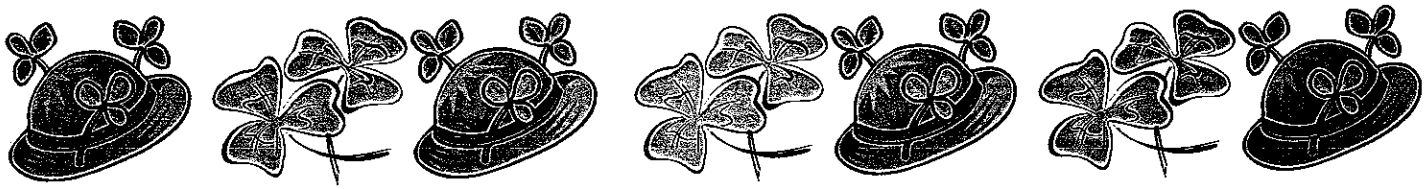


CHINO BASIN WATERMASTER

NOTICE OF MEETINGS

Thursday, March 9, 2006

9:00 a.m. – Joint Appropriative and Non-Agricultural Pool Meeting

AT THE CHINO BASIN WATERMASTER OFFICES
9641 San Bernardino Road
Rancho Cucamonga, CA 91730
(909) 484-3888

Tuesday, March 21, 2006

9:00 a.m. – Agricultural Pool Meeting

AT THE INLAND EMPIRE UTILITIES AGENCY OFFICES
6075 Kimball Ave. Bldg. A Board Room
Chino, CA 91710
(909) 993-1600

CHINO BASIN WATERMASTER

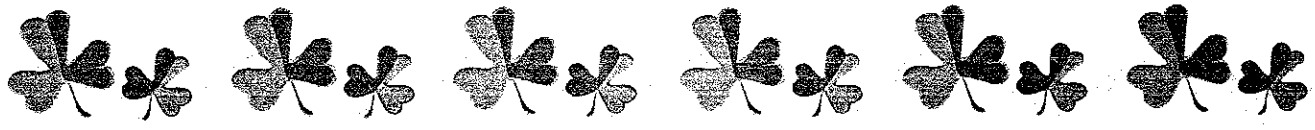
March 9, 2006

9:00 a.m. - Joint Appropriative & Non-Agricultural Pool Meeting

March 21, 2006

9:00 a.m. - Agricultural Pool Meeting

AGENDA PACKAGE



CHINO BASIN WATERMASTER
JOINT MEETING APPROPRIATIVE & NON-AGRICULTURAL POOLS

9:00 a.m. – March 9, 2006
At The Offices Of
Chino Basin Watermaster
9641 San Bernardino Road
Rancho Cucamonga, CA 91730

AGENDA

CALL TO ORDER

AGENDA - ADDITIONS/REORDER

I. **CONSENT CALENDAR**

Note: All matters listed under the Consent Calendar are considered to be routine and non-controversial and will be acted upon by one motion in the form listed below. There will be no separate discussion on these items prior to voting unless any members, staff, or the public requests specific items be discussed and/or removed from the Consent Calendar for separate action.

A. MINUTES

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

B. FINANCIAL REPORTS

5. Cash Disbursements for the month of February 2006 *(Page 13)*
6. Combining Schedule of Revenue, Expenses and Changes in Working Capital for the Period July 1, 2005 through January 31, 2006 *(Page 18)*
7. Treasurer's Report of Financial Affairs for the Period January 1, 2006 through January 31, 2006 *(Page 19)*
8. Profit & Loss Budget vs. Actual July through January 2006 *(Page 21)*

II. **BUSINESS ITEMS**

A. CONTRACT FOR DRILLING AND CONSTRUCTION OF A NESTED PIEZOMETER

Consider Approval of the Contract with Layne Christensen Company to Drill and Construct a Nested Piezometer at Ayala Park in Chino *(Page 23)*

B. MZ1 SUMMARY REPORT

Consider Approval of the February 2006 MZ-1 Summary Report *(Page 29)*

C. IEUA/DWR GRANT FUNDING AGREEMENT

Consider Approval of the Agreement Regarding Recharge Facilities Improvements Matching Funds Cost Sharing Agreement between Inland Empire Utilities Agency and Chino Basin Watermaster Dated March, 2006 *(Page 99)*

D. ALLOCATION OF VOLUME VOTE

Consider Comparison of Approaches for the Allocation of the Appropriative Pool Volume Vote *(Page 107)*

III. **REPORTS/UPDATES**

A. **WATERMASTER GENERAL LEGAL COUNSEL REPORT**
1. Attorney Manager Process/Discussion of Peace II Agreement
2. 85/15 Update

B. **WATERMASTER ENGINEERING CONSULTANT REPORT**
1. Update on Report on Balance of Recharge and Discharge

C. **CEO/STAFF REPORT**
1. USGS-GAMA Program
2. Legislative Update
3. SAW DMS Data Coordination *(Page 115)*
4. Department of Health Services Public Hearing on Recycled Water
5. Monthly Recharge Update

IV. **INFORMATION**
1. Newspaper Articles *(Page 119)*

V. **POOL MEMBER COMMENTS**

VI. **OTHER BUSINESS**

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 23, 2006	11:00 a.m.	Watermaster Board Meeting
March 28, 2006	9:00 a.m.	GRCC Meeting

Meeting Adjourn

CHINO BASIN WATERMASTER
AGRICULTURAL POOL MEETING

9:00 a.m. – March 21, 2006
At The Offices Of
Inland Empire Utilities Agency
6075 Kimball Ave., Bldg. A, Board Room
Chino, CA 91710

AGENDA

CALL TO ORDER

AGENDA - ADDITIONS/REORDER

I. **CONSENT CALENDAR**

Note: All matters listed under the Consent Calendar are considered to be routine and non-controversial and will be acted upon by one motion in the form listed below. There will be no separate discussion on these items prior to voting unless any members, staff, or the public requests specific items be discussed and/or removed from the Consent Calendar for separate action.

A. MINUTES

1. Minutes of the Agricultural Pool Meeting held February 21, 2006 *(Page 7)*

B. FINANCIAL REPORTS

5. Cash Disbursements for the month of February 2006 *(Page 13)*
6. Combining Schedule of Revenue, Expenses and Changes in Working Capital for the Period July 1, 2005 through January 31, 2006 *(Page 18)*
7. Treasurer's Report of Financial Affairs for the Period January 1, 2006 through January 31, 2006 *(Page 19)*
8. Profit & Loss Budget vs. Actual July through January 2006 *(Page 21)*

II. **BUSINESS ITEMS**

A. CONTRACT FOR DRILLING AND CONSTRUCTION OF A NESTED PIEZOMETER

Consider Approval of the Contract with Layne Christensen Company to Drill and Construct a Nested Piezometer at Ayala Park in Chino *(Page 23)*

B. MZ1 SUMMARY REPORT

Consider Approval of the February 2006 MZ-1 Summary Report *(Page 29)*

C. IEUA/DWR GRANT FUNDING AGREEMENT

Consider Approval of the Agreement Regarding Recharge Facilities Improvements Matching Funds Cost Sharing Agreement between Inland Empire Utilities Agency and Chino Basin Watermaster Dated March, 2006 *(Page 99)*

III. **REPORTS/UPDATES**

A. WATERMASTER GENERAL LEGAL COUNSEL REPORT

1. Attorney Manager Process/Discussion of Peace II Agreement

B. WATERMASTER ENGINEERING CONSULTANT REPORT

1. Update on Report on Balance of Recharge and Discharge

C. CEO/STAFF REPORT

1. USGS-GAMA Program
2. Legislative Update
3. SAW DMS Data Coordination *(Page 115)*
4. Department of Health Services Public Hearing on Recycled Water
5. Monthly Recharge Update
6. Data Request/SAWPA

IV. INFORMATION

1. Newspaper Articles *(Page 119)*

V. POOL MEMBER COMMENTS

VI. OTHER BUSINESS

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

Meeting Adjourn

CHINO BASIN WATERMASTER

I. CONSENT CALENDAR

A. MINUTES

1. Joint Appropriative & Non-Agricultural Pool Meeting – February 9, 2006

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

The Annual Appropriative Pool Meeting was held at the offices of Chino Basin Watermaster, 9641 San Bernardino Road, Rancho Cucamonga, CA, on February 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
Bill Stafford	Marygold Mutual Water Company
Mike McGraw	Fontana Water Company
Charles Moorrees	San Antonio Water Company
Rosemary Hoerning	City of Upland
Rich Atwater	Inland Empire Utilities Agency
Mark Kinsey	Monte Vista Water District

NON-AGRICULTURAL POOL MEMBERS PRESENT

Justin Scott-Coe	Vulcan Materials Company (Calmat Division)

WATERMASTER BOARD MEMBERS PRESENT

Bob Kuhn	Three Valleys Municipal Water District

Watermaster Staff Present

Kenneth 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.

Others Present

Justin Brokaw	Marygold Mutual Water Company
Bill Curley	City of Upland
Bill Kruger	City of Chino Hills
Manuel Carrillo	Senator Soto's Office
Craig Stewart	Geomatrix
Mohamad Elamamy	City of Ontario
Curtis Aaron	City of Fontana

Chair DeLoach called the meeting to order at 9:10 a.m.

AGENDA - ADDITIONS/REORDER
There were no additions or reorders made to the agenda.

I. CONSENT CALENDAR

A. MINUTES

1. Minutes of the Annual Appropriative Pool Meeting held January 12, 2006
2. Minutes of the Annual Non-Agricultural Pool Meeting held January 12, 2006

B. FINANCIAL REPORTS

1. Cash Disbursements for the month of December 2005
2. Combining Schedule of Revenue, Expenses and Changes in Working Capital for the Period July 1, 2005 through November 30, 2005
3. Treasurer's Report of Financial Affairs for the Period November 1, 2005 through November 30, 2005
4. Profit & Loss Budget vs. Actual July through November 2005
5. Cash Disbursements for the month of January 2006
6. Combining Schedule of Revenue, Expenses and Changes in Working Capital for the Period July 1, 2005 through December 31, 2005
7. Treasurer's Report of Financial Affairs for the Period December 1, 2005 through December 31, 2005
8. Profit & Loss Budget vs. Actual July through December 2005

C. INDEPENDENT AUDITOR'S REPORT ON FINANCIAL STATEMENTS FOR FISCAL YEAR ENDED JUNE 30, 2005

Receive and File the Annual Audited Financial Statements for Fiscal Year Ended June 30, 2005.

D. 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 Kinsey, and by unanimous vote

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

II. BUSINESS ITEMS

No comment was made regarding this item.

III. REPORTS/UPDATES

A. WATERMASTER GENERAL LEGAL COUNSEL REPORT

1. Attorney Manager Process/Discussion of Peace II Agreement

Counsel Fife stated the two items under legal reports will be reported as one item today. There have been a number of pleadings filed within the last ten days; the most recent are available on the back table and will be the subject of the court hearing scheduled for today at 2:00 p.m. There is an Attorney-Manager meeting scheduled today for 11:00 a.m. in order to discuss the pleadings that have been filed and a strategy for approaching the hearing at 2:00 p.m. Counsel is anticipating a quiet hearing as we have had for the past several years. Questions and major comments can be heard and addressed at the 11:00 a.m. meeting today.

2. Court Hearing

No comment was made regarding this item.

B. WATERMASTER ENGINEERING CONSULTANT REPORT

1. Evaluation of the Cumulative Effects of Transfers Pursuant to the Peace Agreement

Mr. Wildermuth stated one of the items the Special Referee noted in her comments/report that she was concerned about regarded the Accumulative Effect of Transfers Pursuant to the Peace Agreement, which is done every two years starting in 2003. This analysis was completed last summer, on time; it has not been brought forward through the Watermaster process to date. Wildermuth Environmental had produced a report in draft form in dealing with hydraulic control issues, balance of recharge and discharge, and that report contains

this required analysis within it since these issues are all drawn together and relate to one another. This report is now ready for internal staff review within the next few days and will go through the Watermaster process for approval.

2. Hydraulic Control Update
Mr. Wildermuth commented on the status of the State of the Basin Report. Mr. Kinsey inquired into a short summary of the Accumulative Effect Pursuant to the Peace Agreement. Mr. Wildermuth stated 261,000 acre-feet of water has been avoided in wet water recharge due to transfers from storage accounts and the assessment is that there is no negative impact in this regard. Mr. Wildermuth stated this process has been of great benefit to the Chino Basin and to disallow the transfers could end up being a financial burden on the parties involved. Mr. Kinsey offered comment on Mr. Wildermuth's summary. A discussion ensued regarding the accumulative effect and recharge within the basin. It was asked if the report can be brought back to this committee to be given in presentation form to bring parties up to full speed on its content and intent in a timely manner. Mr. Manning and Mr. Wildermuth stated it will be brought back for review as requested.

C. CEO/STAFF REPORT

1. 85/15 Update
Mr. Manning stated this item was asked to be reviewed by staff and to be agendized for review and/or discussion at a future pool meeting. Mr. Manning stated a full report has not been completed at this date and time and noted this item will be brought back at the March meeting for review and/or discussion.

2. Volume Vote Update
Mr. Manning stated this item was brought up at the November 2005 pool meeting and it was noted, at that meeting, that this item would be addressed early in 2006. The volume vote was relative to the fact that Watermaster includes the payments for replenishment water as overproduction as part of the assessments paid in relationship to this volume voting issue. Watermaster staff asked counsel to do some research on this issue and some scenarios have been formulated for contemplation today. Counsel Fife referred to the memorandum regarding the Volume Vote which is available on the back table. Counsel Fife stated the issue with the volume voting is that under the Judgment which means under the Appropriative Pool pooling plan, there are 1,000 votes within the Appropriative Pool, 500 of those votes are distributed based on initial shares of safe yield and 500 of them are allocated according to "assessments paid to Watermaster". Watermaster has interpreted the phrase, "assessments paid to Watermaster", to include all assessments which means administrative, OBMP, and replenishment assessments and it is the replenishment assessments category that raised the issue at hand. Counsel Fife stated there is a reason replenishment assessments would be included as a policy counter balance to parties who were fully developed or had high water usages back in the 1970's when the Judgment was created and initial shares of safe yield were allocated; versus parties who have developed later and who have very low shares of safe yield but who now produce a lot of water. By including replenishment assessments in that equation sort of creates a balance. The question is that some parties, who may be over producers, in any given year, may cover their replenishment not by paying an assessment to Watermaster but by rather taking water out of storage or buying water from another party. This leads into the discussion that once the basin in balance and there can be more transfers across zones, parties may be covering a greater portion of their replenishment assessments this way. Counsel Fife questions the parties by asking does this analysis create an inequity – should Watermaster's policies concerning the allocation of volume votes be changed? Feedback was solocited from parties that resulted in a few approaches that we could take in resolving the issue. Counsel Fife read the four sample approaches that were listed in the memo and noted these approaches are intended to generate discussion and receive possible direction. Mr. Kinsey offered comment on the history of how this calculation was

first formulated during the creation of the Judgment. A lengthy discussion ensued by several committee members regarding the initial process and the issue at hand. It was noted this discussion and the decisions only involves/effects the "Appropriative Pool" and action will be taken only by this pool. Mr. Manning stated staff is looking for guidance to either have a decision today to bring this issue back for a motion in March or to come up with a few options today to have the parties explore the options with their agencies and bring it back for a motion at a later date. A further discussion ensued with regard to the presented sample approaches counsel brought forth. Mr. Garibay noted that he would like to see some numbers crunched prior to making a decision. Counsel Fife stated the direction would be to bring back a proposal in March and not to make a final decision today. Mr. Manning stated that numbers could be brought back with the proposal at the March pool meeting.

It was asked if the committee members could get an explanation of what will be brought up regarding the 85/15 rule and how this inquiry came about. It was noted that the City of Chino had brought up the issue at the November pool meeting. Mr. Crosley stated that during the review of last assessment package that was distributed, the City of Chino noticed application of the 85/15 rule in a few instances where he thought that it was a misapplication and at that time Watermaster staff was asked to research that and come back at a later time with the findings. A brief discussion ensued with regard to the 85/15 rule and it was noted that staff is not prepared to go into detail and that this item will be brought back at the March meeting with a full report.

3. Department of Water Resources Grant Financing Update

Mr. Manning stated that staff fully expects that next month the Pools, Advisory Committee, and Watermaster Board will be dealing with a contract wherein terms will be discussed relative to the financing of the Department of Water Resources (DWR) Grant – a grant that totals over $10M; that is a 50/50 split between Chino Basin Watermaster (CBWM) and Inland Empire Utilities Agency (IEUA). Included at the back table is a handout which is a breakdown of the projects that are included within this DWR grant, it is a $5M dollar grant with a $5M dollar match; half paid by CBWM and half paid by IEUA, meaning that Watermaster will agree to contribute $2.5M towards this grant. The terms of debt repayment are presently being worked out with IEUA. Mr. Manning reviewed several of the items listed in the handout. Mr. Atwater offered history on past funding agreements and debt services for improvements and noted the new debt service for this new grant will be a policy issue brought through the Watermaster process in the near future. A discussion regarding the possible additional and/or increase of acre-feet of water created by these improvements and who will benefit ensued. Ms. Rojo stated that the actual value of the increase in recharge capacity it is not known merely on potential storm water yield but more of a increase in recharge capacity. As our basin is constantly being overdrawn and is expected to be done in the future as well – we have an obligation to get water in the ground and we need places to do that. Mr. Atwater noted that given the quantity and involvement of the questions presented today he would not hesitate in putting together a workgroup to be able to elaborate better on what has been presented today. It was noted by several pool members that it is a good idea to put together a workgroup and be given the opportunity to discus this issue in greater detail. Mr. Treweek offered comment on some of the Phase III improvements and how those improvements will enhance the capture of water.

4. San Diego County Water Authority RFP for Groundwater Conjunctive Use Project

Mr. Manning stated that the San Diego County Water Authority has released their RFP and staff has had the opportunity to review that proposal and staff is inclined to submit a proposal. It was asked if the RFP was available and Ms. Rojo noted she had copies available for those who wanted them. Mr. Manning noted that San Diego is anxious to have Watermaster involved and staff feels they are willing to discuss terms with us.

Added Item:

Mr. Manning noted that available on the back table is an additional handout regarding supplemental and storm water recharge; it was asked at a past meeting that parties be kept informed on a monthly basis of how we are doing on recharge. As was noted by Mr. Treweek, we appear to be on target for our recharge from more supplemental than storm water at this point in time. This chart will be made available with updates each month.

IV. INFORMATION

1. Newspaper Articles
   No comment was made regarding this item.

V. POOL MEMBER COMMENTS

No comment was made regarding this item.

VI. OTHER BUSINESS

No comment was made regarding this item.

VII. FUTURE MEETINGS

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

The Joint Appropriative & Non-Agricultural Pool Meeting Adjourned at 10:07 a.m.

Secretary: _____

Minutes Approved: _____

THIS PAGE

HAS

INTENTIONALLY

BEEN LEFT

BLANK

FOR PAGINATION

CHINO BASIN WATERMASTER

I. CONSENT CALENDAR

A. MINUTES

1. Agricultural Pool Meeting –
   February 21, 2006

Draft Minutes

CHINO BASIN WATERMASTER

AGRICULTURAL POOL MEETING

February 21, 2006

The Agricultural Pool Meeting was held at the offices of the Inland Empire Utilities Agency, 6075 Kimball Avenue, Chino, CA, on February 21, 2006 at 9:00 a.m.

Agricultural Pool Members Present	
Nathan deBoom, Chair	Dairy
Glen Durrington	Crops
Jeff Pierson	Crops
John Huitsing	Dairy
Pete Hettinga	Dairy
Robert Feenstra	Dairy
Nate Mackamul	State of California CIW

Watermaster Board Member Present	
Paul Hofer	Crops

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.

Others Present	
Steve Lee	Reid & Hellyer
Rich Atwater	Inland Empire Utilities Agency

Chair deBoom called the meeting to order at 9:10 a.m.

AGENDA - ADDITIONS/REORDER
There were no additions or reorders made to the agenda.

I. CONSENT CALENDAR

A. MINUTES

1. Minutes of the Annual Agricultural Pool Meeting held January 17, 2006

B. FINANCIAL REPORTS

1. Cash Disbursements for the month of December 2005
2. Combining Schedule of Revenue, Expenses and Changes in Working Capital for the Period July 1, 2005 through November 30, 2005
3. Treasurer's Report of Financial Affairs for the Period November 1, 2005 through November 30, 2005
4. Profit & Loss Budget vs. Actual July through November 2005
5. Cash Disbursements for the month of January 2006

6. Combining Schedule of Revenue, Expenses and Changes in Working Capital for the Period July 1, 2005 through December 31, 2005
7. Treasurer's Report of Financial Affairs for the Period December 1, 2005 through December 31, 2005
8. Profit & Loss Budget vs. Actual July through December 2006

C. INDEPENDENT AUDITOR'S REPORT ON FINANCIAL STATEMENTS FOR FISCAL YEAR ENDED JUNE 30, 2005

Receive and File the Annual Audited Financial Statements for Fiscal Year Ended June 30, 2005.

D. 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 Durrington, second by Feenstra, and by unanimous vote
Moved to approve Consent Calendar Items A through D, as presented

II. BUSINESS ITEMS

No comment was made regarding this item.

III. REPORTS/UPDATES

A. WATERMASTER GENERAL LEGAL COUNSEL REPORT

Item 2 was received/discussed prior to item 1.

2. Court Hearing

Counsel Fife stated there are several court related handouts available on the back table. Counsel Fife noted that he would present a summary of events since the last Agricultural Pool meeting. Watermaster filed a motion to reappoint the nine member board, there were some last minute discussion on how that motion be written/presented and the Watermaster Board ultimately instructed counsel to not only ask for a reappointment for another five year term but to also express a commitment by the Board to convene a Governance Committee. The Governance Committee would review the overall governance of Watermaster along with several other items which will be determined by that committee. The commitment of forming a Governance Committee was put into the pleading noting a result had to come forth within a two year time frame from that committee on issues of governance. After the pleading was filed, the Special Referee filed a response to the Watermaster's pleading. Counsel Fife stated that the Special Referee's report recommended reappointment of the Board and it was noted that the report did not acknowledge any of the good progress that has been made over the last five years. The Special Referee was also under the impression that our reappointment request was for a two year term instead of the full five year term; that notion was rectified at the February 9, hearing. The Special Referee's report sparked a lot of response from several parties. Watermaster filed a response that stated Watermaster was asking for a five year reappointment and also responded that we "Watermaster" have done a lot of good things and made a lot of progress over the last five years. Joinders were also attached to our pleading by Three Valleys Municipal Water District, Inland Empire Utilities Agency, and the Water Conservation District. The City of Ontario and Cucamonga Valley Water District also each filed their own objections to the Special Referees report; those two pleadings stated they wanted a five year term and that Watermaster has done a lot of great things over the last five years. A hearing took place on February 9, 2006 that was well attended and the court did put out an order at that hearing. The order indicated that Watermaster is doing a good job and the nine member board is reappointed for another five year term; it was also stated that the court is not satisfied with where Watermaster is at presently with our desalting planning. A discussion ensued with regard to the pleadings which were filed and the court responses to the desalters. It was noted that the court ordered Watermaster to hold a workshop in July 2006 with the Special Referee where

Watermaster will present our plan for getting to the next increment of desalting. There were no consequences laid out in the order if we get to the workshop and have nothing to offer on the desalting issue; however, there was a strong implication in the order while the five year reappointment is not a conditional reappointment, that it is really conditioned upon Watermaster showing the court forward movement on the desalter planning. Mr. Feenstra noted that he and Mr. Atwater are going to be going to Washington shortly and maybe the item of recycling water can be brought up by one of them to get the word out to our legislators. Mr. Manning stated that he too would be attending the Washington meetings and would speak to Mr. Feenstra and Mr. Atwater regarding this issue after the meeting.

1. Attorney Manager Process/Discussion of Peace II Agreement

Counsel Fife stated we are moving forward with the Peace II process; there are items under discussion which should be resolved in a timely manner. A brief discussion ensued with regard to the two new board members which came on board in January 2006. Mr. Manning described Mr. Ken Willis from the City of Upland including some of his water background and noted that Mr. Willis is the newly appointed 2006 Watermaster Board Chairman. Mr. Manning stated Ms. Sandra Rose from Monte Vista Water District now sits on the board and noted she is the newly appointed 2006 Board Secretary. It was noted that Mr. Willis was able to join some of the Watermaster staff in the recent trip to Sacramento and Mr. Willis proved he knows his water issues. Mr. Manning noted that prior to the July workshop a pre-workshop will need to be called for parties to get together to discuss issues. A brief discussion ensued with regard to the Peace II process. Mr. Hofer stated that he felt there is a genuine consensus among the parties to resolve the Peace II issues and to come up with a workable plan.

B. WATERMASTER ENGINEERING CONSULTANT REPORT

1. Evaluation of the Cumulative Effects of Transfers Pursuant to the Peace Agreement

Mr. Wildermuth stated that Watermaster has an obligation every two years, ending in odd years, to prepare an analysis of the balance of recharge and discharge in every area and sub area of the basin as well as to evaluate the cumulative effect of transfers. As of July of 2005 those analyses have been completed as best as they could be at that time but because of the negotiations under Peace II, that work was put on hold. An administration draft report was produced which sat un-acted upon on until now. Since then, a lot of model work to analyze the balance of recharge and discharge in the basin in support of the Peace II process has taken place. That work is now complete and the final touches with maps and such are being completed and will be forthcoming. Internally there will be an administrative draft of that effort and shortly the report will be out for review by all parties. Inside of that report is the analysis of cumulative effect of transfers which can't be looked at independently because both the hydraulic control and the cumulative effect of transfers are used by Watermaster to figure out a supplemental water recharge plan. The purpose of the balance of recharge and discharge is for Watermaster to look at how the basin is functioning relative to pumping and to try and design a supplemental water recharge plan to bring the basin into balance hydrologically. This is an issue that came up also during the Peace I discussions by the Management Zone 1 pumpers. There is an excerpt in the meeting packet for review which is basically the same excerpt released in July of 2005. The accumulative effect of transfers has resulted in the avoidance of about 26,000 acre-feet of wet water recharge; that is primarily a result of transfers among parties and using water from storage accounts. The market system put into place by the Judgment which allows parties to buy water from under-producers and move it to over-producers has been a good thing overall. Mr. Wildermuth referred to page 80 of the meeting packet to review the four outcomes that describe the results of doing the transfers. The conclusion is that there has been no material physical injury from the transfer process and the actual transfer process has been a good thing. Mr. Wildermuth referred to page 86 of the meeting packet to review the water transfers, to and from, in management zone 1. Mr. Atwater offered comment on recycled water and a discussion ensued with regard to recycled water programs and noted a workgroup could be held in March to get ready for the public hearing that is scheduled for April.

2. Hydraulic Control Update
This item was discussed under item B1. No further discussion took place regarding this item.

C. CEO/STAFF REPORT

1. 85/15 Update
Mr. Manning noted this is a notification item only and this item is being addressed at the Appropriative Pool meetings by a request from the Appropriative Pool Members.

2. Volume Vote Update
Mr. Manning noted this is a notification item only and this item is being addressed at the Appropriative Pool meetings by a request from the Appropriative Pool Members. Once this item has been resolved the resolution will be brought through the Watermaster process as an information item.

3. Department of Water Resources Grant Financing Update
Mr. Manning stated that staff fully expects that next month the Pools, Advisory Committee, and Watermaster Board will be dealing with a contract wherein terms will be discussed relative to the financing of the Department of Water Resources (DWR) Grant – a grant that totals over $10M; that is a 50/50 split between Chino Basin Watermaster (CBWM) and Inland Empire Utilities Agency (IEUA). Included at the back table is a handout which is a breakdown of the projects that are included within this DWR grant, it is a $5M dollar grant with a $5M dollar match; half paid by CBWM and half paid by IEUA, meaning that Watermaster is agreeing to contribute $2.5M towards this grant. The terms of repayment are presently being worked out with IEUA. Mr. Atwater offered history on past funding agreements and debt services for improvements and noted the debt service for this new grant will be a policy issue brought through the Watermaster process in the near future. Mr. Manning reviewed several of the items listed in the handout and Mr. Treweek reviewed some of the potential projects in detail.

4. San Diego County Water Authority RFP for Groundwater Conjunctive Use Project
Mr. Manning stated that the San Diego County Water Authority has released their RFP and staff has had the opportunity to review that proposal and staff is inclined to submit a proposal. It was asked if the RFP was available and Ms. Rojo noted she had copies available for those who wanted them. Mr. Manning noted that San Diego is anxious to have Watermaster involved and staff feels they are willing to discuss terms with us.

Added Item:

Mr. Manning noted that available on the back table is an additional handout regarding supplemental and storm water recharge; it was asked at a past meeting that parties be kept informed on a monthly basis of how we are doing on recharge. As was noted by Mr. Treweek, we appear to be on target for our recharge from more supplemental than storm water at this point in time. This chart will be made available with updates each month.

IV. INFORMATION

1. Newspaper Articles
No comment was made regarding this item.

V. POOL MEMBER COMMENTS

Mr. Durrington commented on flooding issues in the Northern California and the importance of the Peripheral Cannel project. It was noted this topic might be mentioned to our local legislators. Mr. Feenstra stated during the general manager search at Metropolitan Water District one of the candidates stated that it is urgent that we address issues regarding the Peripheral Cannel. A brief discussion ensued with the regard to the suggestion of pipe installation.

VI. OTHER BUSINESS

No comment was made regarding this item.

VII. FUTURE MEETINGS

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

The Agricultural Pool Meeting Adjourned at 10:06 a.m.

Secretary: _____

Minutes Approved: _____

THIS PAGE

HAS

INTENTIONALLY

BEEN LEFT

BLANK

FOR PAGINATION

CHINO BASIN WATERMASTER

I. CONSENT CALENDAR

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

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: **March 9, 2006**
March 21, 2006
March 23, 2006

TO: **Committee Members**
Watermaster Board Members

SUBJECT: **Cash Disbursement Report – February 2006**

SUMMARY

Issue – Record of cash disbursements for the month of February 2006.

Recommendation – Staff recommends the Cash Disbursements for February 2006 be received and filed as presented.

Fiscal Impact – All funds disbursed were included in the FY 2005-06 Watermaster Budget.

BACKGROUND
A monthly cash disbursement report is provided to keep all members apprised of Watermaster expenditures.

DISCUSSION
Total cash disbursements during the month of February 2006 were $1,324,400.49. The most significant expenditures during the month were Inland Empire Utilities Agency in the amount of $897,752.90, Wildermuth Environmental Inc. in the amount of $169,794.65, and Hatch and Parent in the amount of $43,249.35.

THIS PAGE

HAS

INTENTIONALLY

BEEN LEFT

BLANK

FOR PAGINATION

CHINO BASIN WATERMASTER
Cash Disbursement Detail Report
February 2006

Type	Date	Num	Name	Amount
Feb 06				
Bill Pmt -Check	2/2/2006	10215	APPLIED COMPUTER TECHNOLOGIES	-2,548.55
Bill Pmt -Check	2/2/2006	10216	COMPUSA, INC.	-73.72
Bill Pmt -Check	2/2/2006	10217	CONRAD & ASSOCIATES, L.L.P.	-5,119.00
Bill Pmt -Check	2/2/2006	10218	DIRECTV	-74.98
Bill Pmt -Check	2/2/2006	10219	MEDIA JIM	-995.00
Bill Pmt -Check	2/2/2006	10220	OFFICE DEPOT	-403.95
Bill Pmt -Check	2/2/2006	10221	PURCHASE POWER	-2,016.99
Bill Pmt -Check	2/2/2006	10222	R&D PEST SERVICES	-85.00
Bill Pmt -Check	2/2/2006	10223	RICOH BUSINESS SYSTEMS-Maintenance	-848.18
Bill Pmt -Check	2/2/2006	10224	UNION 76	-155.99
Bill Pmt -Check	2/2/2006	10225	VELASQUEZ JANITORIAL	-1,200.00
Bill Pmt -Check	2/2/2006	10226	VERIZON	-41.44
Bill Pmt -Check	2/2/2006	10227	VIP AUTO DETAILING	-479.20
Bill Pmt -Check	2/2/2006	10228	PUBLIC EMPLOYEES' RETIREMENT SYSTEM	-5,062.16
Bill Pmt -Check	2/2/2006	10229	PUBLIC EMPLOYEES' RETIREMENT SYSTEM	0.00
Bill Pmt -Check	2/2/2006	10230	PUBLIC EMPLOYEES' RETIREMENT SYSTEM	-5,063.83
Bill Pmt -Check	2/2/2006	10231	PUBLIC EMPLOYEES' RETIREMENT SYSTEM	-5,078.83
Bill Pmt -Check	2/2/2006	10232	PUBLIC EMPLOYEES' RETIREMENT SYSTEM	-5,202.67
Bill Pmt -Check	2/2/2006	10233	CITISTREET	-1,000.00
Bill Pmt -Check	2/2/2006	10234	CITISTREET	-975.68
Bill Pmt -Check	2/2/2006	10235	CITISTREET	-1,250.00
Bill Pmt -Check	2/2/2006	10236	CITISTREET	-4,217.38
Bill Pmt -Check	2/2/2006	10237	CITISTREET	-2,750.00
Bill Pmt -Check	2/2/2006	10238	CALIFORNIA PUBLIC EMPL RETIREMENT SYSTEM	-1,487.00
Bill Pmt -Check	2/2/2006	10239	PUBLIC EMPLOYEES' RETIREMENT SYSTEM	-1,548.70
Bill Pmt -Check	2/2/2006	10240	PUBLIC EMPLOYEES' RETIREMENT SYSTEM	-1,548.70
Bill Pmt -Check	2/2/2006	10241	PUBLIC EMPLOYEES' RETIREMENT SYSTEM	-1,548.70
Bill Pmt -Check	2/2/2006	10242	PUBLIC EMPLOYEES' RETIREMENT SYSTEM	-61.70
Bill Pmt -Check	2/2/2006	10243	PUBLIC EMPLOYEES' RETIREMENT SYSTEM	-1,182.86
General Journal	2/5/2006	06/02/4	PAYROLL	-6,440.84
General Journal	2/5/2006	06/02/4	PAYROLL	-20,905.55
Bill Pmt -Check	2/9/2006	10244	PUBLIC EMPLOYEES' RETIREMENT SYSTEM	-35.75
Bill Pmt -Check	2/9/2006	10245	PUBLIC EMPLOYEES' RETIREMENT SYSTEM	-35.76
Bill Pmt -Check	2/9/2006	10246	PUBLIC EMPLOYEES' RETIREMENT SYSTEM	-35.74
Bill Pmt -Check	2/9/2006	10247	AWWA	-150.00
Bill Pmt -Check	2/9/2006	10248	BOWCOCK, ROBERT	-375.00
Bill Pmt -Check	2/9/2006	10249	COSTCO WHOLESALE MEMBERSHIP	-205.00
Bill Pmt -Check	2/9/2006	10250	FRANKLIN COVEY	-8.06
Bill Pmt -Check	2/9/2006	10251	HAMRICK, PAUL	-125.00
Bill Pmt -Check	2/9/2006	10252	HSBC BUSINESS SOLUTIONS	-381.13
Bill Pmt -Check	2/9/2006	10253	INLAND COUNTIES INSURANCE SERVICES, INC.	-477.14
Bill Pmt -Check	2/9/2006	10254	INLAND EMPIRE UTILITIES AGENCY	-897,752.90
Bill Pmt -Check	2/9/2006	10255	KRUGER, W. C. "BILL"	-250.00
Bill Pmt -Check	2/9/2006	10256	KUHN, BOB	-375.00
Bill Pmt -Check	2/9/2006	10257	NEUFELD, ROBERT	-875.00
Bill Pmt -Check	2/9/2006	10258	PARK PLACE COMPUTER SOLUTIONS, INC.	-2,200.00
Bill Pmt -Check	2/9/2006	10259	PAYCHEX	-354.12
Bill Pmt -Check	2/9/2006	10260	QUILL	-58.92
Bill Pmt -Check	2/9/2006	10261	REID & HELLYER	-4,347.68
Bill Pmt -Check	2/9/2006	10262	RICOH BUSINESS SYSTEMS-Maintenance	-40.00
Bill Pmt -Check	2/9/2006	10263	ROSE, SANDRA	-250.00
Bill Pmt -Check	2/9/2006	10264	SAN BERNARDINO COUNTY FLOOD CONTROL DI...	-36.00
Bill Pmt -Check	2/9/2006	10265	UNITED PARCEL SERVICE	-552.04
Bill Pmt -Check	2/9/2006	10266	VANDEN HEUVEL, GEOFFREY	-375.00
Bill Pmt -Check	2/9/2006	10267	VERIZON	-340.85
Bill Pmt -Check	2/9/2006	10268	WILDERMUTH ENVIRONMENTAL INC	-5,938.00
Bill Pmt -Check	2/9/2006	10269	WILLIS, KENNETH	-375.00
Bill Pmt -Check	2/15/2006	10270	ACWA SERVICES CORPORATION	-256.12
Bill Pmt -Check	2/15/2006	10271	BANK OF AMERICA	-1,008.10
Bill Pmt -Check	2/15/2006	10272	CA SOCIETY OF MUNICIPAL FINANCE OFFICERS	-100.00
Bill Pmt -Check	2/15/2006	10273	FIRST AMERICAN REAL ESTATE SOLUTIONS	-125.00
Bill Pmt -Check	2/15/2006	10274	HATCH AND PARENT	-43,249.35
Bill Pmt -Check	2/15/2006	10275	MCI	-908.17
Bill Pmt -Check	2/15/2006	10276	RICOH BUSINESS SYSTEMS-Lease	-3,591.31
Bill Pmt -Check	2/15/2006	10277	STATE COMPENSATION INSURANCE FUND	-1,132.85
Bill Pmt -Check	2/15/2006	10278	STAULA, MARY L	-136.61
Bill Pmt -Check	2/15/2006	10279	THE FURMAN GROUP, INC.	-2,625.00
Bill Pmt -Check	2/15/2006	10280	WHEELER METER MAINTENANCE	-900.00

CHINO BASIN WATERMASTER
Cash Disbursement Detail Report
February 2006

Type	Date	Num	Name	Amount
Bill Pmt -Check	2/15/2006	10281	RICOH BUSINESS SYSTEMS-Lease	-888.94
Bill Pmt -Check	2/15/2006	10282	CUCAMONGA VALLEY WATER DISTRICT	-5,076.00
Bill Pmt -Check	2/15/2006	10283	PUBLIC EMPLOYEES' RETIREMENT SYSTEM	-123.84
Bill Pmt -Check	2/22/2006	10284	A & R TIRE	-466.26
Bill Pmt -Check	2/22/2006	10285	EXCEL LANDSCAPE	-407.00
Bill Pmt -Check	2/22/2006	10286	MATHIS & ASSOCIATES	-978.30
Bill Pmt -Check	2/22/2006	10287	PUMP CHECK	-5,291.55
Bill Pmt -Check	2/22/2006	10288	UNITEK TECHNOLOGY INC.	-231.66
Bill Pmt -Check	2/22/2006	10289	WILDERMUTH ENVIRONMENTAL INC	-169,794.65
Bill Pmt -Check	2/23/2006	10290	JAMES JOHNSTON	-1,295.00
General Journal	2/24/2006	06/02/7	PAYROLL	-5,733.22
General Journal	2/24/2006	06/02/7	PAYROLL	-19,447.59
Bill Pmt -Check	2/24/2006	10291	VIP AUTO DETAILING	-299.40
Bill Pmt -Check	2/24/2006	10292	CALPERS	-2,650.83
Bill Pmt -Check	2/24/2006	10293	CITISTREET	-1,750.00
Bill Pmt -Check	2/24/2006	10294	ELLISON, SCHNEIDER & HARRIS, LLP	-34,715.71
Bill Pmt -Check	2/24/2006	10295	IDEAL GRAPHICS	-694.00
Bill Pmt -Check	2/24/2006	10296	OFFICE DEPOT	-678.20
Bill Pmt -Check	2/24/2006	10297	PRE-PAID LEGAL SERVICES, INC.	-129.50
Bill Pmt -Check	2/24/2006	10298	PRINTING RESOURCES	-70.37
Bill Pmt -Check	2/24/2006	10299	PUBLIC EMPLOYEES' RETIREMENT SYSTEM	-6,692.71
Bill Pmt -Check	2/24/2006	10300	RICOH BUSINESS SYSTEMS-Maintenance	-274.48
Bill Pmt -Check	2/24/2006	10301	SPRINT	-600.80
Bill Pmt -Check	2/24/2006	10302	STANDARD INSURANCE CO.	-579.88
Bill Pmt -Check	2/24/2006	10303	STATE COMPENSATION INSURANCE FUND	-1,133.45
Bill Pmt -Check	2/24/2006	10304	CITISTREET	-2,850.00
Bill Pmt -Check	2/24/2006	10305	PUBLIC EMPLOYEES' RETIREMENT SYSTEM	-6,692.70
Bill Pmt -Check	2/24/2006	10306	PUMP CHECK	-5,506.25
Feb 06				**-1,324,400.49**

CHINO BASIN WATERMASTER
COMBINING SCHEDULE OF REVENUE, EXPENSES AND CHANGES IN WORKING CAPITAL
FOR THE
PERIOD JULY 1, 2005 THROUGH JANUARY 31, 2006

	WATERMASTER ADMINISTRATION	OPTIMUM BASIN MANAGEMENT	POOL ADMINISTRATION AND SPECIAL PROJECTS APPROPRIATIVE POOL	AGRICULTURAL POOL	NON-AGRIC. POOL	GROUNDWATER OPERATIONS GROUNDWATER REPLENISHMENT	SB222 FUNDS	EDUCATION FUNDS	GRAND TOTALS	BUDGET 2004-05
Administrative Revenues										
Administrative Assessments			4,781,347		66,160				4,847,507	$3,984,888
Interest Revenue			100,514	9,255	3,278			37	113,084	78,330
Mutual Agency Project Revenue		29,763							29,763	0
Grant Income									-	0
Miscellaneous Income									-	0
Total Revenues	-	29,763	4,881,861	9,255	69,438	-	-	37	4,990,354	4,063,218
Administrative & Project Expenditures										
Watermaster Administration	302,376								302,376	621,784
Watermaster Board-Advisory Committee	32,525								32,525	37,018
Pool Administration			12,087	74,889	2,846				89,822	91,153
Optimum Basin Mgnt Administration		799,322							799,322	1,019,183
OBMP Project Costs		1,017,024							1,017,024	3,733,694
Education Funds Use								375	375	375
Mutual Agency Project Costs	18,380								18,380	80,004
Total Administrative/OBMP Expenses	353,281	1,816,346	12,087	74,889	2,846			375	2,259,824	5,583,211
Net Administrative/OBMP Income	(353,281)	(1,786,583)								
Allocate Net Admin Income To Pools	353,281		274,340	73,946	4,994				-	0
Allocate Net OBMP Income To Pools		1,786,583	1,387,371	373,955	25,257				-	0
Agricultural Expense Transfer			516,640	(516,640)					-	0
Total Expenses			2,190,438	6,150	33,098	-	-	375	2,259,824	5,583,211
Net Administrative Income			2,691,423	3,105	36,340			(338)	2,730,530	(1,519,993)
Other Income/(Expense)										
Replenishment Water Purchases						6,635,065			6,635,065	0
MZ1 Supplemental Water Assessments									-	2,179,500
Water Purchases									-	0
MZ1 Imported Water Purchase									-	(2,278,500)
Groundwater Replenishment						(4,007,547)			(4,007,547)	0
Net Other Income			-	-	-	2,627,518	-	-	2,627,518	(99,000)
Net Transfers To/(From) Reserves			2,691,423	3,105	36,340	2,627,518	-	(338)	5,358,048	(1,618,993)
Working Capital, July 1, 2005			4,450,869	464,653	187,298	3,580,499	158,251	2,238	8,843,808	
Working Capital, End Of Period			7,142,292	467,758	223,638	6,208,017	158,251	1,900	14,201,856	
04/05 Production			127,810.967	34,450.449	2,326.836				164,588.252	
04/05 Production Percentages			77.655%	20.931%	1.414%				100.000%	

Q:\Financial Statements\05-06\06 Jan\[CombiningSchedule Jan.xls]Sheet1

Prepared by Sheri Rojo, Chief Financial Officer /Assistant General Manager

THIS PAGE

HAS

INTENTIONALLY

BEEN LEFT

BLANK

FOR PAGINATION

CHINO BASIN WATERMASTER
TREASURER'S REPORT OF FINANCIAL AFFAIRS FOR THE PERIOD
JANUARY 1 THROUGH JANUARY 31, 2006

DEPOSITORIES:			
Cash on Hand - Petty Cash			$ 500
Bank of America			
Governmental Checking-Demand Deposits		$ 180,974	
Savings Deposits		9,685	
Zero Balance Account - Payroll		-	190,659
Vineyard Bank CD - Agricultural Pool			415,275
Local Agency Investment Fund - Sacramento			12,345,566
TOTAL CASH IN BANKS AND ON HAND	1/31/2006		**$ 12,952,000**
TOTAL CASH IN BANKS AND ON HAND	12/31/2005		3,692,630
PERIOD INCREASE (DECREASE)			**$ 9,259,370**

CHANGE IN CASH POSITION DUE TO:		
Decrease/(Increase) in Assets:	Accounts Receivable	$ 667,277
	Assessments Receivable	8,874,166
	Prepaid Expenses, Deposits & Other Current Assets	-
(Decrease)/Increase in Liabilities	Accounts Payable	54,461
	Accrued Payroll, Payroll Taxes & Other Current Liabilities	57,739
	Transfer to/(from) Reserves	(394,273)
PERIOD INCREASE (DECREASE)		**$ 9,259,370**

SUMMARY OF FINANCIAL TRANSACTIONS:

	Petty Cash	Govt'l Checking Demand	Zero Balance Account Payroll	Savings	Vineyard Bank	Local Agency Investment Funds	Totals
Balances as of 12/31/2005	$ 500	$ 493,387	$ (25,393)	$ 9,685	$ 413,970	$ 2,800,481	$ 3,692,630
Deposits	-	9,506,241	-	-	1,305	45,085	9,552,631
Transfers	-	(9,552,651)	52,651	-	-	9,500,000	-
Withdrawals/Checks	-	(266,003)	(27,258)	-	-	-	(293,261)
Balances as of 1/31/2006	$ 500	$ 180,974	$ -	$ 9,685	$ 415,275	$ 12,345,566	$ 12,952,000
	-	-	-	-	-	-	
PERIOD INCREASE OR (DECREASE)	**$ -**	**$ (312,413)**	**$ 25,393**	**$ -**	**$ 1,305**	**$ 9,545,085**	**$ 9,259,370**

CHINO BASIN WATERMASTER
TREASURER'S REPORT OF FINANCIAL AFFAIRS FOR THE PERIOD
JANUARY 1 THROUGH JANUARY 31, 2006

INVESTMENT TRANSACTIONS

Effective Date	Transaction	Depository		Activity	Redeemed	Days to Maturity	Interest Rate(*)	Maturity Yield
1/15/2006	Interest	L.A.I.F.	$	45,085				
1/12/2006	Deposit	L.A.I.F.	$	9,500,000				
TOTAL INVESTMENT TRANSACTIONS			**$**	**9,545,085**	**-**			

* The earnings rate for L.A.I.F. is a daily variable rate; 3.63% was the effective yield rate at the Quarter ended December 31, 2005

INVESTMENT STATUS
January 31, 2006

Financial Institution		**Principal Amount**	**Number of Days**	**Interest Rate**	**Maturity Date**
Local Agency Investment Fund	$	12,345,566			
TOTAL INVESTMENTS	**$**	**12,345,566**			

Funds on hand are sufficient to meet all foreseen and planned Administrative and project expenditures during the next six months.

All investment transactions have been executed in accordance with the criteria stated in Chino Basin Watermaster's Investment Policy.

Respectfully submitted,

Sheri M. Rojo, CPA
Chief Financial Officer & Assistant General Manager
Chino Basin Watermaster

CHINO BASIN WATERMASTER
Profit & Loss Budget vs. Actual
July 2005 through January 2006

	Jul '05 - Jan 06	Budget	$ Over Budget	% of Budget
Ordinary Income/Expense				
Income				
4010 · Local Agency Subsidies	29,762.50	132,000.00	-102,237.50	22.55%
4110 · Admin Asmnts-Approp Pool	4,781,346.88	4,804,121.00	-22,774.12	99.53%
4120 · Admin Asmnts-Non-Agri Pool	66,160.17	73,425.00	-7,264.83	90.11%
4700 · Non Operating Revenues	113,084.36	78,330.00	34,754.36	144.37%
Total Income	4,990,353.91	5,087,876.00	-97,522.09	98.08%
Gross Profit	4,990,353.91	5,087,876.00	-97,522.09	98.08%
Expense				
6010 · Salary Costs	279,041.35	404,153.00	-125,111.65	69.04%
6020 · Office Building Expense	50,086.74	97,850.00	-47,763.26	51.19%
6030 · Office Supplies & Equip.	13,786.45	47,500.00	-33,713.55	29.02%
6040 · Postage & Printing Costs	46,215.33	75,700.00	-29,484.67	61.05%
6050 · Information Services	74,192.64	103,500.00	-29,307.36	71.68%
6060 · Contract Services	7,057.98	130,500.00	-123,442.02	5.41%
6080 · Insurance	-691.20	24,210.00	-24,901.20	-2.86%
6110 · Dues and Subscriptions	2,752.40	14,000.00	-11,247.60	19.66%
6140 · WM Admin Expenses	1,031.77	6,500.00	-5,468.23	15.87%
6150 · Field Supplies	-1,826.63	4,050.00	-5,876.63	-45.1%
6170 · Travel & Transportation	45,468.29	45,200.00	268.29	100.59%
6190 · Conferences & Seminars	7,317.75	17,500.00	-10,182.25	41.82%
6200 · Advisory Comm - WM Board	8,524.68	14,082.00	-5,557.32	60.54%
6300 · Watermaster Board Expenses	24,000.54	29,782.00	-5,781.46	80.59%
8300 · Appr PI-WM & Pool Admin	12,086.73	15,347.00	-3,260.27	78.76%
8400 · Agri Pool-WM & Pool Admin	11,122.52	18,756.00	-7,633.48	59.3%
8467 · Agri-Pool Legal Services	57,616.53	45,000.00	12,616.53	128.04%
8470 · Ag Meeting Attend -Special	6,150.00	10,000.00	-3,850.00	61.5%
8500 · Non-Ag PI-WM & Pool Admin	2,845.50	7,423.00	-4,577.50	38.33%
6500 · Education Funds Use Expens	375.00	375.00	0.00	100.0%
9500 · Allocated G&A Expenditures	-222,056.43	-378,284.00	156,227.57	58.7%
Subtotal G&A Expenditures	425,097.94	733,144.00	-308,046.06	57.98%
6900 · Optimum Basin Mgmt Plan	724,032.30	996,767.00	-272,734.70	72.64%
6950 · Mutual Agency Projects	18,380.00	75,000.00	-56,620.00	24.51%
9501 · G&A Expenses Allocated-OBMP	75,289.70	109,541.00	-34,251.30	68.73%
Subtotal OBMP Expenditures	817,702.00	1,181,308.00	-363,606.00	69.22%
7101 · Production Monitoring	39,734.82	68,755.00	-29,020.18	57.79%
7102 · In-line Meter Installation	20,486.87	97,954.00	-77,467.13	20.92%
7103 · Grdwtr Quality Monitoring	45,619.48	66,503.00	-20,883.52	68.6%
7104 · Gdwtr Level Monitoring	63,027.90	184,812.00	-121,784.10	34.1%
7105 · Sur Wtr Qual Monitoring	7,663.28	90,223.00	-82,559.72	8.49%
7106 · Wtr Level Sensors Install	0.00	5,734.00	-5,734.00	0.0%
7107 · Ground Level Monitoring	80,586.93	554,825.00	-474,238.07	14.53%
7108 · Hydraulic Control Monitoring	155,853.25	495,368.00	-339,514.75	31.46%
7109 · Recharge & Well Monitoring Prog	109,265.65	133,061.00	-23,795.35	82.12%
7200 · PE2- Comp Recharge Pgm	187,302.28	759,105.00	-571,802.72	24.67%

CHINO BASIN WATERMASTER
Profit & Loss Budget vs. Actual
July 2005 through January 2006

	Jul '05 - Jan 06	Budget	$ Over Budget	% of Budget
7300 · PE3&5-Water Supply/Desalte	338.93	12,548.00	-12,209.07	2.7%
7400 · PE4- Mgmt Plan	106,973.70	1,081,014.00	-974,040.30	9.9%
7500 · PE6&7-CoopEfforts/SaltMgmt	46,555.90	255,769.00	-209,213.10	18.2%
7600 · PE8&9-StorageMgmt/Conj Use	6,848.56	77,268.00	-70,419.44	8.86%
7690 · Recharge Improvement Debt Pymt	0.00	300,000.00	-300,000.00	0.0%
7700 · Inactive Well Protection Prgm	0.00	12,128.00	-12,128.00	0.0%
9502 · G&A Expenses Allocated-Projects	146,766.71	268,742.00	-121,975.29	54.61%
Subtotal Special Project Expenditures	1,017,024.26	4,463,809.00	-3,446,784.74	22.78%
Total Expense	2,259,824.20	6,378,261.00	-4,118,436.80	35.43%
Net Ordinary Income	2,730,529.71	-1,290,385.00	4,020,914.71	-211.61%
Other Income/Expense				
Other Income				
4231 · MZ1 Assigned Water Sales	0.00	600,000.00	-600,000.00	0.0%
4210 · Approp Pool-Replenishment	6,635,065.45			
Total Other Income	6,635,065.45	600,000.00	6,035,065.45	1,105.84%
Other Expense				
5010 · Groundwater Replenishment	4,007,546.70	699,000.00	3,308,546.70	573.33%
9999 · To/(From) Reserves	5,358,048.46	-1,389,385.00	6,747,433.46	-385.64%
Total Other Expense	9,365,595.16	-690,385.00	10,055,980.16	-1,356.58%
Net Other Income	-2,730,529.71	1,290,385.00	-4,020,914.71	-211.61%
Net Income	0.00	0.00	0.00	0.0%

CHINO BASIN WATERMASTER

II. BUSINESS ITEMS

A. CONTRACT FOR DRILLLING AND CONSTRUCTION OF NESTED PIEZOMETER

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: **March 9, 2006**
March 21, 2006
March 23, 2006

TO: **Committee Members**
Watermaster Board Members

SUBJECT: **Contract for Drilling and Construction of a Nested Piezometer**

SUMMARY

Issue – 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 MZ-1. 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.

Recommendation – Approve the contract with Layne Christensen Company to drill and construct a nested piezometer.

Fiscal Impact – The cost to Watermaster (*i.e.* the contract amount of the lump sum bid) is $292,000. Watermaster's approved budget for FY 2005-06 has a line-item for this work in the amount of $342,000.

BACKGROUND

Accurate, depth-specific water level data is necessary to effectively monitor and manage land subsidence in the southern portion of MZ-1. A nested set of piezometers located at Ayala Park in the Chino were designed to monitor water levels in the deep portions of the aquifer system. These piezometers have periodically malfunctioned, and need to be replaced (a consensus decision of the MZ-1 Technical Committee).

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. 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.

Through a competitive bidding process, Layne Christensen Company of Fontana (Layne) has been selected as the drilling contractor, and pending approval of Watermaster, is ready to sign the contract and begin work. Layne was the drilling contractor for (1) the highly-sophisticated extensometer facility at Ayala Park in 2003, (2)

the nine monitoring wells that were constructed in the southern Chino Basin to support the Hydraulic Control Monitoring Program in 2005, and (3) the recently-completed monitoring wells that are down-gradient of recharge basins that percolate recycled water in Chino Basin. These construction projects, performed for Watermaster and/or IEUA, have been completed satisfactorily and within budget.

The contract for the drilling and construction of the piezometers at Ayala Park is based on the contracts executed for all prior work with Layne referenced above. Watermaster staff and legal counsel has reviewed and approved contract and all supporting documents and construction specifications. The contract is attached. A complete set of contract documents is available for review at the Watermaster's office.

SECTION IV

CONTRACT

THIS CONTRACT and AGREEMENT, made and entered into this __ day of ____, 2006, by and between Layne Christensen Company, Fontana, California hereinafter referred to as "Contractor," and The Chino Basin Watermaster, Rancho Cucamonga, California, hereinafter referred to as "Watermaster".

WITNESSETH:

That for and in consideration of the promises and agreements hereinafter made and exchanged, the Watermaster and the Contractor agree as follows:

1. Contractor agrees to perform and complete in a workmanlike manner all work required under the bidding schedule of said Watermaster's specifications entitled SPECIFICATIONS FOR One Nested Piezometer in accordance with the specifications and drawings. Therefore, to furnish at their own expense all labor, materials, equipment, tools, and services necessary, except such materials, equipment, and services as may be stipulated in said specifications to be furnished by said Watermaster, and to do everything required by this Contract and the said specifications and drawings.

2. For Furnishing all said labor, materials, equipment, tools, and services, furnishing and removing all plant, temporary structures, tools and equipment, and doing everything required by this Contract and the said specifications and drawings; also for all loss and damage arising out of the nature of the work aforesaid, or from the action of the elements, or from any unforeseen difficulties which may arise during the prosecution of the work until its acceptance by said Watermaster, and for all risks of every description connected with the work; also for all expenses resulting from the suspension or discontinuance of work, except as in the said specifications are expressly stipulated to be borne by said Watermaster; and for completing the work in accordance with the requirements of said specifications and drawings, said Watermaster will pay and said Contractor shall receive, in full compensation therefore, the price(s) set forth in this Contract.

3. That the Watermaster will pay the Contractor progress payments and the final payment, in accordance with the provisions of the contract documents, with warrants drawn on the appropriate fund or funds as required, at the prices bid in the Bid Forms (Part 1, Section III) and accepted by the Watermaster, and set forth in this Contract.

Lump Sum Bid $292,000.00: Two Hundred Ninety Two Thousand Dollars and Zero Cents

If this is not a lump sum bid and the contract price is dependent upon the quantities constructed, the Watermaster will pay and said Contractor shall receive, in full compensation for the work the prices named in the Bid Forms (Part 1, Section III).

4. The Watermaster hereby employs the Contractor to perform the work according to the

terms of this Contract for the above-mentioned price(s), and agrees to pay the same at the time, in the manner, and upon the conditions stipulated in the said specifications; and the said parties for themselves, their heirs, executors, administrators, successors, and assigns, do hereby agree to the full performance of the covenants herein contained.

5. The Notice Inviting Bids, Instructions to Bidders, Bid Forms, Information Required of Bidder, Performance Bond, Payment Bond, Warranty Form, Contractors License Declaration, Specifications, Drawings, and all addenda issued by the Watermaster with respect to the foregoing prior to the opening of bids, are hereby incorporated in and made part of this Contract, as if fully set forth.

6. The Contractor agrees to commence work under this Contract on or before the date to be specified in a written "Notice To Proceed" and to complete said work to the satisfaction of the Watermaster, Sixty (60) calendar days after award of the Contract. All work shall be completed before final payment is made.

7. Time is of the essence on this Contract.

8. Contractor agrees that in case the work is not completed before or upon the expiration of the contract time, damage will be sustained by the Watermaster, and that it is and will be impracticable to determine the actual damage which the Watermaster will sustain in the event and by reason of such delay, and it is therefore agreed that the Contractor shall pay to the Watermaster the amount of ($1,200) dollars for each day of delay, which shall be the period between the expiration of the contract time and the date of final acceptance by the Watermaster, as liquidated damages and not as a penalty. It is further agreed that the amount stipulated for liquidated damages per day of delay is a reasonable estimate of the damages that would be sustained by the Watermaster, and the Contractor agrees to pay such liquidated damages as herein provided. In case the liquidated damages are not paid, the Contractor agrees that the Watermaster may deduct the amount thereof from any money due or that may become due to the Contractor by progress payments or otherwise under the Contract, or if said amount is not sufficient, recover the total amount.

In addition to the liquidated damages, which may be imposed if the Contractor fails to complete the work within the time agreed upon, the Watermaster may also deduct from any sums due or to become due the Contractor, liquidated damages in accordance with the General Requirements (Part 2, Section II), Paragraph 46, "Violations", for any violation of the Instructions to Bidders (Part 1, Section II), Paragraph 6, "Wage Rates"; Contract (Part 1, Section IV), Paragraphs 9 through 11; General Conditions (Part 2, Section I), Paragraph 3.2, "Labor, Materials and Equipment"; General Conditions (Part 2, Section I), Paragraph 3.11, "Safety and Protection" or General Conditions (Part 2, Section I), Paragraph 8.11, "Disturbance of the Peace".

9. That the Contractor will pay, and will require subcontractors to pay, employees on the work a salary or wage at least equal to the prevailing salary or wage established for such work as set forth in the wage determinations and wage standards applicable to this work, contained in or referenced in the contract documents.

10. That, in accordance with Section 1775 of the California Labor Code, Contractor shall forfeit to the Watermaster, as a penalty, not more that Fifty ($50.00) Dollars for each day, or portion thereof, for each worker paid, either by the Contractor or any subcontractor, less than the prevailing rates as determined by the Director of the California Department of Industrial Relations for the work.

11. That, except as provided in Section 1815 of the California Labor Code, in the performance of the work not more than eight (8) hours shall constitute a day's work, and not more than forty (40) hours shall constitute a week's work; that the Contractor shall not require more than eight (8) hours of labor in a day nor more than forty hours of labor in a week from any person employed by the Contractor or any subcontractor; that the Contractor shall conform to Division 2, Part 7, Chapter 1, Article 3 (Section 1810, et seq.) of the California Labor Code; and that the Contractor shall forfeit to the Watermaster, as a penalty, the sum of Twenty-Five ($25.00) Dollars for each worker employed in the execution of the work by Contractor or any subcontractor for each day during which any worker is required or permitted to labor more than eight (8) hours in violation of said Article 3.

12. That the Contractor shall carry Workers' Compensation Insurance and require all subcontractors to carry Workers' Compensation Insurance as required by the California Labor Code.

13. That the Contractor shall have furnished, prior to execution of the Contract, two bonds approved by the Watermaster, one in the amount of one hundred (100) percent of the contract price, to guarantee the faithful performance of the work, and one in the amount of one hundred (100) percent of the contract price to guarantee payment of all claims for labor and materials furnished.

14. The Contractor hereby agrees to protect, defend, indemnify and hold the Watermaster and its employees, agents, officers, directors, servants and volunteers free and harmless from any and all liability, claims, judgments, costs and demands, including demands arising from injuries or death of persons (including employees of the Watermaster and the Contractor) and damage to property, arising directly or indirectly out of the obligation herein undertaken or out of the operations conducted by the Contractor, its employees agents, representatives or subcontractors under or in connection with this Contract, whether or not there is concurrent, passive or active negligence on the part of the Watermaster or its employees, agents, officers, directors, servants and volunteers.

The Contractor further agrees to investigate, handle, respond to, provide defense for and defend any such claims, demands or suit at the sole expense of the Contractor.

15. That this Contract, by reference, includes the contract documents defined in the General Conditions (Part 2, Section I).

IN WITNESS WHEREOF, The Contractor and the Chairman of the Board of Directors, Chino Basin Watermaster, thereunto duly authorized, have caused the names of said parties to be affixed hereto, each in triplicate, the day and year first above written.

Chino Basin Watermaster,
San Bernardino County, California.

By _____
Chief Executive Officer/General Manager

Contractor

By _____
Title

CHINO BASIN WATERMASTER

II. BUSINESS ITEMS

B. MZ1 SUMMARY REPORT

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: **March 9, 2006**
March 21, 2006
March 23, 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.

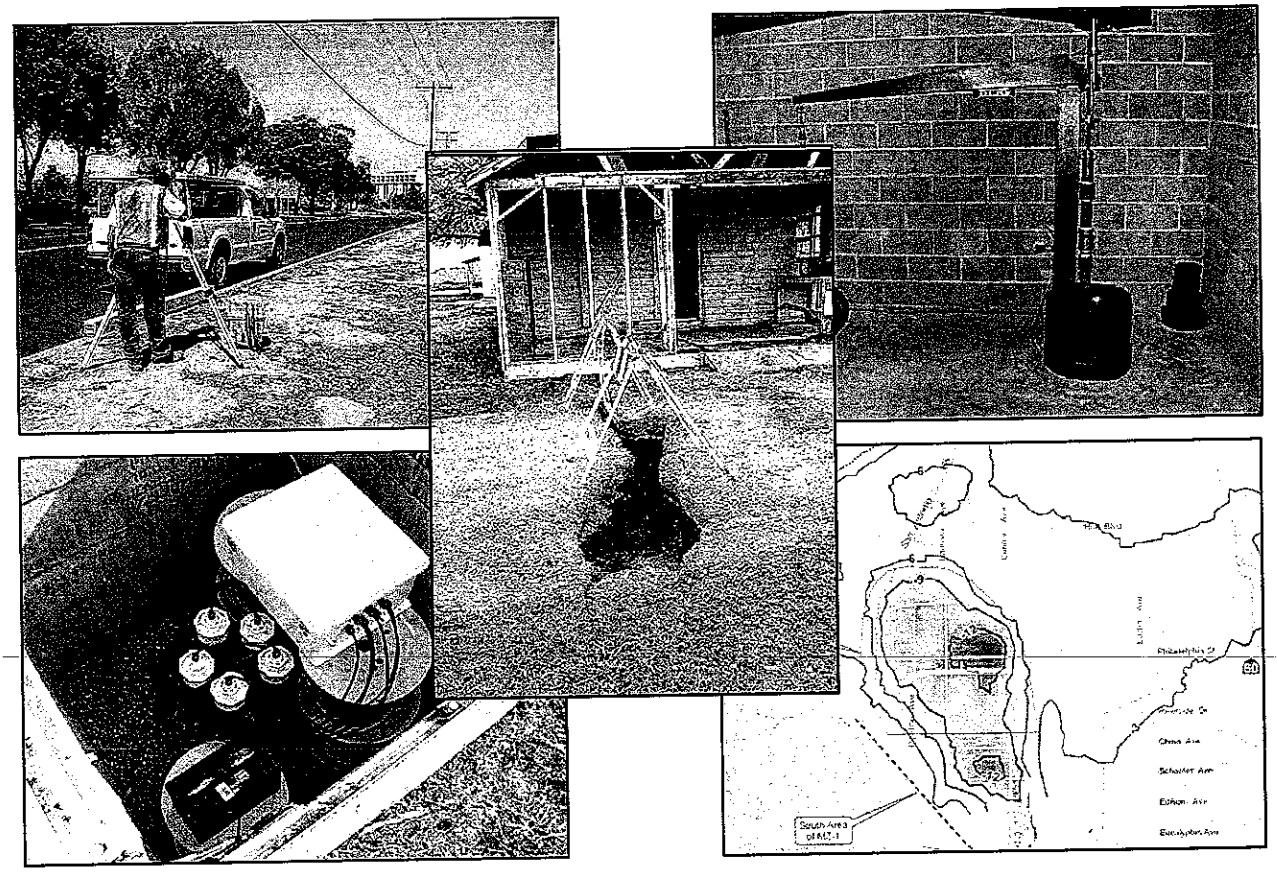
The guidance criteria and the long-term plan discussed above relate to the management of pumping-induced subsidence within the southern region of MZ-1, where associated ground fissuring damaged infrastructure in the early 1990s. However, this investigation has also revealed that the central region of 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 done by downloading this document from: ftp://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

THIS PAGE

HAS

INTENTIONALLY

BEEN LEFT

BLANK

FOR PAGINATION

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

THIS PAGE

HAS

INTENTIONALLY

BEEN LEFT

BLANK

FOR PAGINATION

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

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

THIS PAGE

HAS

INTENTIONALLY

BEEN LEFT

BLANK

FOR PAGINATION

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.

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.

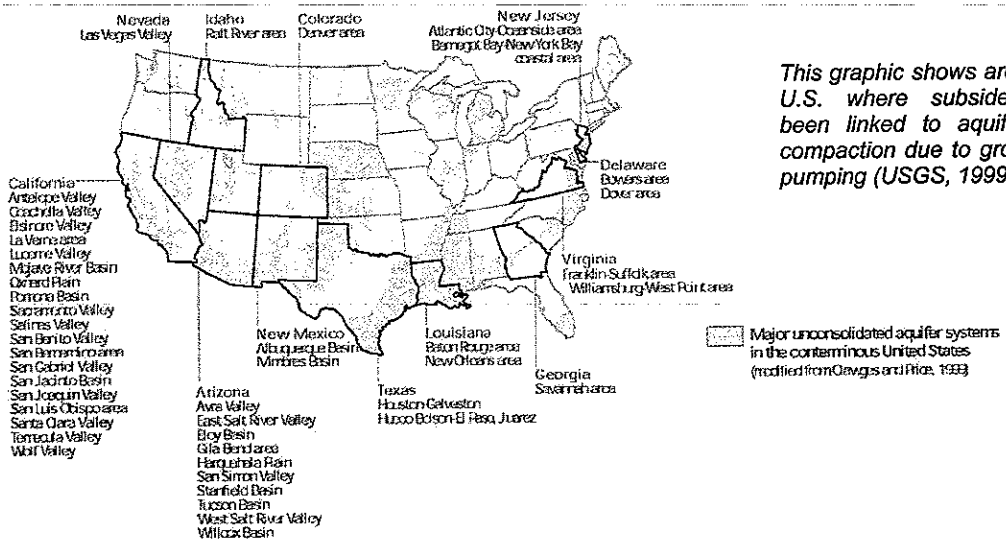
1. BACKGROUND

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

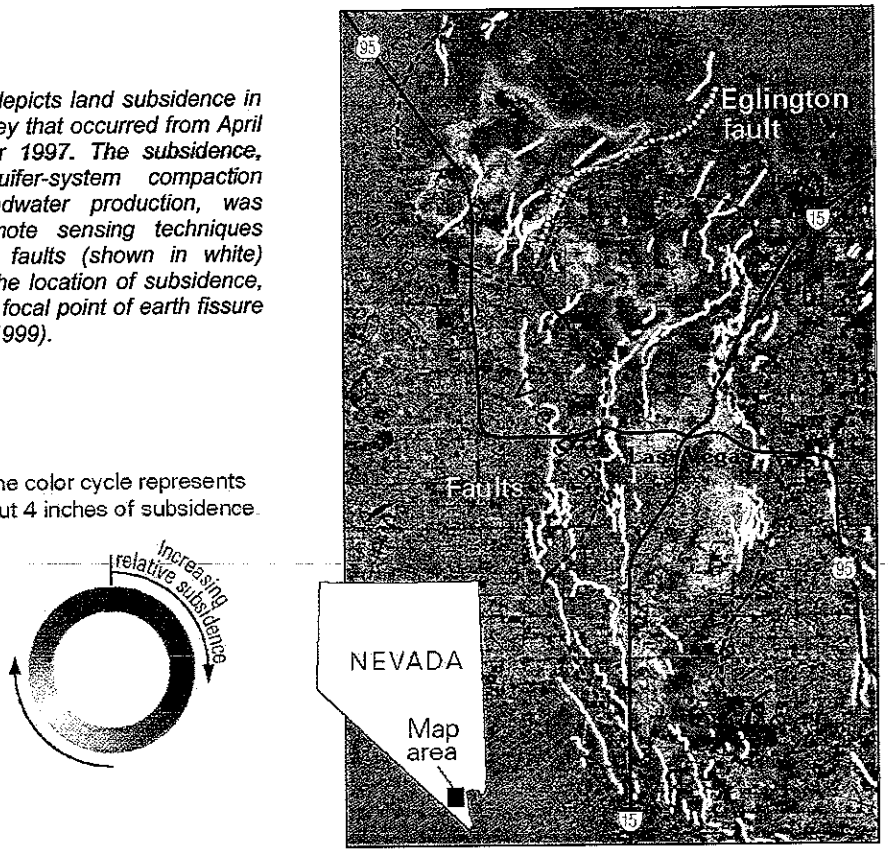


This graphic shows areas in the U.S. where subsidence has been linked to aquifer-system compaction due to groundwater pumping (USGS, 1999).

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).



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:

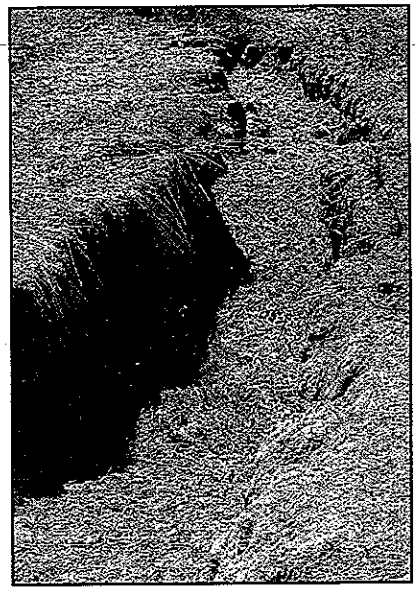
42

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

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.

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 world-wide. 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?

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

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).

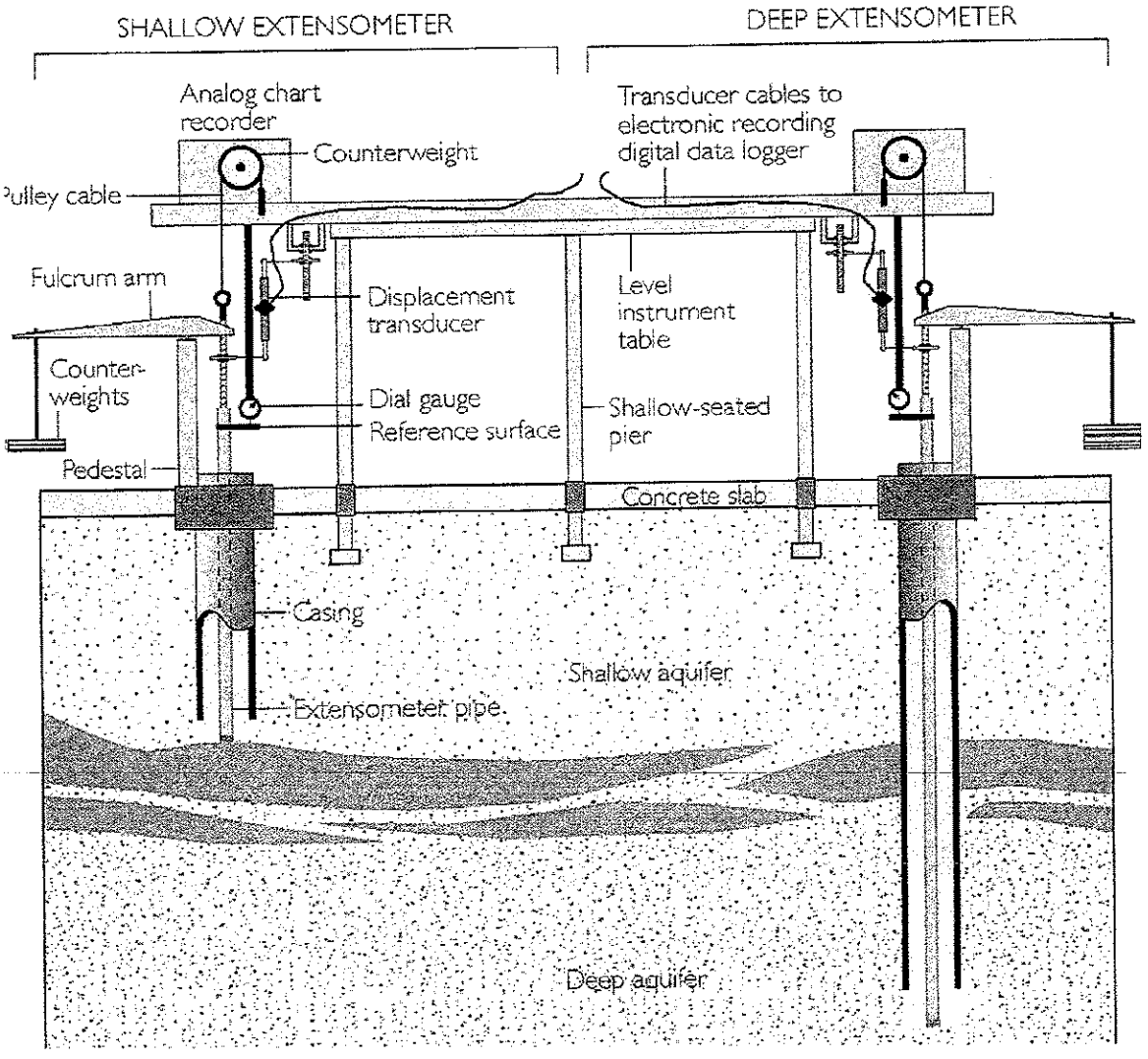
Piezometer construction and instrumentation was completed in mid-November 2002, at which time collection of piezometric data commenced. Dual-extensometer construction and instrumentation was completed in mid-July 2003, at which time collection of aquifer-system deformation data commenced.

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

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.

48

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.

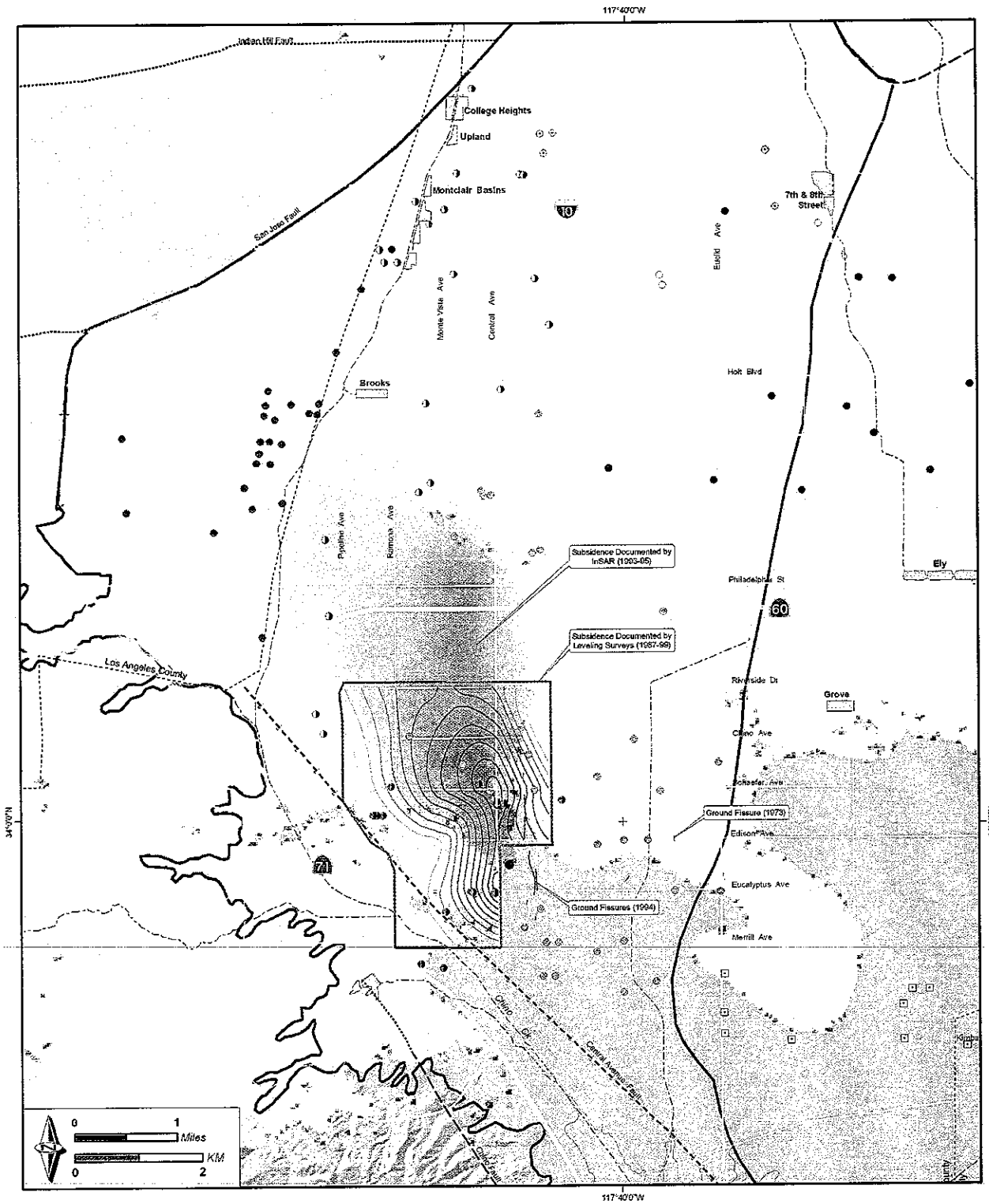
The IMP work plan also called for the deep extensometer at Ayala Park (discussed below), which is anchored in sedimentary bedrock at about 1,400 ft bgs, to be used as the "starting benchmark" for all survey loops. To accomplish this, a Class-A benchmark was constructed outside the extensometer building 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 occuring 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 surfical 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 dessication, despite substantial lowering of the water table.
Settlement of soils due to ground shaking	Significant cosiesmic settlement of unconsolidated soils typically involves temporary liquifaction 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 artesion 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.



Land Surface Deformation in Management Zone 1

Leveling Surveys and InSAR

Figure 1-1

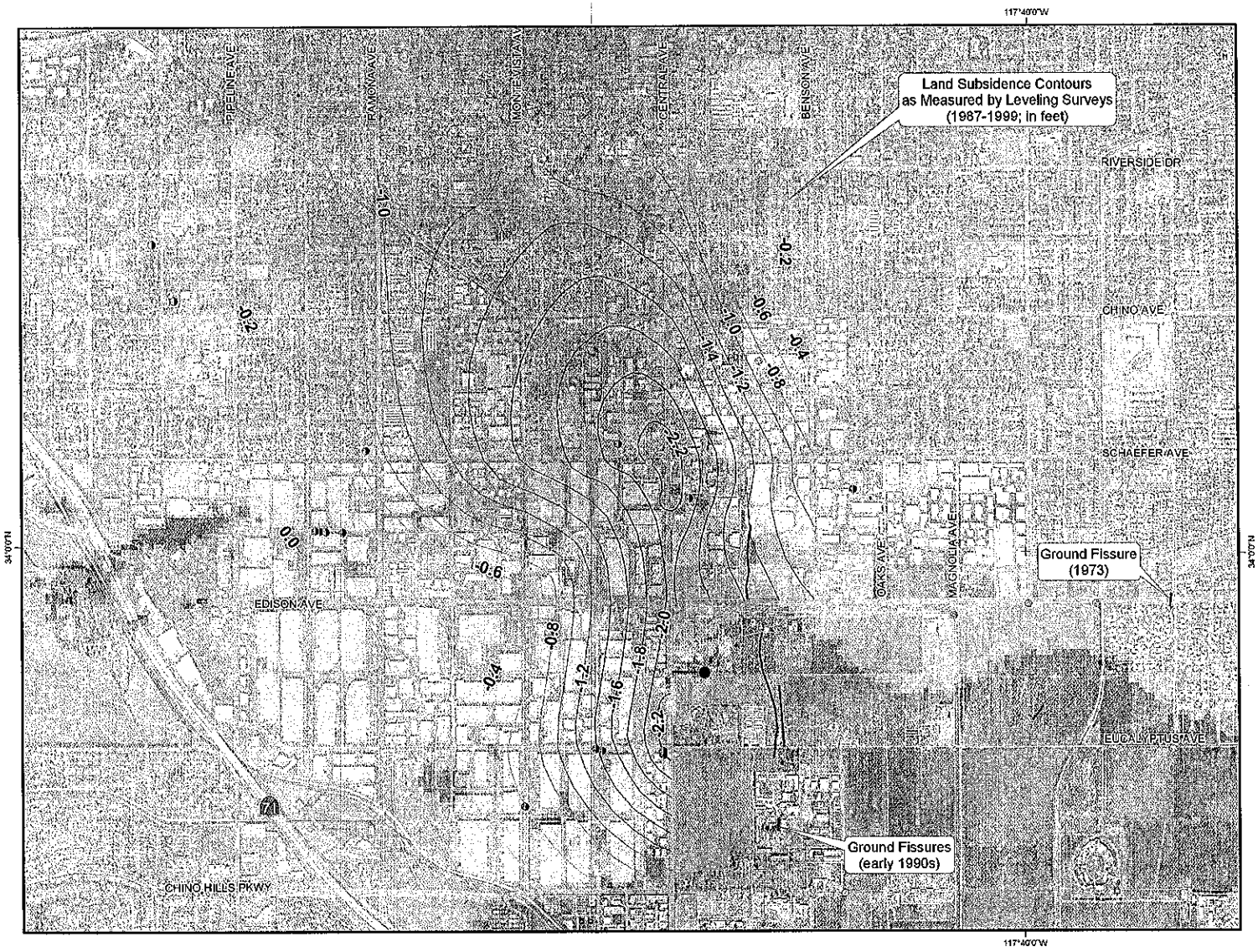
Prepared by:

WILDERMUTH ENVIRONMENTAL INC.

25692 Birtcher Drive
Lake Forest, CA 92630
949.420.3330
www.wildermuthenvironmental.com

MZ-1 Summary Report
September 2005

Author: AEM
Date: 20050927
File: Figure_1-1.mxd



Subsidence Features

Ground Fissure (dashed where approximated)

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

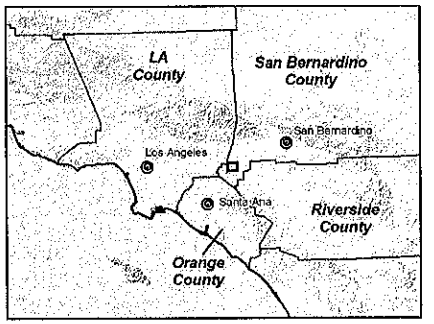
Wells in MZ-1 by Owner

- Ontario
- Pomona
- SAWC
- Upland
- SCWC
- CIM
- Chino Hills
- Chino
- MWD

Other Features

- Ayala Park Extensometer Facility

Note: Air photo background flown in April 2004.



Produced by:

WILDERMUTH ENVIRONMENTAL INC.
23692 Birtcher Drive
Lake Forest, CA 92630
949.420.3030
www.wildermuthenvironmental.com

Author: AEM
Date: 20050927
File: Figure_1-2.mxd

0 1,000 2,000 3,000 Feet
0 500 1,000 Meters

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)

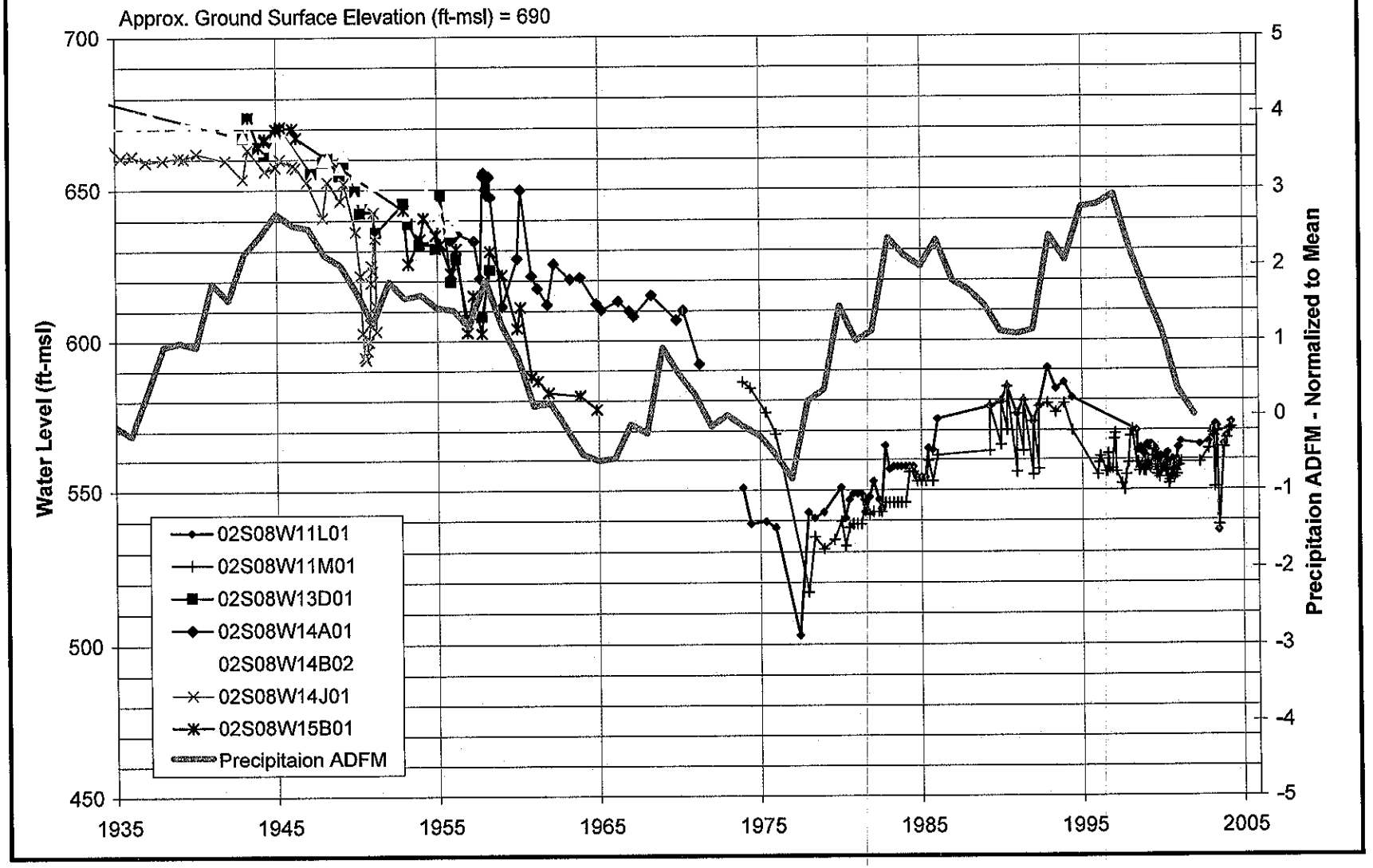
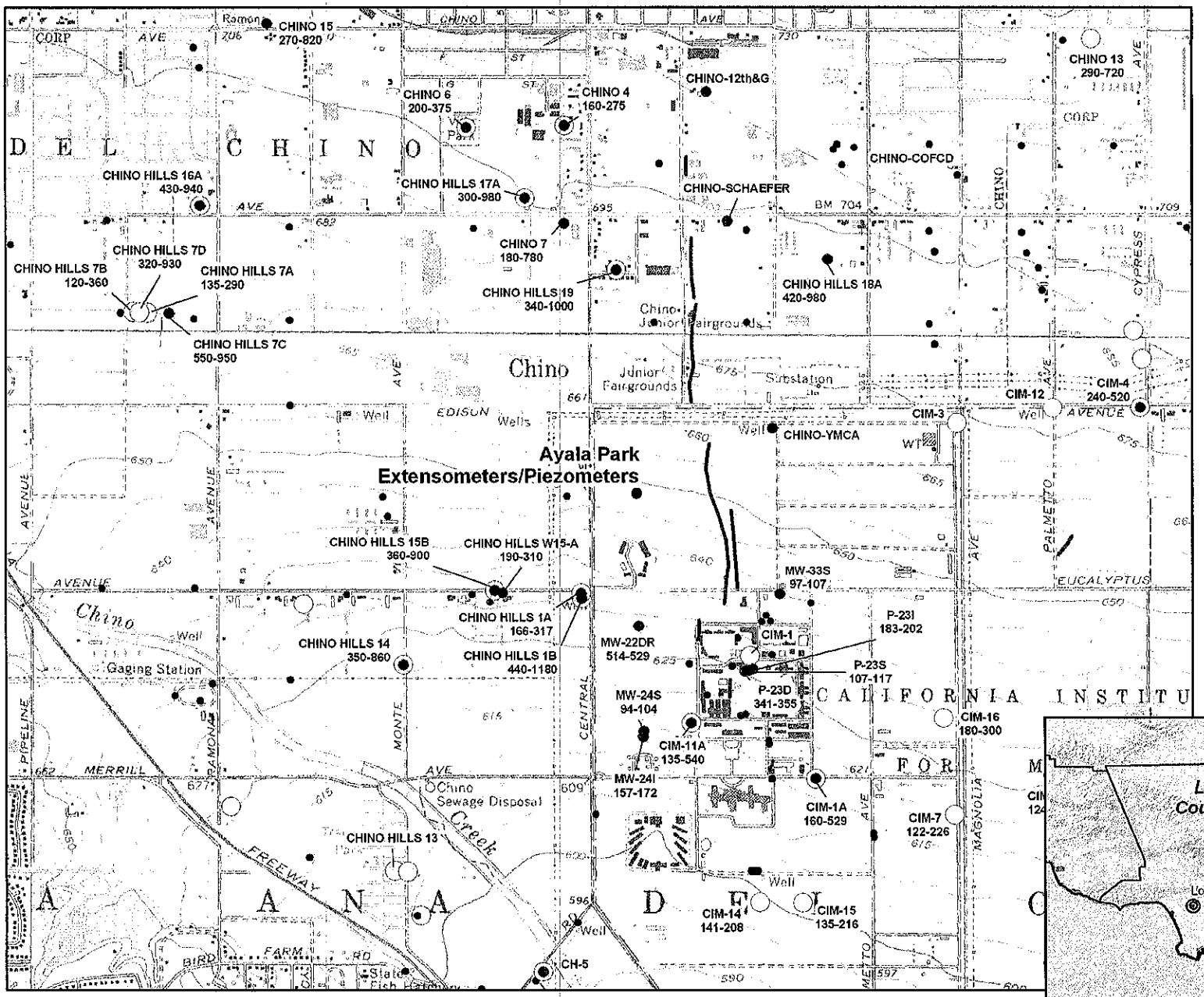


Figure_1-3.xls - Figure_1-3
10/4/2005

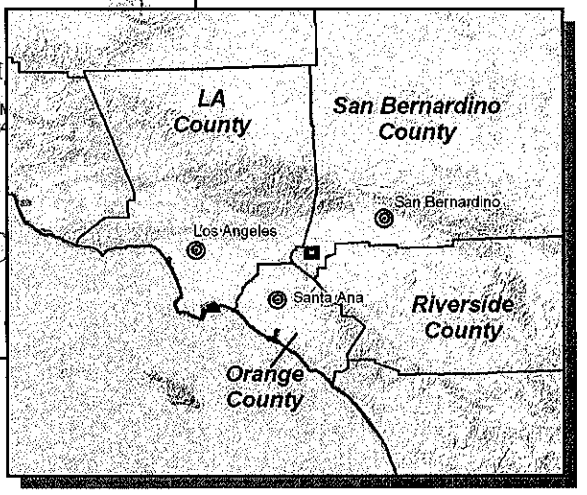


Main Map Features

- 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

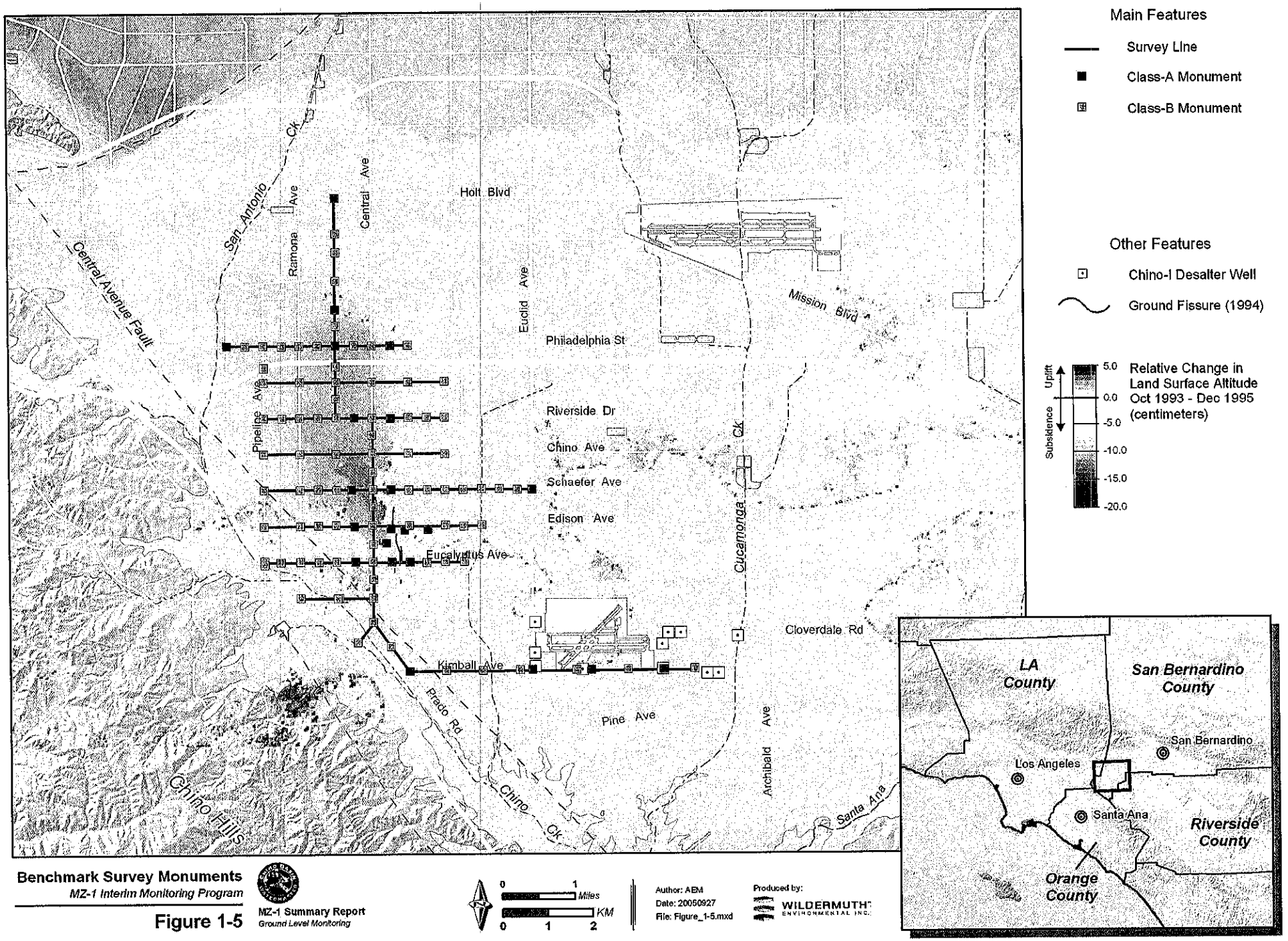
Figure 1-4

MZ-1 Summary Report
September 2005

0 1,000 2,000 Feet
0 200 400 600 Meters

Author: AEM
Date: 20050927
File: Figure_1-4.mxd

Produced by: WILDERMUTH ENVIRONMENTAL INC.



Benchmark Survey Monuments
MZ-1 Interim Monitoring Program

Figure 1-5

MZ-1 Summary Report
Ground Level Monitoring

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 associate 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

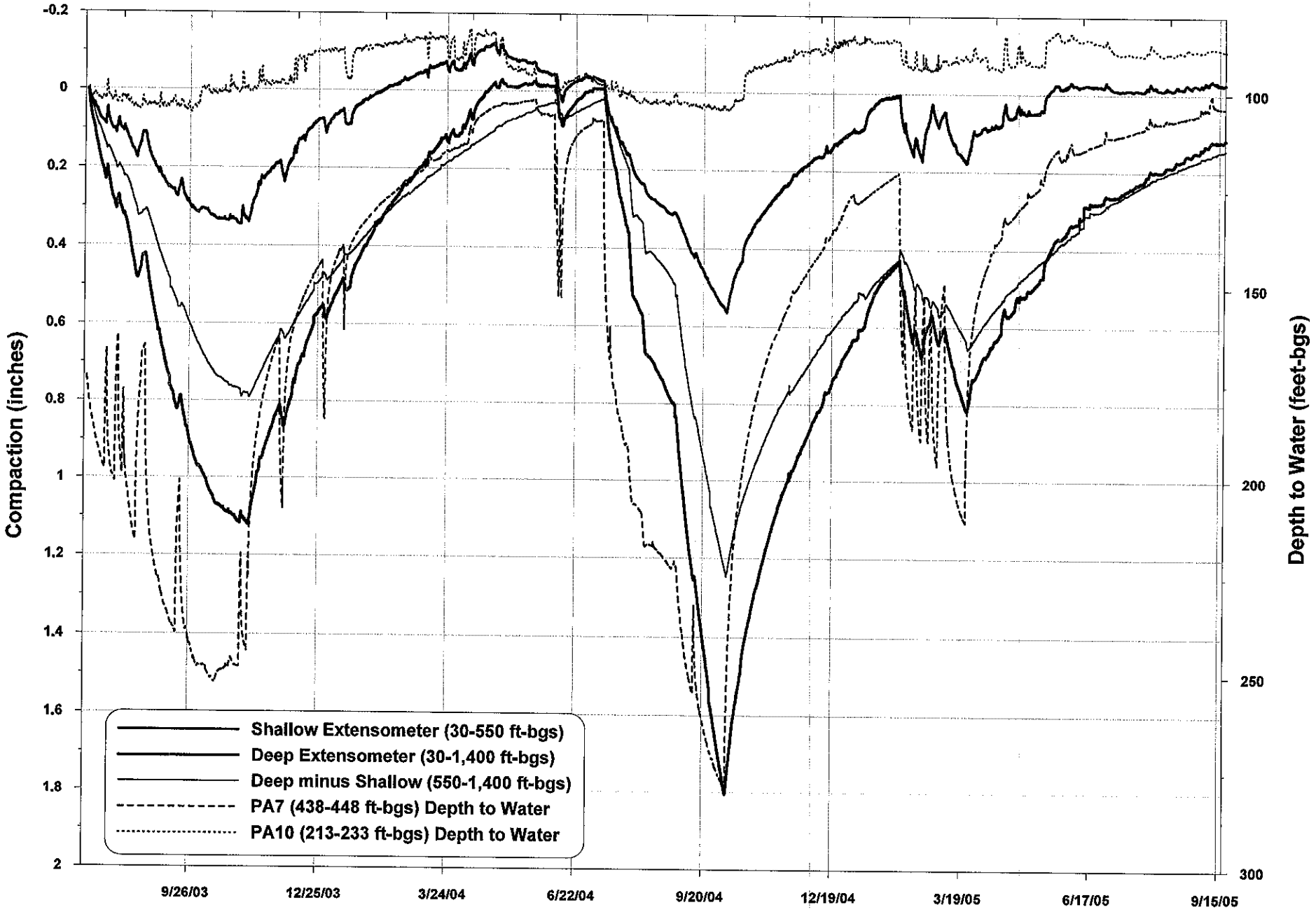
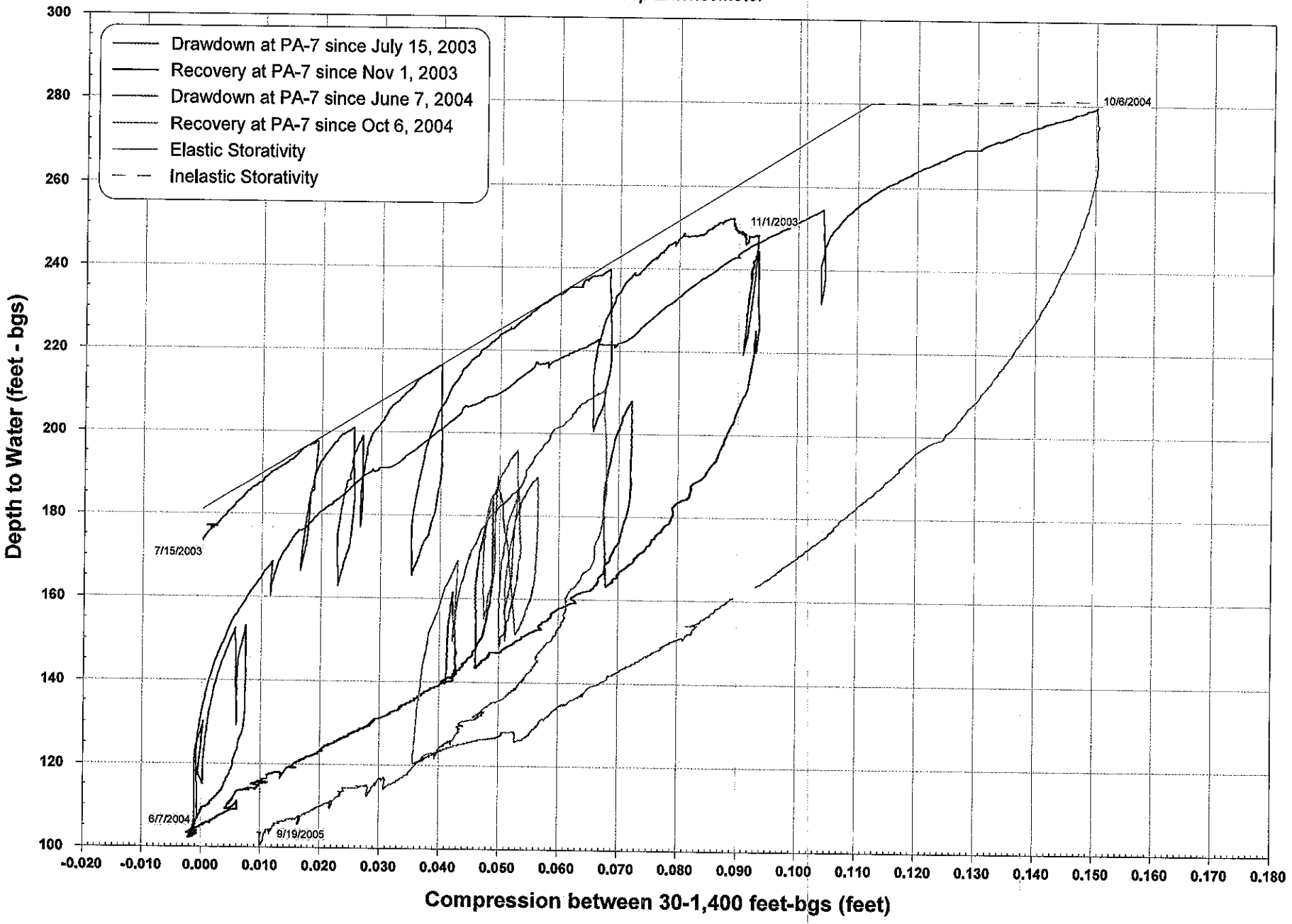
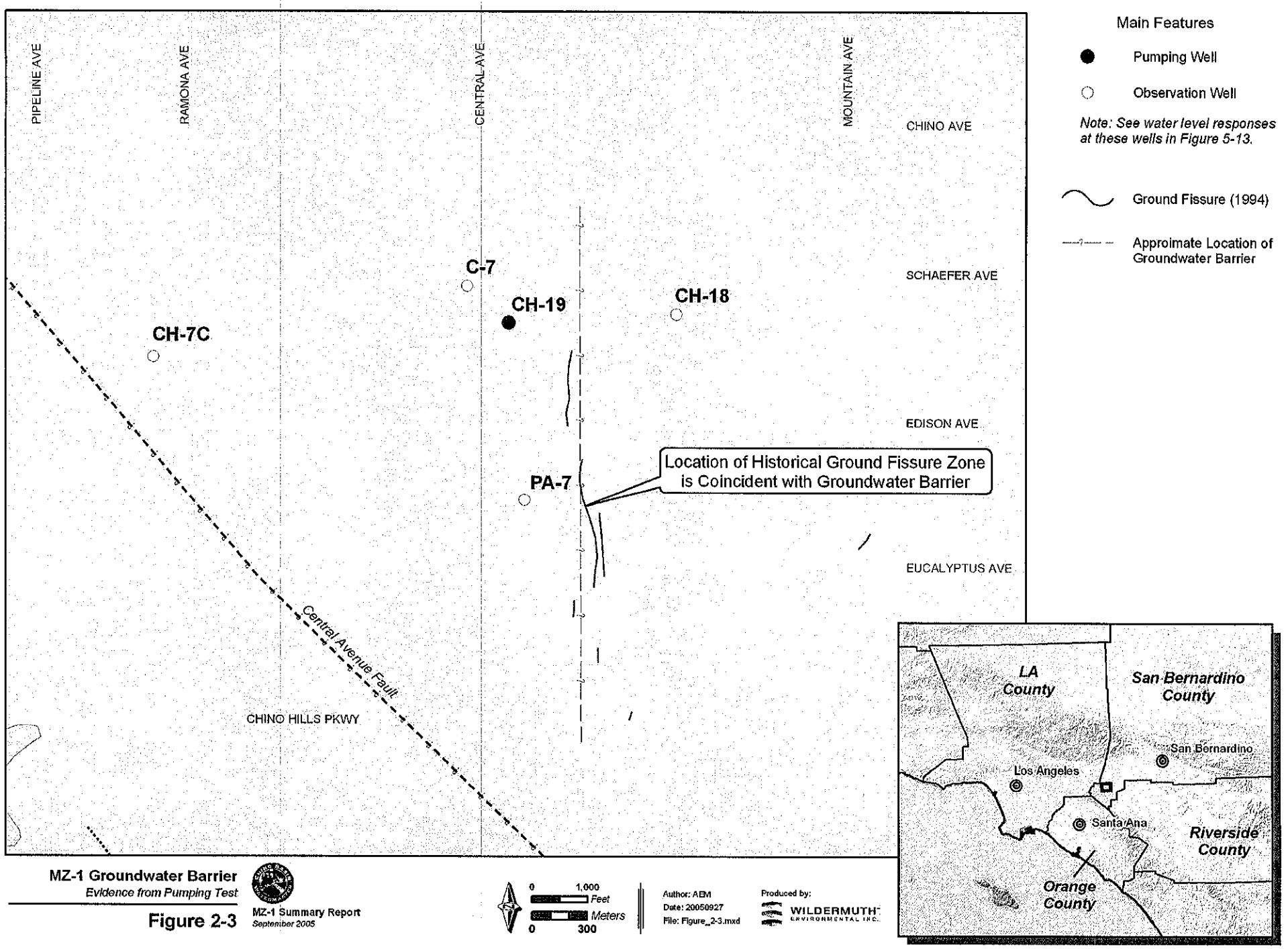


Figure 2-2 -- Stress-Strain Diagram

PA-7 vs. Deep Extensometer



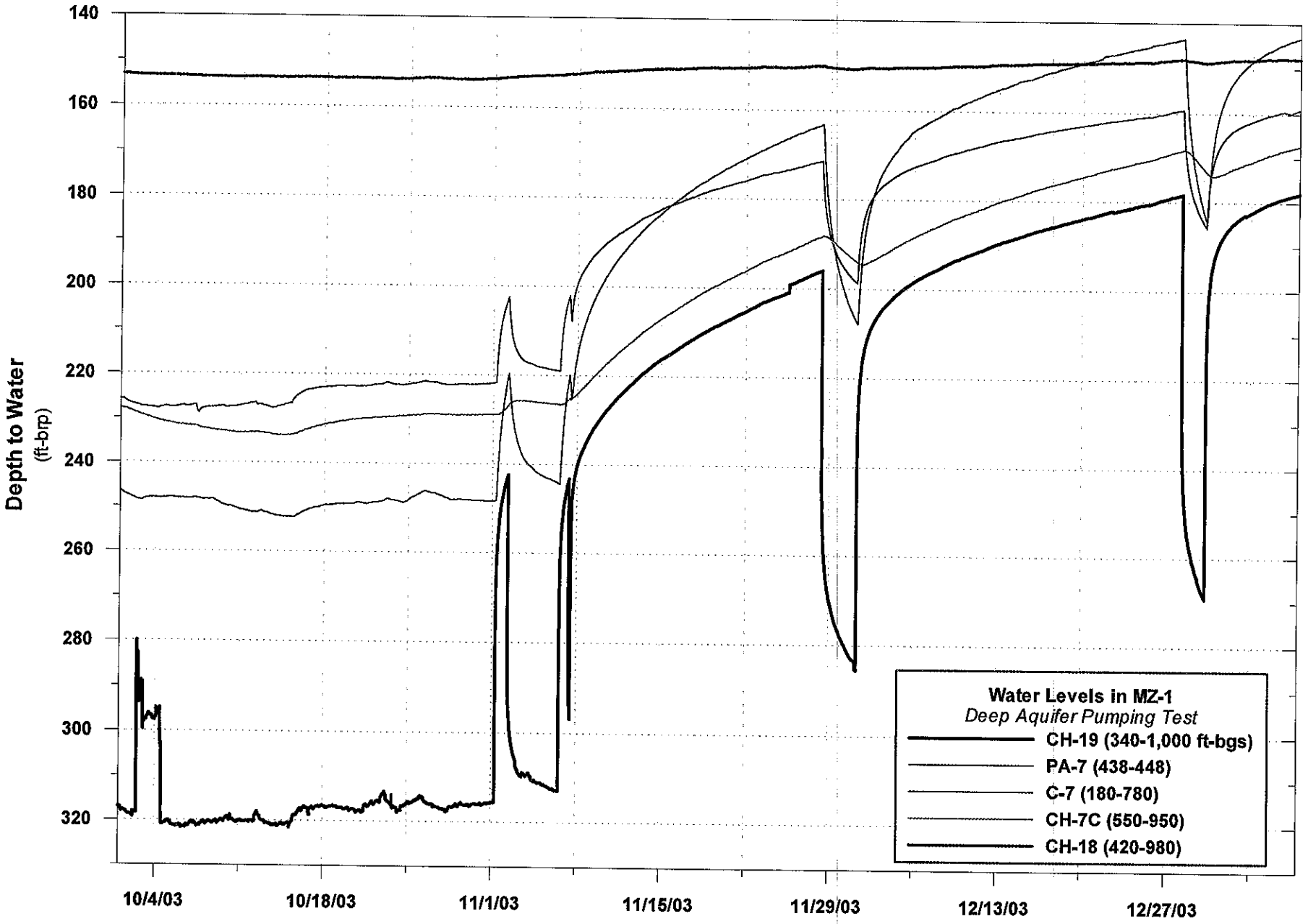


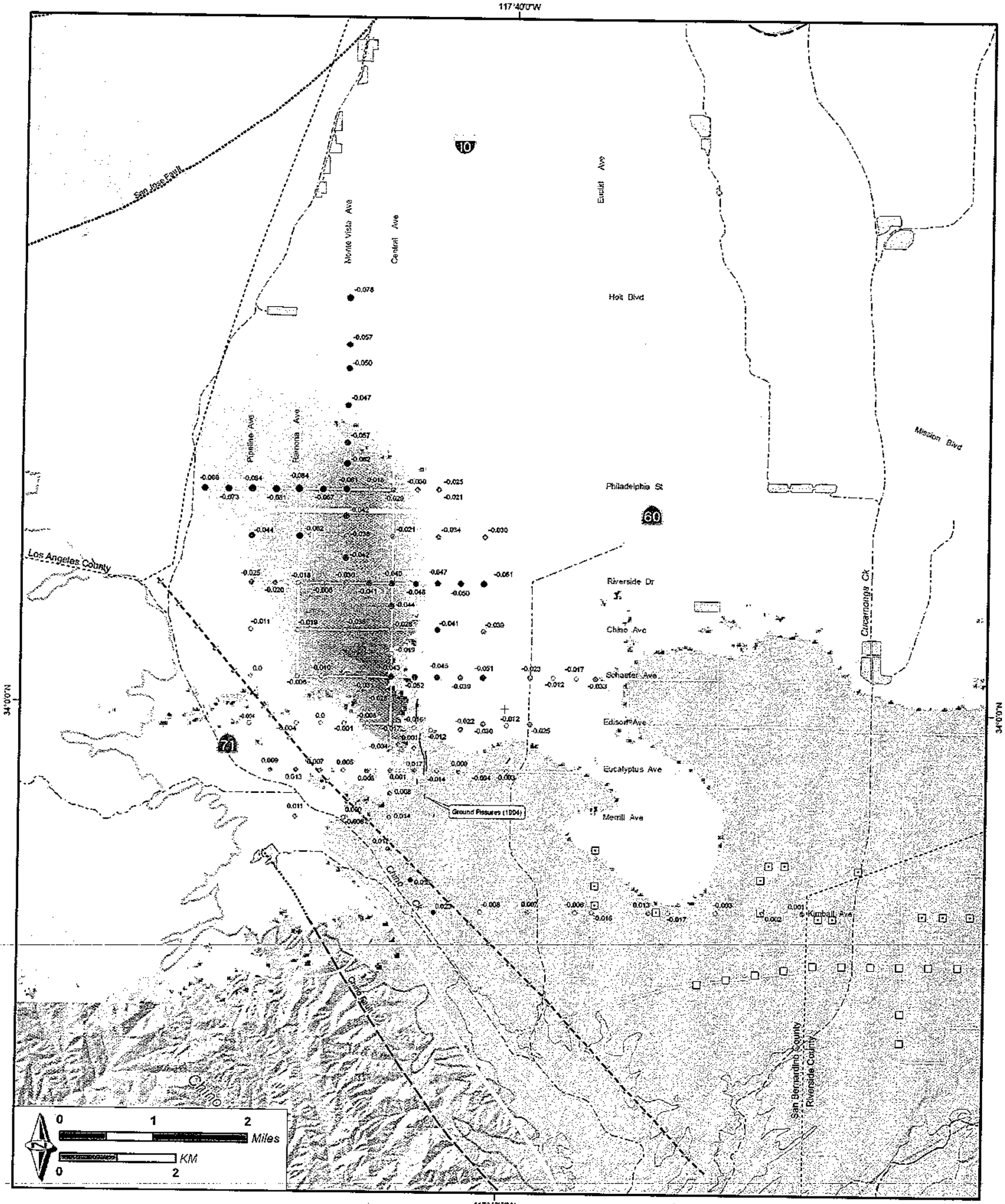
MZ-1 Groundwater Barrier
Evidence from Pumping Test

Figure 2-3

MZ-1 Summary Report
September 2005

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





Main Features

- -0.010 to -0.080
- -0.079 to -0.060
- -0.059 to -0.040
- -0.039 to -0.020
- -0.019 to -0.001
- 0.0
- 0.001 to 0.020

Relative Change in Land Surface Altitude as Measured by Leveling Surveys April 2003 - April 2004 (feet)

+ 1.0 / 0.0 / - 1.0

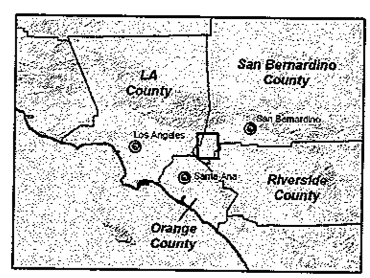
Relative Change in Land Surface Altitude as Measured by InSAR Oct 1993 - Dec 1995 (feet)

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 Approximate
- Location Concealed
- Location Uncertain
- Groundwater Divide



Prepared by:

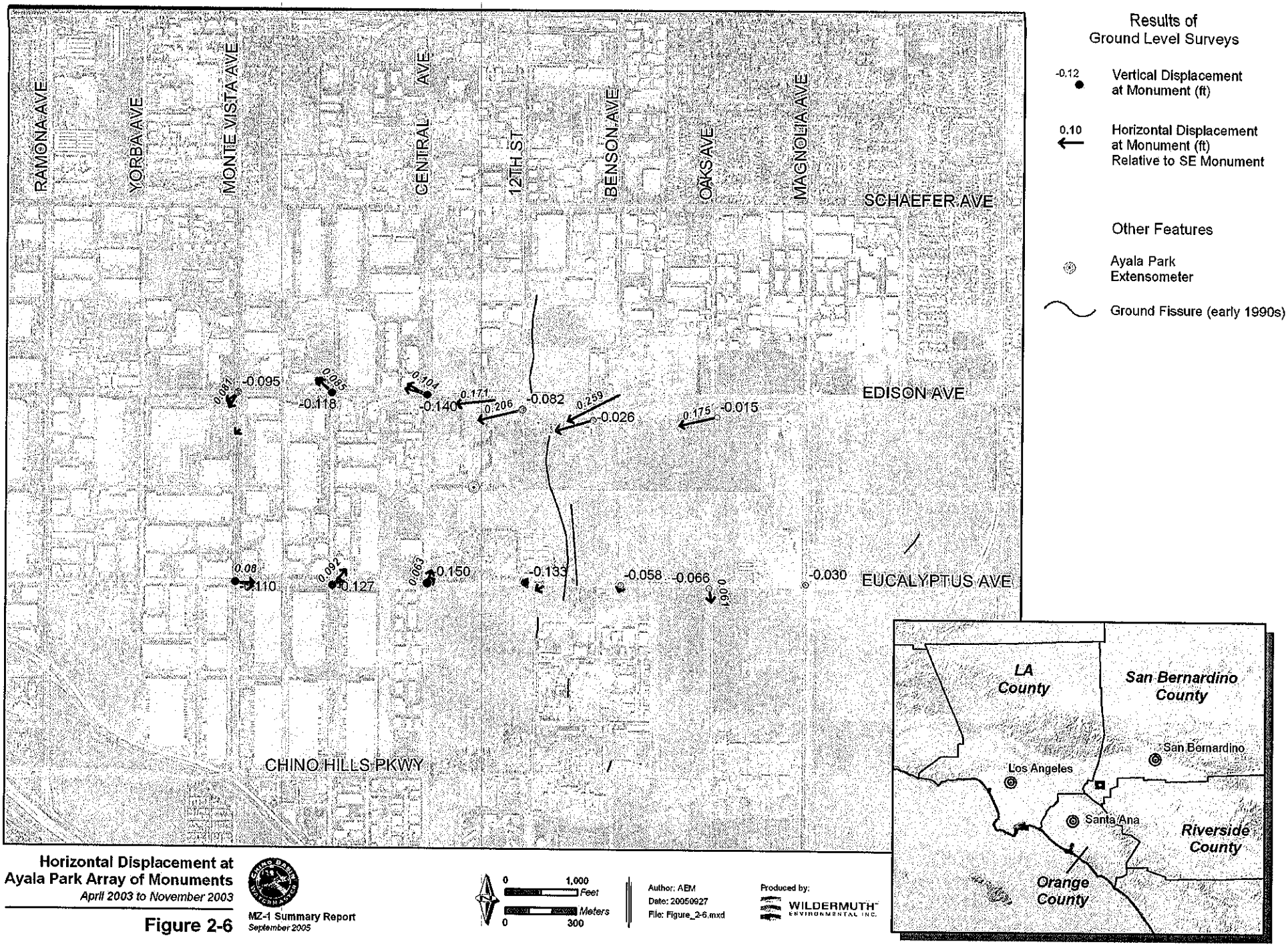
WILDERMUTH ENVIRONMENTAL INC.
23692 Birtcher Drive
Lake Forest, CA 92630
949.420.3030
www.wildermuthenvironmental.com

MZ-1 Summary Report
September 2005

Author: AEM
Date: 20050927
File: Figure_2-5.mxd

Ground Level Survey Results
April 2003 to April 2004

Figure 2-5

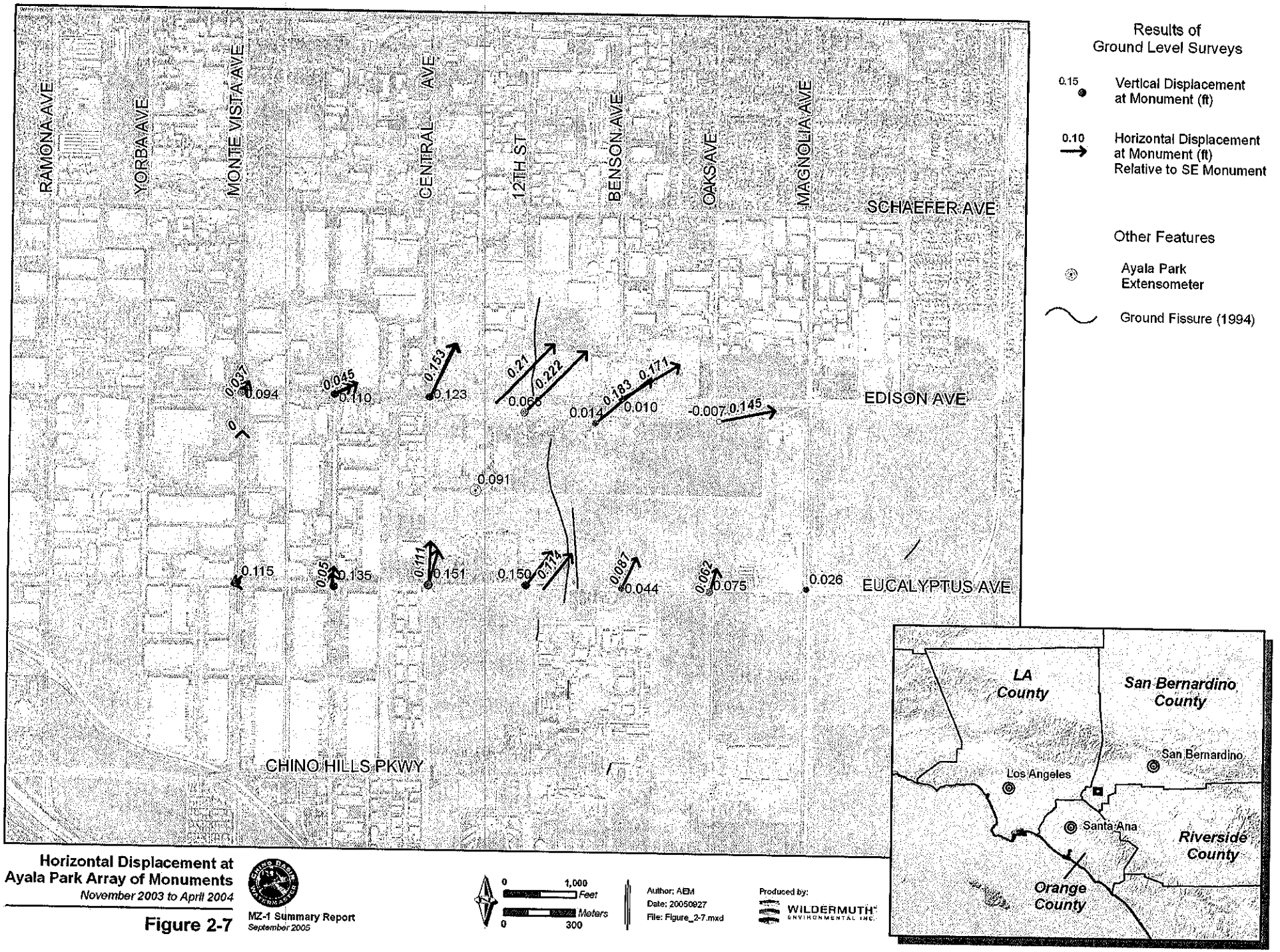


Horizontal Displacement at Ayala Park Array of Monuments

April 2003 to November 2003

Figure 2-6

MZ-1 Summary Report
September 2005



Horizontal Displacement at Ayala Park Array of Monuments

November 2003 to April 2004

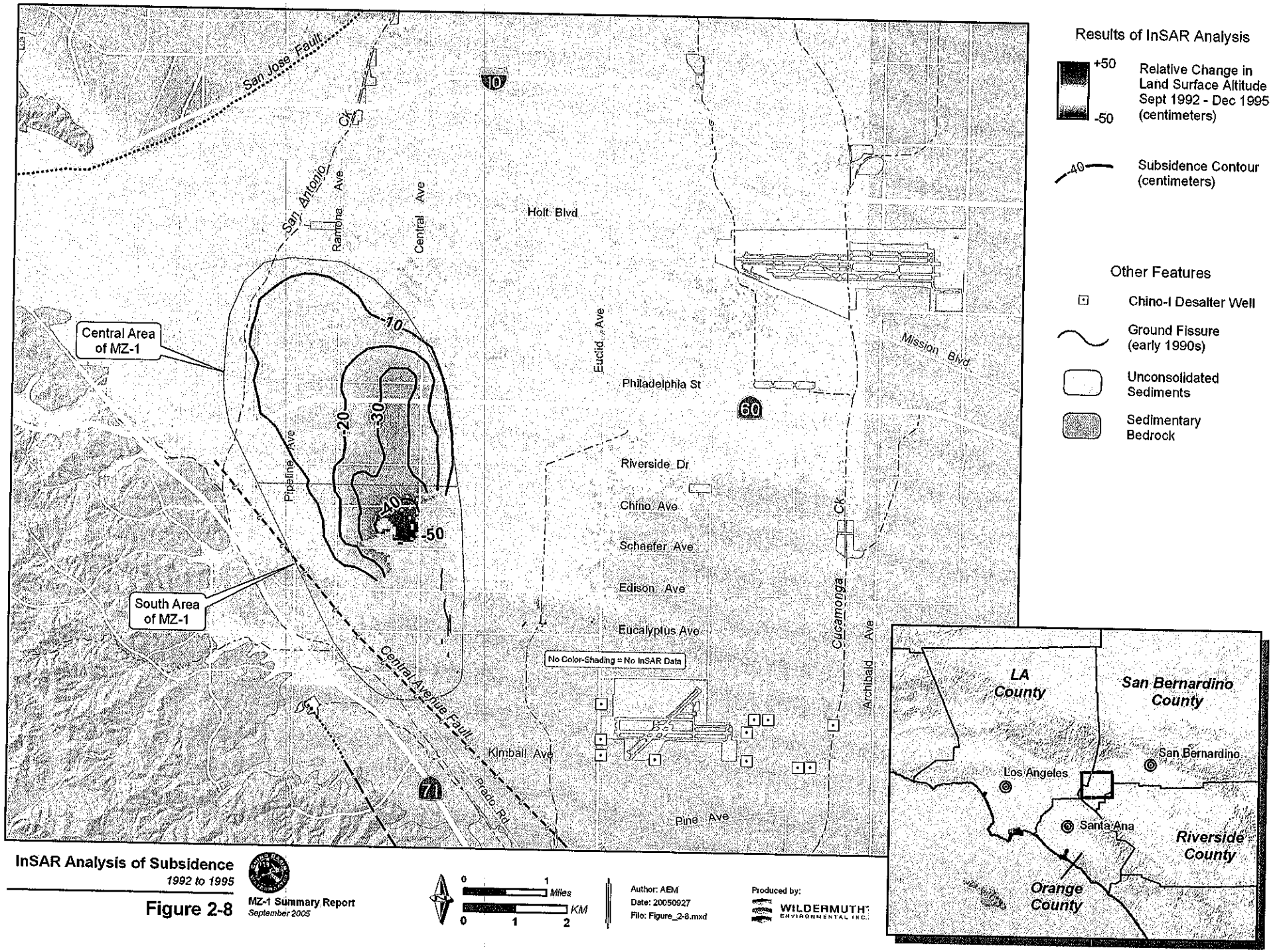
Figure 2-7

MZ-1 Summary Report
September 2005

0 1,000 Feet
0 300 Meters

Author: AEM
Date: 20050927
File: Figure_2-7.mxd

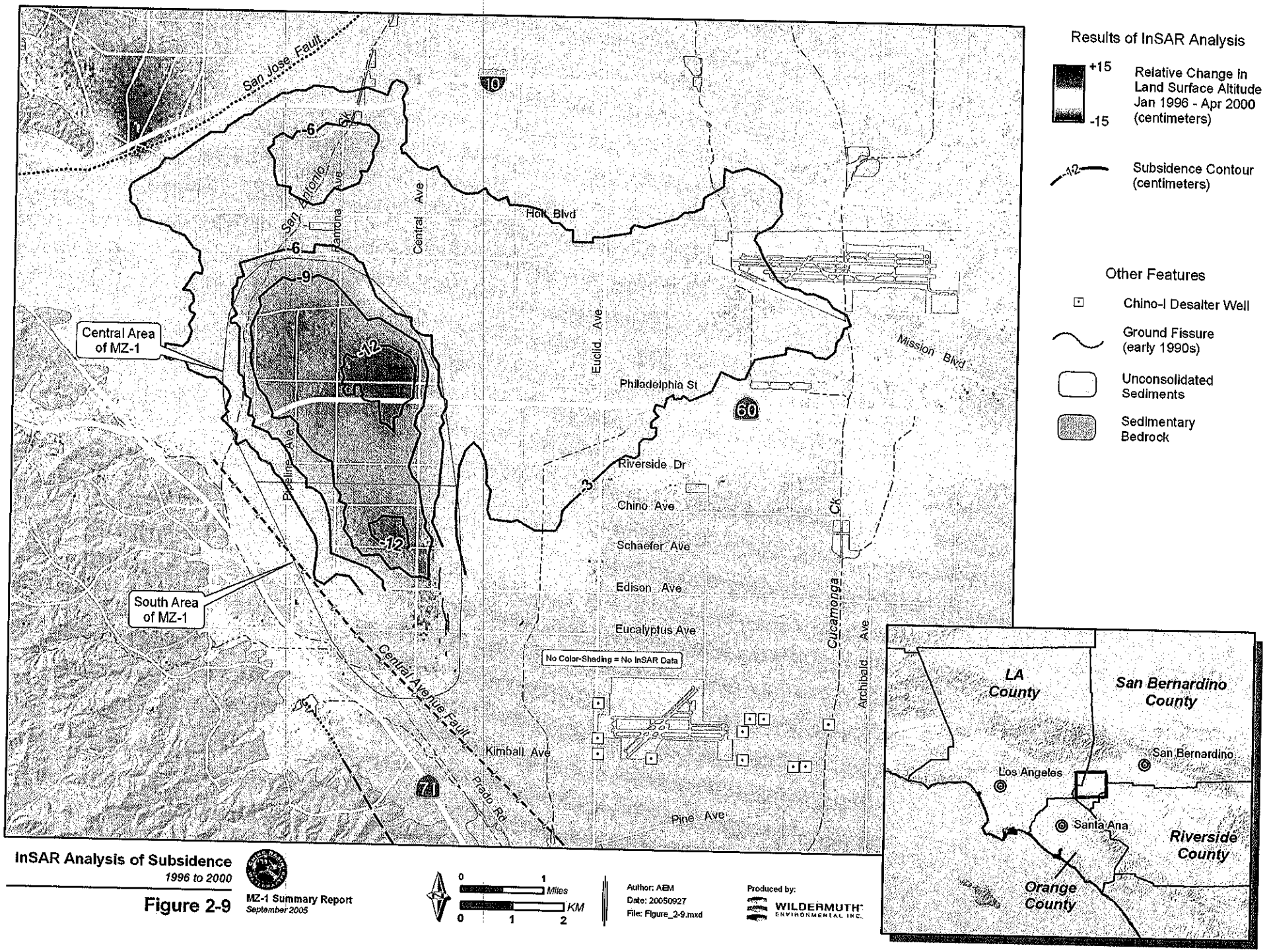
Produced by:
WILDERMUTH ENVIRONMENTAL INC.



InSAR Analysis of Subsidence
1992 to 1995

Figure 2-8

MZ-1 Summary Report
September 2005



InSAR Analysis of Subsidence
1996 to 2000

Figure 2-9

MZ-1 Summary Report
September 2005