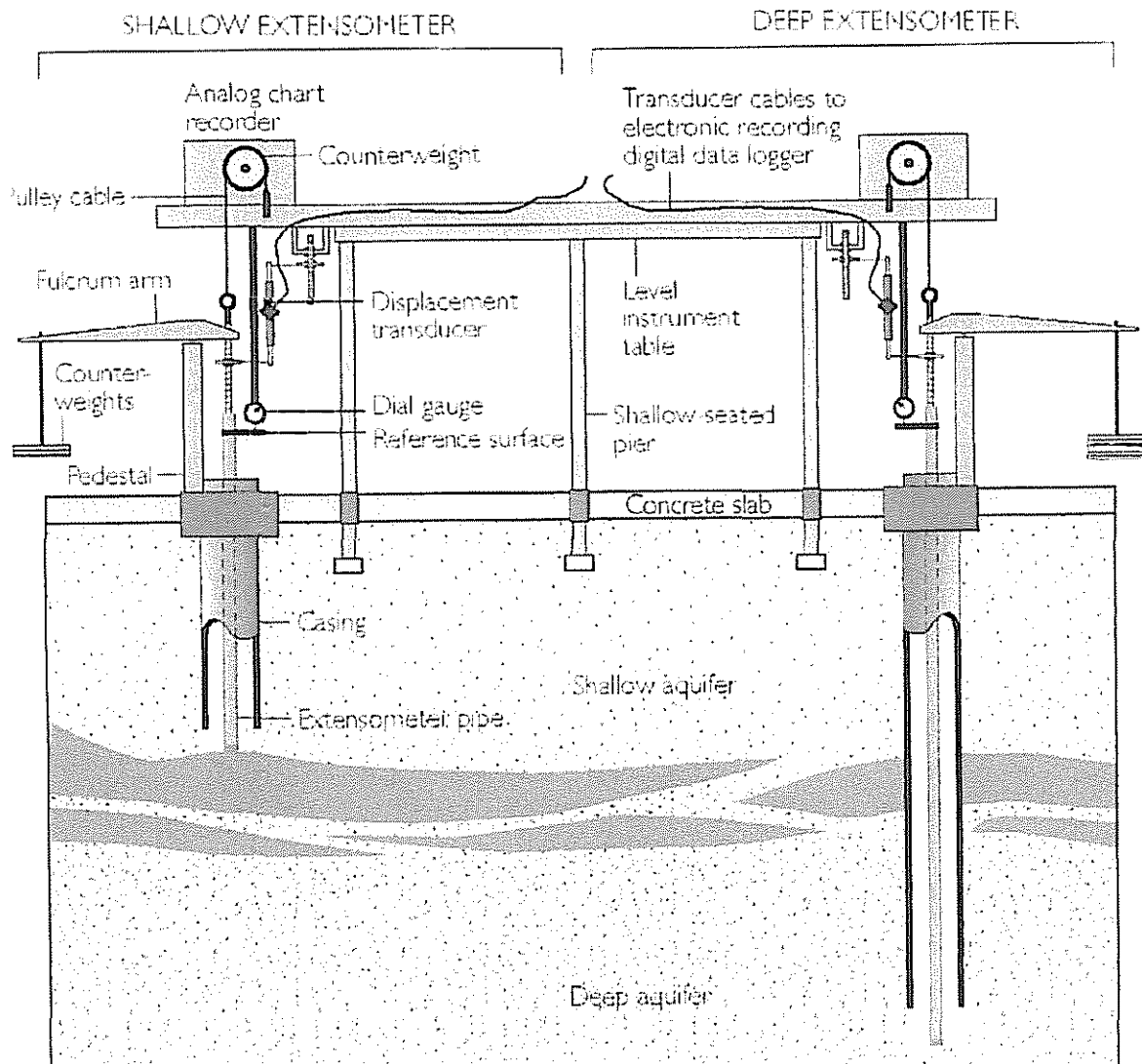
The IMP also called for Watermaster, with the assistance of the well owners, to conduct controlled aquifer stress tests (pumping tests) while monitoring water levels and groundwater production at nearby monitoring wells and production wells, as well as aquifer-system compaction and/or expansion at the dual-extensometer. These tests were performed in fall 2003, spring 2004, and fall 2004.

The data collected from this monitoring effort are being used to: (1) quantify and characterize the current state of aquifer-system deformation (i.e. elastic vs. inelastic), (2) determine the threshold value of head decline at which the deformation of the aquifer-system sediments changes from an elastic compression to



SECTION 1 – BACKGROUND
MZ-1 SUMMARY REPORT

inelastic compaction, (3) estimate aquifer-system parameters, such as the conductive and storage parameters of the aquifer and aquitard sediments, (4) reveal the existence of groundwater barrier(s) within the aquifer sediments, and (5) use all the above data as input to predictive computer models of compaction, subsidence, and groundwater flow to support the development of a long-term management plan.



A conceptual graphic of a dual extensometer, very similar to the facility at Ayala Park in Chino. Extensometers measure vertical deformation within an aquifer system. Typically, they are accompanied by piezometers that measure pore water pressure changes that cause deformation within the aquifer system.



SECTION 1 – BACKGROUND
MZ-1 SUMMARY REPORT

Methods: Ground-Level Surveying. This work involves repeated benchmark surveying to measure vertical (and in some cases horizontal) ground surface deformation along selected profiles within Chino Basin – mainly in MZ-1. The benchmark surveys are being used to (1) establish a datum from which to measure land surface deformation during the IMP period, (2) allow determination of historical subsidence at any historical benchmarks that can be recovered, (3) “ground-truth” the InSAR data, and (4) assist in the development and evaluation of the long-term management plan.

A network of stable benchmark monuments was installed to supplement an existing network of benchmarks that was installed for the City of Chino in 1987. Associated Engineers (AE) completed monument installations (see Figure 1-5) and an initial survey of all monument elevations in April 2003. Repeat surveys are planned for April of each year during the IMP period.

The IMP work plan also called for the deep extensometer at Ayala Park (discussed below), which is anchored in sedimentary bedrock at about 1,400 ft bgs, to be used as the “starting benchmark” for all survey loops. To accomplish this, a Class-A benchmark was constructed outside the extensometer building to serve as the practical (i.e. actual) starting benchmark. To link this benchmark to the deep extensometer pipe, each survey event begins by referencing the benchmark to a marked spot on one of the piers that supports the extensometer instrument platform. These piers and the instrument platform represent a stable ground surface datum that is used to measure relative vertical displacement between the ground surface and the deep extensometer pipe (recorded every 15 minutes). The vertical displacement recorded at the deep extensometer between survey events, in addition to any vertical displacement measured between the starting benchmark and the pier, is then used to calculate the elevation at the starting benchmark outside the extensometer building. Then, relative vertical displacement between benchmarks is measured across the entire network to obtain current elevations.

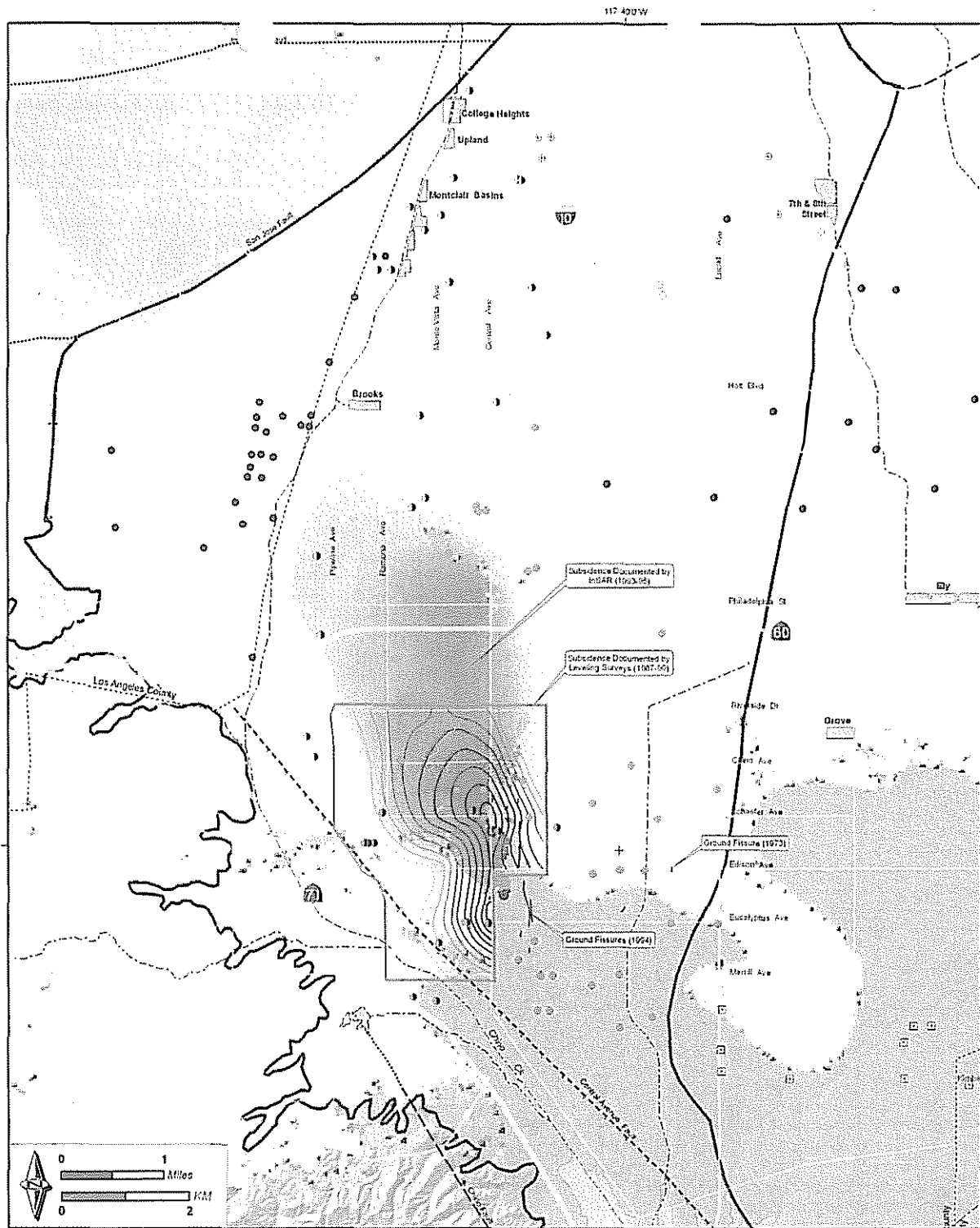
A key element of the MZ-1 benchmark network is the array of closely spaced benchmarks that have been established across the historic fissure zone in the immediate vicinity of the Ayala Park extensometers (Ayala Park Array). At this array, located along Edison and Eucalyptus Avenues, both vertical and horizontal displacements are measured. These horizontal and vertical displacements are defining 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. These surveys are being repeated semi-annually during the late spring and early fall periods of highest and lowest water levels in an attempt to monitor fissure movement, if any, that may be associated with elastic and/or inelastic aquifer-system deformation. (Note: the semi-annual survey frequency of the Ayala Park Array monuments is a modification to the IMP work plan, and was agreed upon by the MZ-1 Technical Committee at the September 24, 2003 meeting).

Methods: InSAR Analyses. InSAR is being used to characterize ground surface deformation in Chino Basin. This analysis will be performed for a historical period (1992-2000) and on an on-going basis thereafter. The advantage of InSAR is that it provides an aerially continuous representation of land surface deformation. These data are planned to be used to: (1) characterize the time history of land surface deformation in greater spatial and temporal detail than can be accomplished from the available historical ground-level survey data, (2) calibrate computer simulation models of subsidence and groundwater flow, and (3) assist in the evaluation of the effectiveness of the long-term management plan.



**Table 1-1
Applicability of Potential Causes of Subsidence in Chino Basin**

Potential Cause of Subsidence	Applicability to Chino Subsidence
Collapse of underground caverns	No caverns or soluble rocks are known to underlie the Chino Basin, and the geologic environment and history of the basin make their existence extremely unlikely.
Consolidation due to surface loading	No substantial surface loading has been applied, other than the construction of Prado Dam and the occasional short-lived accumulation of flood waters behind it. These are well south of the area of significant subsidence.
Consolidation of sediments over geologic time scales	This process is presumably occurring under the gradually increasing load of accumulating alluvial sediments, but at rates much too slow to be readily detectable over a period of decades. Under conditions of subaerial deposition the buildup of surficial sediments far exceeds their compaction at depth.
Desiccation and shrinkage of expansive soils	Swell/shrink properties of soils in the subsiding area have not been investigated. However, most of the area has been subject to agricultural and/or residential irrigation and is unlikely to have experienced serious desiccation, despite substantial lowering of the water table.
Settlement of soils due to ground shaking	Significant cosiesmic settlement of unconsolidated soils typically involves temporary liquefaction manifested in localized slumping and sand boils. These phenomena have not been reported during the seismic events of recent decades.
Drainage of organic soils	High organic soils do not occur in the subsiding area.
Hydrocompaction	Hydrocompaction occurs where thick accumulations of very dry soils are rewetted for the first time since deposition. The very shallow water tables and artesian conditions that historically characterized the area of recent subsidence rule out this phenomenon.
Solution of soluble subsurface deposits like salt	There is no evidence for the existence of soluble rocks underlying the Chino Basin.
Subsurface extraction of hydrocarbons	Not applicable. There are no known oil or gas extraction wells currently in operation in Chino Basin.
Tectonism	While the alluvial basins of California have obviously been subsiding over geologic time relative to their bounding mountain ranges, there is no evidence for a tectonic mechanism that would account for the localized and relatively rapid subsidence observed in the southwestern part of Chino Basin.
Thawing permafrost	Not applicable. Permafrost is soil or rock that remains below 0°C throughout the year, and forms when the ground cools sufficiently in winter to produce a frozen layer that persists throughout the following summer. These conditions do not occur in Chino Basin.
Aquifer-system compaction	Probable cause.



Subsidence Features

— -0.2	Relative Change in Land Surface Altitude as Measured by Leveling Surveys 1987 - 1999 (feet)
— -2.1 - -2.0	
— -1.9 - -1.8	
— -1.5 - -1.4	
— -1.3 - -1.2	
— -1.1 - -1.0	
— -0.9 - -0.8	
— -0.7 - -0.6	
— -0.5 - -0.4	
— -0.3 - 0.0	

■ +1.0	Relative Change in Land Surface Altitude as Measured by InSAR Oct 1993 - Dec 1995 (feet)
□ 0.0	
□ -1.0	

Wells in MZ-1 by Owner

● Ontario	⊗ CIM
● Pomona	⊗ Chino Hills
● SAWC	⊗ Chino
● Upland	⊗ MWWD
● SCWC	

Other Features

⊗	Ayala Park Extensometer Facility
⊗	Chino Basin Desalter Well (Existing)
□	Management Zone 1 Boundary
□	No InSAR Data

Land Surface Deformation in Management Zone 1
Leveling Surveys and InSAR

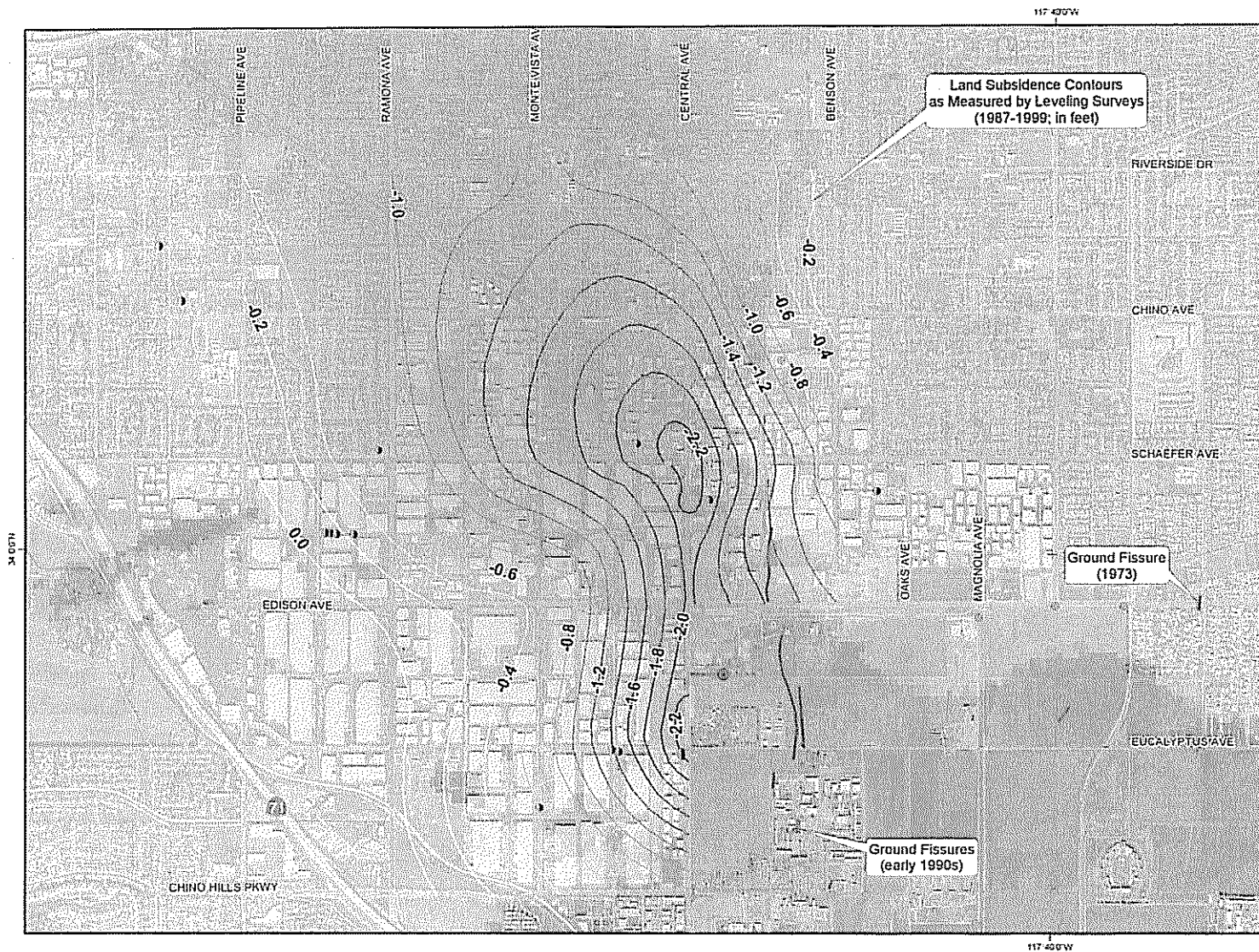
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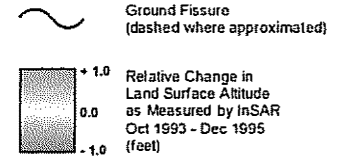
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Author: AEM
 Date: 02/05/05
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Figure 1-1



Subsidence Features



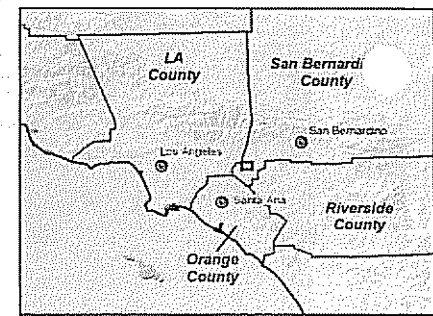
Wells in MZ-1 by Owner

- Ontario
- Pomona
- SAVAC
- Upland
- SCWC
- CHM
- Chino Hills
- Chino
- MWD

Other Features

- Ayala Park Extensometer Facility

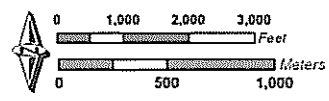
Note: Air photo background flown in April 2004.



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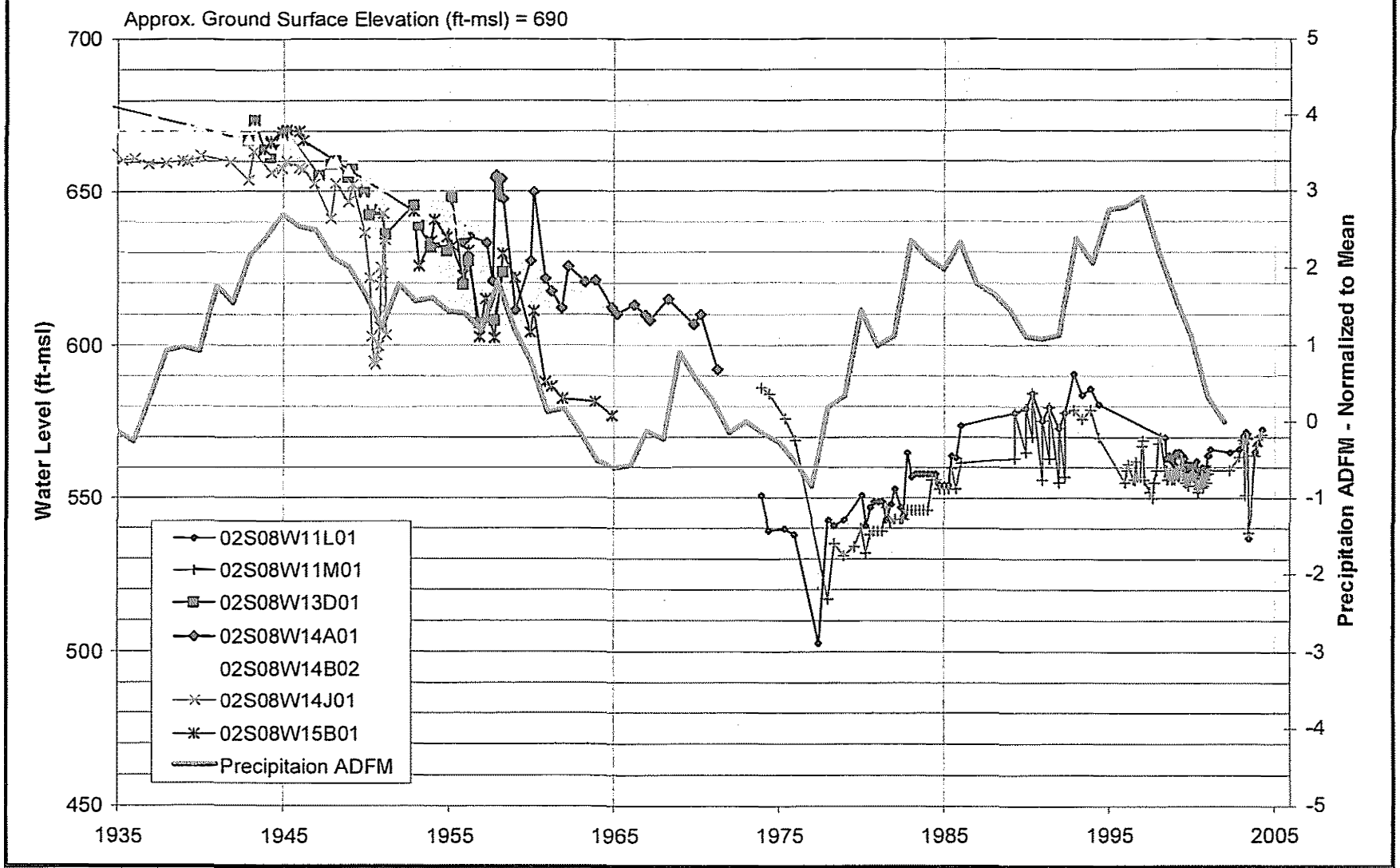


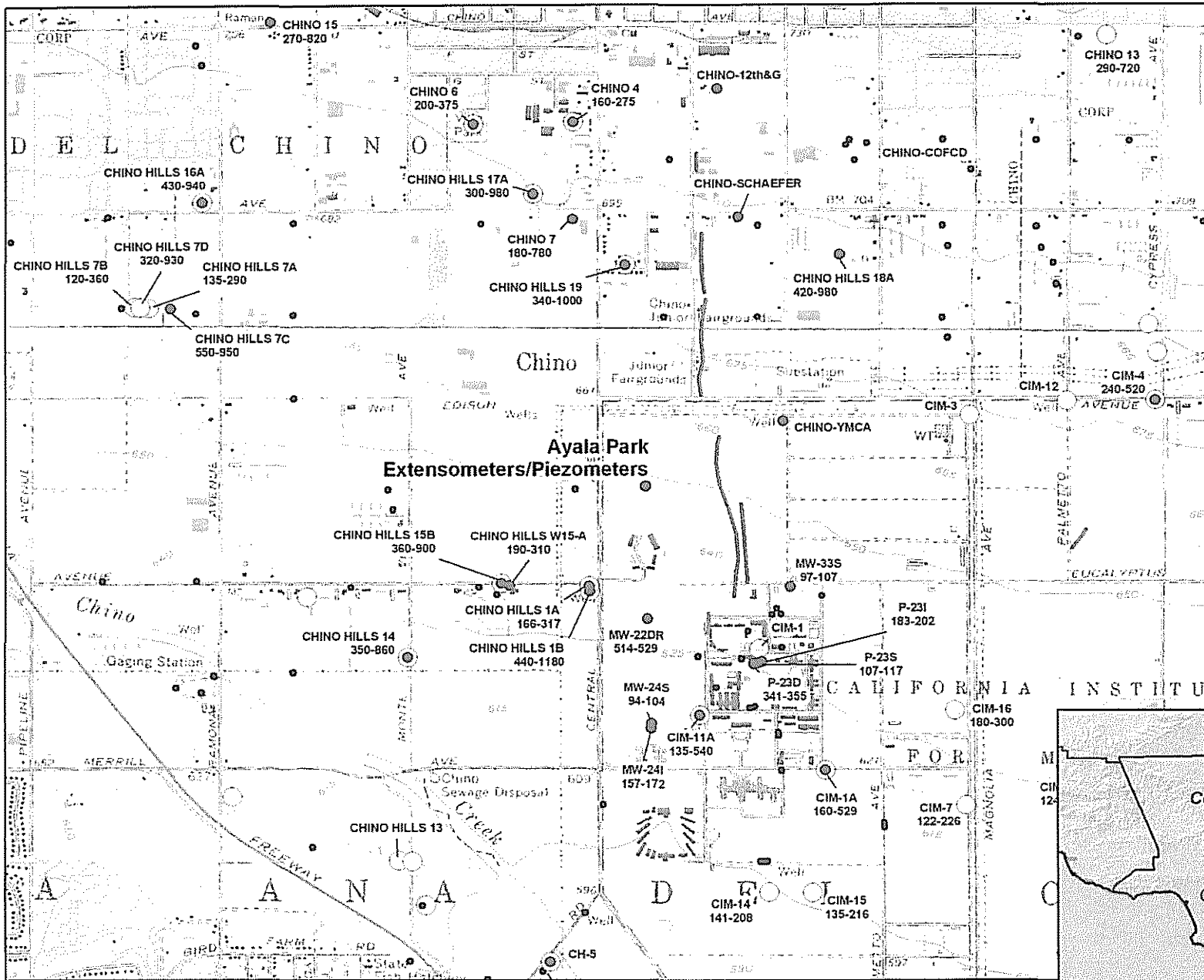
MZ-1 Summary Report
 September 2005

**Land Surface Deformation
 in Chino, CA
 Leveling Surveys and InSAR**

Figure 1-2

**Figure 1-3
Groundwater Level History in Southern MZ-1 (Shallow Wells)**





Main Map Features

- MZ-1 Observation Well
{Water level recording transducer installed at each well}

Other Features

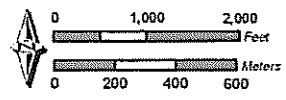
- Active Well
- Inactive or Destroyed Well
- ~ Ground Fissure (early 1990s)

Piezometric Monitoring Network
MZ-1 Interim Monitoring Program



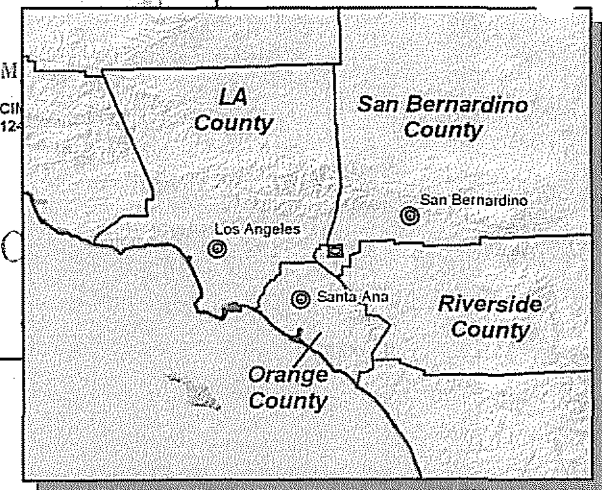
Figure 1-4

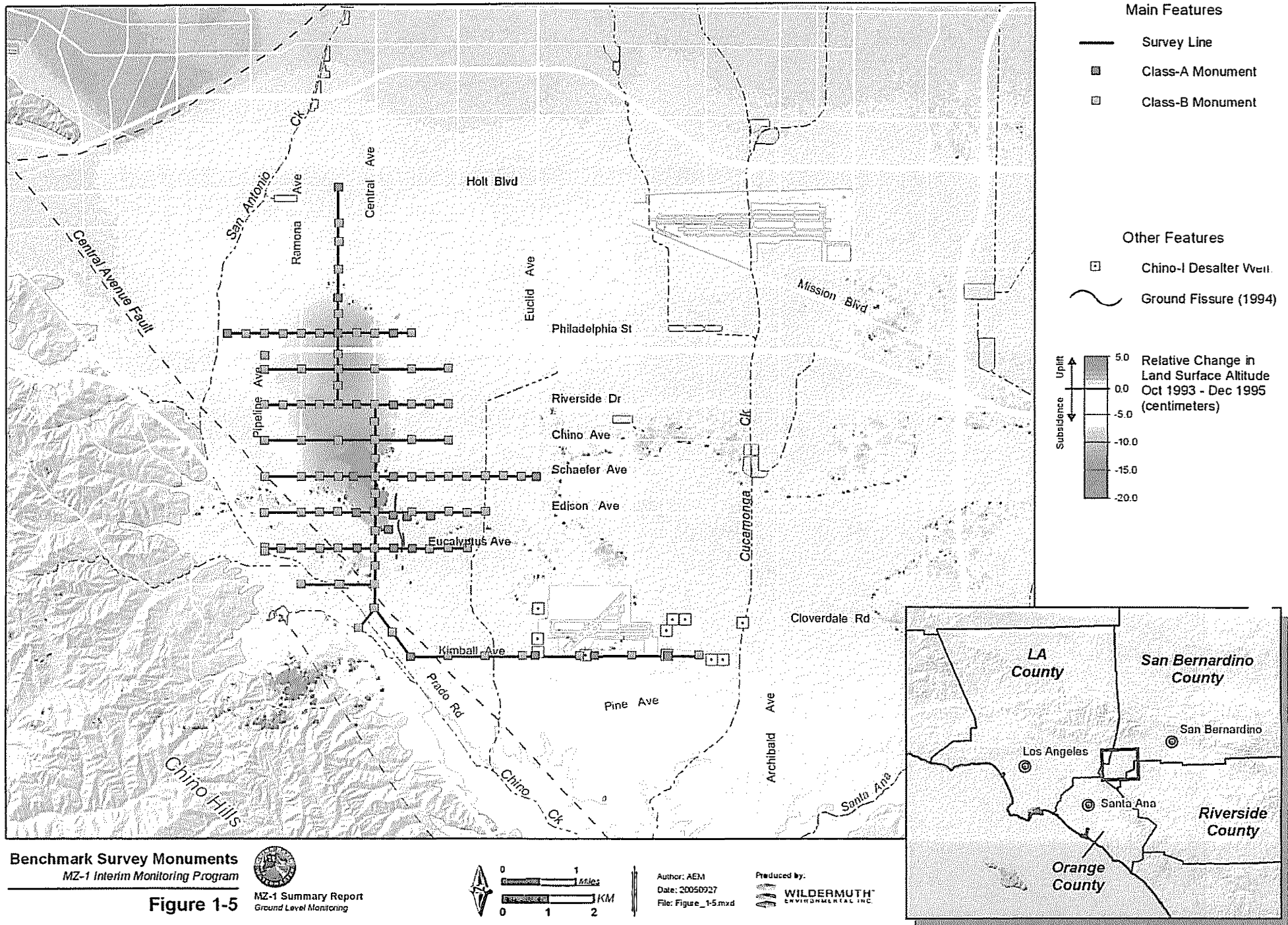
MZ-1 Summary Report
September 2005



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Date: 20050927
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2. MZ-1 INTERIM MONITORING PROGRAM

This section describes the results, interpretations, and major conclusions derived from the Interim Monitoring Program (IMP) as of September 19, 2005.

Results and Interpretations

Aquifer-System Monitoring. The controlled testing and comprehensive monitoring of the aquifer-system (see Section 1) and subsequent data analyses has led to a number of key interpretations:

1. There appear to be two distinct aquifer systems in this area – a shallow, un-confined to semi-confined system from about 100-300 ft-bgs and a deep, confined system from about 400-1,200 ft-bgs.
2. Under current conditions of aquifer utilization in MZ-1, the aquifer-system deformation appears to be essentially elastic. At the Ayala Park Extensometer, about 0.14 feet of elastic land subsidence and rebound were observed during the pumping and recovery seasons of 2004-05. Minor amounts (~0.01 feet) of permanent compaction and associated land subsidence apparently occurred over this same period.
3. The relationships between aquifer-system stress (water level changes) and aquifer-system strain (vertical deformation of the sediment matrix) have been established by comparing piezometer data versus extensometer data. These relationships indicate the nature of the aquifer-system deformation (i.e. elastic vs. inelastic) and provide estimates of aquifer-system parameters for later use in aquifer-system models.
4. A deep aquifer-system pumping test in September 2004 appears to have transitioned the system from elastic to inelastic deformation. This provides a “threshold” water level at Ayala Park, below which further drawdown will result in inelastic compaction. The data derived from this test will assist in the creation of management tools for MZ-1 (e.g. groundwater flow and subsidence models).

A technical discussion related to the above interpretations follows:

Figure 2-1 shows the changes in thickness of the aquifer systems as recorded by the deep and shallow extensometers, completed at depths of 1,400 and 550 ft-bgs. It also shows the water-level fluctuations in two piezometers, PA-10 and PA-7, which are representative of the shallow aquifer system and the upper part of the deep aquifer system, respectively.

During periods of water-level decline in PA-7, both extensometers are recording compaction of the sediments. During periods of recovery in PA-7, both extensometers are generally recording elastic expansion. Note that for the data available, almost all of the compaction during the drawdown season is recovered as expansion during the recovery season.

During the late-spring (2004) pumping of the shallow aquifer system, while the deep system not pumped, the shallow extensometer recorded compression while the deep extensometer recorded an overall expansion. Subtracting the shallow record from the deep confirms that the deeper sediments continued a smooth expansion in response to continuing recovery of heads in the deeper parts of the aquifer system, as represented by the data from PA-7, which is screened from 438-448 ft-bgs. The shallow compression is seen to correlate closely with the drawdown recorded by PA-10, screened from 213-233 ft-bgs.

These observations clearly demonstrate the existence of the deep and shallow aquifer-systems in this region of MZ-1. Nearby pumping at wells that are screened in either the deep or shallow aquifer-systems result in distinct hydraulic and mechanical responses that are recorded at the Ayala Park piezometers and extensometers. These observations also demonstrate the importance, for analytical purposes, of



independently stressing the deep and shallow systems by pumping from only one at a time, so that the observed deformation can be more accurately attributed to production from a specific depth interval.

The relationships between water levels and aquifer-system deformation are further depicted in the stress-strain diagrams shown in Figure 2-2. In this diagram, increasing depth to water (drawdown due to pumping) is the measure of decreasing pore pressure and increasing effective intergranular stress. Increasing compression of the sediments is the resulting strain. When pumping diminishes or ceases, pore pressures recover, intergranular stress is reduced, and the aquifer system expands.

Figure 2-2 shows that the full thickness of sediments responds linearly to extended intervals of continuous drawdown or recovery, but with a large seasonal hysteresis attributable to the time lag involved in the delayed vertical propagation of pore pressure changes from the pumped aquifers into adjacent, poorly permeable aquitards. The parallel slopes of the compression and expansion trends represent the overall elasticity of the sedimentary section. Its inverse is the skeletal storativity, in hydrologic terminology.

Brief intervals of recovery during the drawdown season, and of drawdown during the recovery season, produce steeply sloping, more-or-less tight hysteresis loops. Their much steeper slope represents the (inverse) aggregate compressibility of the permeable pumped aquifers. The longer intervals of recovery and drawdown generate the more open hysteresis loops, as the delayed responses of immediately adjacent portions of the aquitards have time to influence the extensometers.

The parallelism of the seasonal drawdown and recovery stress-strain slopes in Figure 2-2 indicates that seasonal drawdown to 250 ft-bgs at this site is producing essentially elastic, recoverable deformation. However, the slope of the drawdown curve in 2004 begins to deviate from its elastic trend when the seasonal drawdown exceeds 250 ft-bgs indicating a transition to inelastic compaction within draining aquitard interbeds. A minor amount of non-recovered compaction is indicated by the offset of the recovery curve in 2005 to the right (direction of compression). On about September 19, 2005 water levels had recovered to the levels of pre-pumping conditions of 2004 (~105 ft-bgs at PA-7), and the offset of the stress-strain curve to the right (direction of compression) confirmed that about 0.01 ft of permanent compaction occurred during the pumping season of 2004.

The pumping and associated drawdown of water levels in 2004 was part of a controlled aquifer system stress test. The primary objective of this test was to transition the deformation of aquifer-system sediments from elastic compression to inelastic compaction. If successful, it would provide “threshold” piezometric heads at the extensometer location that should not be approached in the future if permanent (inelastic) compaction within the aquifer-system is to be avoided. This would also define a key parameter required for estimating the maximum elastic storage capacity of the confined aquifer-system.

For fear of exacerbating the ground fissuring, one limiting condition of the test that was agreed upon by the participating agencies was that pumping cease when inelastic compaction was identified. Although 0.01 feet of permanent compaction is relatively minor deformation, it is measurable and within the detection limits of the extensometer. The stress-strain diagram in Figure 2-2 indicates that at Ayala Park the aquifer-system transitioned from elastic compression to inelastic compaction when the water level in the PA-7 piezometer at Ayala Park fell below about 250 ft-bgs. The applicability of this limit at increasing distances from the piezometer/extensometer facility is dependent on an approximate replication of the tested pumping conditions (i.e. specific wells pumped, pumping rates, and pumping durations). A different areal distribution of pumping might cause localized inelastic compaction away from Ayala Park without drawing PA-7 below 250 feet or recording inelastic effects at the extensometer.



A different vertical distribution of extraction will stress the aquifer system in a different manner, and may result in a different threshold water level in PA-7.

Other objectives of the pumping test that were successfully accomplished were to (1) estimate key aquifer-system parameters that could be used in later modeling efforts, and (2) confirm and elucidate the existence of a groundwater barrier within the sediments below about 300 ft-bgs

Discovery of Groundwater Barrier. Multiple lines of evidence suggest that a previously unknown groundwater barrier exists within the deep aquifer-system in the same location as the fissure zone.

Controlled aquifer-system stress (pumping) tests in October 2003 and April 2004 provided piezometric response data that revealed a potential groundwater barrier within the sediments below about 300 ft-bgs and aligned north-south with the historic fissure zone. Figure 2-3 is a map that shows the locations of a pumping well perforated in the deep aquifer system (CH-19, 340-1,000 ft-bgs) and other surrounding wells that also are perforated exclusively in the deep system. Figure 2-4 shows the water level responses in these wells during various pumping cycles at CH-19. The groundwater barrier is evidenced by a lack of water level response in CH-18 (east of the fissure zone) due to pumping at CH-19 (west of the fissure zone). Image-well analysis of pumping-test responses also indicates that this barrier approximately coincides with the location of the historic zone of ground fissuring.

Ground level survey data (described in detail below) corroborate the water level data – also indicating the existence of the barrier and its coincident location with the fissure zone. Figure 2-6 shows that during the pumping season of 2003 (April to November) vertical displacement of the land surface (i.e. subsidence) was generally greater on the west side of the fissure zone where water-level drawdown was greatest. Figure 2-7 shows that during the recovery season of 2003-04 (November to April) vertical displacement of the land surface (i.e. rebound) was again greater on the west side of the fissure zone where water level recovery was greatest.

In other words, the groundwater barrier in the deep aquifer-system is aligned with the fissure zone and causes greater water level fluctuations on the west side of the barrier where the pumping is concentrated. These greater water level fluctuations on the west side of the barrier, in turn, cause greater deformation of the aquifer-system matrix which, in turn, causes greater vertical land surface deformation on the west side of the barrier. In addition, the pattern of horizontal displacement of benchmarks over the pumping and recovery seasons, as shown in Figures 2-6 and 2-7, likely reflects, in part, the differential compaction of the aquifer system across the fissure zone.

Similarly, the InSAR data in Figures 1-2 and 2-5 also corroborate the existence of the groundwater barrier by showing maximum subsidence west of the barrier and virtually no subsidence east of the barrier.

This spatial coincidence of the groundwater barrier and the historic fissure zone suggests a cause-and-effect relationship: the barrier causes differential water level declines, which cause differential aquifer-system compaction and a steep gradient of subsidence across the barrier, which can and likely has caused ground fissuring above the barrier.

Monitoring of Ground-Surface Deformation—Ground-Level Surveying. In late April 2004, AE performed the annual survey event across the entire network of benchmark monuments, including the measurements of horizontal displacements at the Ayala Park Array of monuments. The results of the ground level surveys were presented to the MZ-1 Technical Committee at its meeting. Also at this



meeting, the project manager from AE made a presentation to describe survey methodologies, accuracy, results, and challenges.

Figure 2-5 displays the vertical displacement at monuments that occurred from April 2003 to April 2004. Comparing monument elevations over the April-to-April period is meant to reveal the inelastic component of compaction, if any, which may be occurring in the region. The assumption here is that in April 2004 water levels in the region have recovered to the April 2003 levels; thus the measured vertical displacement does not include the elastic component of aquifer system deformation. Water levels measured as part of the IMP (in the vicinity of Ayala Park) support this assumption. Examination of Figure 2-5 shows that the monuments near Ayala Park experienced little to no subsidence over this time period. However, the monuments located in the northern portions of the surveyed area showed small but measurable subsidence of the land surface (on average about 0.04 feet). Maximum subsidence of about 0.08 feet was recorded at monuments located along Philadelphia Street between Pipeline and Ramona Avenues. Water level and groundwater production data have not been collected or analyzed as part of the IMP in these northern portions of the survey area; hence, it is not yet possible to classify the nature of the subsidence in this region (*i.e.* elastic vs. inelastic), since it is not known whether water levels in 2004 had recovered to their 2003 levels.

The color-coded background in Figure 2-5 represents the subsidence that occurred in the area over the October 1993 to December 1995 period as measured by InSAR. The subsidence shown by this InSAR data has been interpreted as primarily permanent subsidence caused by inelastic aquifer-system compaction. If so, the survey data in Figure 2-5 are indicating that the distribution of inelastic compaction in 2003-04 is significantly different than the distribution of inelastic compaction that occurred during the early 1990s. In particular, maximum permanent subsidence of about 1 foot in 1993-95 was measured in the vicinity of Ayala Park by InSAR, whereas in 2003-04 the survey data are indicating minimal permanent subsidence, if any, in this same area.

Figures 2-6 and 2-7 display the vertical and horizontal displacement at monuments of the Ayala Park Array that occurred from April 2003 to November 2003 and November 2003 to April 2004, respectively. The determination of horizontal displacement of monuments was accomplished through the processing of distance and angle measurements between adjacent monuments, and is based on the assumption that the southeastern monument was stable over the period of measurement. The methods used to measure the horizontal displacement of monuments at the Ayala Park Array are currently being refined by AE. These figures show:

- significant horizontal displacement of the ground surface over the course of the pumping and recovery seasons in the vicinity of the historic fissure zone
- the elastic nature of the land surface displacement over the course of the pumping and recovery seasons
- the apparent presence of a groundwater barrier within the deep aquifer system (see Section 5.3.4 below).

Groundwater production and water-level data show that pumping of wells perforated within the deep aquifer system (>300 ft-bgs) causes water-level drawdowns in the deep aquifer system on the order of 150 feet. However, these large drawdowns do not propagate east of the fissure zone. During the pumping season of 2003 (April to November) vertical displacement of the land surface (*i.e.* subsidence) was generally greater on the west side of the fissure zone where water-level drawdown was greatest. During



the recovery season of 2003-04 (November to April) vertical displacement of the land surface (i.e. rebound) was again greater on the west side of the fissure zone where water-level recovery was greatest.

In other words, the groundwater barrier in the deep aquifer system aligned with the fissure zone causes greater water-level fluctuations on the west side of the barrier where the pumping is concentrated. These greater water-level fluctuations west of the barrier cause greater deformation of the aquifer-system matrix which, in turn, causes greater vertical land surface deformation on the west side of the barrier. The InSAR data corroborate the existence of the groundwater barrier by showing maximum subsidence west of the barrier (0.2ft) and virtually no subsidence east of the barrier during the course of one pumping season (April-1993 to September 1993). In addition, the pattern of horizontal displacement of benchmarks over the pumping and recovery seasons likely reflects, in part, the differential compaction of the aquifer system across the fissure zone.

In June 2005, the entire network of monuments was surveyed for vertical displacement and, at the Ayala Park array of monuments, for horizontal displacement. The results of this survey are currently being processed.

Monitoring of Ground Surface Deformation—InSAR. Vexcel Corporation of Boulder, Colorado – a company that specializes in remote sensing and radar technologies – conducted a “proof of concept” study of historical synthetic aperture radar data that was acquired over the MZ-1 area. The objective of this study was to generate cumulative displacement maps over relatively short time steps (April to November 1993). The MZ-1 Technical Group deemed the study successful, and approved follow-up study by Vexcel to perform a comprehensive analysis of all historical synthetic aperture radar data (1992-2003) to characterize in detail the history of subsidence in MZ-1.

The comprehensive analysis was completed during the first quarter of calendar 2005. However, the usable data in this analysis only spanned the 1992-2000 period. Dr. David Cohen of Vexcel presented the InSAR results by to the MZ-1 Technical Committee in March 2005. Figures 2-8 and 2-9 display the summary results of the InSAR analysis of land subsidence for the periods of 1992-1995 and 1996-2000.

The InSAR results were generally consistent with the ground level survey data collected over a similar period with respect to the areal extent and magnitude of historical subsidence. The InSAR data show that:

- the rate of subsidence in the south area of MZ-1 has declined over time, particularly since about 1995.
- currently, the aquifer system is experiencing mainly elastic compression and expansion in the south area of MZ-1.
- the central area of MZ-1 is displaying greater rates of subsidence than the south area (near Ayala Park). This subsidence is probably due to aquifer system compaction, but pumping and water level data that would define this relationship have not yet been collected and analyzed in the central area of MZ-1.
- a steep gradient of subsidence exists across the fissure zone. The steep gradient extends north of the fissure zone to about Francis Street. In addition, the spatially continuous InSAR data show that the gradient of subsidence is steeper across the fissure zone than is shown by surveys of discrete benchmarks, which further supports the potential link between the subsidence and the fissuring. The existence of this steep gradient across the fissure zone also supports/reveals the existence and extent of the groundwater barrier.

Conclusions



There are five major conclusions that have been derived from the IMP to date:

1. The current state of aquifer-system deformation in south MZ-1 (in the vicinity of Ayala Park) is essentially elastic. Little, if any, inelastic (permanent) compaction is now occurring in this area, which is in contrast to the past when about 2.2 feet of land subsidence occurred, accompanied by ground fissuring, from about 1987-1995.
2. Groundwater production from the deep, confined aquifer system in this area causes the greatest stress to the aquifer system. In other words, pumping of the deep aquifer system causes water-level drawdowns that are much greater in magnitude and lateral extent than drawdowns caused by pumping of the shallow aquifer system.
3. Water-level drawdowns due to pumping of the deep aquifer system can cause inelastic (permanent) compaction of the aquifer-system sediments, which results in permanent land subsidence. The initiation of inelastic compaction within the aquifer system was identified during this investigation when water levels fell below a depth of about 250 feet in the PA-7 piezometer at Ayala Park.
4. Through this study, a previously undetected barrier to groundwater flow was identified. The barrier is located within the deep aquifer system and is aligned with the zone of historical ground fissuring. Pumping from the deep aquifer system is limited to the area west of the barrier, and the resulting drawdowns do not propagate eastward across the barrier. Thus, compaction occurs within the deep system on the west side of the barrier, but not on the east side, which causes concentrated differential subsidence across the barrier and creates the potential for ground fissuring.
5. InSAR and ground-level survey data indicate that permanent subsidence in the central parts of MZ-1 (north of Ayala Park) has occurred in the past and continues to occur today. The InSAR data also indicate that the groundwater barrier extends northward into central MZ-1. These observations suggest that the conditions that very likely caused ground fissuring near Ayala Park in the 1990s are also present in central MZ-1, and should be studied in more detail.



Figure 2-1 - Piezometric and Extensometer Data
Ayala Park Piezometer/Extensometer Facility

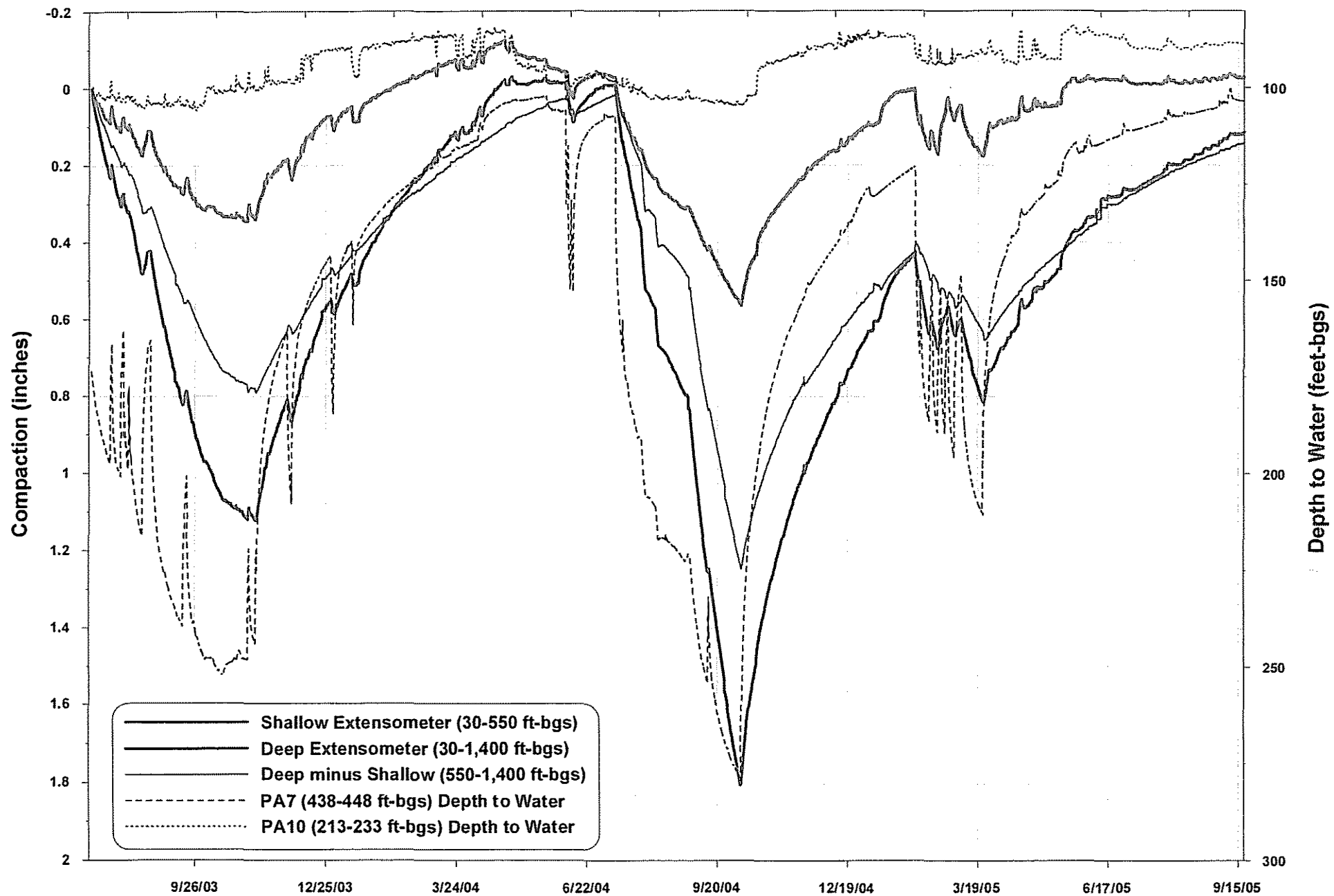
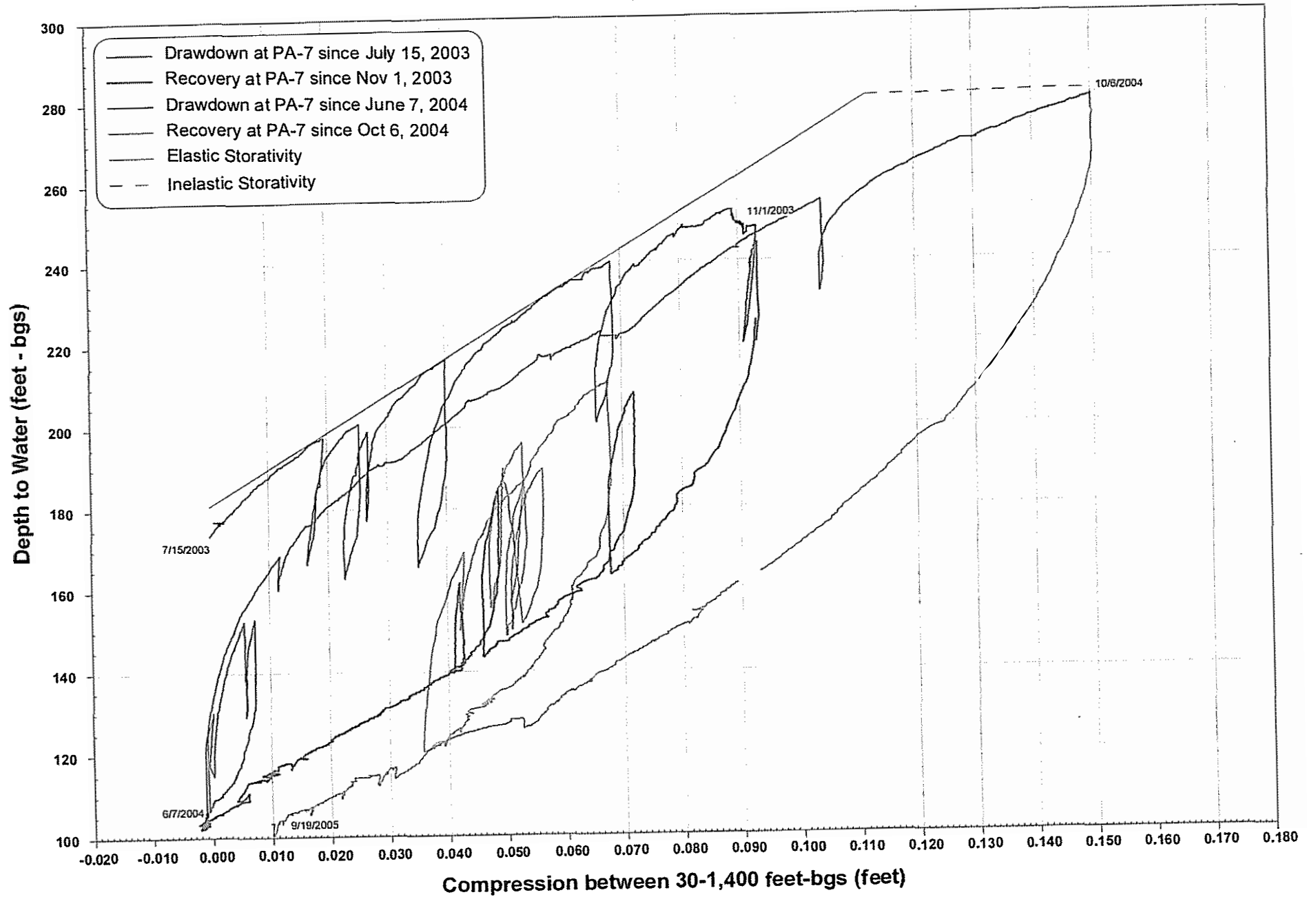
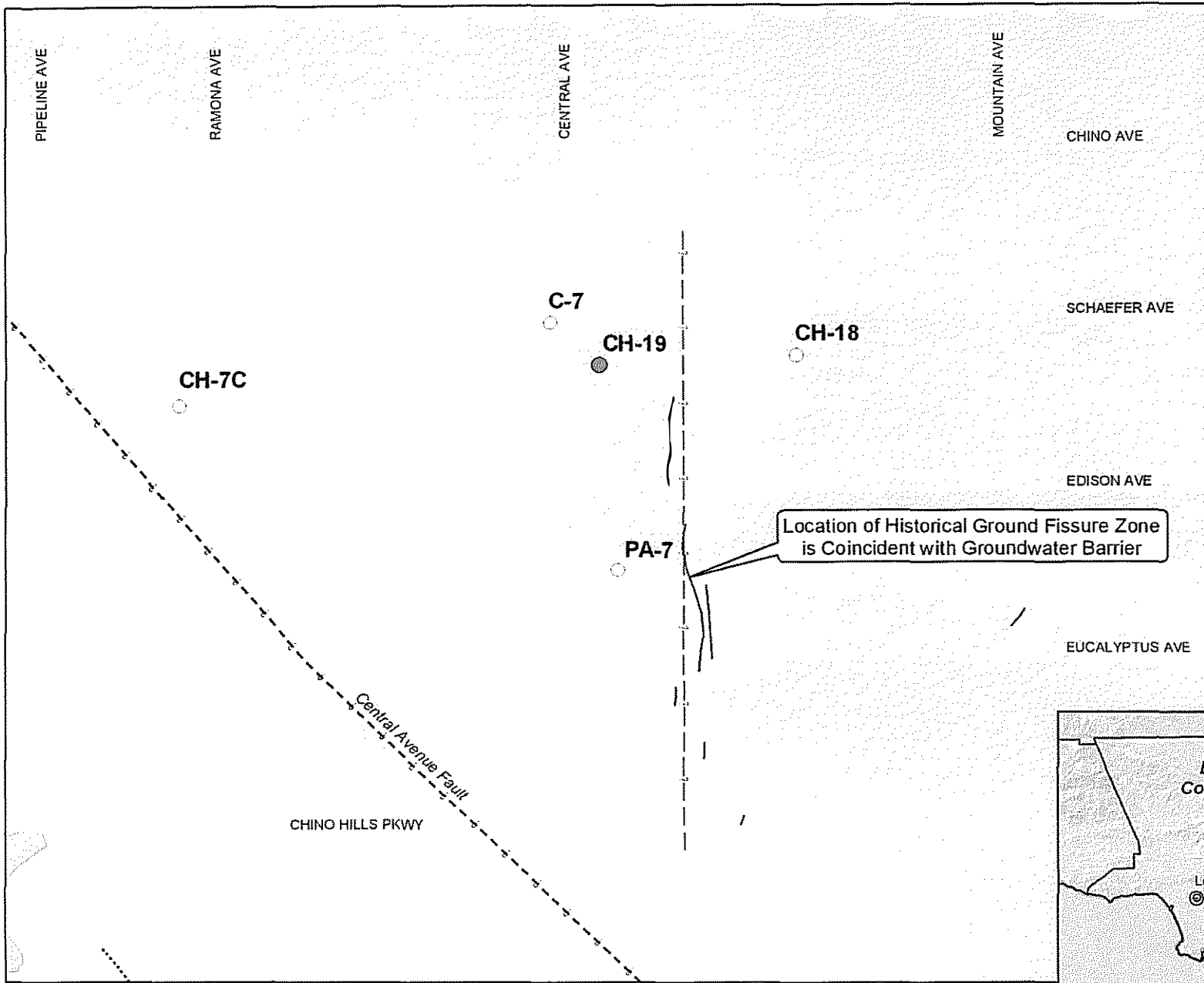


Figure 2-2 -- Stress-Strain Diagram
PA-7 vs. Deep Extensometer



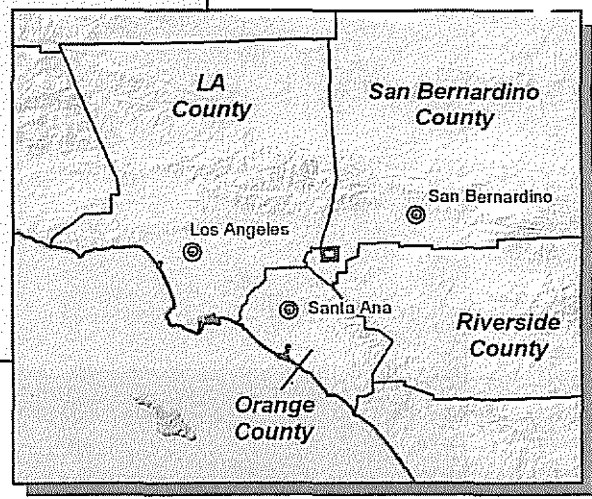


Main Features

- Pumping Well
- Observation Well

Note: See water level responses at these wells in Figure 5-13.

- ~ Ground Fissure (1994)
- - - Approximate Location of Groundwater Bar

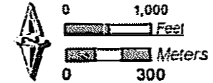


MZ-1 Groundwater Barrier
Evidence from Pumping Test



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September 2005

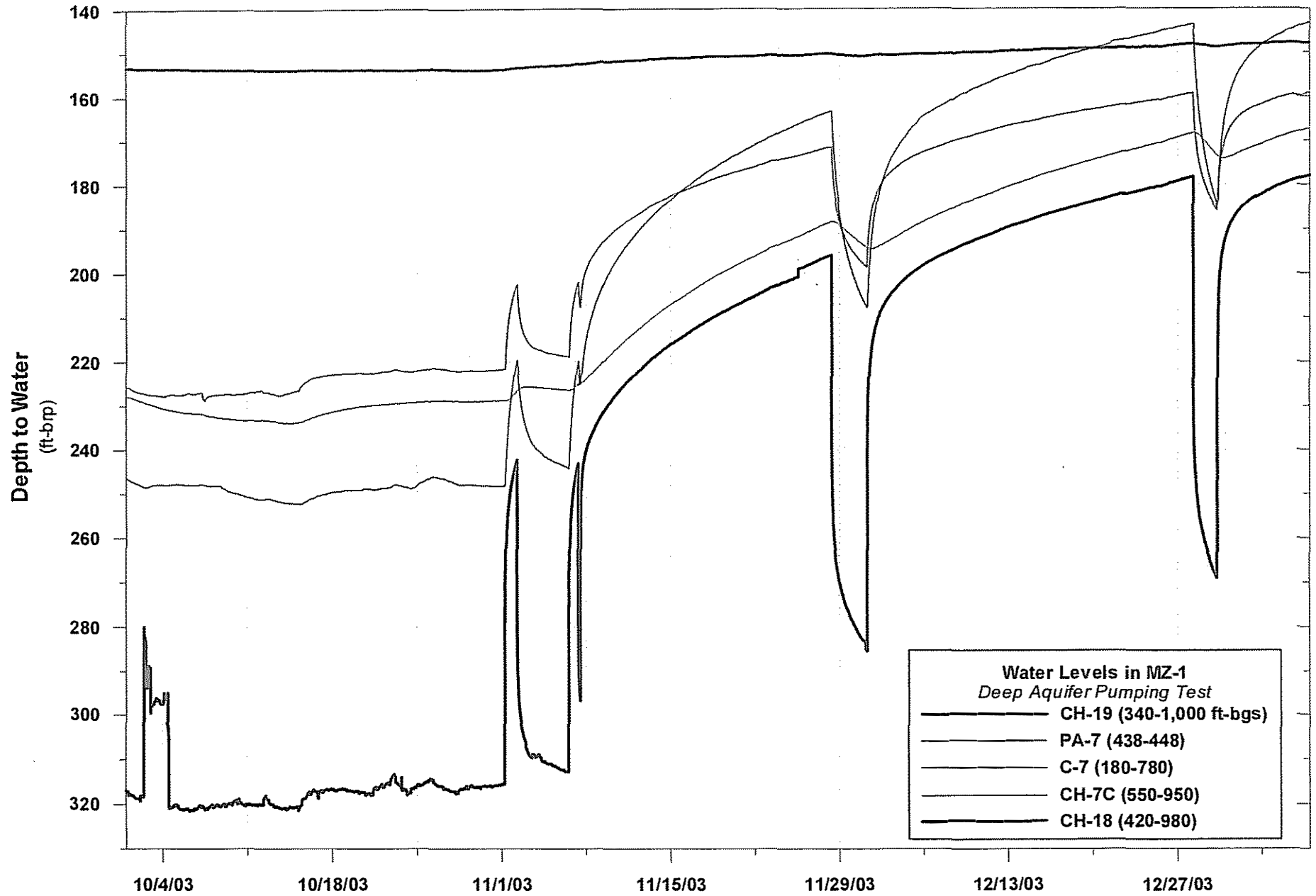
Figure 2-3

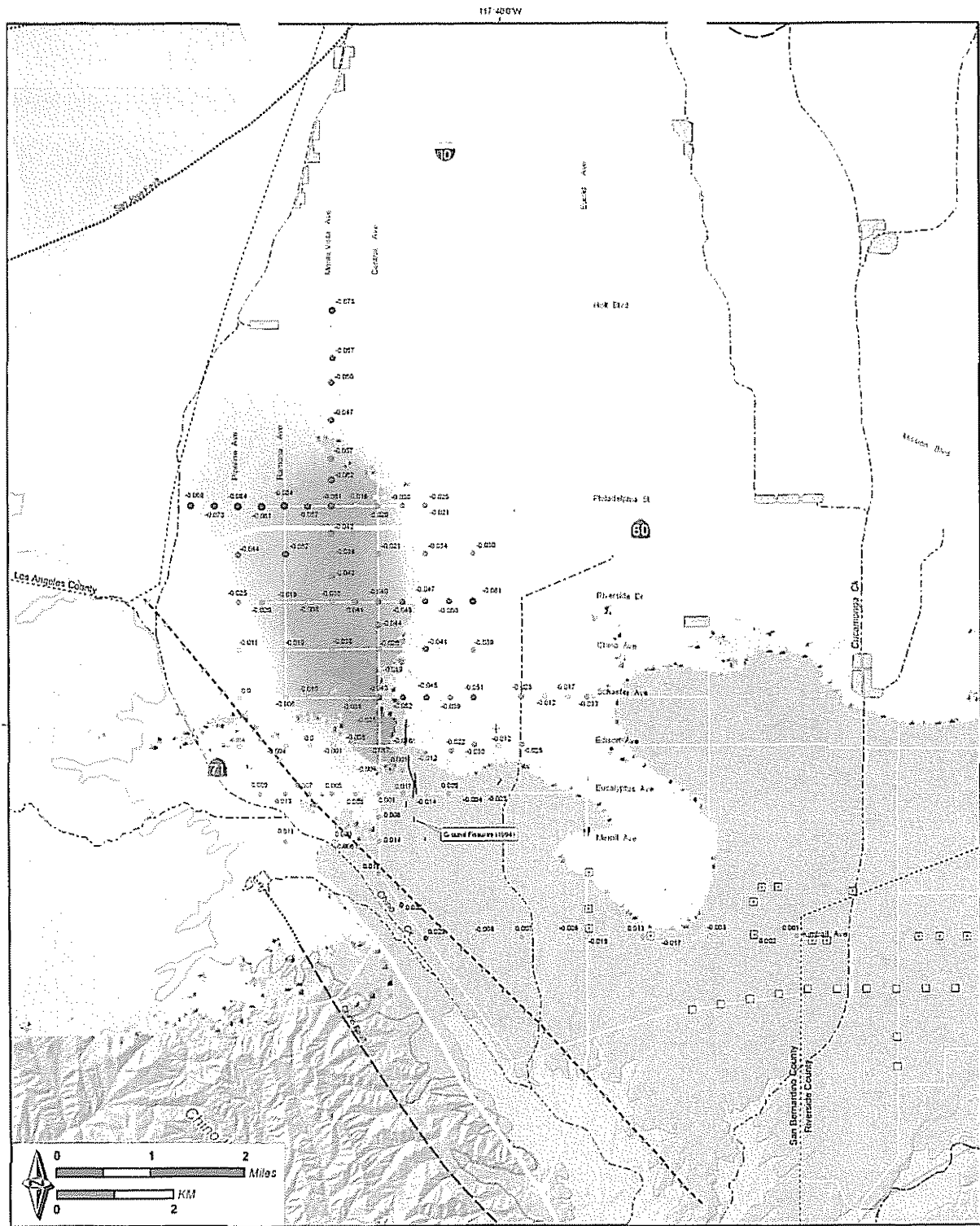


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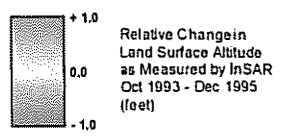
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Figure 2-4
Water Level Responses at Nearby Wells to Pumping at CH-19



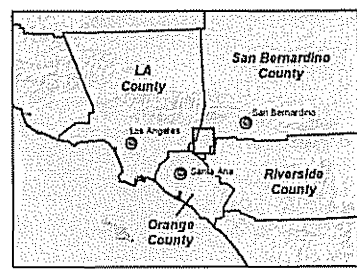


- Main Features**
- -0.010 to -0.020
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 - -0.990 to -1.000



- Other Features**
- Ayala Park Extensometer Facility
 - Chino Basin Desalter Well (Existing)
 - Chino Basin Desalter Well (Planned)
 - Chino Basin Hydrologic Boundary

- Faults & Groundwater Divides**
- Location Certain
 - - - Location Uncertain
 - · - · - Location Approximate
 - · - · - Groundwater Divide
 - · · · · Location Concealed



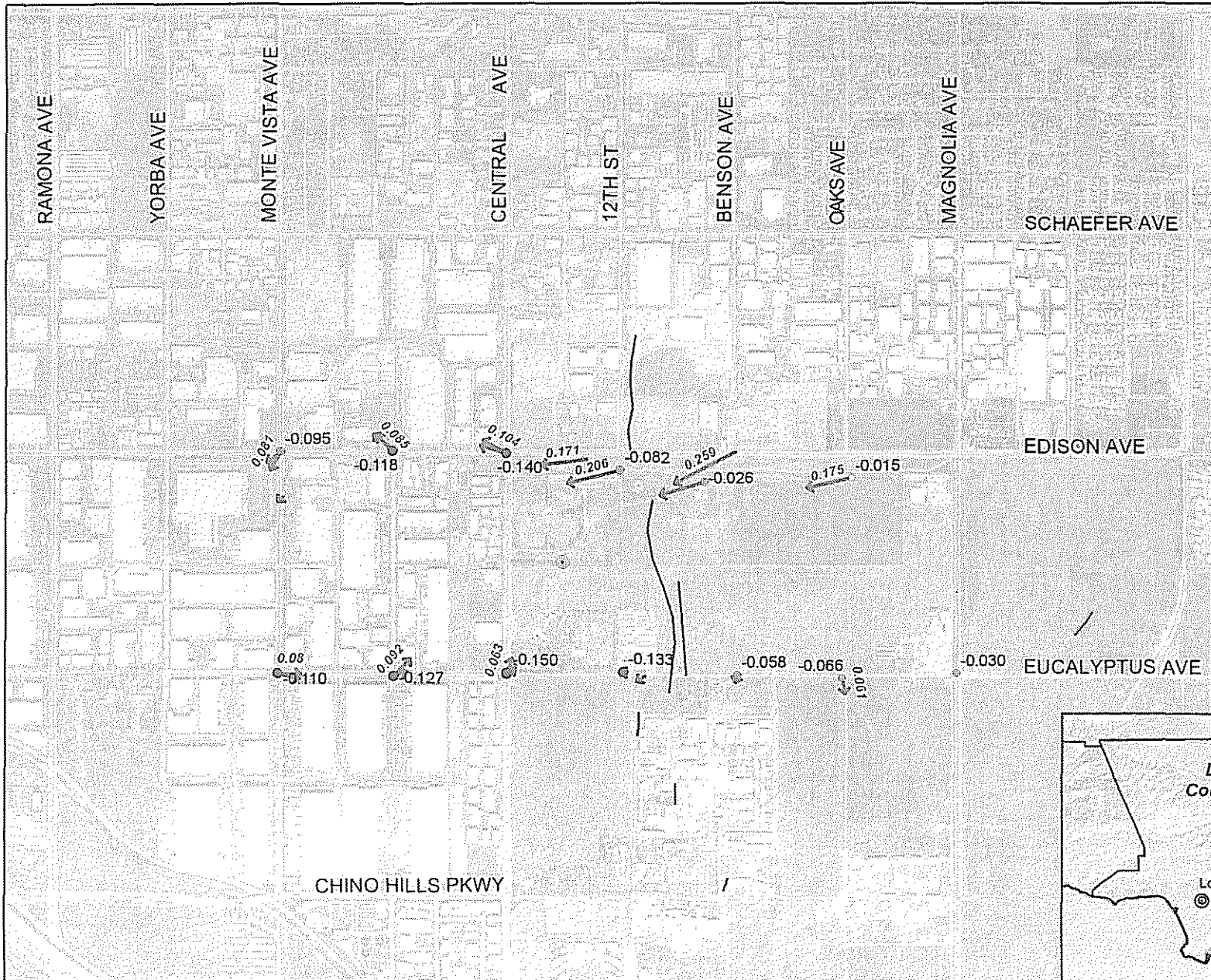
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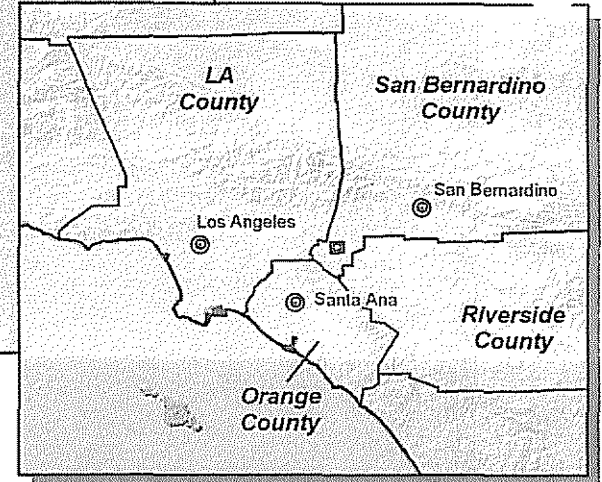
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Ground Level Survey Results
 April 2003 to April 2004

Figure 2-5



- Results of Ground Level Surveys**
- 0.12 Vertical Displacement at Monument (ft)
 - 0.10 Horizontal Displacement at Monument (ft) Relative to SE Monument
- Other Features**
- Ayala Park Extensometer
 - Ground Fissure (early 1990s)

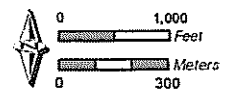


Horizontal Displacement at Ayala Park Array of Monuments
 April 2003 to November 2003

Figure 2-6

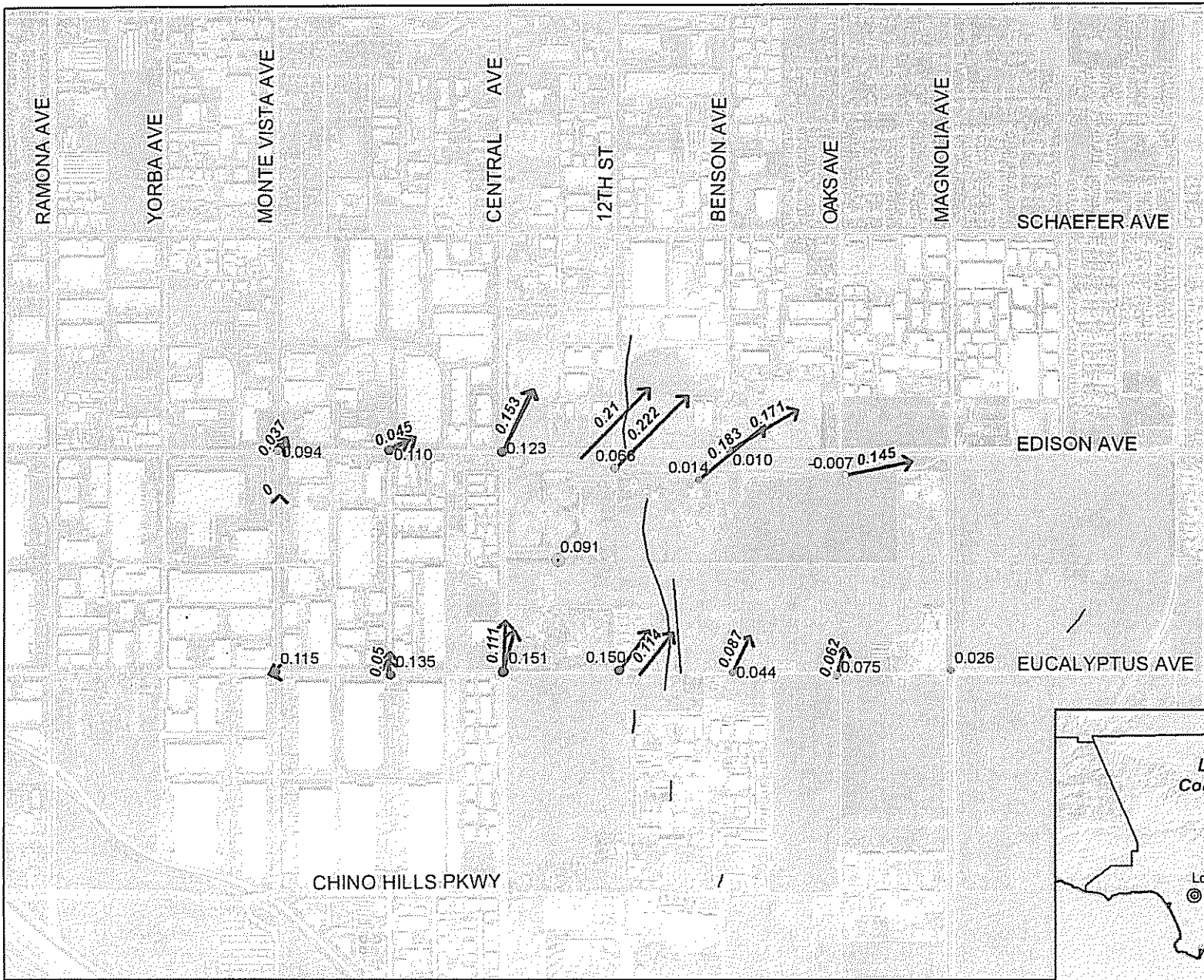


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Results of Ground Level Surveys

- 0.15 Vertical Displacement at Monument (ft)
- 0.10 Horizontal Displacement at Monument (ft) Relative to SE Monument

Other Features

- Ayala Park Extensometer
- Ground Fissure (1994)

Horizontal Displacement at Ayala Park Array of Monuments
November 2003 to April 2004

Figure 2-7

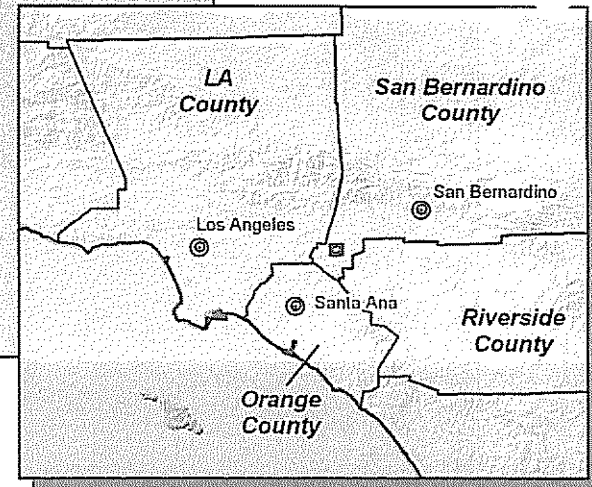


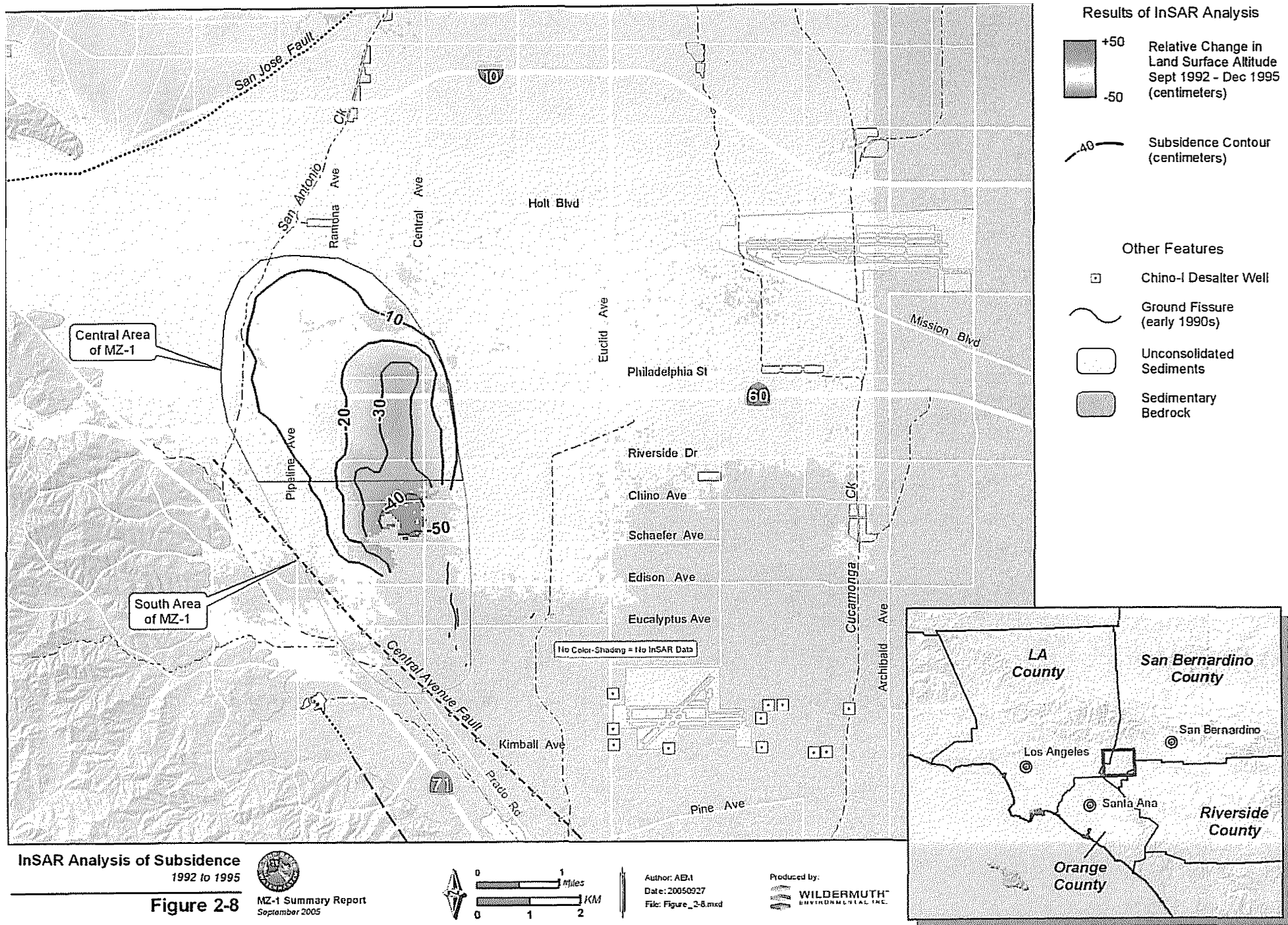
HZ-1 Summary Report
September 2005

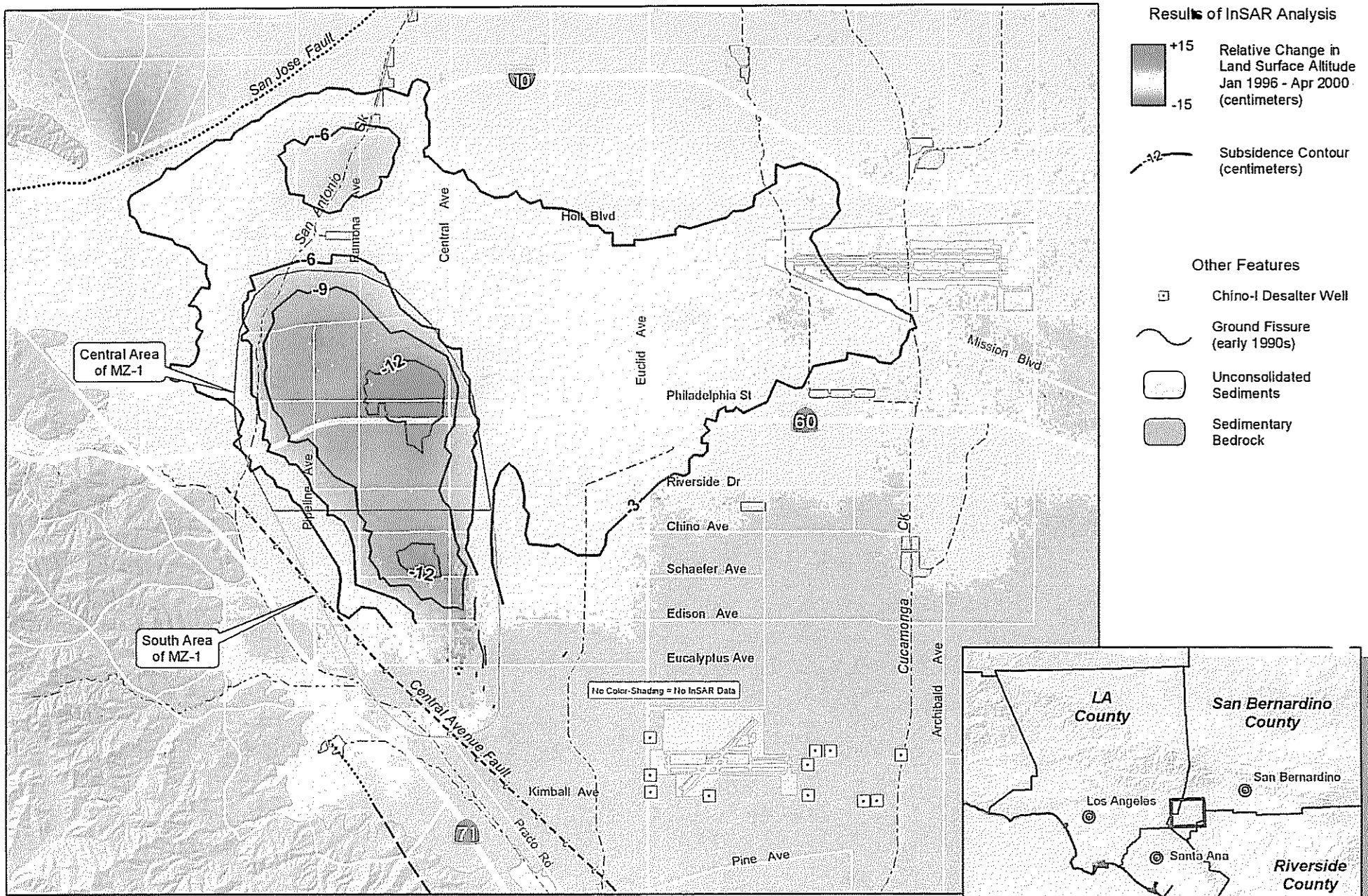


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InSAR Analysis of Subsidence
1996 to 2000

Figure 2-9



MZ-1 Summary Report
September 2005



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3. ONGOING AND RECOMMENDED WORK

This section describes:

- the ongoing work of the IMP, which includes the continued monitoring of the aquifer system and land surface deformation and the development of analytical and numerical models of groundwater flow and aquifer-system deformation.
- the work that is currently being implemented that was not initially part of the IMP, but has been recommended by MZ-1 Technical Committee and/or Watermaster based on data obtained during the IMP period. This work includes the expanded aquifer-system monitoring in the central area of MZ-1, and the monitoring of horizontal ground surface deformation along Schaefer Avenue.

Continued Monitoring

Aquifer-System Monitoring. Aquifer-system monitoring efforts will continue for the duration of the IMP. The MZ-1 Technical Committee will likely recommend that the aquifer-system monitoring efforts continue, albeit at a reduced scope, as part of the long-term management plan. Electronic data from the Ayala Park Extensometer facility and from water level recording transducers in surrounding wells will be collected and entered into the MZ-1 database once every two months. The purpose of this continued monitoring effort is to (1) continually evaluate the effectiveness of the long-term plan, and (2) verify the accuracy of the groundwater flow and subsidence models that are being used as management tools.

InSAR. The MZ-1 Technical Committee is recommending that on-going InSAR monitoring of land surface deformation be conducted on a semi-annual interval (spring and fall data acquisition and interferometric analysis) for the next two years. This analysis will (1) reveal seasonal and annual ground surface displacement across the entire MZ-1 area, and (2) be compared to ground-level survey data collected at the same interval (see Section 5.4.2 below) to help determine a long-term strategy to monitor ground surface deformation.

Ground Level Surveying. The MZ-1 Technical Committee is recommending that the entire network be surveyed twice per year for the next two years (during the spring and fall of each year). The ground level survey data will be compared against the InSAR data (see above) to help determine a long-term strategy to monitor ground surface deformation.

Development of Analytical and Numerical Models

The objectives of aquifer-system modeling in MZ-1 are:

- To evaluate fluid withdrawal as the mechanism of historical land subsidence and fissuring
- To predict the effects of potential basin management practices on groundwater levels and land subsidence and fissuring (forecasting tool)

In other words, if a model can be constructed that simulates past drawdown and associated land subsidence, then the model represents an additional line of evidence that fluid withdrawal was the mechanism of historical land subsidence. In addition, the model can be used to predict future drawdown and associated land subsidence that would result from potential basin management practices.

Three distinct modeling efforts will take place in sequence:

1. *Inverse analytical modeling.* This type of modeling will use groundwater level and production data collected as part of the aquifer-system stress testing (pumping tests) that were conducted in 2003 and



2004. The objectives are to determine the hydraulic and mechanical parameters of the aquifer-system and reveal XY-anisotropy. The results will be used in subsequent numerical modeling efforts.

2. *One-dimensional compaction modeling.* This type of modeling will use groundwater level and aquifer-system deformation data collected at the Ayala Park Piezometer/Extensometer Facility, as well as historical water level and subsidence data collected near Ayala Park. One objective is to determine the aquitard properties in the vicinity of Ayala Park. Areal extrapolation of aquitard properties will be based on geology and InSAR data, and the results will be used in the three-dimensional numerical modeling efforts (see Section 3). Another objective is to predict aquifer-system deformation due to predicted water level changes that may occur at Ayala Park in the future due to nearby pumping.
3. *Three-dimensional groundwater flow and subsidence modeling.* This type of modeling will use groundwater level and production data at all wells in the area and historical land subsidence data from ground level surveys and InSAR. Again, this model will attempt to match historical water level and subsidence data and, if successful, will serve as a forecasting tool for MZ-1 managers.

It is desirable that the calibration period for future groundwater flow and subsidence modeling begins before significant drawdown in MZ-1 (~1940). The comprehensive set of subsidence data in this region begins in 1987. If subsidence data exists prior to 1987, then it needs to be collected, evaluated, and linked to the post-1987 survey data if it is to be used in model calibration. Associated Engineers is currently investigating the quantity and quality of pre-1987 subsidence data in MZ-1, and will deliver a report containing these data in October 2005.

Expanded Monitoring

One of the key discoveries of the IMP has been the groundwater barrier located beneath the historic fissure zone. However, the northern and southern extent of this barrier is unknown. The MZ-1 Technical Committee is contemplating the expansion of the aquifer-system monitoring network to the north and south of its current extent to better characterize the location and effectiveness of the barrier. Further aquifer-system testing (i.e. pumping test) may be necessary as part of this effort.

The horizontal surveys will also be extended to the north over this two year period to include the benchmarks along Schaefer Avenue. The next survey of the entire monument network is planned for October 2005.



4. DEVELOPMENT OF THE LONG-TERM MANAGEMENT PLAN FOR MZ-1

Recall that the objective of the long-term management plan is to minimize or abate permanent land subsidence and ground fissuring in MZ-1. The modeling efforts described above will be critical to the development of the long-term plan, and the continual evaluation of plan in the future.

A workshop was held May 25, 2005 to update the Special Referee on IMP progress and development of the long-term management plan for MZ-1. The OBMP implementation plan called for the development of the long-term plan by June 2005. Because the modeling efforts were just begun in the summer of 2005, the Special Referee was notified before and during the workshop of the impending delay in the development of the long-term plan.

Subsequent to the workshop, the Special Referee issued a report to the Court (Appendix A). In the report, the Special Referee:

- indicated that the IMP progress and current activities are sufficient to warrant a delay in the development of a long-term plan
- indicated that it was incumbent upon Watermaster to request that the Court extend the period for completion of the long-term plan, and that Watermaster file with the Court a motion for an order to set a new schedule for the completion of the long-term plan
- requested that Watermaster produce a MZ-1 Summary Report (this report) that describes the IMP results and conclusions to date, and addresses outstanding issues such as other potential subsidence mechanisms and historical subsidence that pre-dates the 1990s
- requested that Watermaster provide "guidance criteria" to the MZ-1 producers in an effort to minimize the potential for future subsidence and fissuring until the completion of the long-term plan

Guidance Criteria to Minimize Subsidence and Fissuring

In response, Watermaster produced this summary report, and drafted a set of guidance criteria for MZ-1 producers. Again, the purpose of the guidance criteria is to minimize the risk of permanent subsidence and ground fissuring while the long-term plan is being developed. The guidance criteria are listed in Table 4-1 and below:

1. Table 4-2 lists the existing wells (hereafter the Managed Wells) and their owners (hereafter the Parties) that are the subject of these Guidance Criteria.
2. Figure 4-1 shows the area addressed by these Guidance Criteria (hereafter the Area of Subsidence Management). Within the boundaries of this area, both existing and newly-constructed wells are subject to being classified as Managed Wells. This is based upon the observed and/or predicted effects of pumping on groundwater levels and aquifer-system deformation. Initial Managed Well designations for wells that pumped during the IMP were based on effects measured at the Ayala Park Piezometer/Extensometer Facility. Additional Managed Well designations were made based on analysis of well construction and geology.
3. The Guidance Level is a specified depth to water measured in Watermaster's PA-7 piezometer at Ayala Park. It is defined as the threshold water level at the onset of inelastic compaction of the aquifer system as recorded by the extensometer, minus 5 feet. The 5-foot reduction is meant to be a safety factor to ensure that inelastic compaction does not occur. The Guidance Level is established by Watermaster based on the periodic review of monitoring data collected by Watermaster. The initial Guidance Level is 245 feet below the top of the PA-7 well casing.



4. If the water level in PA-7 falls below the Guidance Level, Watermaster recommends that the Parties curtail their production from designated Managed Wells as required to maintain the water level in PA-7 above the Guidance Level.
5. Watermaster will provide the Parties with real-time water level data from PA-7.
6. The Parties are requested to maintain and provide to Watermaster accurate records of the operation of the Managed Wells, including production rates and on-off dates and times. The Parties are requested to promptly notify Watermaster of all operational changes made to maintain the water level in PA-7 above the Guidance Level.
7. Watermaster recommends that the Parties allow Watermaster to continue monitoring piezometric levels at their wells.
8. Watermaster will evaluate the data collected as part of the MZ-1 Monitoring Program at the conclusion of each fiscal year (June 30) and determine if modifications, additions, and/or deletions to the Guidance Criteria are necessary. These changes to the Guidance Criteria could include (1) additions or deletions to the list of Managed Wells, (2) re-delineation of the Area of Subsidence Management, (3) raising or lowering of the Guidance Level, or (4) additions and/or deletions to the Guidance Criteria (including the need to have periods of water level recovery).
9. Watermaster cautions that some subsidence and fissuring may occur in the future even if these Guidance Criteria are followed. Watermaster makes no warranties that faithful adherence to these Guidance Criteria will eliminate subsidence or fissuring.

Development and Schedule of the Long-Term Plan

In a sense, the guidance criteria listed above are a *first draft* of the long-term plan. Over the next nine months (October 2005 to June 2006), Watermaster will conduct its modeling exercises and coordinate a series of meetings with MZ-1 producers that will likely lead to revisions of the guidance criteria.

Of particular interest to the affected Parties is the sixth criterion (6) listed above, which limits the timing of production from the Managed Wells to July through September of each year. It may be that the Managed Wells can be pumped at reduced rates over periods longer than three months, and still not cause drawdown below 245 feet at the PA-7 piezometer or inelastic compaction within the aquifer system. Watermaster's groundwater flow and subsidence models will help to address these unknowns prior to pumping by predicting:

- the water level response at PA-7 due to various proposed pumping scenarios, and
- the aquifer-system compaction response due to the water level responses.

In June 2006, after the MZ-1 meetings and modeling exercises, Watermaster will release an expanded *second draft* of the guidance criteria, which will be defined as the official long-term plan for MZ-1. A key element of the long-term plan will be the verification of the model predictions and the protective nature of the guidance criteria as related to permanent land subsidence and ongoing fissuring. This verification will be accomplished through continued monitoring and reporting by Watermaster and revision of the guidance criteria when appropriate (see Criterion 11 above). In this sense, the long-term plan will be adaptive.

The guidance criteria and the long-term plan discussed above relate to the management of pumping-induced subsidence within south MZ-1 (the Area of Subsidence Management in the terminology of the



guidance criteria). Recall that central MZ-1 is currently experiencing measurable land subsidence, and is the focus of an expanded effort to monitor piezometric levels and land surface deformation. An adaptive long-term plan will accommodate the results and modified recommendations that will emerge from the expanded monitoring of central MZ-1.

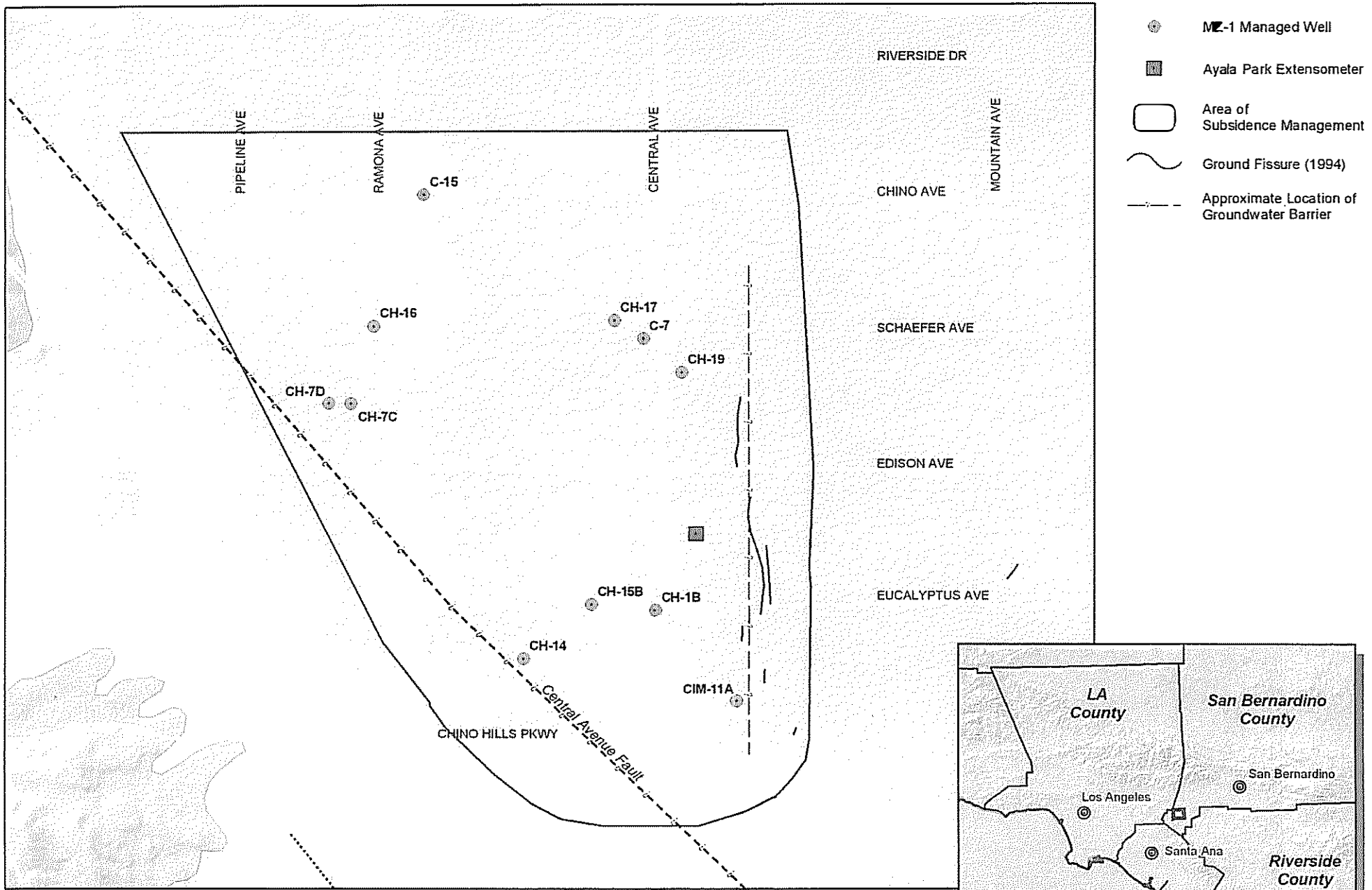







Table 4-1
Guidance Criteria for MZ-1 Producers

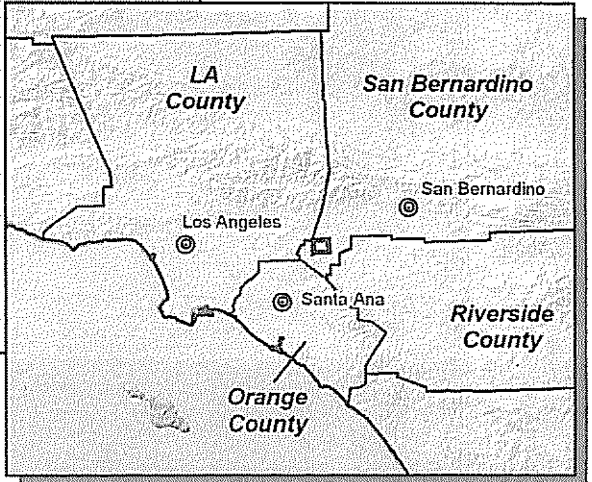
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4. If the water level in PA-7 falls below the Guidance Level, Watermaster recommends that the Parties curtail their production from designated Managed Wells as required to maintain the water level in PA-7 above the Guidance Level.
5. Watermaster will provide the Parties with real-time water level data from PA-7.
6. The Parties are requested to maintain and provide to Watermaster accurate records of the operation of the Managed Wells, including production rates and on-off dates and times. The Parties are requested to promptly notify Watermaster of all operational changes made to maintain the water level in PA-7 above the Guidance Level.
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8. Watermaster will evaluate the data collected as part of the MZ-1 Monitoring Program at the conclusion of each fiscal year (June 30) and determine if modifications, additions, and/or deletions to the Guidance Criteria are necessary. These changes to the Guidance Criteria could include (1) additions or deletions to the list of Managed Wells, (2) re-delineation of the Area of Subsidence Management, (3) raising or lowering of the Guidance Level, or (4) additions and/or deletions to the Guidance Criteria (including the need to have periods of water level recovery).
9. Watermaster cautions that some subsidence and fissuring may occur in the future even if these Guidance Criteria are followed. Watermaster makes no warranties that faithful adherence to these Guidance Criteria will eliminate subsidence or fissuring.

**Table 4-2
MZ-1 Managed Wells**

CBWM_ID	Owner	Well Name	Status	Screened Interval ft-bgs	Capacity gpm
600487	Chino Hills	1B	Inactive	440-470, 490-610, 720-900, 940-1180	up to 1200
600687	Chino Hills	7C	Inactive	550-950	--
600498	Chino Hills	7D	Inactive	320-400, 410-450, 490-810, 850-930	400
600495	Chino Hills	14	Inactive	350-860	300-400
600488	Chino Hills	15B	Active	360-440, 480-900	1500
600489	Chino Hills	16	Inactive	430-940	800
600499	Chino Hills	17	Active	300-460, 500-980	700
600500	Chino Hills	19	Active	340-420, 460-760, 800-1000	1100-1500
3600461	Chino	7	Inactive	180-780	
600670	Chino	15	Inactive	270-400, 626-820	
3602461	CIM	11A	Active	135-148, 174-187, 240-283, 405-465, 484-512, 518-540	500-600



-  MZ-1 Managed Well
-  Ayala Park Extensometer
-  Area of Subsidence Management
-  Ground Fissure (1994)
-  Approximate Location of Groundwater Barrier

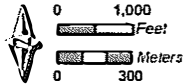


MZ-1 Managed Wells
MZ-1 Long-Term Monitoring Program

Figure 4-1



MZ-1 Monitoring Program
Ground Level Monitoring



Author: AEM
Date: 20060226
File: Figure_4-1.mxd

Produced by:
WILDERMUTH
ENVIRONMENTAL INC.

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**APPENDIX A – SPECIAL REFEREE’S REPORT ON PROGRESS MADE ON IMPLEMENTATION OF
THE WATERMASTER INTERIM PLAN FOR MANAGEMENT OF SUBSIDENCE**

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6
7
8 SPECIAL REFEREE

9 SUPERIOR COURT OF THE STATE OF CALIFORNIA
10 COUNTY OF SAN BERNARDINO, RANCHO CUCAMONGA DIVISION

11 CHINO BASIN MUNICIPAL WATER)
12 DISTRICT,)
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14)
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18)
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21)
22)
23)
24)
25)
26)
27)
28)

Plaintiff,

v.

THE CITY OF CHINO,

Defendants.

CASE NO. RCV 51010

Judge: Honorable J. Michael Gunn

Date: TBD

Time:

Dept:

20 SPECIAL REFEREE'S REPORT ON PROGRESS MADE ON
21 IMPLEMENTATION OF THE WATERMASTER INTERIM PLAN
22 FOR MANAGEMENT OF SUBSIDENCE
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TABLE OF CONTENTS

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

I. INTRODUCTION 1

II. 2002 COURT ORDER 2

III. COMPLIANCE WITH 2002 COURT ORDER 2

 A. Regular Reports by Watermaster 2

 B. Pumping Forbearance Agreements 3

 C. Court Order and Deadlines 3

IV. INTERIM PLAN WORK 3

 A. Technical Work Completed to Date 3

 B. Recommended Additional Technical Work 5

 C. Long-Term Plan Schedule 6

V. RECOMMENDATION OF SPECIAL REFEREE 6

 A. Preparation of a Summary Report on MZ1 Technical Work 6

 B. Watermaster Issuance of Guidance Criteria 7

 C. Long-Term Plan and Schedule 8

 D. Expanded Monitoring in MZ1 9

VI. CONCLUSION 9

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8 SUPERIOR COURT OF THE STATE OF CALIFORNIA
9 COUNTY OF SAN BERNARDINO, RANCHO CUCAMONGA DIVISION

10
11 CHINO BASIN MUNICIPAL WATER) CASE NO. RCV 51010
DISTRICT,)
12) Judge: Honorable J. Michael Gunn
Plaintiff,)
13)
v.) SPECIAL REFEREE'S REPORT ON
14) PROGRESS MADE ON IMPLEMEN-
THE CITY OF CHINO,) TATION OF THE WATERMASTER
15) INTERIM PLAN FOR MANAGE-
Defendants.) MENT OF SUBSIDENCE
16) Date: TBD
17) Time:
18) Dept:

19 I. INTRODUCTION

20 A workshop was held May 25, 2005, as a follow-up to the workshop held August 29, 2002.
21 The second workshop was originally scheduled to be held in 2003, pursuant to Court Order
22 Concerning Watermaster's Interim Plan for Management of Subsidence, dated October 17, 2002
23 ("2002 Order"). The second workshop was postponed until substantial data collection and analysis
24 had been completed.

25 The scope of the workshop was limited to presentation of technical data and analysis
26 completed to date related to the Watermaster Interim Plan for Management of Subsidence ("Interim
27 Plan"). The presentation was made by Mr. Malone of Wildermuth Environmental, Inc., Watermaster
28 Engineering Consultant. Mr. Malone, Mr. Wildermuth, and Mr. Riley addressed questions posed

1 by the Special Referee, technical expert Joe Scalmanini, and several others. Consistent with use of
2 a workshop format, cross-examination was not allowed. A transcript of the workshop has been
3 prepared and will be filed with the Court by Watermaster.

4 II. 2002 COURT ORDER

5 In the 2002 Order, Judge Gunn directed Watermaster to:

- 6 (1) Implement the Interim Plan Monitoring Program for subsidence, including all work
7 related to piezometers, extensometers, ground-level monitoring, aquifer testing, and
8 other actions to study, analyze, and interpret subsidence and fissuring in MZ1 and to
determine causes in sufficient detail that they can be managed through a long-term
plan;
- 9 (2) Continue the MZ1 Technical Committee work and have the Technical Committee
10 serve in an advisory capacity to assist Watermaster in developing a long-term
subsidence management plan for MZ1;
- 11 (3) Develop a long-term management plan by fiscal year 2004/2005;
- 12 (4) Submit quarterly reports to the court on all interim and long-term efforts to address
13 MZ1 subsidence and fissuring problems, including documentation of participation,
14 forbearance, impacts, and other "noteworthy details that pertain to the goal of
forbearance to minimize subsidence and fissuring";
- 15 (5) Schedule a follow-up workshop for July 17, 2003; and
- 16 (6) File reports at least quarterly to apprise the court of any actions pending that could
17 cause the "jurisdiction issue" to resurface.

17 III. COMPLIANCE WITH 2002 COURT ORDER

18 A. Regular Reports by Watermaster

19 Watermaster has regularly reported to the court, through its status reports, on the progress
20 of all work related to Management Zone 1 ("MZ1") subsidence issues. Watermaster has also
21 reported that it is not aware of any pending legal actions which have raised issues concerning the
22 court's jurisdiction related to subsidence. The City of Chino ("Chino") has annually asked for
23 continuances of its Paragraph 15 Motion. The process has been that Chino requests continuance
24 after both Chino and the City of Chino Hills ("Chino Hills") have committed to forbear some
25 pumping. (Our files reflect that Chino requested a continuance to September 1, 2005, but we do not
26 have a copy of a court order approving that continuance.) Watermaster has reported that the MZ1
27 Technical Advisory Committee has been actively meeting.

28 ///

1 **B. Pumping Forbearance Agreements**

2 Annual forbearance agreements have been entered into for the past three years by Chino and
3 Chino Hills. On April 28, 2005, Watermaster approved continuation of the forbearance agreements
4 for a fourth year. The fourth year of forbearance will be fiscal year 2005/2006.

5 **C. Court Order and Deadlines**

6 Two of the deadlines set forth in the 2002 Order have not been met. First, a long-term
7 management plan for MZ1 was to have been completed this fiscal year (by July 1, 2005). Second,
8 a follow-up Special Referee workshop was not held in July 2003, but, instead, was postponed in
9 order that a substantial body of work could be completed to study and assess the MZ1 issues.

10 **IV. INTERIM PLAN WORK**

11 **A. Technical Work Completed to Date**

12 The purpose of the second workshop was to hear a description of the work and study that has
13 been done since the MZ1 Interim Plan was begun, to ascertain whether any conclusions have been
14 reached, and to obtain a description of the activities that are being undertaken now and that remain
15 to be done. Mr. Malone's presentation on the technical work and analysis to date formed the bulk
16 of the workshop. He provided a very detailed description of the monitoring and other technical work
17 that has been undertaken. Ongoing efforts have included installation of piezometers and an
18 extensometer, installation of transducers to monitor water levels in a network of wells, and ground-
19 level and InSAR monitoring for subsidence. Mr. Malone reported several discoveries which he
20 characterized as significant, including discovery of a groundwater barrier at depth in a location
21 approximately coincident with the fissuring that has occurred, and that there are two very distinct
22 aquifer systems. (Reporter's Transcription ("RT") at pp. 44-47)

23 Mr. Malone also indicated that all of the potential causes of the subsidence and fissuring
24 which had been previously suggested had been reviewed, but that the Interim Plan work has focused
25 on the hypothesis that the subsidence and fissuring have been caused by subsurface fluid withdrawal:

26 We reviewed all these [other potential causes of subsidence], but what we zeroed in
27 on was the subsurface withdrawal as our hypothesis. That's what we identified as the
28 most likely cause of the subsidence that we had observed in the City of Chino . . . so
our hypothesis was that the groundwater production caused land subsidence and
fissuring in Chino Basin. . . We also noted that it was likely, or that we were

1 hypothesizing that the production from the confined aquifer system was the main
2 cause of this recent episode of subsidence and fissuring that was measured in the
3 early 1990's. So this is what we designed our monitoring program to test, whether
or not this hypothesis was correct.

4 (RT at pp. 32-33) There was no further discussion on the record regarding the nature of the review
5 that was done as to other potential causes of the subsidence and fissuring.

6 A primary focus of the technical work has been to determine at what point subsidence creates
7 inelastic compaction versus subsidence which is elastic and can recover. Mr. Malone described the
8 process to identify:

9 . . . the threshold where the deformation process transitions from elastic to inelastic.
10 By doing that, we'd be defining the usable volume of the storage reservoir, under
11 what range of water levels can we operate where we're not causing inelastic
compaction. And that would be a very key finding to any long-term management
plan that might develop out of this study.

12 (RT at pp. 43-44) The presentation included detailed descriptions of "stress-strain diagrams" which
13 reflect data on the elastic versus inelastic response of the system to pumping. Mr. Malone drew
14 attention to a "key point" that there appears to have been about two one-hundredths of a foot (0.02
15 ft.) of permanent compaction over the 2004 pumping season. (RT at pp. 58-59) He indicated that
16 the ". . . inelastic threshold was crossed at about 250 feet below ground surface during the latter part
17 of the pumping season." (RT at p. 60) Mr. Malone made it very clear that it is necessary to wait for
18 "fully recovered water levels" before drawing any final conclusions that the system transitions from
19 elastic to inelastic compaction when water levels are somewhere below 250 feet below ground
20 surface. (RT at p. 95)

21 In response to questions as to whether there are sufficient data available now to develop a
22 long-term plan, Mr. Malone responded that:

23 . . . When we operate in the forbearance agreement where we pump during the
24 pumping season, but we allow the system to recover during the wintertime months,
25 . . . we've demonstrated that we're operating generally in an elastic range. . . And so
26 to how far we can step out of that same pumping pattern and still operate within the
27 elastic range, we have not determined that yet. But the models hold the promise of
determining that.

27 (RT at p. 93)

28 Mr. Malone explained that the next step in the investigation is to create groundwater models

1 to "... simulate the groundwater production's effects on groundwater levels." (RT at p. 91) The
2 model will: "... help us provide that linkage between groundwater production and groundwater
3 levels that would provide a tool to evaluate any management plan that might come out of this." (RT
4 at p. 107)

5 In response to a question, Mr. Malone indicated that there are not plans to do further testing
6 in the southern part of MZ1:

7 We feel like if the stress-strain diagram goes to where it seems to be going, that
8 we've identified this threshold of preconsolidation stress that is the transition
9 between inelastic and elastic compaction. . . I don't think we have any further
10 questions that we're trying to answer in this southern part of Management Zone 1.
11 We're going to be developing the models that will help us provide that linkage
12 between groundwater production and groundwater levels. . .

13 (RT at p. 107)

14 **B. Recommended Additional Technical Work**

15 Mr. Malone recommended that technical work be continued in the southern part of MZ1 and
16 that certain technical work be started in the central MZ1 area to the north. For the southern MZ1
17 area, the recommendation is that monitoring continue (RT at pp. 97-99) and that some of the
18 dedicated piezometers be replaced (RT at pp. 103-104). In addition, numerical models would be
19 developed (a one-dimensional compaction model and a three-dimensional groundwater flow and
20 subsidence model). The three-dimensional model would link:

21 ... the areal and vertical distribution of pumpage to water level fluctuations and then
22 the ultimate deformation that occurs in the aquifer system. . . We've been working
23 mostly on this link between water level fluctuation and deformation. The model will,
24 then, now take us from that to include pumpage, how it affects water level
25 fluctuations, and then how the water level fluctuations affect deformation.

26 (RT at pp. 99-100)

27 Mr. Malone also discussed expanding the investigation of subsidence, initially via
28 monitoring, to the central region of MZ1, including the installation of water level transducers in
existing wells. (RT p. 107) Mr. Malone characterized as speculative the potential need to construct
a new monitoring facility or facilities in the central region, including a multi-piezometer and/or
extensometer. (RT at p. 102) He clarified that ground-level survey data, InSAR data, and water-
level data should be collected in the central MZ1 area before any conclusion would be reached on

1 the need for piezometers or an extensometer. (*Id.*) Expansion of the subsidence investigation into
2 the central region of MZ1 is prompted by the observation of some historical subsidence in the area,
3 confounded to some degree by the lack of any known local pumping in the immediate subsidence
4 area. (RT at pp. 76, 80, 83-84, 87)

5 C. Long-Term Plan Schedule

6 There was not extensive discussion at the workshop on either a long-term plan or a schedule
7 for completion of a plan. Mr. Malone indicated that InSAR surveys and ground surveys will be
8 conducted in both fall 2005 and spring 2006. (RT at p. 104) The modeling would be completed in
9 the spring of 2006, with a modeling report to follow that summer. (*Id.*) Mr. Wildermuth responded
10 to a question regarding scheduling by indicating that several more years of studies and model
11 development and analysis would be required, followed by 12 months to reach an agreement on a
12 long-term plan. (RT at p. 109) This timing is consistent with the discussion in the 2002 workshop.
13 At that workshop, in response to the question of how long it would take to start developing a long-
14 term plan given optimal agreement by all parties, Mr. Wildermuth stated that he thought it would
15 take three to five years (2002 Workshop Transcript at page 101.) Mr. Slater also clarified at the 2002
16 workshop that Mr. Wildermuth's three to five years were for the "data development side" and that
17 "the business deal probably follows soon thereon, and one would expect maybe twelve months to
18 wrap that piece up." (2002 Workshop Transcript at p. 103.)

19 V. RECOMMENDATION OF SPECIAL REFEREE

20 A. Preparation of a Summary Report on MZ1 Technical Work

21 A substantial body of technical work has been completed in the southern MZ1 area.
22 However, conclusions are still preliminary:

23 . . . With our stress-strain diagram . . . we're seeing that these head declines can
24 induce permanent compaction. But again this is a preliminary conclusion because
25 it is still pending fully recovered water levels. We're waiting for those water levels
to be fully recovered to see if any inelastic compaction did occur over the last
pumping season.

26 (RT at p. 95) When sufficient time has elapsed for water levels to have fully recovered, it is our
27 view that a summary report on all of the work presented at the workshop would be extremely helpful.
28 Even though no modeling has been completed, there appear to be sufficient data to conclude that

1 there is a threshold depth to water that, if crossed, will likely lead to new inelastic compaction and
2 subsidence and ground fissuring. That information should be made available to the parties in a
3 summary report as soon as possible. Based on Mr. Malone's presentation, it should be feasible to
4 prepare such a report by the middle of August. When the three-dimensional model is prepared, a
5 modeling report will be written. In the meantime, there are important data and preliminary findings
6 that can be made available very soon that will be of immediate use to the pumpers within MZ1.

7 A further recommendation related to a summary report is that the summary report should also
8 address the other potential causes of subsidence and fissuring that have been suggested in the past.
9 If any of those items cannot be readily addressed, then the summary report should recommend how
10 they will be addressed. While the detailed monitoring and testing has been substantial, they have
11 not apparently addressed whether subsidence and fissuring might have been partially the result of
12 mechanisms other than deep groundwater pumping. The continuing possibility that other
13 mechanisms may also be responsible for subsidence is a potential impediment to development of the
14 long-term plan.

15 As part of this discussion, the summary report should discuss any information related to
16 whether any significant subsidence predated the notable subsidence and fissuring since the early
17 1990's, and should describe the historical surveying investigation commissioned by Watermaster to
18 address that issue. An important outstanding question is whether any pre-1990's subsidence that
19 may have occurred correlates with, or can be attributed to, the large historical changes in
20 groundwater levels that predated the Judgment.

21 **B. Watermaster Issuance of Guidance Criteria.**

22 Near the close of the workshop, there was some discussion of what would be included in a
23 long-term plan, including possibly expanding the study area to include the central MZ1 region. (RT
24 at pp. 123 *et seq.*) The concept of a long-term MZ1 management plan has been part of the
25 Watermaster program since it was first articulated in 1999 in the Optimum Basin Management
26 Program Phase 1 Report. A long-term management plan was to be formulated during the interim
27 plan period, and would be based on investigations, monitoring programs and data assessment. It
28 would be adaptive in nature. The workshop discussion noted that the technical work that has been

1 done and that will be done will form the basis for a long-term plan. Mr. Wildermuth indicated that:

2 . . . we haven't felt until very recently, last maybe six or eight months, that we were
3 at a point where we are getting close to coming up with conclusions from which we
4 could build a plan on, pull the parties together and talk about their deal making to
5 implement a plan.

6 (RT at p. 125) As discussed, above, however, development of a long-term plan itself does not appear
7 to be imminent.

8 In response to questions regarding the possibility of phasing the long-term plan, Mr.
9 Wildermuth discussed the option of bifurcating the ". . . southern and central portion, try to get the
10 southern portion going, and then based on the interests of the stakeholders, do something in the
11 central area." (RT at p. 125) Mr. Wildermuth also suggested that Watermaster's long-term plan
12 could range from being "guidance information" to something more aggressive. (RT at p. 108)

13 The concept of providing guidance criteria is a compelling one. It appears, based on the
14 presentation at the workshop, that Watermaster can very soon alert pumpers in the southern MZ1
15 area that there is a substantial risk that lowering water levels to below approximately 250 to 260 feet
16 below ground surface will result in new inelastic compaction and subsidence. This type of
17 information should formally be made available to the parties as soon as possible, presumably as soon
18 as a summary report on the MZ1 technical work is completed. The guidance criteria would be issued
19 by Watermaster in a timely fashion, to be followed by the long-term plan development which
20 necessarily will require a longer period to complete.

21 **C. Long-Term Plan and Schedule**

22 It is incumbent upon Watermaster now to request that the court extend the period for
23 completion of a long-term plan for MZ1. The overall testimony indicated that several more years
24 of technical and modeling work will be required, followed by approximately a year of negotiations
25 among the parties. The Watermaster should propose a schedule to the court which takes into account
26 the continuation of data collection and modeling work in the main MZ1 area as well as technical
27 work in the central MZ1 area. A date should be established for completion of a long-term plan.

28 Whether the long-term plan is ultimately characterized as a management plan is an issue for
the parties to address. Based on presentation and discussion at the workshop, it is clear that, at the

1 | very least, an ongoing monitoring program by Watermaster will be required so that the parties have
2 | full and sufficient information available to them to inform their decisions.

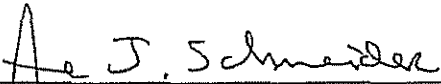
3 | **D. Expanded Monitoring in MZ1**

4 | The presentation at the workshop, while focused on monitoring and studies in the southern
5 | MZ1 area, indicated that some monitoring work can and should be done in the central MZ1 area,
6 | including installation of transducers in wells, and ground and InSar ground-level monitoring. More
7 | costly and complex efforts involving piezometers and an extensometer would logically be held in
8 | abeyance pending assessment of data collected. A phased long-term plan could include provision
9 | for central MZ1 monitoring work and studies, with future efforts considered and scheduled on an
10 | as-needed basis, while more definitive conclusions are drawn in the southern MZ1 area based on the
11 | extensive work already focused in that area. As noted above, the central MZ1 area appears to
12 | warrant additional investigation in light of detectable subsidence in spite of no significant pumping
13 | stress in the immediate subsidence area. Such additional investigation would also appear important
14 | in light of the overall concept of basin reoperation and hydraulic control, which could result in
15 | locally lower groundwater levels in parts of the basin.

16 | **VI. CONCLUSION**

17 | The workshop was very productive. Mr. Malone's presentation was excellent. The
18 | Watermaster does not require court approval to direct the preparation of a summary report on the
19 | MZ1 technical work or to issue guidance criteria. The Watermaster, however, should file with the
20 | court a motion for an order to set a schedule for the completion of a long-term plan.

21 | Dated: June 16, 2005

22 |
23 | 
24 | Anne J. Schneider, Special Referee

CHINO BASIN WATERMASTER
Case No. RCV 51010
Chino Basin Municipal Water District v. The City of Chino

PROOF OF SERVICE

I declare that:

I am employed in the County of San Bernardino, California. I am over the age of 18 years and not a party to the within action. My business address is Chino Basin Watermaster, 9641 San Bernardino Road, Rancho Cucamonga, California 91730; telephone (909) 484-3888.

On June 21, 2005 I served the following:

Special Referee's Report on Progress Mad on Implementation of the Watermaster Interim Plan for Management of Subsidence

BY MAIL: in said cause, by placing a true copy thereof enclosed with postage thereon fully prepaid, for delivery by United States Postal Service mail at Rancho Cucamonga, California, addresses as follows:

See attached service list:
Mailing List 1

BY PERSONAL SERVICE: I caused such envelope to be delivered by hand to the addressee.

BY FACSIMILE: I transmitted said document by fax transmission from (909) 484-3890 to the fax number(s) indicated. The transmission was reported as complete on the transmission report, which was properly issued by the transmitting fax machine.

BY ELECTRONIC MAIL: I transmitted notice of availability of electronic documents by electronic transmission to the email address indicated. The transmission was reported as complete on the transmission report, which was properly issued by the transmitting electronic mail device.

I declare under penalty of perjury under the laws of the State of California that the above is true and correct.

Executed on June 21, 2005 in Rancho Cucamonga, California.


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EXHIBIT "B"

Minutes
CHINO BASIN WATERMASTER
JOINT APPROPRIATIVE & NON-AGRICULTURAL POOL MEETING
March 9, 2006

The Joint Appropriative and Non-Agricultural Pool Meeting were held at the offices of Chino Basin Watermaster, 9641 San Bernardino Road, Rancho Cucamonga, CA, on March 9, 2006 at 9:00 a.m.

APPROPRIATIVE POOL MEMBERS PRESENT

Robert DeLoach, Chair	Cucamonga Valley Water District
Raul Garibay	City of Pomona
Dave Crosley	City of Chino
Ken Jeske	City of Ontario
Charles Moorrees	San Antonio Water Company
Rosemary Hoerning	City of Upland
Frank LoGuidice	Fontana Water Company
Mark Kinsey	Monte Vista Water District
J. Arnold Rodriguez	Santa Ana River Water Company
Gerald J. Black	Fontana Union Water Company
Mike Maestas	City of Chino Hills

NON-AGRICULTURAL POOL MEMBERS PRESENT

Justin Scott-Coe	Vulcan Materials Company (Calmat Division)
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WATERMASTER BOARD MEMBERS PRESENT

Ken Willis	West End Consolidated Water Company
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Watermaster Staff Present

Kenneth R. Manning	Chief Executive Officer
Danielle Maurizio	Senior Engineer
Gordon Treweek	Project Engineer
Sherri Lynne Molino	Recording Secretary

Watermaster Consultants Present

Michael Fife	Hatch & Parent
Mark Wildermuth	Wildermuth Environmental Inc.
Andy Malone	Wildermuth Environmental Inc.

Others Present

Bill Kruger	City of Chino Hills
Craig Stewart	Geomatrix
Robert Tock	Monte Vista Water District
Ashok K. Dhingra	City of Pomona

Chair DeLoach called the meeting to order at 9:04 a.m.

AGENDA - ADDITIONS/REORDER

There were no additions or reorders made to the agenda.

I. CONSENT CALENDAR

A. MINUTES

1. Minutes of the Joint Appropriative and Non-Agricultural Pool Meeting held February 9, 2006

B. FINANCIAL REPORTS

1. Cash Disbursements for the month of February 2006
2. Combining Schedule of Revenue, Expenses and Changes in Working Capital for the Period July 1, 2005 through January 31, 2006
3. Treasurer's Report of Financial Affairs for the Period January 1, 2006 through January 31, 2006
4. Profit & Loss Budget vs. Actual July through January 2006

*Motion by Black, second by Jeske, and by unanimous vote – non-Ag concurred
Moved to approve Consent Calendar Items A through B, as presented*

II. BUSINESS ITEMS**A. CONTRACT FOR DRILLING AND CONSTRUCTION OF A NESTED PIEZOMETER**

Mr. Manning stated the presented contract is for replacements on the nested piezometers at Ayala Park. Mr. Malone stated a nested set of piezometers needs to be drilled and constructed to replace a malfunctioning set of piezometers that are used for monitoring and management of subsidence in MZ1. It was noted that through a competitive bidding process, Layne Christensen Company of Fontana has been selected as the drilling contractor, and pending approval of Watermaster, is ready to sign the contract and begin work. Mr. Malone stated that accurate, depth-specific water level data is necessary to effectively monitor and manage land subsidence in the southern portion of MZ1. A nested set of piezometers located at Ayala Park in Chino were designed to monitor water levels in the deep portions of the aquifer system. These piezometers have periodically malfunctioned, and needed to be replaced; this was a consensus decision of the MZ1 Technical Committee. In reviewing requirements it was decided that the piezometer replacement process will include the drilling of a 1,200 foot borehole, the construction of two, 4-inch, stainless steel piezometers, and a well-head completion within an underground vault. Mr. Malone stated that the park property that is impacted during the drilling and construction process will be restored to pre-project conditions to the satisfaction of the City of Chino. It was noted that Layne Christensen was the drilling contractor for the extensometer facility at Ayala Park in 2003, the monitoring wells that were constructed in the southern Chino Basin to support the Hydraulic Control Monitoring Program in 2005, and the recently completed monitoring wells that percolate recycled water in Chino Basin. Mr. Malone stated Watermaster staff and legal counsel has reviewed and approved the contract, all supporting documents and construction specifications. A lengthy discussion ensued with regard to the other companies who bid on the contract and that led to several questions and answers being presented to the parties. Chair DeLoach noted that staff is recommending the approval of this contract to be forwarded to the Advisory Committee and the Watermaster Board.

*Motion by Crosley, second by Garibay, and by unanimous vote – non-Ag concurred
Moved to approve the Layne Christensen Company contract for drilling and construction of a nested piezometer at Ayala Park in Chino, as presented*

B. MZ1 SUMMARY REPORT

Mr. Manning stated the Optimum Basin Management Plan (OBMP) called for this aquifer system investigation of the suspected pumping induced land subsidence and ground fissuring which occurred in the southern end of the basin. Mr. Manning stated that along with the OBMP and pursuant to the Special Referee's report dated June 16, 2005, Watermaster staff prepared a report titled, "Management Zone 1 Interim Monitoring Program, MZ1 Summary Report". There is a copy of the summary report in the packet, however, since it is not in color it loses some resolution; the full color report is available on the Wildermuth Environmental web site. Mr. Manning noted this MZ1 report presents a summary of all the data collected as part of the MZ1 monitoring program (through September 2005) and the conclusions reached from the analysis of the monitoring data. The report also includes MZ1 Guidance Criteria, which are recommended groundwater management criteria for the management of subsidence in the southern part of MZ1 in Chino. The guidance criteria will be the basis of the long-term subsidence management plan. Mr. Malone gave the presentation titled, "Special Referee's

Report on MZ1 Progress" and noted the recommendations from that report were to prepare a summary report on MZ1 technical work, issue "guidance criteria" to MZ1 producers, develop a schedule to complete the long-term plan, and to expand monitoring to the central portions of the MZ1 area on an as-needed basis. Mr. Malone stated the MZ1 guidance criteria will consist of, "guidance" water levels. Counsel Fife stated the motion would be to approve this report; we are issuing this as a Watermaster report about subsidence and then the guidance criteria is to put the parties on notice that Watermaster has made these findings concerning subsidence in the MZ1 area and is recommending that parties do not produce water in a way that would cause further subsidence. Questions were presented regarding pumping tests and drawing water levels down. A discussion ensued with regard to subsidence in MZ1. Mr. Manning noted that staff is looking at additional ways to satisfy Chino Hills need for water, although, that issue is being kept separate from the MZ1 discussions. Counsel Fife stated there are two processes going on in this item; there are the guidance criteria, which are what is being presented to this pool today; the other item is the question of the long-term plan which needs to be developed. The MZ1 Technical Committee is currently working on the long-term plan and has committed to having that done by June of 2006. The guidance criteria advises the parties of the technical data that has been collected and advises them they should voluntarily alter their production patterns if they are going to cause water levels to go below the stated guidance level. The long-term plan is not currently including things like continuation of the forbearance program etc. that would provide financial assistance to various parties to help it comply with the guidance criteria. The financial issue was brought up at the MZ1 Technical Committee meeting this morning and it was the Technical Committee's view that issues regarding financial assistance to parties are not an issue for the Technical Committee to resolve; this is an Appropriative Pool topic to consider whether those elements should be a part of the long-term plan or not. It was noted at the MZ1 meeting this subject will be brought up at this pool meeting, as an introduction to discuss this item further. Mr. Jeske inquired into the costs of this project and how they will be funded. Mr. Manning stated he strongly feels there is a project out there that has mutual benefits for everybody in this case and that Chino Hills might be interested in helping us pursue it; a meeting with Chino Hills is being scheduled in the near future. Mr. Manning stated the guidance criteria which are outlined today is prudent and in accordance with what the court has asked us to do. A discussion ensued with regard to the overall approval of the guidance criteria. Mr. Maestas offered comment on the presented guidance criteria and noted that Chino Hills is not in a position presently to approve what is being presented today. Counsel Fife stated the summary report and the guidance criteria are only to report technical information that has been collected over the past three years; it is not intended to be the management plan or to indicate how we are going to go forward managing subsidence based on the technical knowledge we have collected. Counsel Fife stated the concerns that were raised at today's meeting, as valid as they may be; apply to the long-term plan and not to the summary report or the guidance criteria. Mr. Manning offered comment on adopting the guidance criteria and noted meetings with Chino Hills are in the works. Mr. Crosley stated that the City of Chino has participated in all MZ1 Technical Committee meetings and discussions and that it is fully understood that the MZ1 summary report is a summarization of the technical data that has been gathered by Watermaster and evaluated. The City of Chino also understands that the guidance criteria is a summarization of the kinds of activities that should be taken under consideration by water producing parties in this affected area; it is understood there are unresolved issues regarding financial assistance. The City of Chino reviews these documents as purely technical information. Mr. Jeske inquired into the ramifications of putting this item off for one month for review and development. Mr. Manning stated that it is staff's opinion that if a motion to move forward was put off for one month would be no harm to the MZ1 area; the concern would be that discussions need to begin quickly on the long-term plan. A discussion ensued with regard to the MZ1 Technical Committee reviewing any new or revised guidance criteria prior to it being brought back through the Watermaster process.

*Motion by Crosley, second by Black, and by unanimous vote – non-Ag concurred
Motion to table a motion until this item is brought back at the April 2006
meeting, as discussed*

C. IEUA/DWR GRANT FUNDING AGREEMENT

Mr. Manning stated in January 2005, Inland Empire Utilities Agency (IEUA) received a grant of \$15,500,000 from the Department of Water Resources (DWR) through the Proposition 13 Groundwater Recharge and Storage Programs. Mr. Manning noted that the purpose of this grant was to fund IEUA's Chino Basin Conjunctive Use Expansion Program. The total project cost for this program was estimated to be \$39,026,300, with the local share being funded through IEUA's Water and Sewer Rate revenue and a combination of various State and Federal funds. Mr. Manning stated in 2002, a separate grant of Proposition 13 money was given to IEUA that was used to fund implementation of Watermaster's Recharge Master Plan. That project involved a total cost of approximately \$40 million. One half of this project cost was paid through grant funds, and the one-half local share was split evenly between IEUA and Watermaster. Through the initial implementation of the Recharge Master Plan, most, but not all, of the identified recharge basin improvements were constructed; the available funding fell short of being able to fund all of the identified improvements. Mr. Manning noted that additional improvement work was identified as necessary over the course of initial project construction and over the past year of use of the facilities. IEUA has proposed using a portion of the most recent grant funding to perform further improvement work on the recharge basins. IEUA has also proposed using \$5,250,000 of grant money for this purpose, using the same cost sharing arrangement that was used for the grant money that was used for initial implementation of the Recharge Master Plan. A discussion ensued with regard to the work that will be performed. Mr. Jeske inquired into the involvement of the Conservation District. Mr. Manning stated the Conservation District was involved with the negotiation of projects; however, they are not included in the financial aspect. Chair DeLoach confirmed that we are making improvements to some of the basins that they operate. A discussion ensued with regard to the maintenance and ownership of the improvements.

*Motion by Jeske, second by Garibay, and by unanimous vote – non-Ag concurred
Moved to approve the agreement regarding recharge facilities improvements
matching funds Cost Sharing Agreement between Inland Empire Utilities Agency and
the Chino Basin Watermaster dated March, 2006, as presented*

D. ALLOCATION OF VOLUME VOTE

Mr. Manning stated following the Appropriative Pool meeting on February 9, 2006, staff was asked to compare various approaches to calculating the Appropriative Pool's allocation of volume votes. Mr. Manning reviewed the handout titled, "Comparison of Approaches" for fiscal year 2004-2005 (based on 2003-2004 production). Mr. Manning stated the Appropriative Pool rarely invokes a volume vote and any parties purchase of water or lack of purchase of water has never been influenced by willingness to change the volume vote calculations. Whether this is an issue or is a non issue is something that may want to be addressed; how it is allocated is strictly decided by this pool. A discussion on how a volume vote is called ensued. Chair DeLoach noted there has been very few volume votes called in the ten years he has been coming to these types of meetings.

*Committee members decided to take no action regarding this item and to save this
item for future discussions noting counsel's recommendations will be filed, as
discussed*

III. REPORTS/UPDATES**A. WATERMASTER GENERAL LEGAL COUNSEL REPORT****1. Attorney Manager Process/Discussion of Peace II Agreement**

Counsel Fife stated we are at the eve of being able to put out the report that will respond to the questions that were brought up during the workshops in November and December, 2005. Wildermuth Environmental is just about finished with their work and then there are some legal issues that counsel needs to respond to. Staff is anticipating those responses will be out within the next week. After that release, staff and counsel will be prepared to

move into finishing the Peace II process. This might involve coming back to the parties with the original agreement which was distributed in October 2005, or if there is a need to modify that document, we can then discuss how we will go about that process.

2. 85/15 Update

Counsel Fife stated this item along with the volume vote issue was brought up a few months ago and staff agreed at that time to look into this and report back to the parties. Counsel Fife referred to the volume vote handout on the last page titled, "Watermaster Assessment Categories", noting this is a chart that was produced to explain the different calculations that were used with the volume vote. Counsel Fife noted that on this chart a few of the mentioned categories apply to the 85/15 rule. Counsel Fife stated the chart is divided into two categories, one with replenishment assessments to which the 85/15 rule was applied and the other is where water transaction activity to which the 85/15 rule was applied. The Judgment is specific in stating the 85/15 applies to water purchased for replenishment purposes. As the Assessment Package is becoming a more familiar and easier to understand document, as was reported at the last Assessment Package workshop, as we move through this document with improvements things will come to light that have gone unnoticed or undetected. In reviewing this subject it seems there are a certain category of water transactions to which the 85/15 rule has historically been applied and it is unclear if the 85/15 rule was correctly applied in those instances. The issue which brought this subject up was a request by the City of Chino to explain how a few of the transactions between a couple appropriators and a couple of non-agricultural pool members to which the 85/15 rule was applied – why that was correct and why was Watermaster applying it the way they were. The policy issue behind that question is currently non-agricultural pool water is not available to appropriators for replenishment purposes; then how could the 85/15 rule be applied to a transaction between an appropriator and a non-agricultural pool member. Counsel Fife stated the question that was presented to inquire about this subject was a very good question, however, staff and counsel has not yet come up with a complete answer. The report today, in response to the question of, "Is the 85/15 rule being applied correctly?" staff and counsel have checked with the appropriators and the non-agricultural pool members involved and nobody knows why the 85/15 rule has been applied to these certain transactions; concluding they very well could be miss-applied. Staff and counsel will continue to look into this subject matter and counsel noted this will not become any sort of an issue until the next Assessment Package is formulated, when we will need to determine the application of the 85/15 rule. Counsel Fife stated that if indeed the 85/15 rule has been miss-applied, changes in how Watermaster has been historically applying the rule might be made at the next Assessment Package go around. A discussion ensued with regard to the 85/15 rule. It was noted this item will be looked at on a go forward basis and there will be no look back. Mr. Manning stated this item will continue to be reviewed and will be brought back with options on how to possibly proceed if the 85/15 rule has been miss-applied at a future meeting.

B. WATERMASTER ENGINEERING CONSULTANT REPORT

1. Update on Report on Balance of Recharge and Discharge

Mr. Wildermuth stated at the last Appropriative and Non-Agricultural pool meeting it was noted that the administrative draft of the Summary of Hydraulic Control and Basin Re-Operation Modeling Results would be completed shortly. As to date, this report is now even closer to being finished, and this report is to update the parties on its advancements. Mr. Wildermuth gave the presentation and noted his staff is very carefully checking over simulation results and putting the final touches on economics. Mr. Wildermuth stated several charts and map graphics are being created to support studies and will be reviewed in detail and noted a copy of today's presentation will be handed out after the meeting for reference. One of the questions that was presented previously is, "How much new yield is truly generated by the desalter program and by re-operation". To solve that question we needed to come up with a scenario, for planning purposes, that would reflect how the basin and river would respond if there were no desalters. Mr. Wildermuth reviewed findings from

the performed studies and made reference to several chart slides. A discussion ensued with regard to the presentation and findings presented.

C. CEO/STAFF REPORT

1. USGS-GAMA Program

Mr. Manning stated in May this pool is going to be given a presentation on the USGS-GAMA Program which is a groundwater ambient water monitoring and assessment program. This is where the USGS comes into various groundwater basins and tests and evaluates water quality (called the GAMA Program). Mr. Manning stated he recently had a conversation with Robert Kent from USGS, who is the person who will be giving the May presentation, by letting him know that this basin is already light years ahead of other basins in data collection and data management and that we will gladly cooperate in assisting him in his quest by offering data that we have already gathered. Staff is trying to avoid letting the USGS come in and test where they want and then take incorrect or uncorroborated data back to our legislature and let legislature make assumptions against isolated tests. This is an awareness issue and a full presentation will be given in May on this item.

2. Legislative Update

Mr. Manning stated a number of people were in Washington last week talking with members of congress about issues relative to California. This was the ACWA Legislative Agenda that was being discussed. This agenda gave us an opportunity to talk about the issues which are taking place within our own basin. Because of the tight schedules and the hastiness at those ACWA meetings, we will be returning in a few weeks to talk in greater detail about specifically the Chino Basin issues and where we think congress can be effective in meeting our mission in delivering an affordable water supply.

Mr. Manning stated that there is a meeting being held, as we speak, with Senator Margett and Senator Dutton who are currently negotiating, on our behalf, to put money into the bond for the Chino Basin. The deadline for getting our bond issue onto the ballot is March 10, 2006. It appears by several conversations with legislatures that our interests are being protected and staff is in contact with them quite frequently.

3. SAW DMS Data Coordination

Mr. Manning stated there are a few letters provided in the meeting packet which parties have probably already received a copy of wherein SAWPA is asking to come in and talk to the parties about data at each agency. After Watermaster staff received this letter, an email was sent to Daniel Cozad at SAWPA which expressed to him that staff would like to coordinate this through Watermaster; it is preferred that SAWPA not work with all the individual parties that there are reasons and benefits to work with Watermaster in a joint effort on this item. By working together Watermaster can eliminate a lot of duplicated work efforts on their part and also possibly save them some money. Mr. Manning stated this is an awareness issue and that Daniel was open and receptive to the idea.

4. Department of Health Services Public Hearing on Recycled Water

Mr. Manning noted the flyer for the Department of Health Services Public Hearing on Recycled Water is available on the back table. This meeting is co-sponsored by Watermaster and Mr. Manning encouraged all members to attend this important hearing in support of recycled water. The hearing is on April 20, 2006 at 9:30 a.m. here at the Watermaster offices.

5. Monthly Recharge Update

Mr. Manning noted that by commitments made at previous meetings in which Watermaster would provide the parties with monthly recharge updates at these meetings, a copy of the most recent update is available on the back table. Mr. Treweek stated we have been lucky recently in having some late spring storm events. Mr. Treweek reviewed the handout in

detail and noted we are pretty much on target as far as capturing water; our goal for the year is 50,000 acre-feet and in order to achieve that we need more months like February with its heavier rain storms. Some of our basins are only recharged, at this point in time, with only storm water and this recharge situation will be rectified shortly via our DWR grant for improvements.

IV. INFORMATION

1. Newspaper Articles

No comment was made regarding this item.

V. POOL MEMBER COMMENTS

Mr. Manning thanked Cucamonga Valley Water District for their quick service on repairs to our building due to some faulty roof work which caused a flood in the board room.

Mr. Garibay thanked all the committee members for putting up with all its many-many questions over the years and stated that he has learned a lot from attending these meetings and participating on various Watermaster committees.

Ms. Hoerning inquired to the Watermaster staff if would be possible to have the packages out on Thursdays instead of Fridays due to time constraints in reviewing the package details when so many people observe their flex days on Fridays. Mr. Manning stated our staff would attempt to provide the packages on Thursdays; however, sometimes information needed for the package is not turned into Sherri Lynne until Friday mornings.

VI. OTHER BUSINESS

No comment was made regarding this item.

VII. FUTURE MEETINGS

March 9, 2006	9:00 a.m.	Joint Appropriative & Non-Agricultural Pool Meeting
March 14, 2006	9:00 a.m.	GRCC Meeting
March 21, 2005	9:00 a.m.	Agricultural Pool Meeting @ IEUA
March 23, 2006	9:00 a.m.	Advisory Committee Meeting
March 23, 2006	11:00 a.m.	Watermaster Board Meeting
March 28, 2006	9:00 a.m.	GRCC Meeting

The Joint Appropriative & Non-Agricultural Pool Meeting Adjourned at 10:45 a.m.

Secretary: 

Minutes Approved: April 13, 2006

EXHIBIT "C"

Minutes
CHINO BASIN WATERMASTER
JOINT APPROPRIATIVE & NON-AGRICULTURAL POOL MEETING
April 13, 2006

The Joint Appropriative and Non-Agricultural Pool Meeting were held at the offices of Chino Basin Watermaster, 9641 San Bernardino Road, Rancho Cucamonga, CA, on April 13, 2006 at 9:00 a.m.

APPROPRIATIVE POOL MEMBERS PRESENT

Robert DeLoach, Chair	Cucamonga Valley Water District
Jim Taylor	City of Pomona
Dave Crosley	City of Chino
Ken Jeske	City of Ontario
Charles Moorrees	San Antonio Water Company
Rosemary Hoerning	City of Upland
James T. Bryson	Fontana Water Company
Mark Kinsey	Monte Vista Water District
Gerald J. Black	Fontana Union Water Company
Mike Maestas	City of Chino Hills
Cheryl Russell	Jurupa Community Services District

NON-AGRICULTURAL POOL MEMBERS PRESENT

Justin Scott-Coe	Vulcan Materials Company (Calmat Division)
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Watermaster Staff Present

Kerjeth R. Manning	Chief Executive Officer
Sheri Rojo	CFO/Asst. General Manager
Danielle Maurizio	Senior Engineer
Gordon Treweek	Project Engineer
Sherri Lynne Molino	Recording Secretary

Watermaster Consultants Present

Michael Fife	Hatch & Parent
Mark Wildermuth	Wildermuth Environmental Inc.
Andy Malone	Wildermuth Environmental Inc.
Dave Argo	Black & Veatch

Others Present

Kristi Kuhlmann	Black & Veatch
John Rossi	Western Municipal Water District
David DeJesus	Three Valleys Municipal Water District
Marty Zvirbulis	Cucamonga Valley Water District
Jack Safely	Western Municipal Water District
Craig Stewart	Geomatrix
Frank Brommenschenkel	Ag Pool Representative
Ashok K. Dhingra	City of Pomona

Chair DeLoach called the meeting to order at 10:00 a.m.

AGENDA - ADDITIONS/REORDER

It was noted the "Draft Desalter III Alternative Study Update" under CEO/UPDATES which is being presented by Dave Argo of Black & Veatch be presented first after the Consent Calendar.

I. CONSENT CALENDAR**A. MINUTES**

1. Minutes of the Joint Appropriative and Non-Agricultural Pool Meeting held March 9, 2006

B. FINANCIAL REPORTS

5. Cash Disbursements for the month of March 2006
6. Combining Schedule of Revenue, Expenses and Changes in Working Capital for the Period July 1, 2005 through February 28, 2006
7. Treasurer's Report of Financial Affairs for the Period February 1, 2006 through February 28, 2006
8. Profit & Loss Budget vs. Actual July through February 2006

*Motion by Kinsey, second by Taylor, and by unanimous vote – non-Ag concurred
Moved to approve Consent Calendar Items A through B, as presented*

C. CEO/STAFF REPORT**7. Draft Desalter III Alternative Study Update**

Mr. Manning stated that as part of the Peace II process staff has been discussing a relationship with Western Municipal Water District (WMWD) for the construction of a desalter program that provided for 10 mgd of product water. There have been several questions regarding what the new desalter program might possibly look like. Mr. Dave Argo from Black & Veatch has been tasked by WMWD to look at some desalter alternatives and Mr. Argo is here to present five draft concept ideas. Mr. Argo presented the "Chino Basin Optimum Basin Management Program – Potential Deliveries of 10,000 AFY to WMWD / Development of New Chino III Desalter) presentation. The presentation was developed by Black & Veatch in association with RBF Consulting and Wildermuth Environmental, Inc. It was noted Watermaster is exploring options for a third Chino desalter and a plan is needed to fulfill the objectives of the originally proposed Chino III Desalter which will maintain hydraulic control, meet Peace II objectives, and meet the goals of the Optimum Basin Management Program (OBMP). Mr. Argo stated a plan is needed to maintain hydraulic control in the basin and reviewed the goal to maintain historic agricultural pumping in the south basin to achieve required production of 40,000 afy. Mr. Argo stated five concepts were developed to meet the objectives of Chino III Desalter and reviewed in detail each of the possible concepts. It was noted in the evaluation that Concept #1 explores 10 mgd expansion of Chino II Desalter, Concept #2 explores new 10 mgd Chino II Desalter, Concept #3 explores 10 mgd expansion of Chino I Desalter, Concept #4 explores 4 mgd expansion of Chino I Desalter and 6 mgd expansion of Chino II Desalter, and Concept #5 explores 4.7 mgd expansion of Chino I, 3.5 mgd expansion of Chino II and new 1.8 mgd Chino III Desalter. Mr. Argo stated all concepts assume use of the existing Arlington Desalter pipeline for deliveries to Western. Facility and cost assumptions were based on existing Chino Desalter Authority facilities and construction costs. A facility model was developed to estimate the costs for each of the five concepts. Mr. Argo reviewed several maps of wells in correlation to the five concepts in detail and discussed the next steps that will be taken with Watermaster and stakeholder approval. The hydraulic control summary chart was examined and discussed and Mr. Argo solicited questions and comments from committee members. A question regarding the numbers presented on the concepts which lead to a discussion. Mr. Argo stated the five concepts which were presented will most likely not be one of the options to choose from later on once more work has been done and recommendations received to make changes. Mr. Wildermuth noted this endeavor will need to be a partnership of costs. A discussion ensued with regard to costs, concepts, and water demands from Metropolitan Water District.

II. BUSINESS ITEMS**A. MZ1 SUMMARY REPORT**

Mr. Manning stated this item was brought forth to this pool in March for recommendation to approve the February 2006 MZ1 Summary Report. It was decided at the March Appropriative & Non-Agricultural pool meeting to table the recommendation for another month to allow further discussions between the City of Chino Hills and Watermaster due to concerns expressed by the City of Chino Hills. Unfortunately, no proposals for revision of the guidance criteria were forthcoming. Mr. Manning noted that in May of 2005 the Special Referee held a workshop and issued a report from that workshop. In that report were three findings in which the Special Referee was asking Watermaster to perform: 1) produce an MZ1 Summary Report that describes the investigation results and conclusions, 2) notify the court of the schedule for completion of the long-term plan, and 3) provide guidance criteria to the MZ1 producers in an effort to minimize potential for future subsidence in fissuring pending completion of the long-term plan. Mr. Manning noted the implementation of the Optimum Basin Management Plan (OBMP) requires this work be done and provide it to the court. The MZ1 Technical Committee has been meeting on a regular basis and has reviewed the MZ1 Summary Report in detail and is now focusing on the long-term plan issues. Staff is recommending this item be moved forward with the approval. Mr. Kinsey inquired to the City of Chino Hills if they were presently ready to support the report as prepared. Mr. Maestas stated to his knowledge the report has not changed from the May meeting and the City of Chino Hills will not be in support of approving the report. Mr. Manning stated the MZ1 Summary Report and the Long-Term plan will not necessarily have to be connected; this report is important to take action on and the long-term issues still need to be addressed with the City of Chino Hills is a separate issue. Staff will continue its attempt to schedule a meeting with the City of Chino Hills and work with all the parties to ensure their full understanding of the document/process.

*Motion by Crosley, second by Taylor, and by majority vote – non-Ag concurred
Motion approve the February 2006 MZ1 Summary Report, as presented*

III. REPORTS/UPDATES**A. WATERMASTER GENERAL LEGAL COUNSEL REPORT****1. Peace II Process**

Counsel Fife stated this week the Wildermuth Environmental's technical report along with legal counsel responses to the questions that came up during the Peace II workshops was posted on the Chino Basin Watermaster web and ftp site. Mr. Manning stated there are some hard copies of both reports available here for those of you who had trouble downloading the items onto your systems due to its size.

Counsel Fife stated there is a confidential negotiating session scheduled for Tuesday, April 18, 2006 at 1:00 p.m. at the Watermaster office. Counsel and staff are anticipating a proposal from Watermaster to be available to help resolve the impasse that parties have been in over the last few months. Mr. Manning stated the strawman proposal will be made available for distribution this afternoon. Comments and suggestions will be received at the April 18, meeting on the strawman proposal.

2. Santa Ana River Water Rights Application

Counsel Fife stated this item has been a long on-again/off-again process and presently it is on the forefront again. Counsel Fife stated in May of 2005, the other parties that are involved in this process (including Orange County Water District (OCWD), Western Municipal Water District (WMWD), San Bernardino Municipal Water District, and the City of Riverside) decided they were ready to move forward on their applications and bring their applications to hearing by the beginning of 2006. Counsel Fife stated it has been made known to the parties involved that Watermaster is confident in our projects, positive in our validity of our application, and if they are ready to go to the State Board to get confirmation of their rights, we will follow suit. The last time this item was in motion, counsel and staff met with the State Board's staff to discuss the details of our application along with trips

made to Sacramento and after that attempt the issue faded away and has been silent ever since. Counsel Fife stated OCWD has now reissued a programmatic environmental impact report for their water rights application. The notice of availability is on the back table for review. With this news, counsel is anticipating WMWD to follow suit and if this does happen counsel, in concert with WMWD, will approach the State Board. Counsel Fife stated it is Watermaster's position that we have all the rights to all the surface water that passes through the Chino Basin and staff has expressed to the State Board that we do not need to do any further CEQA work and believe Watermaster is solid on our part of our application. Chair DeLoach stated he was pleased to read in the Summary Report that OCWD can move forward with their application and not impact the northern entities. A discussion ensued with regard to water being counted twice and the possibility of an impact study. Counsel Fife offered comment on water rights. Mr. Manning stated parties might want to make comments on this issue.

B. WATERMASTER ENGINEERING CONSULTANT REPORT

1. Update on Report on Balance of Recharge and Discharge

Mr. Wildermuth stated the report on Balance of Recharge and Discharge is now complete. There are copies available today for handout. Mr. Wildermuth noted there are some slight changes to the numbers but the end result is the same as in previous releases. The suggested reading if you are not into maps and graphs is section "Conclusions" because there are some differences in that section than in previous releases. Mr. Wildermuth stated the engineering staff is having a difficult time showing hydraulic control in the far west side. In conversations with the Regional Board is that they want to see a definitive hydraulic control and see groundwater flowing to desalter wells (definitive containment) which is a new request. Mr. Wildermuth discussed various well sites. Mr. Wildermuth noted a concern has been raised at the MZ1 Technical Committee meetings that there is an area north, the managed area in MZ1, which still is undergoing some subsidence; not a great deal of concern has been expressed over this finding. The City of Chino has been concerned which is why this item has been placed in the Peace II process in the Peace Agreement to deal with the subsidence problem. As staff moves forward with re-operation more understanding is going to be placed on that particular subsidence process to make sure re-operation, does not impact it. With half replenishment this should not be a big problem; a management plan could be drawn up to make that work. With no desalter replenishment it would probably be more difficult and that is what the models suggest. The conclusions and recommendations are written around with doing a re-operation up to 400,000 acre-feet or some kind of policy statement stating it is alright to subside in that particular place because there are no worries concerning that area. Mr. Wildermuth stated subsidence happens in all basins and the ground will sink slightly. The question is do we have an acceptable amount or some kind of other factor involved such as fissuring. Mr. Jeske inquired into the expansion of desalter well locations. A discussion on wells one through four and other possible shallow wells ensued.

C. CEO/STAFF REPORT

1. Consequences of Non-Implementation of Peace II

Mr. Manning stated following discussions with the special referee, it was suggested a brief summary be put together and presented to the parties on this subject matter. Hatch & Parent was tasked to go through all the consequences and provide a memo to be presented at the meetings to bring the parties up to speed on the consequences. Counsel Fife stated this memo is a brief overview of some of the consequences if Peace II is not completed. Counsel Fife noted that other than water quality, all the rest of the items are tied to specific deadlines, all of which will kick in whether we do Peace II or not. The ultimate conclusion of the memo is the choice in dealing with these issues as a unit and in a coordinated way or dealing with them on an individual basis. It was noted that "no action" really constitutes "action" because something will happen eventually if one chooses to do nothing – it will have a consequence.

2. DataX Presentation

Mr. Manning stated this presentation will be given at the Watermaster Board meeting and that the Inland Empire Utilities Agency (IEUA) will also be presenting it at their board meeting; this is a joint effort project with IEUA. Ms. Maurizio noted an update was last given on this project in March 2005. Ms. Maurizio reviewed the background on this project and acknowledged this is a joint CBWM and IEUA effort which started in October 2003. The purpose of the project is to facilitate the collection, management and sharing of water resources data. What DataX can be used for was reviewed in detail. The phased implementation was presented including Phase I - fiscal year 2004/05 and Phase II - fiscal year 2005/06. Ms. Maurizio stated the DataX inter-agency web-based data-entry portal will be a centralized location for CBWM and IEUA to receive and store data that is being collected and submitted by other parties. The objectives and benefits to participating agency/cities were discussed. An inter-agency data entry portal pilot test will take place with the City of Chino and Cucamonga Valley Water District as participants. Future work for Phase III - fiscal year 2006/07 will include implementing direct data input by all appropriate pool data generators, display recharge basin calculated results from the SCADA data, and interface imported and recycled water system with the IEUA billing system. Ms. Maurizio stated staff at Chino Basin Watermaster is currently using DataX and is very pleased with it. Mr. Manning noted this system should provide a lot of streamlining for agencies for data requests and processing.

3. Legislative Update

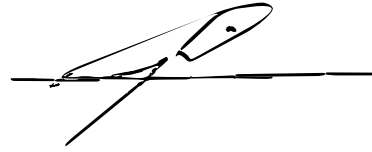
Mr. Manning stated staff was in Washington DC at the end of March for a two in a half day schedule which included meeting with a number of legislators, aides, and staff as well as members of the sub-committees for both the senate and the house. Some additional meetings were added to the schedules which were very productive and important with both the Bureau of Reclamation and the Agricultural Departments staff. SB2106 which was HR176 and is a title 16 program was held up at the senate level and Mr. Manning discussed the bill in detail. After staff returned from Washington DC it was noted the Bureau of Reclamation surfaced a new proposal twist on their "Water 2025" publication.

Mr. Manning stated that within that last few days a new bill has been introduced by Senator Simitian, SB1612, which will pump new life into the concept of peripheral canal under the title of a clean water project. Mr. Manning encouraged the public agencies to take a look at the bill to see if input is needed by their agency. Mr. Manning offered more details on the bill. Chair DeLoach stated CVWD is going to be filing comments on the bill and offered comments on the issues of the bill.

4. MWD Groundwater Study

Mr. Manning stated in September of 2005 the Metropolitan Water District (MWD) asked groundwater managers in the MWD service area to meet at their office to discuss putting together a very cursory look at groundwater basins in Southern California within and in some cases outside the service area. The purpose would be to answer questions from their board relative to, "Is there any potential for groundwater storage as opposed to surface storage?" MWD staff is collecting data for this report. Last Friday Ms. Grebbien, Mr. Rossi and Mr. Manning met with MWD staff to talk about what MWD is exactly looking for due to the vagueness of their request for data. Mr. Manning stated he expressed a concern to MWD staff that if they were going to be gathering groundwater data that they needed to have a groundwater savvy person on staff or in a consultant capacity that can deal with the data. MWD noted that was one of their concerns and they were going to be addressing that concern. Mr. Manning noted several other basins opted to fill out a questionnaire that was sent by MWD; however, Chino Basin Watermaster opted to send them our State of the Basin Report and some of our underlying governance documents and then schedule meeting directly with them to discuss their needs to fill in the gaps.

Secretary:

A handwritten signature in black ink, consisting of several loops and a long horizontal stroke, positioned over a horizontal line.

Minutes Approved: May 25, 2006

EXHIBIT "D"

Minutes
**CHINO BASIN WATERMASTER
ADVISORY COMMITTEE MEETING**

April 27, 2006

The Advisory Committee meeting was held at the offices of the Chino Basin Watermaster, 9641 San Bernardino Road, Rancho Cucamonga, California, on April 27, 2006 at 9:00 a.m.

ADVISORY COMMITTEE MEMBERS PRESENT

Agricultural Pool

Nathan deBoom, Chair	Ag Pool/Dairy
Bob Feenstra	Ag Pool/Dairy

Appropriative Pool

Ken Jeske	City of Ontario
Mike McGraw	Fontana Water Company
Frank LoGuidice	Fontana Union Water Company
Rosemary Hoerning	City of Upland
Dave Crosley	City of Chino
Ashok K. Dhingra	City of Pomona
Charles Moorrees	San Antonio Water Company
Mark Kinsey	Monte Vista Water District
J. Arnold Rodriguez	Santa Ana River Water Company
Justin Brokaw	Marygold Mutual Water Company

Non-Agricultural Pool

Bob Bowcock	Vulcan Materials Company (Calmat Division)
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Watermaster Staff Present

Kenneth R. Manning	Chief Executive Officer
Sheri Rojo	CFO/Asst. General Manager
Gordon Treweek	Project Engineer
Danielle Maurizio	Senior Engineer
Sherri Lynne Molino	Recording Secretary

Watermaster Consultants Present

Michael Fife	Hatch & Parent
Mark Wildermuth	Wildermuth Environmental Inc.
Dave Argo	Black & Veatch

Others Present

Chris Diggs	Fontana Water Company
Bill Kruger	City of Chino Hills
Steven G. Lee	Ag Pool Legal Counsel
Rick Hansen	Three Valleys Municipal Water District
Martha Davis	Inland Empire Utilities Agency

The Advisory Committee meeting was called to order by Chair deBoom at 9:10 a.m.

AGENDA - ADDITIONS/REORDER

No comment was made regarding this item.

I. CONSENT CALENDAR

A. MINUTES

1. Minutes of the Advisory Committee Meeting held March 23, 2006

B. FINANCIAL REPORTS

5. Cash Disbursements for the month of March 2006
6. Combining Schedule of Revenue, Expenses and Changes in Working Capital for the Period July 1, 2005 through February 28, 2006
7. Treasurer's Report of Financial Affairs for the Period February 1, 2006 through February 28, 2006
8. Profit & Loss Budget vs. Actual July through February 2006

C. WATER TRANSACTION

Consider Approval for Transaction of Notice of Sale or Transfer – Cucamonga Valley Water District has agreed to purchase from West Valley Water District water in storage in the amount of 500 acre-feet. Date of application: January 10, 2006

Motion by Jeske, second by McGraw, and by unanimous vote

Moved to approve Consent Calendar Items A through C, as presented

II. BUSINESS ITEMS**A. MZ1 SUMMARY REPORT**

Mr. Manning stated this item was presented to the pools and had unanimous votes in favor of this item except for a one negative vote by the City of Chino Hills. Staff, counsel, and technical consultants are recommending the approval of the presented MZ1 Summary Report. This summary report was designed out of the MZ1 workshop in May of 2005 where the Special Referee made recommendations, this being one of those, and to be in compliance with the court, staff is asking that this report be approved and forwarded to the Watermaster Board for their approval. This report also includes the guidance criteria of the MZ1 management and meets the needs for this agency and for the court.

Motion by Kinsey, second by Rodriguez, and by unanimous vote

Motion approve the February 2006 MZ1 Summary Report, as presented

III. REPORTS/UPDATES**A. WATERMASTER GENERAL LEGAL COUNSEL REPORT****1. Peace II Process**

Counsel Fife stated there was a meeting held the week before last on the Peace II process and staff and counsel are currently taking comments on the proposal that was released prior to that meeting. Staff is anticipating scheduling follow up meetings shortly. Staff and counsel are optimistic to be able to bring something to the Watermaster Board members in May for their approval to place the approved term sheet through the Watermaster process in June in preparation of the court mandated workshop in July.

2. Santa Ana River Water Rights Application

Counsel Fife stated this item has been a long on-again/off-again process and presently it is on the forefront again. Counsel Fife stated in May of 2005, the other parties that are involved in this process (including Orange County Water District (OCWD), Western Municipal Water District (WMWD), San Bernardino Municipal Water District, and the City of Riverside) decided they were ready to move forward on their applications and bring their applications to hearing by the beginning of 2006. Counsel Fife stated it has been made known to the parties involved that Watermaster is confident in our projects, positive in our validity of our application, and if they are ready to go to the State Board to get confirmation of their rights, we will follow suit. The last time this item was in motion, counsel and staff met with the State Board's staff to discuss the details of our application along with trips made to Sacramento and after that attempt the issue faded away and has been silent ever since. Counsel Fife stated OCWD has now reissued a programmatic environmental impact report for their water rights application. The notice of availability is on the back table for review. With this news, counsel is anticipating WMWD to follow suit and if this does happen counsel, in concert with WMWD, will approach the State Board. Counsel Fife stated it is

Watermaster's position that we have all the rights to all the surface water that passes through the Chino Basin and staff has expressed to the State Board that we do not need to do any further CEQA work and believe Watermaster is solid on our part of our application.

Counsel Fife stated there is an interesting development in legislation regarding Senate Bill 1795 which is being sponsored by the Stockton East Water District. The purpose of the legislation is to amend the water code, to say that any water rights application that is for the diversion of surface flows to use as groundwater recharge will not need an underground storage supplement. This is a part of the application that is very onerous and requires a lot of reporting. The State Board in recent years has stated they will regard a diversion for the purpose of recharge as that ultimate pumping is the actual diversion and everything prior to that just a pipe basically and what the State Board is going to regulate is the ultimate pumping. This SB1795 would rectify this situation and make our application much easier. To date there is no opposition to this bill and staff and counsel are hopeful this bill will get passed. A brief discussion ensued with regard to water plans.

B. WATERMASTER ENGINEERING CONSULTANT REPORT

1. Update on Report on Balance of Recharge and Discharge

Mr. Wildermuth stated as reported at the pool meetings, the Balance of Recharge and Discharge/Hydraulic Control Modeling Report is out as a draft report. Mr. Wildermuth stated that opposed to all the numbers the engineers have been working over the past twelve months, the numbers are slightly different; however, the final answer comes out the same. Mr. Wildermuth noted one item that is different; and this has been collaborated by all the new monitoring data that has come out of the Hydraulic Control mentoring program, which is we do not have hydraulic control on the far west side of the basin. This area would be in the vicinity of Desalter I, wells one through four which are deep wells, and then just west of those wells. There is an opportunity that we can obtain hydraulic control by installing more desalter wells in that location; we can't control that area by re-operation. This report will be finalized at some point in time or will be accepted as a draft report as final.

Added Comment:

Mr. Wildermuth stated recently the Regional Board was anticipating coming up with waste discharge requirements for the recharge of imported water. The Regional Board has now put out that tentative order for review which contains objectives that must be met in order to recharge water. The order has faults and will need to be looked at carefully and the Regional Board is asking for comments by May 1, 2006 which has caused uproar by agencies wanting this deadline pushed back for sixty days for proper review. Mr. Manning commented this is an item Watermaster will want to review and phone calls on this issue have been received. Mr. Manning suggested to the parties who phoned him would be to have the agencies get together and put together a "united" set of recommendations. Ms. Davis added comment regarding sending out a united message for the delay on this issue.

C. CEO/STAFF REPORT

1. Consequences of Non-Implementation of Peace II

Mr. Manning stated following discussions with the special referee, it was suggested a brief summary be put together and presented to the parties on this subject matter. Hatch & Parent was tasked to go through all the consequences and provide a memo to be presented at the meetings to bring the parties up to speed on the consequences. Counsel Fife stated this memo is a brief overview of some of the consequences if Peace II is not completed. Counsel Fife noted that other than water quality, all the rest of the items are tied to specific deadlines, all of which will kick in whether we do Peace II or not. The ultimate conclusion of the memo is the choice in dealing with these issues as a unit and in a coordinated way or dealing with them on an individual basis. It was noted that "no

action" really constitutes "action" because something will happen eventually if one chooses to do nothing – there will be a consequence.

2. DataX Presentation

The Advisory Committee members declined on seeing the DataX Presentation at this meeting. It was noted the presentation was given at each of the pool meetings and will be given at the Watermaster Board meeting today. Mr. Manning gave a brief overview of the DataX program and noted Watermaster staff is currently using the system and is very pleased with it.

3. Legislative Update

Mr. Manning stated he believes SB 1795 bill will be amended shortly and will assist our efforts in the Chino Basin to declare the water as beneficial use. Mr. Manning stated there is a new bill presented by Senator Simitian SB 1612 which has been pulled by the senator because it was not going to get a hearing. This is a \$3 billion dollar general obligation bond and noted even if the bill was passed it would still have to go through the voters. Mr. Manning noted the portion of the bill that was of interest to us is for the first time since 1982 it had discussion about a bypass facility around the Delta as the basis for the bill. It was noted this bill will be introduced at a later date.

4. MWD Groundwater Study

Mr. Manning stated in September of 2005, Metropolitan Water District (MWD) asked groundwater managers in the MWD service area to meet at their office to discuss putting together a very cursory look at groundwater basins in Southern California within and in some cases outside the service area. The purpose would be to answer questions from their board relative to, "Is there any potential for groundwater storage as opposed to surface storage?" MWD staff is collecting data for this report. Recently Ms. Grebbien, Mr. Rossi and Mr. Manning met with MWD staff to talk about what MWD is exactly looking for due to the vagueness of their request for data. Mr. Manning stated he expressed a concern to MWD staff that if they were going to be gathering groundwater data that they needed to have a groundwater savvy person on staff or in a consultant capacity that can deal with the data. MWD noted they were going to be addressing that concern. Mr. Manning noted several other basins opted to fill out the questionnaire that was sent by MWD; however, Chino Basin Watermaster opted to send them our State of the Basin Report and some of our underlying governance documents and then schedule meeting directly with them to discuss their need to fill in the gaps.

5. Workshops Update

Mr. Manning stated there is a Boardmanship workshop scheduled for board members and any other party who wishes to attend today after the Board meeting. This meeting has been scheduled by a request from board member Sandra Rose who wanted a better understanding of her role as a board member for the Chino Basin Watermaster. Hatch & Parent will be conducting this workshop.

A budget workshop has been scheduled for Ms. Rojo to present the proposed 2006/2007 budget on Tuesday, May 2, 2006 starting at 9:00 a.m.

6. Storm Water/Recharge Update

Mr. Treweek stated there is an updated Storm Water/Recharge Update available on the back table. It was noted 34,000 acre-feet of water has been recharged after nine months, there are four more months left in the storm season and we have been receiving above 5,000 acre-feet per month of recharge. This should bring us up to the 50,000 acre-foot goal for this year. February and March have had very good results of recharge due to recent storms. Mr. Treweek reviewed the handout in detail.

7. Draft Desalter III Alternative Study Update

Mr. Manning stated that as part of the Peace II process, staff has been discussing a relationship with Western Municipal Water District (WMWD) for the construction of a desalter program. There have been several questions regarding what the new desalter program might possibly look like. Mr. Dave Argo from Black & Veatch has been tasked by WMWD to look at some desalter alternatives and Mr. Argo is here to present five draft concept ideas. Mr. Argo presented the "Chino Basin Optimum Basin Management Program – Potential Deliveries of 10,000 AFY to WMWD / Development of New Chino III Desalter) presentation. The presentation was developed by Black & Veatch, in association with RBF Consulting and Wildermuth Environmental, Inc. It was noted Watermaster is exploring options for a third Chino desalter and a plan is needed to fulfill the objectives of the originally proposed Chino III Desalter which will maintain hydraulic control, meet Peace II objectives, and meet the goals of the Optimum Basin Management Program (OBMP). Mr. Argo stated a plan is needed to maintain hydraulic control in the basin and reviewed the goal to maintain historic agricultural pumping in the south basin to achieve required production of 40,000 afy. Mr. Argo stated five concepts were developed to meet these objectives of Chino III Desalter and reviewed in detail each of the possible concepts. Mr. Argo stated all concepts assume use of the existing Arlington Desalter pipeline for deliveries to Western. Facility and cost assumptions were based on existing Chino Desalter Authority facilities and construction costs. A facility model was developed to estimate the costs for each of the concepts presented. Mr. Argo reviewed several maps of wells in correlation to the five concepts in detail and discussed the next steps that will be taken with Watermaster and stakeholder approval. The hydraulic control summary chart was examined and discussed and Mr. Argo solicited questions and comments from committee members. A question regarding the numbers presented on the concepts which lead to a discussion. Mr. Argo stated the five concepts which were presented will most likely not be one of the options to choose from later on once more work has been done and recommendations received to make changes. Mr. Jeske made reference to the report on hydraulic control which was received last month on what we may need to do in certain issues. That report and findings may or may not tie into what Black & Veatch is trying to do. Mr. Jeske noted that in a meeting with the CDA the group was looking at five specific low cost alternatives to achieve both goals in hydraulic control and providing reliability to the agencies. There may be some work involved to merge what WMWD and the CDA are doing financially. Mr. Manning stated the extension of the work which was originally discussed was authorized and budgeted for in the Watermaster budget and is still within the original authorization. Discussions will still take place with WMWD on cost sharing ideas. A discussion ensued with regard to cost sharing and the Tier II rate.

D. INLAND EMPIRE UTILITIES AGENCY

1. Monthly Water Conservation Programs Report
No comment was made regarding this item.
2. Groundwater Operations Recharge Summary – handout
No comment was made regarding this item.
3. Monthly Imported Water Deliveries Report
No comment was made regarding this item.
4. State/Federal Legislation Reports
No comment was made regarding this item.
5. Public Relations Report
No comment was made regarding this item.

E. OTHER METROPOLITAN MEMBER AGENCY REPORTS

Mr. Hansen commented on the feedback received regarding waste discharge requirements for the recharge of imported water by the Regional Board. Mr. Hansen stated it is not just the Chino

Basin area that would be affected; there would be a terrible precedent for all of Southern California. Mr. Hansen stated yesterday communications already began with Metropolitan Water District that they want MWD member agencies to all get involved in this process.

IV. INFORMATION

- 1. Newspaper Articles

No comment was made regarding this item.

V. COMMITTEE MEMBER COMMENTS

No comment was made regarding this item.

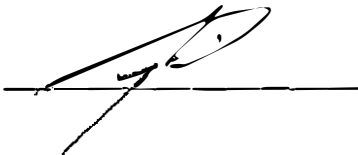
VI. OTHER BUSINESS

No comment was made regarding this item.

VII. FUTURE MEETINGS

April 25, 2006	9:00 a.m.	GRCC Committee Meeting
April 27, 2006	9:00 a.m.	Advisory Committee Meeting
April 27, 2006	11:00 a.m.	Watermaster Board Meeting
April 27, 2006	1:00 p.m.	Boardsmanship Workshop
May 2, 2006	9:00 a.m.	Budget Workshop
May 11, 2006	9:00 a.m.	Appropriative & Non-Agricultural Pool Meeting
May 16, 2006	9:00 a.m.	Agricultural Pool Meeting @ IEUA
May 25, 2006	9:00 a.m.	Advisory Committee Meeting
May 25, 2006	11:00 a.m.	Watermaster Board Meeting

The Advisory Committee Meeting Adjourned at 9:45 a.m.

Secretary: 

Minutes Approved: May 25, 2006

EXHIBIT "E"

Minutes
**CHINO BASIN WATERMASTER
WATERMASTER BOARD MEETING**

April 27, 2006

The Watermaster Board Meeting was held at the offices of the Chino Basin Watermaster, 9641 San Bernardino Road, Rancho Cucamonga, California, on April 27, 2006 at 11:00 a.m.

WATERMASTER BOARD MEMBERS PRESENT

Ken Willis, Chair	West End Consolidated Water Company
Sandra Rose	Monte Vista Water District
Terry Catlin	Inland Empire Utilities Agency
Al Lopez	Western Municipal Water District
Bob Kuhn	Three Valleys Municipal Water District
Bob Bowcock	Vulcan Materials Company
Paul Hofer	Agricultural Pool, Crops
Paul Hamrick	Jurupa Community Services District
Geoffrey Vanden Heuvel	Agricultural Pool, Dairy

Watermaster Staff Present

Kenneth R. Manning	Chief Executive Officer
Sheri Rojo	CFO/Asst. General Manager
Gordon Treweek	Project Engineer
Danielle Maurizio	Senior Engineer
Sherri Lynne Molino	Recording Secretary

Watermaster Consultants Present

Scott Slater	Hatch & Parent
Michael Fife	Hatch & Parent
Mark Wildermuth	Wildermuth Environmental Inc.
Dave Argo	Black & Veatch

Others Present

Rosemary Hoerning	City of Upland
Ken Jeske	City of Ontario
Marty Zvirbulis	Cucamonga Valley Water District
Mark Kinsey	Monte Vista Water District
Carole McGreevy	Jurupa Community Services District
Ashok K. Dhingra	City of Pomona
Charles Moorrees	San Antonio Water Company
Dave Crosley	City of Chino
David DeJesus	Three Valleys Municipal Water District

The Watermaster Board Meeting was called to order by Mr. Willis at 11:00 a.m.

PLEDGE OF ALLEGIANCE

AGENDA - ADDITIONS/REORDER

Mr. Manning noted that while reviewing the March 23, 2006 minutes counsel decided to make a slight change to the language written on the discussion regarding confidentiality. Counsel Slater noted the revised minutes are provided in your meeting folder and on the back table. A brief discussion ensued with regard to what was changed and why the change was necessary. The revised minutes were presented into the Consent Calendar for approval.

I. CONSENT CALENDAR**A. MINUTES**

1. Revised Minutes of the Watermaster Board Meeting held March 23, 2006

B. FINANCIAL REPORTS

5. Cash Disbursements for the month of March 2006
6. Combining Schedule of Revenue, Expenses and Changes in Working Capital for the Period July 1, 2005 through February 28, 2006
7. Treasurer's Report of Financial Affairs for the Period February 1, 2006 through February 28, 2006
8. Profit & Loss Budget vs. Actual July through February 2006

C. WATER TRANSACTION

Consider Approval for Transaction of Notice of Sale or Transfer – Cucamonga Valley Water District has agreed to purchase from West Valley Water District water in storage in the amount of 500 acre-feet. Date of application: January 10, 2006

Motion by Kuhn, second by Hamrick, and by unanimous vote

Moved to approve Consent Calendar Items A (as revised) through C, as presented

II. BUSINESS ITEMS**A. MZ1 SUMMARY REPORT**

Mr. Manning stated this item was presented to the Pools and Advisory Committee and had unanimous votes in favor of this item except for a one negative vote by the City of Chino Hills. Staff, counsel, and technical consultants are recommending the approval of the presented MZ1 Summary Report. This summary report was designed as a result of the MZ1 workshop held in May of 2005 where the Special Referee made recommendations, this being one of those recommendations. To be in compliance with the court, staff is asking that this report be approved. This report also includes the guidance criteria of the MZ1 management and meets the needs for this agency and for the court. Mr. Vanden Heuvel inquired if the city of Chino Hills has expressed an opinion on this report. Mr. Manning noted the city of Chino Hills at this point in time is not in concurrence with the MZ1 Technical Committee or other parties who are in favor of this report. The city of Chino Hills has not provided any comment on this report in the last sixty days and they have been absent from the MZ1 meetings. Mr. Vanden Heuvel asked if a representative had been in attendance at any meeting where this report was presented for approval. Mr. Manning stated a representative was present at the April 13, 2006, Appropriative & Non-Agricultural pool meeting and that representative was the only "no" vote at any meeting where this was presented for approval. Mr. Vanden Heuvel offered comment on the history of this issue. It was noted a representative from the Watermaster Board should meet personally with the city of Chino Hills to understand what their concerns are and that Chair Willis should be that representative. An extended discussion ensued with regard to the Summary Report and the Long-Term Report with regard to the city of Chino Hills concerns. Counsel Slater stated Chino Hills concerns do not necessarily relate to the report itself or to the guidance criteria, which are not mandates, they are recommendations on operation. Comments were received by each member and Chair Willis called for a vote to table the motion for 30 days, while further attempts are made to engage Chino Hills into dialogue regarding their concerns.

Motion by Vanden Heuvel, second by Rose, and by majority vote

Motion to table this item for 30 days in order for Chair Willis to meet with the city of Chino Hills for resolution of their issues on the MZ1 Summary Report

III. REPORTS/UPDATES**A. WATERMASTER GENERAL LEGAL COUNSEL REPORT****1. Peace II Process**

Counsel Slater noted the legal section will be divided between himself who will be presenting the Peace II Process update and Counsel Fife who will be presenting the Santa Ana update. Counsel Slater stated as we reported at the last Board meeting the Wildermuth Environmental technical report would be out for review, a Strawman Proposal would be distributed, and a confidential meeting with attorneys, managers, principals, board members, and stakeholders who were willing to abide by the rules of evidentiary confidentiality was held on April 18, 2006. At that meeting the Strawman Proposal was explained and it was noted that this was not a proposal of the Watermaster Board or Board Member; it was solely an effort on the part of staff to facilitate an agreement among the parties. The document was presented, questions were asked and answered and the question was put to the group whether the proposal was worth further discussion, and the strong consensus in favor to continue the discussions of the document. The discussion of process occurred by either two ways, through the open Watermaster process or should the dialog continue in a confidential environment. The consensus was, for the time being, that conversations should be continued in confidence. Based upon that decision, a preliminary "hold a date" notice has been sent out for two dates May 4, 2006 and May 15, 2006. Mr. Kuhn inquired if input from board members will be needed at the next Attorney-Manager meeting? Counsel Slater stated the board members input is welcome. Mr. Vanden Heuvel offered comment on seeking board comments at those meetings. A discussion ensued with regard to the differences in the meetings. Counsel Slater stated initially the Attorney-Manager meetings was limited to the parties to have in attendance, a lawyer and a principal which was perceived as being exclusive as opposed to inclusive. Our understanding by the direction we received was to not limit it to allow board members to attend but to allow any representative of the stakeholders to attend so long as each attendee were willing to abide by the evidentiary confidentiality associated with the discussions. Ultimately that process would yield a product which would be brought forward through the Pools, Advisory Committee, and be subject to open comments by the Board members; the question is to give that process more time or the confidential sessions more time prior to the introduction to the Watermaster process. Ms. Rose confirmed the meetings that might be held on the 4th and the 15th are the confidential sessions and Counsel Slater concurred. Chair Willis acknowledged the board members want to continue to be invited to the confidential meetings and will adhere to the evidentiary confidentiality agreement.

2. Santa Ana River Water Rights Application

Counsel Fife stated this item has been a long on-again/off-again process and presently it is on the forefront again. Counsel Fife stated in May of 2005, the other parties that are involved in this process (including Orange County Water District (OCWD), Western Municipal Water District (WMWD), San Bernardino Municipal Water District, and the City of Riverside) decided they were ready to move forward on their applications and bring their applications to hearing by the beginning of 2006. Counsel Fife stated it has been made known to the parties involved that Watermaster is confident in our projects, positive in our validity of our application, and if they are ready to go to the State Board to get confirmation of their rights, we will follow suit. The last time this item was in motion, counsel and staff met with the State Board's staff to discuss the details of our application along with trips made to Sacramento and after that attempt the issue faded away and has been silent ever since. Counsel Fife stated OCWD has now reissued a programmatic environmental impact report for their water rights application. The notice of availability is on the back table for review. With this news, counsel is anticipating WMWD to follow suit and if this does happen counsel, in concert with WMWD, will approach the State Board. Counsel Fife stated it is Watermaster's position that we have all the rights to all the surface water that passes through the Chino Basin and staff has expressed to the State Board that we do not need to do any further CEQA work and believe Watermaster is solid on our part of our application.

Counsel Fife stated there is an interesting development in legislation regarding Senate Bill 1795 which is being sponsored by the Stockton East Water District. The purpose of the legislation is to amend the water code, to say that any water rights application that is for the diversion of surface flows to use as groundwater recharge will not need an underground storage supplement. This is a part of the application that is very onerous and requires a lot of reporting. The State Board in recent years has stated they will regard a diversion for the purpose of recharge as that ultimate pumping is the actual diversion and everything prior to that just a pipe basically and what the State Board is going to regulate is the ultimate pumping. This SB1795 would rectify this situation and make our application much easier. To date there is no opposition to this bill and staff and counsel are hopeful this bill will get passed. A brief discussion ensued with regard to water plans.

B. WATERMASTER ENGINEERING CONSULTANT REPORT

1. Update on Report on Balance of Recharge and Discharge

Mr. Wildermuth stated as reported at the Pool and the Advisory Committee, the Balance of Recharge and Discharge/Hydraulic Control Modeling Report is out as a draft report. Mr. Wildermuth stated that opposed to all the numbers the engineers have been working with over the past twelve months, the numbers are slightly different; however, the final answer comes out the same. Mr. Wildermuth noted one item is different, and this has been collaborated by all the new monitoring data that has come out of the Hydraulic Control monitoring program, is that we do not have hydraulic control on the far west side of the basin. This area would be in the vicinity of Desalter I, wells one through four which are deep wells, and then just west of those wells. There is an opportunity there that we can obtain hydraulic control by installing more desalter wells in that location. This report will be finalized at some point in time or will be accepted as a draft report as final. Mr. Vanden Heuvel commented on the new information which was just released regarding our monitoring showing there is leakage from the Chino Basin and the Regional Board is aware of this issue and expecting something to be done about it.

C. CEO/STAFF REPORT

1. Consequences of Non-Implementation of Peace II

Mr. Manning stated following discussions with the special referee, it was suggested a brief summary be put together and presented to the parties on this subject matter. Hatch & Parent was tasked to go through all the consequences and provide a memo to be presented at the meetings to bring the parties up to speed on the consequences. Counsel Fife stated this memo is a brief overview of some of the consequences if Peace II is not completed. Counsel Fife noted that other than water quality, all the rest of the items are tied to specific deadlines, all of which will kick in whether we implement Peace II or not. The ultimate conclusion of the memo is the choice in dealing with these issues together and in a coordinated way or dealing with them on an individual basis. Mr. Vanden Heuvel stated, in his opinion, the presented document does not spell out the magnitude of the consequences and noted there are huge price tags associated with the failure to deal with storage. Mr. Vanden Heuvel stated an estimated range of potential cost should be given to the parties for the record regarding storage. A lengthy discussion ensued with regard to liability and financial obligations. Counsel Fife stated to put together a more comprehensive analysis including all aspects of financial obligations and numbers on storage would take longer to produce than time we have left for the conclusion of the Peace II process. A discussion ensued on the cost of estimation of replenishing the existing desalters. Comments were received by Mr. Vanden Heuvel regarding the discussions on this issue. Mr. Manning noted the cost is unknown at this time, however, in reviewing the numbers we have to date the costs could well be in the hundred million dollar range to proceed with an accurate account of what would be involved to proceed with giving a more detailed description of consequences.

2. DataX Presentation

Mr. Manning stated this presentation will be given at the Watermaster Board meeting and that the Inland Empire Utilities Agency (IEUA) will also be presenting it at their board meeting; this is a joint project with IEUA. Ms. Maurizio noted an update was last given on this project in March 2005 and reviewed the background on this project and acknowledged that this effort started in October 2003. The purpose of the project is to facilitate the collection, management and sharing of water resources data. What DataX can be used for was reviewed in detail. The phased implementation was presented including Phase I - fiscal year 2004/05 and Phase II - fiscal year 2005/06. The DataX inter-agency web-based data-entry portal will be a centralized location for CBWM and IEUA to receive and store data that is being collected and submitted by other parties. The objectives and benefits to participating agency/cities were discussed. An inter-agency data entry portal pilot test will take place with the City of Chino and Cucamonga Valley Water District as participants. Future work for Phase III - fiscal year 2006/07 will include implementing direct data input by all Appropriative pool data generators, display recharge basin calculated results from the SCADA data, and interface imported and recycled water system with the IEUA billing system. Chino Basin Watermaster is currently using DataX and is very pleased with it. Mr. Manning noted this system should provide a lot of streamlining for agencies for data requests and processing.
3. Legislative Update

Mr. Manning stated he believes SB 1795 bill will be amended shortly and will assist our efforts in the Chino Basin to declare the water as beneficial use. Mr. Manning stated there is a new bill presented by Senator Simitian SB 1612 which has been pulled by the senator because it was not going to get a hearing. This is a \$3 billion dollar general obligation bond and noted even if the bill was passed it would still have to go through the voters. Mr. Manning noted the portion of the bill that was of interest to us is for the first time since 1982 it had discussion about a bypass facility around the Delta as the basis for the bill. It was noted this bill will be introduced at a later date.
4. MWD Groundwater Study

Mr. Manning stated in September of 2005 Metropolitan Water District (MWD) asked groundwater managers in the MWD service area to meet at their office to discuss putting together a very cursory look at groundwater basins in Southern California within and in some cases outside the service area. The purpose would be to answer questions from their board relative to, "Is there any potential for groundwater storage as opposed to surface storage?" MWD staff is collecting data for this report. Recently Ms. Grebbien, Mr. Rossi and Mr. Manning met with MWD staff to talk about what MWD is exactly looking for due to the vagueness of their request for data. Mr. Manning stated he expressed a concern to MWD staff that if they were going to be gathering groundwater data that they needed to have a groundwater savvy person on staff or in a consultant capacity that can deal with the data. MWD noted they were going to be addressing that concern. Mr. Manning noted several other basins opted to fill out the questionnaire that was sent by MWD; however, Chino Basin Watermaster opted to send them our State of the Basin Report and some of our underlying governance documents and then schedule meeting directly with them to discuss their need to fill in the gaps.
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A budget workshop has been scheduled for Ms. Rojo to present the proposed 2006/2007 budget on Tuesday, May 2, 2006 starting at 9:00 a.m.

6. Storm Water/Recharge Update

Mr. Treweek stated there is an updated Storm Water/Recharge Update available on the back table. It was noted 34,000 acre-feet of water has been recharged after nine months, there are four more months left in the storm season and we have been receiving above 5,000 acre-feet per month of recharge. This should bring us up to the 50,000 acre-foot goal for this year. February and March have had very good results of recharge due to recent storms. Mr. Treweek reviewed the handout in detail.

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IV. INFORMATION

1. Newspaper Articles

No comment was made regarding this item.

V. BOARD MEMBER COMMENTS

No comment was made regarding this item.

VI. OTHER BUSINESS

No comment was made regarding this item.

VII. FUTURE MEETINGS

April 25, 2006	9:00 a.m.	GRCC Committee Meeting
April 27, 2006	9:00 a.m.	Advisory Committee Meeting
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May 25, 2006	9:00 a.m.	Advisory Committee Meeting
May 25, 2006	11:00 a.m.	Watermaster Board Meeting

The Watermaster Board Meeting Adjourned at 1:00 p.m.

Secretary: 

Minutes Approved: May 25, 2006

EXHIBIT "F"

Minutes
CHINO BASIN WATERMASTER
WATERMASTER BOARD MEETING
May 25, 2006

The Watermaster Board Meeting was held at the offices of the Chino Basin Watermaster, 9641 San Bernardino Road, Rancho Cucamonga, California, on May 25, 2006 at 11:00 a.m.

WATERMASTER BOARD MEMBERS PRESENT

Ken Willis, Chair	West End Consolidated Water Company
Sandra Rose	Monte Vista Water District
John Anderson	Inland Empire Utilities Agency
Al Lopez	Western Municipal Water District
David DeJesus	Three Valleys Municipal Water District
Bob Bowcock	Vulcan Materials Company
Paul Hofer	Agricultural Pool, Crops
Paul Hamrick	Jurupa Community Services District
Geoffrey Vanden Heuvel	Agricultural Pool, Dairy

Watermaster Staff Present

Kenneth R. Manning	Chief Executive Officer
Sheri Rojo	CFO/Asst. General Manager
Gordon Treweek	Project Engineer
Janine Wilson	Recording Secretary

Watermaster Consultants Present

Scott Slater	Hatch & Parent
Michael Fife	Hatch & Parent
Mark Wildermuth	Wildermuth Environmental Inc.

Others Present

Rosemary Hoerning	City of Upland
Bill Kruger	City of Chino Hills
Steve Kennedy	Three Valleys Municipal Water District
Manuel Carrillo	Senator Soto's office
Jeff Pierson	Ag Pool
Jim Taylor	City of Pomona
Mike Maestas	City of Chino Hills
Carole McGreevy	Jurupa Community Services District
Dave Crosley	City of Chino

The Watermaster Board Meeting was called to order by Mr. Willis at 11:04 a.m.

PLEDGE OF ALLEGIANCE

AGENDA - ADDITIONS/REORDER

There were no additions or reorders made to the agenda.

I. CONSENT CALENDAR

A. MINUTES

1. Minutes of the Watermaster Board Meeting held April 27, 2006

Mr. Vanden Heuvel stated he wanted the April 27, 2006 minutes to reflect the costs that would be incurred if there was no implementation of Peace II since it is such a costly amount and there was a long discussion at that meeting regarding such costs. Mr. Manning stated the minutes could be revised to include Mr. Vanden Heuvel's request of projected costs.

Motion by Lopez, second by Hofer, and by unanimous vote

Moved to approve Consent Calendar Item A with the amendment made regarding the cost of non-implementing Peace II added to the April 27, 2006 minutes, as presented

B. FINANCIAL REPORTS

1. Cash Disbursements for the month of April 2006
2. Combining Schedule of Revenue, Expenses and Changes in Working Capital for the Period July 1, 2005 through March 31, 2006
3. Treasurer's Report of Financial Affairs for the Period March 1, 2006 through March 31, 2006
4. Profit & Loss Budget vs. Actual July through March 2006

Ms. Rose asked if would be possible on the check register to have a separate memo column that might explain the costs incurred for. Mr. Manning stated that would take a great deal of work on staff's part and that we could possibly have more specific categories in place of an exact description. Ms. Rose asked a question regarding check number 10416 to Mathis & Associates and whether it was too late to stop the check from being mailed. The response was that the check had already gone out. A brief discussion ensued with regard to the policy of approving checks that have already gone out.

Motion by Hamrick, second by Willis, and by unanimous vote

Moved to approve Consent Calendar Item B, as presented

II. BUSINESS ITEMS

A. WATERMASTER BUDGET FOR FISCAL YEAR 2006/2007

Mr. Manning stated Ms. Rojo will give a more detailed description for this item and noted this item has gone to the Pools and Advisory Committee and had unanimous approval at those meetings. A budget workshop was held prior to this item being placed on the agenda and was very well attended. Ms. Rojo stated several appropriators and a few board members attended the budget workshop and the budget was reviewed and discussed in great detail. What is in the meeting package is the actual summary budget; the detailed budget will be available on our ftp and web site. The Watermaster budget is made up of four main expense areas; 1) administration, 2) general OBMP expenses, 3) OBMP implementation projects, and 4) water purchases. The budget in the administration area has two main areas of interest, first being the proposed COLA of 4.7% which is based on the CPI for this area and then the second is the proposed increase in the medical insurance cap; this is actually a place holder which Mr. Manning will be discussing further on the June meeting. Mr. Manning stated the adoption of the presented budget places the money that is in the category to cover the expenses. The actual item will go through the Watermaster process in June as a separate action item with a recommendation from the Personnel Committee. In the general OBMP category there are a couple of areas that increased overall. The first is staff is proposing, as a result of Peace II, we are going to have to do CEQA work and that is budgeted in the OBMP category; this is a place holder; we will be sub-contracting out that work. The second is the next State of the Basin Report, before now this was placed in the budget as an OBMP expense; this is now a separate line item to allow people to better understand the cost. Under the implementation projects and special projects there are a few areas that will be increasing; some slightly and some substantially. Ground water quality monitoring is anticipated to increase; those expenses are being tracked separately. The recharge O&M which was discussed in detail at the Appropriative and Advisory Committee meetings, substantially increased due to the number of basins which have recently come on-line. There is also our recharge debt service a result of the DWR grant funding, that is being cost shared with Inland Empire Utilities Agency on the payment. The debt

service line item was reviewed and discussed in detail. There are a few decreases in the project implementation area which relate to ground level monitoring. The MZ1 and the meter installation and maintenance costs are projected to drop. Overall staff is expecting an increase to assessments this year. Mr. Hofer inquired into how the cost of living adjustment is determined. Ms. Rojo stated that figure is based on the Consumer Price Index (CPI) for the Inland Empire.

Mr. Manning stated, in regards to our groundwater quality monitoring program, that Chino Basin Watermaster is pursuing working with the potential responsible parties (PRP's) on both the Ontario International Airport and the Chino Airport. All of those expenses are recoverable when we settle with the PRP's. Those are funds that would come back to the agency and to the organization at some point in time; we do not know when that will be exactly but they are recoverable expenses.

Mr. Vanden Heuvel inquired where were the increased costs of operations and maintenance for recharge located in the budget. Ms. Rojo stated that has been placed into the OBMP implementation projects category.

Ms. Rose inquired into the three bullets that Mr. Manning mentioned one being the Personnel Committee recommendations regarding the market survey. Mr. Manning stated this is a placeholder which allows the latitude to be able to work with any recommendation that would come through the approval by the Watermaster Board in June.

Motion by Lopez, second by Anderson, and by unanimous vote

Motion to approve the Watermaster budget for fiscal year 2006/2007, as presented

B. PEACE II NON-BINDING TERM SHEET

Mr. Manning stated this item will be covered by Counsel Slater and noted that each member should have already received a copy of the Peace II Non-Binding Term Sheet under separate cover. Counsel Slater stated this item has been developed by the diligent work of the parties for the past twenty-four months who attempted to come to resolution for a proposed road map to take us into the next generation of Watermaster planning. At the last Board meeting in April counsel had indicated that a broader stakeholder meeting had taken place and that there was interest and support in convening additional meetings in an effort to, once and for all, come to a final conclusion as to an appropriate road map. Meetings were held on May 4, 2006 and May 15, 2006; those meetings resulted in a proposed stakeholder non-binding term sheet which is being presented to you today for your consideration. Counsel Slater stated he wanted to make clear the requested action that is being sought today by the Board members. The responsibility for preparation of the Optimum Basin Management Plan lies with this board. The genesis for the plan and for modifications of the plan lies with this board. Staff is not asking today to approve the non-binding term sheet; staff is recommending that this board refer the term sheet to the Pools and the Advisory Committee to move through the Watermaster process. Ms. Rose stated that she is glad that the board members were allowed to attend the last few sessions because it really helped in the understanding of the issues. Mr. Vanden Heuvel complimented the staff and all the parties for all the serious work done on the concerns raised at the last go around of the term sheet noting this is a better document now that all parties should be proud of.

Motion by Vanden Heuvel, second by Rose, and by unanimous vote

Motion to approve to move the non-binding term sheet through the Watermaster process for further consideration, as presented

C. MZ1 SUMMARY REPORT

Mr. Manning stated this is the same item that was presented to the Board a month ago noting this item has gone through the Pools and Advisory Committee and was passed with only one dissenting vote at the Advisory Committee meeting. At the Board meeting last month a

recommendation was made that this item be postponed for a month to give the Board Chairman an opportunity to meet with members of the Chino Hills counsel to discuss this subject. Mr. Manning stated he was not in attendance at any of those meetings. However, it is his understanding that the City of Chino Hills is now in the process of preparing a document that will provide some guidance for us on what they think could or should be achieved through the long-term plan. The outcome turned out well from the meetings that Chair Willis conducted with the City of Chino Hills. Staff's recommendation is still the same in that the Summary Report is just a report and does not include the interim criterion which is voluntary in nature in terms of compliance. It does set out the guidance for good behavior to occur until the long-term plan is decided upon and is adopted. Staff is encouraging the Board to approve the report at this time. Chair Willis invited representatives of Chino Hills to speak. Mr. Maestas stated there are still some concerns with the MZ1 Criteria that have been released. Chino Hills believes there are still concerns that have not yet been addressed through this criteria plan, and believe they are going to be affected by it in production and/or source of water. It appears the MZ1 Committee is attempting to set up criteria. It is unknown how Chino Hills is going to be assisted or compensated for the loss of production by following this criteria. The City of Chino Hills wishes to work with Watermaster and wants resolution. However, Chino Hills does not want to step into a position where they are not taken care of as far as loss of production by following this set of criteria. Until these issues are resolved, the City of Chino Hills is not on board for approval. Chair Willis stated he looks forward to Watermaster staff and members of the Board working with the City of Chino Hills to find out what is in the realm of possibilities and to see if what they are suggesting is or is not possible. Mr. Manning stated he had a conversation with Mr. Kruger prior to the start of the Board meeting and Mr. Kruger commented that the city manager was going to be in contact with Watermaster staff shortly to schedule a meeting.

*Motion by Lopez, second by Anderson, and by unanimous vote
Motion to approve the MZ1 Summary Report, as presented*

III. REPORTS/UPDATES

A. WATERMASTER GENERAL LEGAL COUNSEL REPORT

1. Santa Ana River Application
Counsel Slater stated that Orange County has come with its revised environmental report and the comment period is now open. Watermaster's general legal counsel is presently working to provide a set of draft comments which will be circulated shortly.
2. Boardsmanship Workshop Update
Counsel Slater stated staff and counsel did follow through with the holding of the Boardsmanship workshop and overall it was well received by those who attended. Counsel enjoyed the process and is in contact with the Special Referee with regard to potentially composing advanced curriculum to the extent that the Board thinks it is useful. Staff is thinking of putting together a technical segment which will entail more detailed information on any subject that the Board feels they would like to know more about. Counsel Slater noted that staff and counsel are involving the Special Referee in that curriculum.

B. WATERMASTER ENGINEERING CONSULTANT REPORT

1. Summary of WEI April 2006 Report Regarding Hydraulic Control, Desalters and New Yield
Mr. Wildermuth stated he wanted to bring the board up to date on the Hydraulic Control Monitoring Program and then compare those results to the actual modeling work that was recently done. Mr. Wildermuth reviewed a map from the late 1800's to the early 1900's when USGS was investigating this entire watershed, mapping springs and performing geology work. Mr. Wildermuth stated when the desalter program was designed it was actually designed to do two things; 1) to replace the supply that would be lost from agriculture and 2) to keep water from going out to the river. If we did nothing and Watermaster parties just did what they normally do and agriculture went away there would be no production in that area. What the modeling results shows is that the water levels in the north would drop quite a bit and we would lose, on average, over 20,000 acre-feet a

year to the river. This would also cause us to have water quality problems with the Regional Board and we would have to desalt wastewater or dilute that water. After the OBMP and Peace Agreement were completed and during the TIN/TDS process it became clear that we could isolate the basin with the desalters and if we could isolate it we could end up with higher water quality objectives for TDS and nitrogen. The desalters were set up to cut off outflow; this is how they were developed initially with the information that was at hand. During the preparation of the Basin Plan Amendment which included the Chino Basin/Inland Empire's Maximum Benefits Proposal, we came up with a Hydraulic Control Monitoring Plan. That plan was incorporated into the Basin Plan Amendment. The 2004 Basin Plan Amendment required us to produce annual reports; the first report came out in May. In that report there are nine new wells that were constructed by Watermaster/IEUA and were partially funded by grant monies. In addition to that there are approximately forty other wells that were needed to provide water quality data for this purpose along with twenty five surface water stations. What we are trying to accomplish with the monitoring program is to look at the water level data and determine from the water level data how much containment we have. Mr. Wildermuth reviewed the modeling results map in detail. A discussion ensued with regard to some of the modeling results. Mr. Wildermuth discussed the conclusions which included monitoring data and groundwater simulations that suggest failure to gain hydraulic control west of Desalter I/well no. 5, surface water monitoring which suggests negligible water quality impact to the Santa Ana River. The Regional Water Quality Control Board requires the containment at wells, the locating of the new desalter wells in the west, reducing storage of the basin by 400,000 acre-feet, with the possibility that basin yield could increase by 14,000 to 17,000 acre-feet per year.

2. Proposed Waste Discharge Requirements (WDR) for Recharge of Imported Water

Mr. Wildermuth stated that when CBWM and IEUA were participating in the TIN/TDS work which started in 1996 and was completed in 2002, the technical people along with the decision makers participated in discussing the likelihood of managing the recharge of imported water and eventually permit it. The Regional Board has come out with a proposal to do which basically states, if you have a maximum benefit basin and if anyone else tried to recharge which is not consistent with our plan and did not obtain approval, they would get anti-degradation objectives. The Regional Board is trying to protect the maximum benefits objectives. The hopes are that parties will try and adopt a management plan that implement the Basin Plan without the Regional Board having to issue WDR's for recharge. Mr. Vanden Heuvel offered comments regarding water quality and costs to ensure that quality.

C. **CEO/STAFF REPORT**

1. Water Quality Update

Mr. Treweek stated that over the last year he Water Quality Committee over the last year has concentrated on three major plumes and each of those plumes is in a different phase of the remediation process. The first plume is from the Ontario International Airport which is in the remedial investigation phase because the process is just getting started. A second meeting with the potential responsible parties (PRPs) has taken place and at that meeting staff tried to establish a cooperative relationship with them. Staff hoped the PRPs recognized that one or more of them were the cause of this plume and that they would look at the expansion of the desalter well field and the desalters as a logical remedial action to which they would be willing to contribute. The PRPs have banded together and hired Tetra Tech to review data and compile findings. The second plume is from the Chino Airport which has been discussed at these meetings before and this undertaking is in the feasibility study phase. In the last two years the PRPs have also hired Tetra Tech to do an investigation and have put in nine wells on the airport; these are shallow wells and have identified the plume on the airport property. They have linked that findings to two possible sources at the airport where they did renovations of aircrafts. Staff has met with this group with the idea of seeing the desalter expansion as an additional opportunity to remediate the plume and at the same time recover more water and put that water to beneficial use. It was noted the Regional Board has participated in all these discussions and are very supportive

of this process. The third and final plume is the GE Flat Iron plume; it is in the remedial action phase and has been that way for over a decade now. They have a two step process of doing air stripping to remove TCE and then they also have ION exchange which is used to remove chromate. Their water, after treatment, meets all the maximum containment levels and would be acceptable as drinking water. GE does not want to introduce their water into the drinking water system; they have discharged that water into the Ely Basins. Watermaster staff has explained to GE that we need those basins for storm water and for recycled water and we would like to phase them out of the use of them. The GE permits came up for renewal (one with the Water Conservation District and one with the Flood Control District), we have asked the Flood Control District to extend their permit year-by-year to ensure GE made sequential progress in getting out of the Ely Basins. The Flood Control District decided to extend their permit through 2011. Last month GE met with the Flood Control District and all the interested parties and pointed out they have performed a feasibility study, in which they have identified additional basins that they may purchase and recharge into. They are also looking at Aquifer Storage and Recovery well installation and also have looked into recycling water into the recycled water distribution system. A discussion ensued with regard to the String Fellow Plume.

2. Strategic Planning Committee Update

Mr. Manning stated an open invitation conference is being planned by the Strategic Planning Committee for October 1, 2, and 3, in Indian Wells at the Grand Champions Hyatt Hotel. The event will be kicked off on Sunday with workshops held all day Monday, October 2, and then half day Tuesday, October 3. We will be working on issues dealing with expansion of our recharge facilities based upon the Urban Water Management Plans that were submitted. There is strategic planning that we are going to be doing in many other areas as well. Flyers for this conference will be sent out in a timely manner to be placed on agendas as needed. Staff expects to have follow up sessions and those sessions will be held at Chino Basin Watermaster office or a near by facility locally. Ms. Rose inquired as to how many people are going to be invited. Mr. Manning stated the agencies who are a part of the Watermaster family and their board of directors also the agencies who have an influence on what we are doing at Watermaster, the total count of invitees could be very large. Ms. Rose inquired as to how many from Watermaster will be attending. Mr. Manning stated the majority of our key staff will be attendance. Ms. Rose asked if it will cost to attend the conference and Mr. Manning stated there will be a charge to attend. A discussion ensued with regard to the conference. Chair Willis suggested that the area of governance and policy resolution be discussed at the conference. Mr. Manning stated this item will be discussed with regard to processes.

3. Personnel Committee Update

Mr. Manning stated part of this item was covered under the budget presentation. The second part is the CEO evaluation going on through the Personnel Committee; they are still meeting on this item. Mr. Manning noted Watermaster contracted with a new consultant this year by the name of Mathis and Associates who deal with cities and water districts around the country on issues dealing with personnel and recruitment. Mathis and Associates is currently working with the Personnel Committee on both the surveys that were needed for the health issues and on the CEO evaluation.

4. GAMA Presentation by Robert Kent, California Water Science Center

Mr. Manning stated that Mr. Belitz and Mr. Kent from USGS gave a detailed presentation at the May Appropriative & Non-Agricultural pool meeting. USGS is scheduled to be in the Chino Basin in fall to begin their work. A public workshop will be held prior to the start of their project so that people will be given an opportunity to have input on how the process will be monitored and how information will be dealt with. Their presentation was very informative and it did allow dialog to start between USGS and the Chino Basin.

5. Storm Water/Recharge Update

Mr. Treweek stated through the end of April we have recharged 36,000 acre-feet of storm water, imported, and recycled water. April was a very good water month and in that month alone there were over 5,000 acre-feet of water recharged.

Chino Basin Watermaster in conjunction with Inland Empire Utilities Agency has decided to pursue Hansen Aggregates (a sand and gravel operation) to repair the damage that their discharges did to our Lower Day Basin. Over the winter Hansen Aggregates discharged silt which went into the Lower Day Basin and the damage from that silt discharge is about a half a million dollars. Staff has met with IEUA and they are going to draft a demand letter to Hansen Aggregates. Staff feels we have very good evidence that it was their discharge that caused the basin damage. Mr. Manning stated CBWM's position is Hansen Aggregates can either voluntarily participate in the clean up or we can go to the Regional Board and they can force clean up.

6. Inland Empire Public Affairs Network (IEPAN) Update

Jerry Silva with Southern California Edison and Mr. Manning are involved with setting up this event. This is a public affairs network that is involved with trying to bring speakers who are policy makers both in the State of California and the federal government to the policy decision people within the Inland Empire and allow them to speak directly to each other. Our first luncheon is Friday, June 2, with the guest speaker being Fred Aguiar; he is going to be talking about the State of California and the governor's proposals. IEPAN will be holding quarterly luncheons and the next speaker for September is Gary Miller. The intention behind IEPAN is to try and bring into the basin on a regular basis those people who are helping set policy within this country and state.

7. Legislative/Bond Update

Mr. Manning stated he was in Sacramento on May 24, 2006 and had a chance to facilitate a meeting with the Southern California Water Committee and Senator Perada's office. This meeting was to attempt to get a feel for where Senator Perada's water issues will go given the fact it was not part of this year's bond package. We were also able to the Simitian Bill. Senator Perada was very positive with regard to the Simitian Bill. Several other meetings took place regarding water policy which opened doors for good conversation on where we are at in the water policy issues process. These meetings were especially interesting because they combined staff from the Southern California Water Committee and the Bay Area Counsel. Mr. Manning stated he felt it was a very progressive day and was a good start; we are committed to having these types of meetings on a regular basis.

Mr. Manning stated he recently received an email regarding SB 1795 having to do with the changes within the bill regarding recharge. The changes are advantageous in the Chino Basin.

Mr. Vanden Heuvel offered comment on legislative issues and thanked Mr. Manning for his recent efforts in Sacramento.

IV. INFORMATION

1. Newspaper Articles

No comment was made regarding this item.

V. BOARD MEMBER COMMENTS

Mr. Vanden Heuvel stated he would like to see the production for Desalter 1 on future agendas and offered comment on the minutes from the October 25, 2001 Board meeting regarding desalters.

This is a very important issue and will require some serious staff work. Mr. Vanden Heuvel requested this item be explored and to be on the June agenda if at all possible.

VI. OTHER BUSINESS

No comment was made regarding this item.

VII. FUTURE MEETINGS

May 23, 2006	9:00 a.m.	GRCC Committee Meeting
May 25, 2006	9:00 a.m.	Advisory Committee Meeting
May 25, 2006	11:00 a.m.	Watermaster Board Meeting
June 8, 2006	10:00 a.m.	Appropriative & Non-Agricultural Pool Meeting
June 20, 2006	9:00 a.m.	Agricultural Pool Meeting @ IEUA
June 22, 2006	9:00 a.m.	Advisory Committee Meeting
June 22, 2006	11:00 a.m.	Watermaster Board Meeting

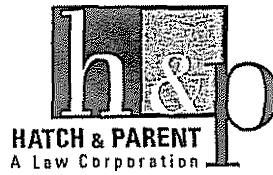
The Watermaster Board Meeting Adjourned at 12:50 p.m.

Secretary: 

Minutes Approved: June 22, 2006

EXHIBIT "G"

21 East Carrillo Street
Santa Barbara, CA 93101
Telephone: (805) 963-7000
Fax: (805) 965-4333



Michael T. Fife
(805) 882-1453
MFife@HatchParent.com

July 28, 2006

Via Facsimile and Mail 310-643-8441

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8350.1
CHINO BASIN
C

Mark Hensley, Esq.
Jenkins & Hogin
1230 Rosecrans Avenue
Suite 110
Manhattan Beach, CA 90266

Dear Mr. Hensley:

Watermaster staff is pleased to learn of Chino Hill's commitment to work with other Management Zone 1 ("MZ1") parties and specifically our office at the July 26, 2006 Special Referee Workshop. We appreciated your pledge to work productively with Watermaster to develop a Long Term Plan for the Management of Subsidence in MZ1. Watermaster looks forward to working together to complete the Long Term Plan by the end of the year.

Perhaps our communication has not been as clear as we both would have liked over the past year. Consequently, I also wanted to clarify your statement that Chino Hills does not support Part VII.B. of the Stakeholder Non-Binding Term Sheet amending the Peace Agreement to eliminate section 5.4(d) of the Peace Agreement. At the workshop, Mr. Slater responded that it was our understanding that Chino Hills was only concerned with section 5.4(e) of the Peace Agreement. Since this amendment would alter only section 5.4(d) and not 5.4(e), our understanding is that Chino Hills does not object to the change. We would appreciate your confirmation that our understanding is correct or that you indeed have a concern over the elimination of Section 5.4(d)? If we have an issue, we would like to see if we can resolve it.

Finally, other parties present at the workshop have inquired of me about a rumor that Chino Hills has prepared a written proposal regarding the Long Term Plan, and that this written proposal has been delivered to me. To my knowledge I have not received such a proposal. If a proposal was delivered to me and I failed to appreciate it, I offer my sincere apology. We can move things forward if you would re-transmit it so that it may be distributed to the MZ1 group for discussion.

Mark Hensley
July 28, 2006
Page 2

The MZ1 meetings have been put on hold for the express purpose of allowing Chino Hills an opportunity to prepare and submit a proposal. We look forward to resuming the work of the MZ1 committee at the first possible opportunity so that we may continue working together to complete the Long Term Plan by the end of the year.

Sincerely,



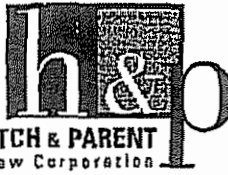
Michael T. Fife
For HATCH & PARENT
A Law Corporation

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5 Packaging *Declared value limit \$200
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EXHIBIT "H"



CHINO BASIN WATERMASTER

9641 San Bernardino Road, Rancho Cucamonga, Ca 91730
Tel: 909.484.3888 Fax: 909.484.3890 www.cbwm.org

KENNETH R. MANNING
Chief Executive Officer

STAFF REPORT

DATE: June 28, 2007

TO: Committee Members
Watermaster Board Members

SUBJECT: Management Zone 1 Long Term Plan for the Management of Subsidence

Recommendation: Staff recommends that after full consideration of the Watermaster Staff Report and evidence presented that the Board adopt the proposed findings set forth in Exhibit "A" to this staff report, and that the Long Term Plan be approved as presented and transmitted to the Court with the pleading included with this staff report.

Introduction

As described in the chronology below, the Management Zone 1 Long Term Plan for the Management of Subsidence has been under development for many years. The Long Term Plan as presented for approval has been the subject of numerous meetings of the MZ1 Technical Committee and represents a plan that will continue the success of the Interim Plan which has been in the implementation phase since 2002.

The Long Term Plan was approved unanimously by all three Pools with the caveat that non-substantive revisions to the Plan would be considered by the MZ1 Technical Committee at a meeting to be held prior to the Advisory Committee and Board meetings. Any revisions to the Plan that result from this meeting will be presented to the Advisory Committee and Board.

Management Directives: Judgment, Peace Agreement and OBMP

In implementing the physical solution for the Chino Basin, Watermaster must consider that the Basin is a "common supply" for all stakeholders that rely upon the Basin. Exhibit "I" to the Judgment provides that it is a management objective that no party be deprived of access to groundwater because of unreasonable pumping patterns or regional or localized Recharge or Replenishment, "insofar as such result may be practically avoided." (Judgment, Exhibit "I"; Watermaster Rules and Regulations 5.3(a).) In addition, financial feasibility, economic impact and the physical facilities of the parties is of equal

importance to water quantity and water quality considerations. (Judgment Exhibit "I"; Watermaster Rules and Regulations 5.3(c).)

The Peace Agreement was executed by the Parties to the Judgment in June of 2000 in furtherance of the Physical Solution. Although Watermaster is not a signatory to the Peace Agreement it approved it and agreed to act in accordance with its terms. Watermaster was subsequently ordered to proceed in accordance with its terms by the Court on July 13, 2000.

The OBMP Implementation Plan was Exhibit "B" to the Peace Agreement. Program Element 4 required the development of an "interim management plan" to "minimize subsidence" while information was being collected. The Interim Plan was to be voluntary. (Implementation Plan, Peace Agreement Exhibit "B" at p. 26.)

The Long Term Plan was to be formulated while the collection of data was ongoing. (Implementation Plan at P. 27) The only requirement of the Long Term Plan was that it be adaptive in nature. It was permissible to include modifications to groundwater pumping rates, pumping location, recharge and monitoring. However, there was no requirement that the Long Term Plan include these provisions.

As long as the Long Term Plan is in accordance with these criteria, Watermaster expects the support of the Parties pursuant to Peace Agreement Article IV, Section 4.2 which provides that no Party to the Peace Agreement will oppose the implementation of the OBMP. All producers within Management Zone 1 are signatories to the Peace Agreement.

Chronology of Interim Plan and Long Term Plan

While Watermaster was preparing an Interim Plan in accordance with Program Element 4 of the OBMP Implementation Plan, on December 7, 2001, the City of Chino Hills filed a Petition for Writ of Mandate against the City of Chino. Chino Hills requested: (1) a judicial declaration related to the City of Chino's encroachment permit process; (2) a preemptory writ requiring Chino to permit Chino Hills to enter its right of ways to allow completion of a pipeline project known as the "Monte Vista Interconnect Transmission Main"; (3) invalidation of Chino's Urgency Ordinance 2001-08 and Regular Ordinance 2001-09 related to Chino's encroachment permit process. (Petition, pp. 26-28.) The Petition specifically requested that it be assigned to the Hon. J. Michael Gunn under his continuing jurisdiction of the Chino Basin adjudication. (Chino Hills Petition, p. 3.)

On December 19, 2001, the Supervising Judge of the San Bernardino Superior Court determined that the Petition encompassed two separate matters. (Dec. 19, 2001 Order, p. 2.) The first matter was construed as a mandamus proceeding brought under the Public Utility Code. The second matter was construed as a motion brought under Paragraph 15 of the Judgment which encompasses all claims pertaining to the rights and obligations of the parties with respect to the production of water in the Chino Basin, including any issues relating to subsidence. This matter was assigned to Judge Gunn.

Also on December 19, 2001, Judge Gunn ordered all parties to report on the status of the technical work performed by Watermaster and others concerning subsidence and related issues, and set a hearing for February 28, 2002 on those issues. (December 19, 2001 Order, p. 2.)

In response, on January 31, 2002, the City of Chino filed a motion pursuant to Paragraph 15 requesting the Court to assume jurisdiction over its dispute with Chino Hills regarding water production and subsidence. (Chino Motion, p. 4.) The purpose of this request was to resolve the following issues: (1) whether Chino Hills' production of water from the deep aquifers within the City of Chino is causing land subsidence and if so, to fashion a remedy to abate the land subsidence; and (2) whether Chino Hills' proposed purchase of groundwater from the Monte Vista Water District will have the potential to degrade the quantity or quality of water that Chino extracts from its northerly wells and if so, to fashion a remedy. (Chino Motion, pp. 3-4.)

On January 29, 2002, Watermaster filed its *Report of Watermaster Activities Regarding Subsidence and Request for Finding and Further Order*. This Report was accompanied by a Declaration from Mr. Wildermuth. On February 14, 2002, Monte Vista Water District filed a Motion to Strike portions of the City of Chino's Motion. Similarly, on February 18, 2002, the City of Chino Hills filed an objection to the City of Chino's Motion. Chino Hills joined in Monte Vista's Motion and also joined in Watermaster's Motion.

Following these filings, Watermaster filed a Motion for a Continuance asking the Court to defer ruling on the pleadings that had been filed and to direct the parties to convene a stakeholder process in order to develop a consensus-based Interim Plan to address subsidence. Twelve parties, including Chino and Chino Hills, joined in this Motion. On February 25, 2002, the Special Referee filed a *Report and Recommendation Concerning Motions Filed Related to Subsidence*. This Report recommended granting Watermaster's Motion. On February 28, 2002, the Court continued the hearing in order to allow a stakeholder process to convene. Watermaster was asked to report back on any consensus that had been achieved, and a hearing was set for June 19, 2002.

On May 1, 2002, Watermaster filed a *Report on Progress of the Interim Plan Stakeholder Process*. On June 17, 2002, Watermaster transmitted the Interim Plan to the Court and requested the Court to schedule a workshop on the Interim Plan. On June 19, 2002, the Court granted this request, and on August 29, 2002 the workshop was held.

On September 18, 2002, the Special Referee filed her report titled *Special Referee's Report on Interim Plan Workshop and Recommendation Concerning Subsidence Issues*. Oppositions and comments to the Referee's Report were filed by several parties. On September 30, 2002, Watermaster filed its comments to the Referee's Report and asked the Court for an order to proceed in accordance with the Interim Plan. Watermaster's Motion was accompanied by a revised version of the Interim Plan.

On October 17, 2002, the Court ordered Watermaster to implement the Interim Plan, to continue reporting regularly to the Court, and to begin the process of developing the Long Term Plan.

The initial term of the Interim Plan was three years, and involved the development of an extensive monitoring program and a forbearance program to reduce pumping in the area of concern. Since then, the Cities of Chino and Chino Hills have annually elected to participate in the forbearance program. On April 28, 2005, Watermaster approved continuation of the forbearance program for the fourth year (2005/2006).

Near the end of the three-year period another workshop was held on May 25, 2005. The scope of the workshop was limited to a presentation of the technical data and analysis that had been completed. On June 16, 2005 the Special Referee filed her *Report on Progress Made on Implementation of the Watermaster Interim Plan for Management of Subsidence*. The Referee's Report recommended that Watermaster prepare a Summary Report on the technical work completed, and issue Guidance Criteria in order to formally alert the parties about the technical determination that drawdown below a certain level in the MZ1 area is likely to cause inelastic compaction. (June 16, 2005 Referee Report, pp. 6-7.)

The MZ-1 Summary Report and Guidance Criteria were completed in February 2006 and submitted to the Appropriative Pool in March 2006. At the Appropriative Pool meeting, the City of Chino Hills expressed reservation about the Summary Report and Guidance Criteria. Action on these items was delayed in order to allow the development of an alternate proposal that would resolve the expressed concerns. (March 9, 2006 Appropriative Pool Meeting Minutes.) By the next regularly scheduled monthly meeting no alternative was forthcoming and the Appropriative Pool approved the Summary Report and Guidance Criteria at the April meeting with one dissenting vote from Chino Hills. (April 13, 2006 Appropriative Pool Meeting Minutes.) The Non-Agricultural Pool and Agricultural Pool unanimously approved the Summary Report and Guidance Criteria at their April meetings.

The Advisory Committee unanimously approved the Summary Report and Guidance Criteria at its April meeting, with Chino Hills absent from the meeting. (April 27, 2006 Advisory Committee Meeting Minutes.) In order to allow additional time to resolve Chino Hills' concerns, the Board voted to delay

action on the item to allow for further attempts to engage Chino Hills in a dialogue regarding their concerns. (April 27, 2006 Board Meeting Minutes.)

During the month of May the Watermaster Board Chair, Mr. Willis, met with representatives from the City of Chino Hills and reported at the May 2006 Board meeting that Chino Hills was in the process of preparing a document that would provide guidance concerning how the Long Term Plan should be formulated. (May 25, 2006 Board Meeting Minutes.) Comments by the representative from Chino Hills at this meeting indicated that the City of Chino Hills is concerned about the method of compensation or assistance for any loss of production that the City of Chino Hills might experience due to subsidence concerns. (Id.) At this meeting the Board also authorized staff to submit the Non-Binding Term Sheet to the Court for approval. (Id.) Article XI of the Non-Binding Term Sheet included a provision for Watermaster to publish guidance criteria and to adopt a final plan.

Following the May Board meeting, the MZ1 Technical Committee suspended its scheduled meetings in order to allow Chino Hills the opportunity to submit a proposal before work on the Long Term Plan continued.

On July 26, 2006, another Special Referee workshop was held in order to present the Non-Binding Term Sheet to the Special Referee and her technical assistant. At that meeting, Counsel for Chino Hills expressed reservations about the Non-Binding Term Sheet. (Reporter's Transcript July 26, 2006 p. 40:6-24.) On July 28, 2006, Watermaster Counsel wrote to Chino Hills' Counsel and requested clarification concerning Chino Hills' concerns. (Watermaster General Counsel Letter of July 28, 2006.) Watermaster Counsel also noted that no proposal had yet been forthcoming from Chino Hills and that the Technical Committee was not meeting in anticipation of such a proposal. (Id.) There was no reply to this correspondence.

Watermaster received no proposal from Chino Hills and eventually reconvened the Technical Committee in October 2006, in order to resume work on the Long Term Plan. Watermaster has formulated and proposed a complete Long Term Plan. As of the date of this Staff Report, Watermaster is unaware of any specific written proposal for the management of subsidence that will comport with the provisions of the OBMP Implementation Plan other than the plan proposed by Watermaster.

Long Term Plan

1. Development and Approach

Consistent with the directives of the OBMP Implementation Plan Program Element 4, the Long Term Plan is adaptive. It includes extensive data collection. It is also completely voluntary. The proposed plan would reserve to each of the producers within Management Zone 1 the right to operate their individual systems with the full suite of information developed and analyzed by Watermaster.

The proposed plan will not require any specific action by any party under the theory that each producer is best suited to weigh the risks and benefits of producing groundwater under the identified conditions. To the extent further actions may be required, Watermaster has reserved whatever discretion it may have under the Judgment to address problems should they arise in the future.

2. Progress Under the Interim Plan

To date, the participation in the Interim Plan, on the Technical Committee, as well as in the Forbearance Program has been completely voluntary. Staff sees no evidence to suggest that the voluntary participation by the parties is unsuccessful. To the contrary, the outcome of implementation of the Interim Plan is that the parties have been able to collectively prevent water levels from dropping below a level that is projected to cause inelastic subsidence. The five years of data gathering and experimentation have produced a better and more comprehensive understanding of the groundwater system. For example, Watermaster is now able to measure very small amounts of inelastic subsidence and the measures that have been taken over the last several years have brought the subsidence problem under control. The Summary Report says that: "The current state of aquifer –system deformation in south MZ-1 (in the vicinity of Ayala Park) is essentially elastic. Little, if any, inelastic (permanent) compaction is now

occurring in this area, which is in contrast to the past" (Summary Report p. ES-1; See also Summary Report p. 2-1.) The proposed Long Term Plan also acknowledges this: "The current state of aquifer-system deformation in south MZ-1 (in the vicinity of Ayala Park) is essentially elastic. Very little inelastic (permanent) compaction is now occurring in this area" (MZ-1 Plan, p. 1-1.) Accordingly, the challenge presented for the Long Term Plan is to maintain the effectiveness of the solution that has been established by the parties through voluntary cooperation rather than trying to remediate an existing problem.

3. Elements of the Long Term Plan

The Long-Term Plan contains the following elements that are consistent with and contemplated by OBMP Program Element Four: (1) voluntary producer participation; (2) continuation and expansion of monitoring; (3) publication of Guidance Criteria.

The Summary Report and Guidance Criteria previously adopted by the Watermaster Board on May 25, 2006 have been included in the Long Term Plan as Appendix A. Since the Summary Report and Guidance Criteria were formally adopted, Watermaster has continued working with the affected parties to develop the Long Term Plan. Based on this outreach and the numerous meetings held with the MZ1 parties, Watermaster has now formulated a proposal which recommends the continuation of monitoring established during the Interim Plan.

The Summary Report also identified other areas in MZ1 and MZ2 that have experienced subsidence in the past, but were not the focus of the Interim Plan. As such, the proposed Long Term Plan recommends additional monitoring and technical work to further Watermaster's understanding of the mechanisms of subsidence in these other areas of MZ1 and MZ2. Watermaster believes that the affected parties in MZ1 are sufficiently concerned with the potential to cause subsidence that the continuation of a voluntary program consistent with the approach utilized by the Interim Plan is the most efficient and effective means to manage subsidence in MZ1 on a long-term basis.

Thus, Watermaster will continue and expand its monitoring efforts to other areas in MZ1, and within the previous area of concern, will ensure that the parties are aware of changes in groundwater levels, will provide direct electronic access to real time groundwater levels, and are clearly alerted if groundwater levels begin to approach the control point. Similarly, the parties are requested to maintain accurate records of the operation of the Managed Wells, including production rates and periods of operation. The parties are requested to provide these records to Watermaster monthly. The parties are further requested to promptly notify Watermaster of all operational changes made to maintain the water level in PA-7 above the Guidance Level. (MZ-1 Plan p. 2-2.)

The Long Term Plan Is Adaptive

As required by OBMP Program Element Four, the proposed Long Term Plan is intended to be adaptive in nature. (MZ-1 Plan, Section 3.) This means that while the Plan sets out a set of actions to be taken by Watermaster, this plan of activities may change through time as additional information is obtained and analyzed.

Watermaster will not presume that any of the producers operating within MZ-1 will disregard the guidance criteria for extended periods or in a manner that will cause unmitigated harm. To the contrary, the essence of the proposed Long Term Plan is to reserve the day to day operational discretion to the operators – not the Watermaster as a regulator. However, if conditions change, Watermaster has reserved whatever discretion it may have under the Judgment to make constructive improvements.

The Long Term Plan is Adequate without an Alternative Water Supply Proposal

Consistent with the intention to reserve operational discretion to the producers within MZ-1 with regard to whether to produce groundwater, in which locations and in which quantities, the proposed Long-

Term Plan will also reserve to each of the producers the right to evaluate supplemental water supply options that may be right for them. To date, the Technical Committee has not advocated the relocation of any wells or any specific supplemental water strategy.

It is the opinion of Watermaster staff and consultants that the existing wells in MZ1 can continue to be operated. So long as the aggregate pumping does not cause water levels to drop below the control point, there is no reason why the existing wells cannot continue to be used in order to make use of the economic value remaining in the wells. Moreover, the decision as to whether to operate outside of the Guidance Criteria is the producer's alone, given their respective balancing of competing considerations. Of course, the success of the Long Term Plan is likely dependent upon whether operations vary from the Guidance Criteria as temporary excursions or the rule.

Staff does note that it has been nearly eight years since deep zone pumping was identified in the Phase I Report as the potential source of subsidence in MZ-1 and it is reasonable to conclude that if parties had concerns regarding the provision of supplemental water to off-set groundwater production, that they would take whatever actions required to redress the problem. On other hand, if Watermaster should subsequently determine that it is necessary to make the provision for supplemental water to offset production as a part of the Long Term Plan, the Plan can be amended accordingly.

Likewise, if a producer demonstrates that their operations have become constrained by subsidence, then it can make a supplemental water proposal for Watermaster's consideration. If appropriate, the Long Term Plan can be amended to add the proposal to the Plan.

Watermaster's Alternative Water Supply Proposal

While Watermaster is cognizant of the interest of the affected MZ1 parties to find a cost effective way to prevent themselves from causing groundwater levels to fall below the 245 foot recommended level, there is no necessary connection between the Long Term Plan and an alternative water supply proposal. Nevertheless, Watermaster is evaluating a replacement water supply proposal to assist the affected parties in voluntarily reducing their pumping from the deep zone in order to avoid causing water levels to drop below the guidance level. This proposal remains preliminary and under consideration by the parties and Watermaster.

Long Term Plan Costs

The management of subsidence was recognized by the OBMP as an important management element for the entire Basin, and Program Element 4 (Develop and Implement Comprehensive Groundwater Management Plan for Management Zone 1) emphasizes management specifically in order to minimize subsidence. Some of the action items included in Program Element 4 include the development of a comprehensive groundwater level and quality monitoring program in MZ1, and development of a groundwater management program for MZ1 consisting of increased stormwater and supplemental water recharge, management of production to minimize subsidence, and the increased use of supplemental water in MZ1.

Thus, measures to address subsidence are an established component of the overall OBMP. In recognition of this, the parties throughout the Basin incur OBMP costs associated with subsidence management. The parties as a whole pay for the monitoring efforts relating to subsidence and have in the past incurred costs associated with increased supplemental water recharge into MZ1. Similarly, Watermaster's proposed alternative water supply plan may involve additional OBMP costs on the parties as a whole. However, at this time there is no commitment in the Long Term Plan for any party or Watermaster to assume a financial responsibility for supplemental water relating to subsidence management.

The Peace Agreement also addressed costs associated with subsidence. Section 5.4(d) says: Watermaster shall adopt reasonable procedures to evaluate requests for OBMP credits against future OBMP assessments or for reimbursement. Any Producer or party to the Judgment, including but not limited to the State of California, may make application to

Watermaster for reimbursement or credit against future OBMP Assessments for any capital or operations and maintenance expenses incurred in the implementation of any project or program, including the cost of relocating groundwater Production facilities, that carries out the purposes of the OBMP including but not limited to those facilities relating to the prevention of subsidence

Thus, the Peace Agreement contemplated potential reimbursement to parties for costs associated with facilities relating to the prevention of subsidence. Such reimbursement is obtained through an Application to Watermaster in advance of construction. One of the considerations with regard to such an Application will be the availability of alternate funding sources, and such an Application will not be approved where the Producer was otherwise legally compelled to make the improvement. It is potentially relevant in this regard that no party has a right to cause Material Physical Injury to other parties or to the Basin.

It is notable that under the Stakeholder Non-Binding Term Sheet, section 5.4(d) of the Peace Agreement is proposed to be deleted.

Furthermore, the Peace Agreement section 5.4(e) says that:

Any Producer that Watermaster compels to move a groundwater Production facility that is in existence in the Date of Execution shall have the right to receive a credit against future Watermaster assessments or reimbursement up to the reasonable cost of the replacement groundwater Production facility.

This provision is not invoked by the proposed Long Term Plan because the proposed Plan is voluntary. No Producer is compelled by Watermaster to move a groundwater production facility. In fact, Watermaster has seen no evidence to date suggesting any necessity to move any groundwater production facilities.

Recommended Action

Staff recommends that the Advisory Committee adopt the findings as described in Exhibit "A" to this staff report and approve the Long Term Plan as presented and direct that it be filed with the Court.

Exhibit "A"

Proposed Findings

Based on the contents of the staff report, as well as the prior discussions of subsidence management before the Advisory Committee and Board, as well as the contents of the Long Term Plan and the Summary Report, the Advisory Committee and Board find as follows:

1. The Interim Plan for the Management of Subsidence has successfully accomplished its goals of minimizing subsidence and fissuring in the short term, and collecting the information necessary to understand the extent and causes of subsidence and fissuring.
2. The Long Term Plan as proposed will be an effective means to continue the success of the Interim Plan.
3. The Long Term Plan as proposed is voluntary for all parties.
4. While the Long Term Plan is voluntary, this does not in any way constitute a waiver of any powers of Watermaster under the Judgment to compel compliance with subsidence management efforts if necessary.
5. The effectiveness of the Long Term Plan does not depend on an alternative water supply plan.
6. The Long Term Plan is adaptive and thus will continue to evolve as circumstances warrant.
7. The Long Term Plan as presented is consistent with the Judgment, the OBMP and the Peace Agreement.
8. The Long Term Plan as presented does not trigger the reimbursement provision of section 5.4(e) of the Peace Agreement.

EXHIBIT "1"

Minutes
**CHINO BASIN WATERMASTER
WATERMASTER BOARD MEETING**
June 28, 2007

The Watermaster Board Meeting was held at the offices of the Chino Basin Watermaster, 9641 San Bernardino Road, Rancho Cucamonga, CA, on June 28, 2007 at 11:00 a.m.

WATERMASTER BOARD MEMBERS PRESENT

Bob Kuhn, Chair	Three Valleys Municipal Water District
Sandra Rose	Monte Vista Water District
Jim Bowman	City of Ontario
Charles Field	Western Municipal Water District
Bob Bowcock	Vulcan Materials Company
Geoffrey Vanden Heuvel	Agricultural Pool, Dairy
Paul Hofer	Agricultural Pool, Crops
Anthony La	West End Consolidated Water Company

Watermaster Staff Present

Kenneth R. Manning	Chief Executive Officer
Sheri Rojo	CFO/Asst. General Manager
Gordon Treweek	Project Engineer
Danielle Maurizio	Senior Engineer
Sherri Lynne Molino	Recording Secretary

Watermaster Consultants Present

Scott Slater	Hatch & Parent
Michael Fife	Hatch & Parent
Ryan Drake	Hatch & Parent
Andy Malone	Wildermuth Environmental Inc.

Others Present

Dave Crosley	City of Chino Basin Watermaster
Bill Kruger	City of Chino Hills
Raul Garibay	City of Pomona
Ken Jeske	City of Ontario
Bob Feenstra	Ag Pool, Dairy
Hank Stoy	Former Director of Cucamonga Valley Water District

The Watermaster Board Meeting was called to order by Chair Kuhn at 11:00 a.m.

PLEDGE OF ALLEGIANCE

AGENDA - ADDITIONS/REORDER

Mr. Manning stated the MZ1 Technical Committee met this morning and that committee made a few minor changes to the Business Item A, MZ1 Long Term Plan. Those changes will be presented today under Business Items.

I. CONSENT CALENDAR

A. MINUTES

1. Minutes of the Watermaster Board Meeting held May 24, 2007

B. FINANCIAL REPORTS

1. Cash Disbursements for the month of May 2007
2. Watermaster Visa Check Detail
3. Combining Schedule for the Period July 1, 2006 through April 30, 2007
4. Treasurer's Report of Financial Affairs for the Period April 1, 2007 through April 30, 2007
5. Profit & Loss Budget vs. Actual July 2006 through April 2007

C. WATER TRANSACTION

1. Consider Approval for Notice of Sale or Transfer – The City of Upland has agreed to purchase from West End Consolidated Water Company a portion of West End's water in storage in the amount of 3,800 acre-feet. The 85/15 rule does not apply and a recapture plan has not been completed as Upland intends to immediately sell 10,000 acre-feet of water in storage to the Fontana Water Company. Date of application: April 11, 2007

Motion by Bowman, second by Bowcock, and by unanimous vote

Moved to approve Consent Calendar Items A through C, as presented

II. BUSINESS ITEMS**A. MZ1 LONG TERM PLAN AND MZ1 PLEADING**

Counsel Slater stated there are a few changes on the MZ1 Long Term Plan that were recommended by the MZ1 Technical Committee which met this morning regarding this item. Counsel Slater stated the MZ1 Long Term Plan was presented to the Pools and the Advisory Committee and was approved at those meetings with the caveat that there may be some proposed minor changes that had come from both the City of Chino and Monte Vista Water District and the Appropriative Pool directed that another MZ1 Technical Committee meeting be held to consider those changes. Staff, counsel, and the MZ1 Technical Committee did meet this morning at 8:00 a.m. and considered the proposed changes. Those changes were included in the copy of the MZ1 Long Term Plan in the packet. At the meeting this morning there were a few additional changes. Counsel Slater stated the first change is on page 2-3 of the plan and page 57 in the agenda package. The change is with regard to the proposal to consider an injection project by the MZ1 Technical Committee. The change will now read, "*The Technical Committee will develop a scope and a budget for the proposed project by April 2008.*" The second change is in section 2-4 in the second paragraph which reads, "By the end of May 2008"; May is being changed to *April*. The last change is in the Evaluation and Update of the MZ1 Subsidence Management Plan on page 65 of the agenda package, beginning with the sentence, "*Within the Managed Area, Watermaster recommends that all.*" After the word all, a footnote is being changed and will now read, "*Well 11A will be exempt from this recommendation. This is based on the small amount of water pumped from the deep zone by this well and the impracticability to shut down this well due to permitting requirements. This exemption shall be subject to continuous review by the Technical Committee to ensure that continued pumping from this well does not interfere with water level recovery.*" Counsel Slater stated staff recommends that this committee then adopt these findings, adopt the Long Term Plan, and then direct them to be filed with the court along with the pleading which is also in the agenda packet beginning on page 67. Chair Kuhn inquired about the Long Term Plan being adaptive and what that means. Mr. Manning stated the plan is written in such a way that the MZ1 Technical Committee and Watermaster in general can review the work that is being done because this is an on going process. As we review and receive additional data, there will be opportunities to fine tune the plan. One of the recommendations that was just discussed is the possibility of doing injection into the area of concern. Staff is going to do a study and look at what the costs would be associated with doing that injection. Staff will come back to the Watermaster parties and possibly recommend a project to do some injection within that area which would assist in the recovery which could then possibly allow for pumping for longer periods of time during the course of the year. A discussion ensued with regard to this matter. Mr. Vanden Heuvel inquired as to how much money the Watermaster has expended since 2002 on the MZ1 effort. He would like this to include staff time, consultant fees, legal fees, and hardware; which will also include a full summary of investment in this project communicated to

the court and for the record. Chair Kuhn noted this is not part of today's discussion, however, it is a request made by a Board member. Mr. Vanden Heuvel stated he would like it to be a part of today's motion because we are being asked to approve counsel to file the MZ1 pleading with the court. Counsel Slater stated to keep the motion in line with the Advisory Committee's motion, would be to authorize counsel to prepare and file the pleading with an addition which references the expenditures of staff and resources and it would be an addendum to the pleading. Chair Kuhn asked counsel how the motion should read. Counsel Slater stated it could be done in one motion with three components. Ms. Rose commented she was glad to hear the addition of an injection feasibility study into the plan and feels this will be an important component. A discussion ensued with regard to Mr. Vanden Huevel's request for a cost breakdown and concerns were voiced regarding the court adopting all three aspects of the motion.

Motion by Vanden Heuvel, second by Bowman, and by majority vote

Moved to adopt the findings, to approve the MZ1 Long Term Plan on the basis of the findings, and to have counsel file the pleading with an addendum regarding MZ1 costs with the court, as presented

B. 2007/2008 BUDGET

Mr. Manning introduced the 2007/2008 budget item to the Board members and noted Ms. Rojo will also be revealing the draft three year budget today. Ms. Rojo stated a Budget Workshop was held and a detailed presentation given at the Advisory Committee and Watermaster Board meetings last month. Ms. Rojo stated some comments were received regarding the presentation given last month and those changes were incorporated. Ms. Rojo noted this item was approved at the Pool meetings earlier this month and by the Advisory Committee today. Ms. Rojo presented a summary of budget items presented such as the Administrative costs that include COLA at 4%, OBMP expenses include costs for the micro-economic study, Implementation Projects include increases in Ground Level Monitoring, HCMP and Storage Programs and decreases in Recharge O&M and MZ1 subsidence issues, Debt services remain relatively neutral, and Assessments should remain neutral but that depends on the final year end production. Chair Kuhn inquired into the budget desalter costs from last year compared to the much higher costs this year. Ms. Rojo stated the number reflects Wildermuth Environmental time that will be dedicated to the desalter implementation program and his staff time. A discussion regarding breaking out costs on the budget line items ensued.

Motion by Bowman, second by Rose, and by unanimous vote

Moved to approve the Chino Basin Watermaster 2007/2008 Budget, as presented

C. MICRO-ECONOMIC ANALYSIS STUDY

Mr. Manning stated the Micro-Economic Analysis Workshop was held last week with Dr. Sunding. Mr. Manning stated the non-binding Term Sheet notes that the micro-economic study is a pre-requisite for the binding agreement and that it also required that we hold a workshop which was completed on June 7, 2007. The prior macro economic study looked at the basin as if it were run by one owner; the micro study will look at it agency by agency. The proposal that is before this committee today is a not to exceed proposal with Dr. Sunding for \$172,600. The scope of work is fully inclusive of all the information that was discussed at the scoping meetings. A communication was received yesterday from Dr. Mann and Dr. Hatchet, where they have made comments on the scope of study; those comments are on the back table. Dr. Mann and Dr. Hatchet have been hired by: Monte Vista Water District, the City of Chino Hills, Three Valleys Municipal Water District, the City of Pomona, and the City of Upland to review and interpret the work of Dr. Sunding. Staff is recommending approval of the proposed scope of work for the micro-economic analysis proposal which is slightly different from the contract that was presented at the Pool meetings. The contract which is before this committee incorporated the change that the Pool Committee members requested, in that the contract is now between Dr. Sunding and Watermaster as opposed to the prior contract which was between Dr. Sunding and Hatch & Parent. Mr. Manning stated this item was approved with

the change from Hatch & Parent to Chino Basin Watermaster unanimously by the Pools and the Advisory Committee. Chair Kuhn commented on the hours from Dr. Sunding and stated he did not agree with some of the numbers that were higher in order to perform the work Dr. Sunding is anticipating to do. Mr. Vanden Heuvel commented it appears to him that Dr. Sunding is attempting to parse out the value of this project to the various entities and there is probably wisdom in that. Mr. Vanden Heuvel questions, "Is it good for the basin and is it good for future generations?" and he hopes that Dr. Sunding keeps those questions in mind.

Motion by Rose, second by Bowman, and by unanimous vote

Moved to approve the scoping work for the micro-economic analysis study not to exceed contract which is being performed by Dr. David Sunding, as presented

III. REPORTS/UPDATES

A. WATERMASTER GENERAL LEGAL COUNSEL REPORT

1. Santa Ana River Hearing Closing Brief

Counsel Slater stated in the meeting packet there is a copy of Watermaster's closing brief in the Santa Ana process along with the stipulations that all the parties entered into concerning the 1969 Agreement.

B. ENGINEERING REPORT

1. Model Update

Mr. Malone gave a report on the Progress on Watermaster's Groundwater Model. Evapotranspiration Estimation (ET) was discussed in detail. Mr. Malone discussed the area of Prado, Orange County Water District's interest in protecting vegetation and endangered species present within Prado, and understanding the relationship between riparian resources in the Prado Basin, and desalter pumping/re-operation. Efforts to improve the original ET were reviewed. Several detailed maps were looked at and discussed and the preliminary results were reviewed. Mr. Malone stated the impact of the new quarterly data will help with needed calibration and will better quantify needs of various communities and cross-check their demands with management planning scenarios. A discussion ensued with regard to the model update given. Mr. Vanden Heuvel inquired as to the time frame of the model being able to run scenarios. Mr. Malone stated that in speaking with Mr. Wildermuth, he noted September would be the date that Wildermuth is trying to meet for a draft report.

C. CEO/STAFF REPORT

1. Legislative Update

Mr. Manning stated the Legislature has begun its budgetary review. Senator Denise Ducheny, Senator Mike Machado, Senator Dennis Hollingsworth, Assemblyman John Laird, Assemblyman Mark Leno, and Assemblyman Roger Niello have been appointed to a Joint Assembly and Senate Budget Committee. The State Water Contractors have asked the Budget Committee to redirect \$10 million within the Delta Levees Special Projects Program and an augmentation of \$50 million from Proposition 84 to the Department of Water Resources' delta Flood Protection Fund to implement a Delta Emergency operations plan as devised by the State Water Contractors. The Legislative Task Force agreed that it makes good sense to pre-position rock, sheet pile, and other necessary equipment to reduce the time needed to restore critical services, given the severe economic consequences of a Delta disaster. It was also noted there are no funds for integrated regional resource management that would be released until the 2008 fiscal year takes effect. Task Force members representing water agencies expressed their concern that the time line presented a problem for their proposed projects, and it had been their understanding that monies from Proposition 84 would be released in 2007 and 2008. Without funds this year, momentum from Proposition 50 may be lost.

Mr. Manning stated in the June 12, 2007 Metropolitan Water District (MWD) Board Action paper MWD has authorized execution of an agreement for the Chino Basin Desalination Phase II desalter; and appropriate \$1.5 million to study expansion of the existing the Chino Basin Groundwater Storage Program. In June 2003, MWD executed the Chino Basin Groundwater Storage Agreement with the Chino Basin Watermaster, Three Valleys Municipal Water District, and Inland Empire Utilities Agency for a groundwater storage program in the Chino groundwater basin. MWD is also proposing an agreement that would pay up to \$250 an acre-foot for about 15,000 acre-feet per year of water produced by the existing Phase II of the Chino Desalination Project. The expanded Storage Program is expected to provide the following regional benefits: 1) Additional Storage capacity an increase of 50 percent to 150,000 acre-feet, 2) Additional dry year yield increasing from 37,000 acre-feet to 50,000 acre-feet, 3) Elimination of losses in MWD's account, 4) ability to help manage peak delivery on the East Branch and Rialto Feeder, and 5) Improved water quality in the Chino Basin.

A lengthy discussion with regard to the peripheral canal and bypass facilities ensued.

2. Recharge Update

Mr. Manning stated the recharge update handout is available on the back table for review. We did have a little over 200 acre-feet recharged by way of urban run-off this past month and we did have one minor storm and were able to capture some water. Metropolitan Water District still has no replenishment water available to purchase at this time.

3. Dry Year Yield Report

Mr. Manning noted there is workshop scheduled for today at 1:00 p.m. here at the Chino Basin Watermaster office to discuss the Dry Year Yield Program. It was noted Rich Atwater from Inland Empire Utilities Agency will host today's DYY workshop.

Added Comment

Mr. Manning referenced is a matrix regarding Peace II that goes through the items that are included within the Peace II process. There are sixteen distinct areas that have been developed and need to be dealt with in order for us to reach completion of our mission. A comment about what each one of the items means and its status is listed as to where they are as of today. A due date of when staff thinks those are to be completed are listed as well and those coincide with the schedule that was developed for the court and the Regional Board. This matrix will be updated each month and made available so that all parties can be kept up to date on the progress of Peace II and the related elements.

IV. INFORMATION

1. Newspaper Articles

No comment was made regarding this item.

V. BOARD MEMBER COMMENTS

Ms. Rose stated there is a confidential session scheduled today and noted that she would like to suggest tabling that closed session because our chair person is not here and another regular board member is not present from Inland Empire Utilities Agency.

Mr. Vanden Heuvel inquired as to the status of the assessment process review. Ms. Rojo stated as a result of meeting with the Budget Advisory Committee, some basic changes to our cash flow analysis have been decided on and staff will bring forward those items at the end of the year with the Assessment Package. Mr. Vanden Heuvel stated he wanted to reiterate a comment that he made last month that he has been noticing there has been some interest in an attempt to turn the water and storage held by the overlying non-agricultural pool into cash. As he looks at the way Watermaster is assessed, we basically get paid based on production and the overlying non-agricultural water is not being produced, as it accumulates it increases in value. The overlying non-agricultural parties have piggy-backed on Watermaster's investments that added value to their water

held in storage. Those parties have never paid any assessments nor have made any investment in the development of this asset and now are coming in and attempting to cash in; there is an inequity that should be addressed. There needs to be some discussion on possibly a split funding mechanism where you pay so much on the share of safe yield and then so much on pumping, rather than all exclusively on pumping. Mr. Bowcock stated he shares Mr. Vanden Heuvel's concern that the non-agricultural pool has an abundance of water in storage and we fully believe that it needs to be put into play. It needs to be utilized and to be properly managed. The issue of economics and who pays has come up over the years and we have asked Watermaster to do an analysis and every time it comes back, the non-Agricultural members have paid based on production, an amount equal to an appropriator and actually there was a small overage. Mr. Bowcock stated something does need to be done and he is open to any and all discussion about this issue. Mr. Bowcock noted that even in the Appropriative Pool there is an enormous amount of water in storage that goes untaxed and un-assessed and is equal to the same quantity that is in the Non-Agricultural Pool. Mr. Bowcock referred to the water transaction that took place on today's consent calendar. A lengthy discussion ensued with regard to Mr. Vanden Huevel's and Mr. Bowcock's comments. It was noted this does need to be investigated. Chair Kuhn inquired as to where this discussion might take place and it was noted the parties and staff are not sure at this time. A discussion ensued with regard to this matter. Mr. Manning stated this item might also be addressed in a workshop and noted Watermaster staff is planning on having a follow up Strategic Planning session and this might be a topic put on the agenda there for a sub-workgroup to discuss. It was noted by the Board members the follow up Strategic Planning conference would be a good place to put this topic for review and discussion.

VI. OTHER BUSINESS

No comment was made regarding this item.

The Chino Basin Watermaster Board meeting was adjourned to allow the confidential session to convene at 12:10 p.m.

The Chino Basin Watermaster closed session was called to order at 12:15 p.m.

VII. CONFIDENTIAL SESSION - POSSIBLE ACTION

It was noted the Chino Basin Watermaster Board accepted the proposal from the Personnel Committee regarding personnel matters pertaining to the Chief Executive Officer of Watermaster which was presented to the committee members during the closed session.

The Chino Basin Watermaster Board closed session was adjourned at 12:25 p.m.

VIII. FUTURE MEETINGS

June 28, 2007	8:00 a.m.	MZ1 Technical Committee Meeting
June 28, 2007	9:00 a.m.	Advisory Committee Meeting
June 28, 2007	11:00 a.m.	Watermaster Board Meeting
July 12, 2007	10:00 a.m.	Appropriative & Non-Agricultural Pool Meeting
July 17, 2007	9:00 a.m.	Agricultural Pool Meeting @ IEUA
July 24, 2007	9:00 a.m.	GRCC Meeting
July 26, 2007	9:00 a.m.	Advisory Committee Meeting
July 26, 2007	11:00 a.m.	Watermaster Board Meeting

The Chino Basin Watermaster Board meeting was dismissed by Chair Kuhn at 12:26 p.m.

Secretary: _____

Minutes Approved July 28, 2007

EXHIBIT "J"



WILDERMUTH™
ENVIRONMENTAL INC.

April 4, 2007

Chino Basin Watermaster
Attention: Mr. Kenneth R. Manning, Chief Executive Officer
9641 San Bernardino Road
Rancho Cucamonga, CA 91730

Subject: Material physical injury analysis – Monte Vista Water District (MVWD) lease of West Valley Water District (WVWD) water production rights in the Chino Basin for fiscal year 2006/07

Dear Mr. Manning:

Per your direction, Wildermuth Environmental, Inc. (WEI) has prepared an assessment of material physical injury for the above referenced transfer of production rights pursuant to the Peace Agreement and Watermaster's Rules and Regulations. Our analysis is presented below. It is sequentially organized to provide a summary of the transfer request, Watermaster review process for transfers pursuant the Peace Agreement and Watermaster Rules and Regulations, background and existing Management Zone 1 conditions, and analysis of the actual transfer request.

As discussed in more detail within the balance of this report, the results of this analysis indicate that the proposed transfer of 500 acre-ft in production rights between MVWD and WVWD will not result in any new subsidence or material physical injury.

Transfer Summary

On October 31, 2006, the MVWD submitted an Application to Recapture Water in Storage to Watermaster. Attached to this application was an Application for the Sale or Transfer of Right to Produce Water from Storage, dated September 12, 2006. In the latter application, the transferring party is the WVWD and the receiving party is the MVWD. In the October 31, 2006 MVWD transmittal letter that accompanied these applications to Watermaster, the description of the proposed and complete transaction is:

“This letter is to notify Watermaster of the lease and/or purchase of 500 acre-ft of water from West Valley Water District's storage account. This lease is made first from WVWD's net under production, if any, in Fiscal 2006-07, with any remainder to be recaptured from storage.

This lease/transfer will be utilized by the District to offset a portion of its projected Fiscal Year 2006-07 replenishment obligation within the Chino Basin. Attached is an executed application for lease or transfer of a right to produce water from storage and a recapture plan for consideration by Watermaster.”

Per MVWD's recapture plan, the transfer will be utilized to offset over-production associated with groundwater deliveries to its retail customers, to the city of Chino Hills and from MVWD's participation in Metropolitan Water District of Southern California's Dry-Year Storage Account in-lieu delivery program. Under the Dry-Year program, “in-lieu” of actual groundwater production, MVWD “exchanges”

groundwater production rights with Metropolitan for an equivalent amount of water on the surface for treatment and distribution. While not actually produced, groundwater exchanged under this program is considered production for the purpose of determining Watermaster assessments and MVWD production in excess of annual production rights.

Watermaster Review Process.

The Peace Agreement provides a process for the review of all proposed transfers (see Section 5.3 Transfers, pages 31 through 32). The following citations are relevant to this review.

“Section 5.3 (a) Watermaster will ensure that any party to the judgment may Transfer water in a manner that is consistent with this Agreement, the OBMP and the law. Watermaster shall not approve a Transfer if it is inconsistent with the terms of the Agreement or will cause any Material Physical Injury to any party to the Judgment or the Basin. Any potential or threatened Material Physical Injury to any party to the Judgment or the Basin caused by the Transfer of water shall be fully and reasonably mitigated as a condition of approval. In the event that the Material Physical Injury cannot be fully and reasonably mitigated, the request for Transfer must be denied.”

“Section 5.3 (b)(ii) Watermaster shall approve the Transfer of water as provided in the Judgment so long as the individual Transfer does not result in any Material Physical Injury to any party or the Basin. Watermaster may approve a proposed Transfer with conditions that fully and reasonably mitigate any threatened or potential Material Physical Injury;”

The Watermaster Rules and Regulations essentially restate these requirements with one important exception.

“Section 9.3 Integrated Watermaster Review. In reviewing Transfers under these Rules and Regulations, Watermaster shall exercise reasonable discretion. Watermaster shall review each proposed Transfer based upon the record before it and considering the potential impacts of the proposed Transfer alone. However, Watermaster shall also consider the cumulative impacts of Transfers generally when carrying out its responsibilities to implement the OBMP and recharge and monitoring programs authorized by these Rules and Regulations and the Judgment.”

Accordingly, review of transfer requests must consider the potential cumulative impacts that may affect Watermaster’s responsibilities under the Peace Agreement, its Rules and Regulations and the Judgment.

The primary material physical injury concern regarding this transfer is subsidence; specifically, subsidence that could occur as a result of this transfer or the cumulative impact of similar transfers if this transfer is used as a precedent to allow other transfers. Figure 1 shows the areas of subsidence in MZ-1. Inelastic subsidence in the southern portion of MZ-1 (MZ-1 Managed Area) appears to have been eliminated, based on Watermaster’s ground-level monitoring programs, and it is likely that inelastic subsidence will not significantly occur in the future if the Watermaster-proposed long-term management plan is implemented.

MZ-1 Background Conditions

This section contains a description of historical groundwater pumping, recharge, groundwater levels and subsidence in MZ-1 for the period that includes fiscal year 1992/93 through 2005/06. This period was chosen because it contains the most reliable combination of groundwater level and subsidence information.

Groundwater Pumping. Table 1 lists the annual groundwater pumping estimates in MZ-1 from fiscal year 1992/93 through 2005/06, a 14-year period. The Peace Agreement became effective in fiscal 2000/01. Table 1 therefore includes statistics to characterize the Peace Agreement period separate and apart from the pre-Peace Agreement period. This table shows that groundwater pumping in MZ-1 during the six-year period of fiscal year 2000/01 through 2005/06 ranged from a minimum of about 40,500 acre-ft/yr to a maximum of about 55,100 acre-ft/yr, totaled about 295,000 acre-ft, and averaged about 49,200 acre-ft/yr.

For the prior eight-year period of fiscal year 1992/93 through 1999/00, groundwater pumping in MZ-1 ranged from a minimum of about 40,500 acre-ft/yr to a maximum of about 54,700 acre-ft/yr, totaled about 393,900 acre-ft, and averaged about 49,200 acre-ft/yr.

The average annual pumping and the maximum and minimum years' pumping are almost identical between the two periods. Pumping by Pomona, MVWD, and the California Institution for Men (CIM) has increased since the Peace Agreement has been in effect. Pumping by Upland, Chino, Chino Hills, Ontario, the San Antonio Water Company, the Golden State Water Company, and the aggregate of all other pumpers has decreased. That said the pumping by Pomona, MVWD and Chino Hills has dropped dramatically in the last three years of the Peace Agreement period, 2003/04 through 2005/06, as these agencies have been participating in in-lieu recharge for the Dry Year Yield (DYY) program.

Groundwater Recharge. Table 2 lists the annual recharge estimates in MZ-1 from fiscal year 1992/93 through October 2006. As in the case of Table 1, Table 2 includes statistics that characterize the Peace Agreement period separate and apart from the pre-Peace Agreement period. This table shows that the wet-water recharge of imported water during the six-year period of fiscal year 2000/01 through 2005/06 ranged from a minimum of about 3,600 acre-ft/yr to a maximum of about 18,900 acre-ft/yr, totaled about 49,900 acre-ft, and averaged about 8,300 acre-ft/yr.

The storm water recharge estimates are incomplete, but, based on partial estimates for the Montclair and Brooks Street Basins from fiscal year 2000/01 through 2002/03, contained in the 2004 State of the Basin Report, and estimates prepared by Watermaster staff for fiscal year 2004/05 and 2005/06, the storm water recharge during the six-year period of Fiscal 2000/01 through 2005/06 ranged from a minimum of about 900 acre-ft/yr to a maximum of about 6,700 acre-ft/yr, totaled about 16,000 acre-ft, and averaged about 3,900 acre-ft/yr. Total stormwater recharge was actually greater.

During the three-year period of fiscal year 2003/04 through 2005/06, the in-lieu recharge of the MZ-1 Appropriators through the DYY program ranged from a minimum of about 9,000 acre-ft/yr to a maximum of about 20,600 acre-ft/yr, totaled about 43,200 acre-ft, and averaged about 14,400 acre-ft/yr. During this three-year period MVWD was responsible for 19,765 acre-ft, or nearly forty-six percent of the in-lieu recharge occurring in MZ-1. There was no in-lieu recharge in MZ-1 for the period 2000/01 through 2002/03.

In total, about 109,000 acre-ft of artificial recharge has occurred in MZ-1 since the Peace Agreement became effective. Of this recharge, about 60 percent is from wet-water recharge and about 40 percent is from in-lieu means. All in-lieu recharge has occurred in the last three years of the six-year period.

Groundwater Levels. Figure 2 displays the groundwater level time histories for three key wells in Watermaster's MZ-1 monitoring program: CH-19, C-10, P-11, and MV-10.

CH-19 is a deep well located in the MZ-1 Managed Area (perforated from 340-1,000 ft-bgs). Water levels in CH-19 have fluctuated by more than 300 feet (to depths of over 400 ft-bgs) due to pumping at the well and/or nearby deep wells. Since the implementation of the MZ-1 Interim Management Program in 2002, water levels have recovered at CH-19 to depths of less than 125 ft-bgs largely due to decreased pumping from the deep aquifer within the MZ-1 Managed Area.

C-10 is a deep well located just northeast of Central MZ-1 (perforated from 355-1,090 ft-bgs). Non-pumping water levels in C-10 have fluctuated by no more than 50 feet (between depths of 270 to 320 ft-bgs). Since 2000, water levels have been relatively stable at C-10.

P-11 is a well located just northwest of Central MZ-1 (perforated from 168-550 ft-bgs). Non-pumping water levels in P-11 have fluctuated by no more than 55 feet (between depths of 270 to 325 ft-bgs). From 1994 to about 2005, water levels at P-11 generally declined from about 270 ft-bgs to about 325 ft-bgs. Since 2005 water levels at P-11 have increased to about 280 ft-bgs.

MV-10 is a well located about two miles north of Central MZ-1 (perforated from 520-1,084 ft-bgs). From 1993 to 2004, non-pumping water levels in MV-10 fluctuated by about 65 feet (between 455 to 520 ft-bgs). From early 2004 to mid-2006, water levels have steadily increased at MV-10 by about 100 feet (from 500 to 400 ft-bgs).

Subsidence. Land subsidence has been measured in MZ-1 since the early 1990s via conventional ground level surveys. A subset of these data is displayed in Figure 2 (a benchmark in the MZ-1 Managed Area [BM-137/53 at the intersection of Schaefer and Central Avenues] and a benchmark in Central MZ-1 [BM-125/49 at the intersection of Walnut and Monte Vista Avenues]). Since 1993, subsidence has occurred in a similar pattern at both benchmarks: rapid subsidence in the early 1990s followed by a gradual slowing of subsidence from 1995-2005. Then, during the spring 2005 to spring 2006 period, both benchmarks recorded a slight rebound of the land surface. The rebound in the MZ-1 Managed Area is closely tied to the recovery of groundwater levels in the deep aquifer (as evidenced by CH-19 in Figure 2), which is due to decreased pumping from the deep aquifer. This conclusion is supported by the data that was collected and analyzed as part of the MZ-1 Interim Management Program.

The causes of rebound in Central MZ-1 are not as well understood due to the lack of a comprehensive land subsidence monitoring program in that area. This rebound does however appear to coincide with the resumption of wet-water recharge in MZ-1 since the Peace Agreement (with significant increases occurring in 2003/04 through 2005/06), with decreases in production associated with MZ-1 producers participation in in-lieu recharge through the Metropolitan DYY program, and with general water level recovery throughout MZ-1.

Summary of Groundwater Conditions in MZ1. Figure 2 shows the time history of recharge for fiscal years 1992/93 through 2005/06 in comparison to groundwater pumping in MZ-1, groundwater levels at four wells in MZ-1, and ground levels at two permanent benchmarks in MZ-1. This chart was prepared to

compare these time histories and to see the temporal relationship among pumping, recharge, groundwater levels, and ground levels. The following observations can be made:

- Groundwater pumping in MZ-1 in aggregate during the Peace Agreement period is about equal to the pre-Peace Agreement period, although internal pumping by some entities has increased and by others has decreased. Groundwater pumping in aggregate has declined significantly over the last three years of the Peace Agreement period.
- Recharge in MZ-1 in aggregate during the Peace Agreement period has increased about 400 percent over the pre-Peace Agreement period through both wet-water and in-lieu means. Most of this increase has occurred during the last three years of the Peace Agreement period.
- Groundwater levels in the deep aquifer in the MZ-1 Managed Area have increased dramatically during the Peace Agreement period with most of this increase occurring in the last three years of the Peace Agreement period. Groundwater level data in Central MZ-1 is scarce due to a lack of wells in this area. But in the Pomona well field directly to the northwest of Central MZ-1, water levels have recovered by about 45 ft over the last two years. In the Chino area directly to the north-northeast of Central MZ-1, water levels have remained relatively constant for the past six years. In the northern portions of MZ-1, water levels have recovered by as much as 100 feet over the last two years.
- The rate of subsidence has decreased over time. Sometime in early 2005, there was a change in curvature in the ground level time histories, indicating a reversal in subsidence (rebound) of the ground surface. This correlates temporally to the in-lieu recharge in the period 2003/04 to 2005/06; a large wet-water replenishment year in 2005/06; and a reduction in pumping by Chino Hills, MVWD, and Pomona.

Analysis of the Transfer for Material Physical Injury

The primary material physical injury concern regarding this transfer is subsidence; specifically, subsidence that could occur as a result of this transfer or the cumulative impact of similar transfers if this transfer is used as a precedent to allow other transfers.

Figure 1 shows the areas of subsidence in MZ-1. Subsidence in the southern portion of MZ-1 (MZ-1 Managed Area) appears to have been eliminated, based on Watermaster's ground-level monitoring programs, and it is likely that subsidence will not significantly occur in the future if the Watermaster-proposed management plan is implemented.

Subsidence in the central portion of MZ-1 (Central MZ-1) appears to have occurred in the recent past and, as described above, may have temporarily abated. Allowing transfers of un-pumped water from another Appropriator pumper in Management Zone 2 or 3 (MZ-2 or MZ-3) could result in lowering the recharge relative to pumping in MZ-1, which could subsequently result in lower groundwater levels, and may restart subsidence in Central MZ-1. The reconnaissance-level analysis presented below is an attempt to characterize the likelihood of this transfer reactivating subsidence in Central MZ-1.

Given the above description of groundwater conditions in MZ-1 and the current state of subsidence, WEI evaluated the potential for material physical injury for the proposed transfer under two future operational scenarios:

- Pumping and recharge activities in 2006/07 would be similar to the last three years.

- Pumping and recharge activities during a DYY take period.

Pumping and Recharge Activities in 2006/07 Similar to Last Three Years. Under this scenario, there would be a continuation of the recent status quo with the exception that Watermaster replenishment in 2006/07 *would be 500 acre-ft less in MZ-2 and/or MZ-3.* The DYY storage account is about half full, and it was assumed that the continuation of in-lieu recharge will occur at a comparable rate for the next three years. It was also assumed that there will be replenishment water available, and Watermaster will, as is its current practice, prioritize the use of recharge basins in MZ-1 for replenishment during the next three years. There will be no new subsidence in MZ-1 from this transfer if the rate of recharge is maintained in MZ-1 and the reduction in wet-water recharge that occurs because of this transfer happens in either MZ-2 and/or MZ-3.

Pumping and Recharge Activities during a DYY Take Period. Under this scenario, the DYY parties would reduce their collective demand from Metropolitan for direct deliveries to their treatment plants, and there would be no replenishment water available for Watermaster. The maximum required shift from imported water to groundwater by MZ-1 Appropriators is 14,263 acre-ft/yr (City of Chino – 1,159 acre-ft/yr; City of Chino Hills – 1,148 acre-ft/yr; City of Ontario – 8,076 acre-ft/yr of which about 2,692 acre-ft/yr will be produced from MZ-1; City of Pomona – 2,000 acre-ft/yr; City of Upland – 3,001 acre-ft/yr; and MVWD – 3,963 acre-ft/yr). For a three-year period, this would total 42,789 acre-ft. In application, the total MZ-1 requirement during any take period will not exceed 42.8 percent of the water stored in Metropolitan's DYY storage account. As of June 30, 2006, about 85 percent of the 54,000 acre-ft in Metropolitan's DYY storage account had been recharged in MZ-1. If the current practice of filling the DYY account continues, there will be a net increase in storage in MZ-1 of about 42,000 acre-ft at the end of each 100,000 acre-ft put and take cycle.

In our professional opinion, there will likely be some subsidence resulting from the DYY program take and that the additional subsidence from a one-time reduction of wet-water recharge of 500 acre-ft in MZ-1 during fiscal 2006/07 would be negligible; even if Metropolitan makes a call on its DYY for the subsequent year. This additional negligible subsidence would not cause a material physical injury.

Conclusions and Recommendations

It is our professional opinion that the proposed transfer, given the reasonable expectation of Watermaster's continued practice of prioritizing replenishment and DYY recharge to MZ-1, will not result in new subsidence and or any other material physical injury. This opinion pertains only to the proposed transfer discussed herein and does not extend to other similar transfers in the future. Should Metropolitan make a call on its DYY account in 2006/07 or later, this transfer could cause a negligible amount of subsidence; however, this subsidence will not result in a material physical injury.

As mentioned above in the section entitled *Subsidence*, the precise cause(s) of subsidence in Central MZ-1 are not entirely understood, and the relative contributions of recharge and local pumping to subsidence have not been estimated. While this transfer does not result in material physical injury, it should not be considered precedence for the approval of future transfers. We are concerned that a future proliferation of transfers of unused production rights and water in storage from MZ-2 and MZ-3 into MZ-1 will erode the recent progress in controlling subsidence in Central MZ-1. We recommend that, until the science is done to understand the causes of subsidence in Central MZ-1, Watermaster, with the exception of the proposed transfer discussed herein, exercise restraint in approving future transfers into MZ-1.

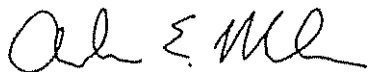
We appreciate the opportunity to serve the Watermaster and the Parties to the Judgment. Please call me if you have any questions or need additional information.

Very truly yours,

Wildermuth Environmental, Inc.



Mark J. Wildermuth, PE
President
Wildermuth Environmental, Inc.



Andrew E. Malone
Associate
Wildermuth Environmental, Inc.

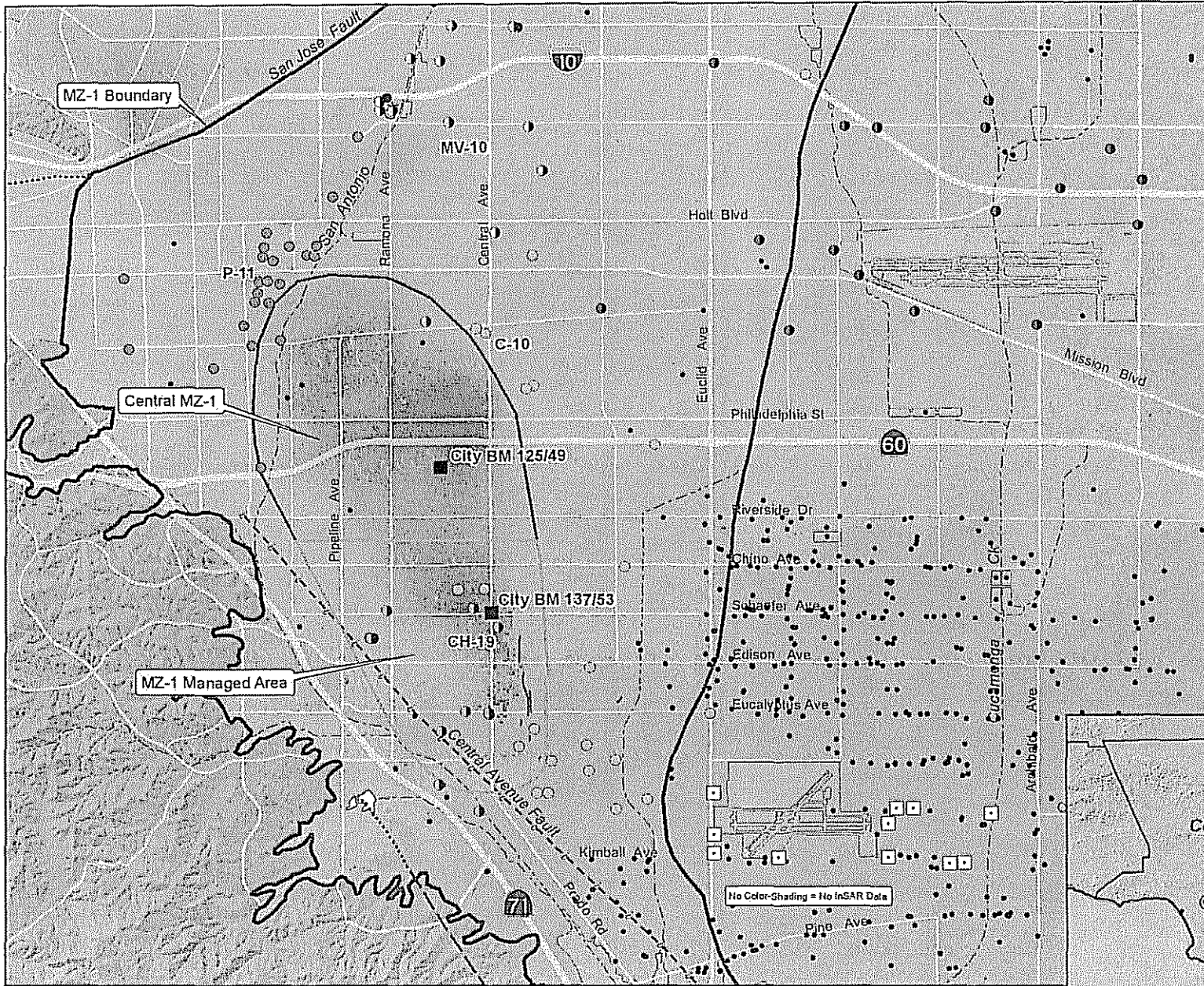
Table 1
Production in Management Zone 1 from Fiscal Year 1992/93 to the Present
 (acre-ft)

Year	MZ-1 Pumpers										Total
	Upland	Pomona	MVWD	Chino	Chino Hills	Ontario	CIM	San Antonio Water Company	Golden State Water Company	All Others	
1992/93	2,373	8,736	5,901	5,940	3,668	6,119	3,112	1,061	367	6,357	43,633
1993/94	2,182	10,052	5,788	4,130	3,710	4,591	3,629	740	199	5,483	40,505
1994/95	3,010	12,861	7,134	6,947	3,692	4,417	2,949	0	251	7,828	49,089
1995/96	2,490	16,517	6,167	9,145	4,128	5,799	3,274	0	306	5,596	53,421
1996/97	1,887	16,732	9,126	9,526	2,245	5,706	2,733	24	576	6,095	54,650
1997/98	1,924	14,124	6,829	7,574	2,909	5,718	2,660	0	380	3,902	46,020
1998/99	2,276	16,564	8,624	9,097	4,362	4,628	2,298	0	243	4,342	52,433
1999/00	1,731	18,966	9,313	8,438	4,264	4,588	2,531	10	482	3,853	54,176
2000/01	2,577	17,453	10,505	6,506	4,239	4,755	3,317	0	372	3,335	53,059
2001/02	2,390	17,666	13,405	5,526	3,605	4,836	3,883	0	225	3,548	55,084
2002/03	1,783	17,571	13,330	5,291	2,031	3,736	3,403	0	260	3,221	50,625
2003/04	1,929	16,110	13,056	5,381	2,416	1,263	3,974	0	171	3,356	47,657
2004/05	1,674	15,981	10,299	5,453	2,477	4,505	4,449	0	216	3,085	48,139
2005/06	1,394	9,763	8,585	5,084	852	5,589	6,384	0	438	2,378	40,467
Totals through 1999/00	17,872	114,552	58,882	60,797	28,977	41,567	23,185	1,835	2,803	43,456	393,926
Average through 1999/00	2,234	14,319	7,360	7,600	3,622	5,196	2,898	229	350	5,432	49,241
Totals 2000/01 through 2005/06	11,745	94,544	69,180	33,242	15,620	24,684	25,411	0	1,682	18,923	295,032
Average 2000/01 through 2005/06	1,958	15,757	11,530	5,540	2,603	4,114	4,235	0	280	3,154	49,172

Table 2
Recharge in Management Zone 1 from Fiscal Year 1992/93 to the Present
 (acre-ft)

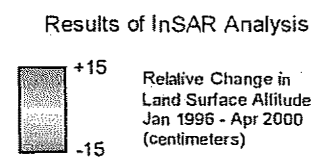
Year	Wet-Water Recharge ¹						Cyclic, Mini Conjunctive Use, In Lieu Exchange for Replenishment, and DYY In Lieu Deliveries ^{1,2}					Total Less Storm Water and Local Runoff	Total	
	6,500 AFY Peace Agreement Obligation	Replenishment	Cyclic	DYY	Storm Water and Local Runoff ³	Subtotal	Upland	Pomona	MVWD	Chino	Chino Hills			Subtotal
1992/93	0	6,444	945	0		7,389	936	1,593	289	356	189	3,363	10,752	10,752
1993/94	0	4,886	5,467	0		10,353	3,696	6,361	0	0	0	10,057	20,410	20,410
1994/95	0	716	0	0		716	0	1,051	0	0	0	1,051	1,767	1,767
1995/96	0	0	0	0		0	1,487	0	1,697	0	285	3,469	3,469	3,469
1996/97	0	17	0	0		17	0	0	0	0	0	0	17	17
1997/98	0	8,323	0	0		8,323	1,252	1,841	1,146	0	0	4,239	12,562	12,562
1998/99	0	3,032	0	0		3,032	0	0	0	0	0	0	3,032	3,032
1999/00	0	214	1,001	0		1,215	0	0	0	0	0	0	1,215	1,215
2000/01	6,530	0	0	0	2,890	9,420	0	0	0	0	0	0	6,530	9,420
2001/02	6,500	0	0	0	877	7,377	0	0	0	0	0	0	6,500	7,377
2002/03	6,499	0	0	0	2,004	8,503	0	0	0	0	0	0	6,499	8,503
2003/04	3,558	0	0	0		3,558	0	0	4,215	3,265	1,500	8,980	12,538	12,538
2004/05	7,887	0	0	0	6,735	14,622	2,012	0	7,050	1,892	2,669	13,623	21,510	28,245
2005/06	1,526	17,397	0	0	3,413	22,336	3,001	4,084	8,500	1,500	3,550	20,635	39,558	42,971
Totals through 1999/00	0	23,632	7,413	0	0	31,045	7,371	10,846	3,132	356	474	22,179	53,224	53,224
Average through 1999/00	0	2,954	927	0	na	3,881	921	1,356	447	45	59	2,772	6,653	6,653
Totals 2000/01 through 2005/06	32,500	17,397	0	0	15,919	65,816	5,013	4,084	19,765	6,657	7,719	43,238	93,135	109,054
Average 2000/01 through 2005/06	5,417	2,900	0	0	3,184	10,869	1,671	1,361	6,588	2,219	2,573	14,413	24,535	27,918

1 -- Replenishment and DYY wet water recharge based on, in order of priority, MWDSC purchases from Danni Maurizio, Annual Report Appendices, Annual Recharge plans actuals report
 2 -- DYY started in 2003/04. DYY In-Lieu Recharge from Danni Maurizio; average is for three-year DYY period 2003/4 through 2005/06.
 3 -- From 2004 State of the Basin Report Table 6-1 and from 2004/05 afterwards from Gordon Treweek. Records are incomplete prior to 2004/05 and actual recharge is significantly larger.

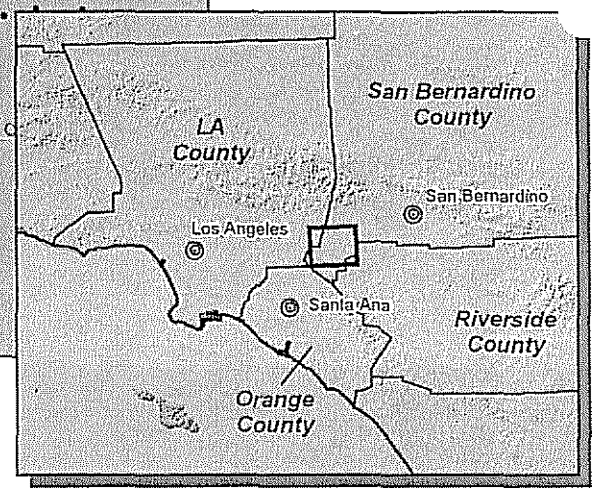


- Area of Subsidence Management
- Areas of Subsidence Concern
- Benchmark Monument for Subsidence Monitoring

- Active Wells in MZ-1 by Owner
- Ontario
 - CIM
 - Pomona
 - Chino Hills
 - SAWC
 - Chino
 - Upland
 - MVWD
 - SCWC
 - Other Owner



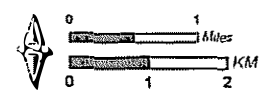
- Other Features
- Chino-I Desalter Well
 - Ground Fissure (early 1990s)
 - Unconsolidated Sediments
 - Sedimentary Bedrock



Subsidence Area in MZ-1

Figure 1

Chino Basin OBMP
Watermaster Staff Report



Author: AEM
Date: 20061205
File: Figure_1_mxd

Produced by:
 WILDERMUTH ENVIRONMENTAL INC.

Figure 2 - Time History of Production, Recharge, Groundwater Levels, and Ground Levels in MZ-1

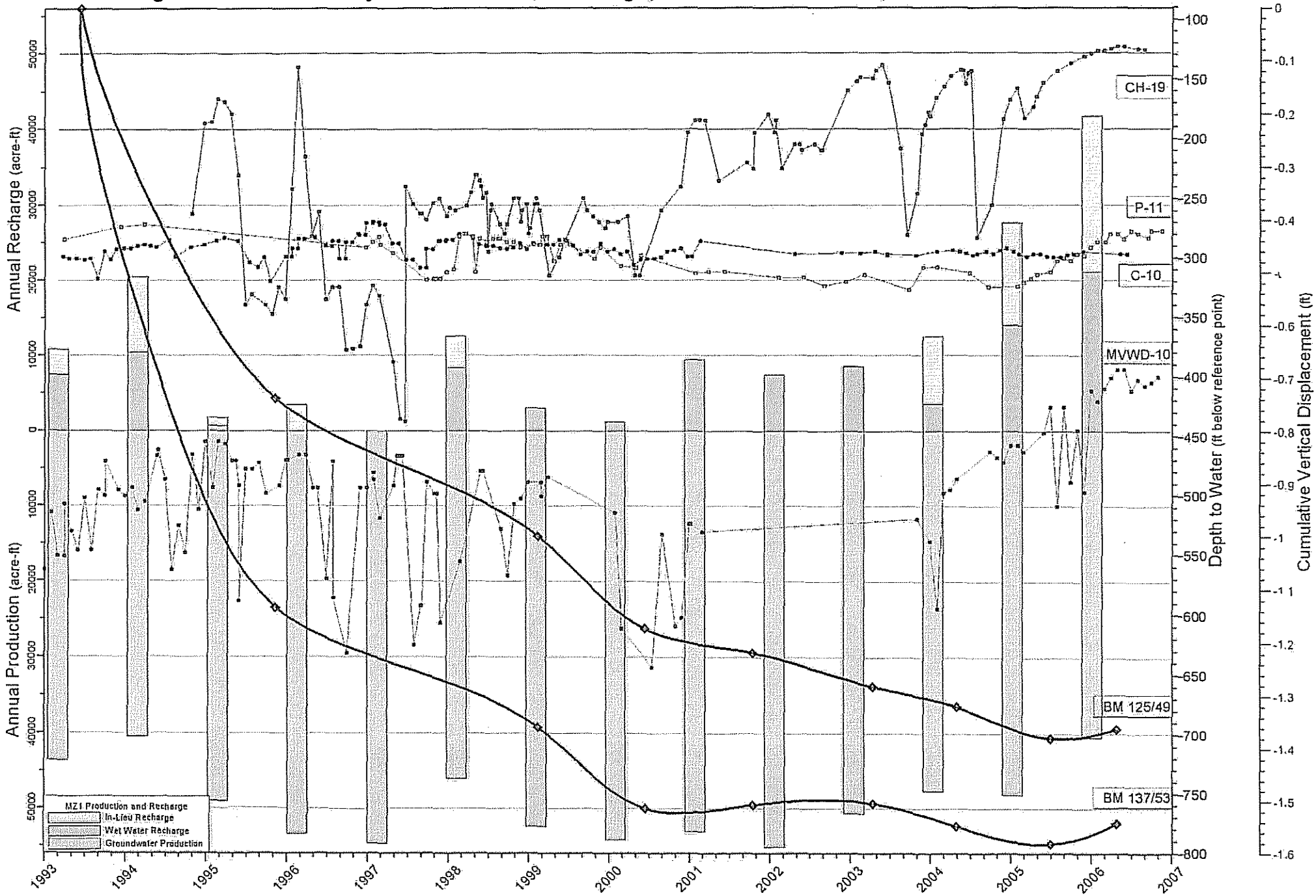


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5 **Attorneys For**
CHINO BASIN WATERMASTER

6
7
8 **SUPERIOR COURT OF THE STATE OF CALIFORNIA**
9 **FOR THE COUNTY OF SAN BERNARDINO**

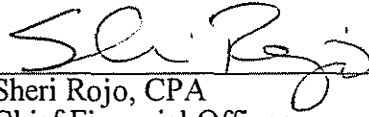
10 CHINO BASIN MUNICIPAL WATER
11 DISTRICT
12 Plaintiff,
13 vs.
14 CITY OF CHINO, ET AL.
15 Defendant.

Case No. RCV 51010
[Assigned for All Purposes to the Honorable
MICHAEL GUNN]
DECLARATION OF SHERI ROJO, CPA

- 16
17
- 18 1. My name is Sheri Rojo and I am the Chief Financial Officer for the Chino Basin
 - 19 Watermaster.
 - 20 2. I was requested by legal counsel to summarize the costs incurred by Watermaster
 - 21 since July 2000 relating to subsidence management in the Chino Basin.
 - 22 3. I reviewed the expense reports for Watermaster for expenses relating to subsidence
 - 23 management for items such as: costs of facilities such as the piezometers and extensometers,
 - 24 technical investigations and staff time.
 - 25 4. These expenses are summarized on the Expense Summary attached to this
 - 26 Declaration as Exhibit "1."
 - 27 5. The total of Watermaster's expenses for these items is \$3,364,637.79 as shown on the
 - 28 Expense Summary.

1 I swear under penalty of perjury that the foregoing is true and correct to the best of my
2 knowledge.

3
4 Date: 8/1/07


5 Sheri Rojo, CPA
6 Chief Financial Officer

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HATCH AND PARENT
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Exhibit “1”

CHINO BASIN WATERMASTER
Expense Summary
July 2000 through June 2007

Jul '00 - Jun 07

Expense

7107 · Ground Level Monitoring	
7107.7 · Ground Level - Piezometer	302,213.42
7107.6 · Grd Level-Contract Svcs	199,006.00
7107.1 · Grd Level-WM Staff	34,869.87
7107.2 · Grd Level-Engineering	383,417.89
7107.3 · Grd Level-SAR Imagery	243,465.00
7107.4 · Grd Level-Computer	487.70
7107.8 · Grd Level-Cap Equip Exte	726,787.93
7107.9 · Ground Level Monitoring - Other	633.00
Total 7107 · Ground Level Monitoring	<u>1,890,880.81</u>

7400 · PE4- Mgmt Plan	
7401 · PE4-WM Staff	59,390.47
7402 · PE4-Engineering	1,320,315.61
7403 · PE4-Contract Svcs	75,743.59
7404 · PE4-Supplies	4,046.92
7405 · PE4-Other Expense	14,260.39
Total 7400 · PE4- Mgmt Plan	<u>1,473,756.98</u>

Total Expense	<u>3,364,637.79</u>
---------------	---------------------

CHINO BASIN WATERMASTER

Case No. RCV 51010

Chino Basin Municipal Water District v. The City of Chino

PROOF OF SERVICE

I declare that:

I am employed in the County of San Bernardino, California. I am over the age of 18 years and not a party to the within action. My business address is Chino Basin Watermaster, 9641 San Bernardino Road, Rancho Cucamonga, California 91730; telephone (909) 484-3888.

On August 2, 2007, I served the following:

- 1) NOTICE OF MOTION FOR APPROVAL OF WATERMASTER'S LONG TERM PLAN FOR THE MANAGEMENT OF OF SUBSIDENCE
- 2)
- 3) POINTS AND AUTHORITIES IN SUPPORT OF MOTION FOR APPROVAL OF WATERMASTER'S LONG TERM PLAN FOR THE MANAGEMENT OF SUBSIDENCE; EXHIBITS AND DECLARATION THEREOF

BY MAIL: in said cause, by placing a true copy thereof enclosed with postage thereon fully prepaid, for delivery by United States Postal Service mail at Rancho Cucamonga, California, addresses as follows:

See attached service list: Mailing List 1

BY PERSONAL SERVICE: I caused such envelope to be delivered by hand to the addressee.

BY FACSIMILE: I transmitted said document by fax transmission from (909) 484-3890 to the fax number(s) indicated. The transmission was reported as complete on the transmission report, which was properly issued by the transmitting fax machine.

BY ELECTRONIC MAIL: I transmitted notice of availability of electronic documents by electronic transmission to the email address indicated. The transmission was reported as complete on the transmission report, which was properly issued by the transmitting electronic mail device.

I declare under penalty of perjury under the laws of the State of California that the above is true and correct.

Executed on August 2, 2007 in Rancho Cucamonga, California.



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