

Bay
BALANCE HYDROLOGICS, INC.
841 FOLGER AVENUE
BERKELEY, CA 94710-2800
(510) 704-1000

RECEIVED
SEP 03 1992
CALIFORNIA
COASTAL COMMISSION
CENTRAL COAST AREA

***Half Moon Bay/Pillar Point
Ground-Water Basin Report
Phase II***

***Supplemental Data
June 1992***

Prepared for:

**Citizens Utilities Company
of California
and
Coastside County Water District**

Prepared by:

**Luhdorff & Scalmanini
Consulting Engineers
Woodland, California**

and

Earth Sciences Associates

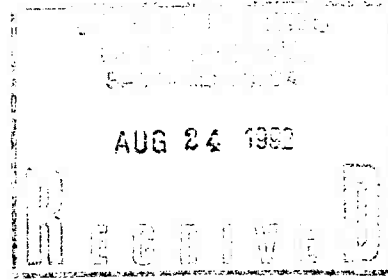


LUHDORFF & SCALMANINI
Consulting Engineers

Eugene E. Luhdorff, Jr., P.E.
Joseph C. Scalmanini, P.E.

August 20, 1992
File No. 87-1-074

Mr. David Frohnen
Citizens Utilities Company of California
P.O. Box 15468
Sacramento, CA 95851



**SUBJECT: SUPPLEMENTAL DATA FOR THE HALF MOON BAY/
PILLAR POINT GROUND-WATER BASIN REPORT, PHASE II**

Dear Mr. Frohnen:

Luhdorff and Scalmanini, Consulting Engineers (LSCE) in collaboration with Earth Sciences Associates (ESA) are pleased to present the enclosed report **Supplemental Data for the Half Moon Bay/Pillar Point Ground-Water Basin Report, Phase II**. As we discussed, the report is enclosed in "camera-ready" unbound form to allow you to make copies for distribution to interested persons and/or agencies. This report provides additional data and an update of the Phase II report through April 1992 as requested by San Mateo County and the California Coastal Commission. A summary of the key points and the source of the information is as follows:

- [ESA] Updates of ground-water elevation data indicate rising basin wide ground-water levels from December 1990 through April 1992.
- [ESA] Rapid rises in water levels in monitoring wells following periods of substantial rainfall suggest that the Denniston Creek Basin recharges relatively quickly, a further illustration of the Phase II report's assertion that the ground-water level declines are due to the drought, not over-pumping of production wells.
- [LSCE] Contours of equal ground-water elevation prepared for spring 1992 continue to show that ground-water elevations remain above sea level along the Half Moon Bay coastline.
- [ESA] The recent water levels measured in the piezometers show that an upward vertical ground-water gradient still exists, indicating that ground water continues to recharge the marsh.
- [LSCE] The quality of water in the basin is generally good and has shown no apparent change.

Mr. David Frohnen
August 20, 1992
Page 2

- [ESA/LSCE] Water levels within the basin have recovered seasonally, except during periods of temporary drought. It is expected that water levels in the DWR well (had it not been abandoned) would have exhibited increases consistent with the basin wide increase in ground-water elevations.
- [LSCE] Pumpage from three new wells located in the El Granada Mobile Home Trailer Park were not included in 1991 ground-water production calculations. The water pumped from these wells is used in lieu of water previously supplied by CUCC. The decrease in CUCC production in 1991 may reflect the Trailer Park well pumpage replacing CUCC supply. Based on the assumption that pumpage from the Trailer Park wells will reduce CUCC demand, hence production, by an equal amount, the three new wells will not produce an increase in ground-water pumpage from the basin.

We have enjoyed the opportunity to work with you and look forward to doing so in the future. Please call if you wish to further discuss the enclosed document.

Sincerely,

LUHDORFF AND SCALMANINI
CONSULTING ENGINEERS



Vicki Kretsinger

VK:js

Enclosure

Introduction

Following the February 11, 1992 hearing of the Board of Supervisors at which the Pillar Point Marsh Ground-Water Basin Report was discussed, both San Mateo County (letter of February 27, 1992) and the California Coastal Commission (letter of February 21, 1992) requested additional information to supplement the data and findings presented in the report. Subsequently, Coastside County Water District (CCWD) authorized Earth Sciences Associates (ESA) and Citizens Utilities Company of California (CUCC) authorized Luhdorff and Scalmanini, Consulting Engineers (LSCE) to respond to the additional requests for information. To most efficiently respond to the letters of request by the County and the Commission, ESA and LSCE have responded to different data requests to minimize duplication of effort.

This document has been organized to include copies of the San Mateo County and Coastal Commission letters. To those letters, item numbers have been assigned to specific comments. Following each letter are responses by ESA and/or LSCE which correspond to the itemized comments.

Department of Environmental Management
Planning and Building Division



Planning Division · 415/363-4161 · FAX 363-4849

Building Inspection Section · 415/363-4601 · FAX 363-4849

County of San Mateo

Mail Drop 5500 · 590 Hamilton Street, 2nd Floor · Redwood City · California 94063

Board of Supervisors

Anna G. Eshoo
Mary Griffin
Tom Huening
Tom Nolan
William J. Schumacher

**Director of
Environmental Management**
Paul M. Koenig

Planning Administrator
Terry L. Burnes

February 27, 1992

Mr. Joseph Scalmanini
Luhdorff and Scalmanini Consulting Engineers
500 First Street
Woodland, CA 95695

Dear Mr. Scalmanini:

SUBJECT: Request for Additional Data from Phase II of the Pillar Point Marsh Groundwater Basin Report

At the February 11, 1992 hearing of the Board of Supervisors, the Pillar Point Marsh Groundwater Basin Report was continued until May to allow staff to develop management options for the Board to consider and to allow time for your firm to collect some additional information. In order to assess the current health of the marsh and determine a safe yield for groundwater extraction, the following additional information was requested:

- SM1** • An update of the tables and graphs to include the most recent data available specifically for the Piezometer Groundwater Elevations (Table 3.4).
- SM2** • An update of the hydrographs for Monitoring Wells M5 and M7.
- SM3** • A final determination of how many wells exist in the basin and their approximate location and depth.
- SM4** Additionally, after your presentation at the February 11, 1992 hearing, Mr. William Rozar and I had an opportunity to discuss your statement that a "small scale well drilled a reasonable distance from the marsh and coastsides may not have a negative impact on the marsh." You indicated that this information could be compiled in a table which would assist in the review of two pending Coastal Development Permits which were filed with our department prior to the release of Phase II of the Pillar Point Marsh Groundwater Basin Report.

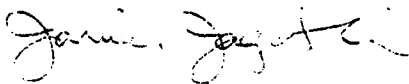
As we described, each permit involves the drilling of a new well within the Princeton area. One permit at 386 Harvard Avenue involves a 2,000 sq. ft.

Mr. Joseph Scalmanini
February 27, 1992
Page 2

mixed use building with a sail repair shop downstairs and a caretakers unit upstairs. The water consumption for this use would be equivalent to a single family residence. The second proposed use is more water intensive; an existing warehouse located at 258 Yale Avenue would be converted to a fish processing plant which would require a minimum of 1,000 gallons of water per day.

Please let me know if this information is available and whether we could receive it prior to the release of the additional information requested for the continued Board of Supervisors hearing in May, 1992. I can be reached at 415/363-1841.

Sincerely,



Janice Jagelski
Planner II

JEJ:kcd - JEJC0541.AKN

cc: Michael Murphy, Deputy County Counsel
Bill Rozar, Development Review Manager

Responses to San Mateo County - Letter of February 27, 1992

SM1. & SM2. *Request for update of tables and graphs to include the most recent data available, specifically for piezometer ground-water elevations.*

SM1. & SM2. [ESA] The update of requested graphs and tables from the Phase II Pillar Point Marsh Ground-Water Study has been completed. This work included taking new measurements of stream flows and piezometer water levels in the Denniston Creek Basin.

See the attached Tables 3.1, 3.2, 3.3, 3.4 and Figures 3.3, 3.4, 3.6, 3.am, 3.7b, and 3.8. The ground-water hydrograph for M5 has also been updated (no figure number). A hydrograph was not prepared for M7 due to the lack of data for that well which has generally been inaccessible throughout the study period.

All of the hydrographs indicate rising ground-water levels in 1992. Table 3.3 also shows that there has been a substantial increase in basinwide ground-water levels between December 1990 and April 1992. It is also important to note that some of the water levels in the monitoring wells rise fairly rapidly following a period of substantial rainfall. For example, notice the rise in Wells M-1, M-3, and M-4 following the major storm in February 1992. This response also occurred following the March 1991 rains and, to a smaller degree, in January 1992. This finding suggests that the Denniston Creek Basin recharges relatively quickly, and it further illustrates the Phase II report's assertion that the ground-water level declines are due to the drought and not over-pumping of production wells.

The recent water levels measured in the piezometers show that an upward vertical

ground-water gradient still exists. This indicates that ground water continues to recharge the marsh, and that the marsh apparently has not been adversely affected by pumping of existing production wells.

Finally, stream flow measurements were taken at the eight locations previously monitored. The measurements were made immediately after a small storm had passed through the area. All eight locations had measurable stream flows; however, stream flows were found to be lower than those measured in March 1989.

SM3. *Request for final determination of how many wells exist in the basin and their approximate location and depth.*

SM3. [LSCE] At the onset of the project, Luhdorff and Scalmanini, Consulting Engineers (LSCE) performed a thorough review of drillers' reports available through the Department of Water Resources to identify wells within and adjacent to the study area. In the **Half Moon Bay Airport/Pillar Point Marsh Ground-Water Basin Phase I Report** (LSCE, June 1987), the following was reported:

"Approximately 90 well logs within and adjacent to the study area have been obtained and reviewed in order to determine their potential for use in water level and water quality determinations. Most of the wells with logs, however, are located outside the study area. A fairly large number of recently constructed domestic wells are located in the El Granada area, a separate ground-water "basin" located east of the southern portion of this basin."

The predominant pumpage was identified as resulting from wells owned and operated by the Citizens Utilities Company of California (CUCC) and Coastside County Water District (CCWD). There were approximately 16 other existing wells identified in the study area as part of the Phase I work. The Phase II report estimated domestic production at approximately 25 acre-feet per year or approximately twice the production that might be expected based on a water usage of 750 gallons per well per

day.

In the County of San Mateo Division proposed negative declaration for the Fortado fish processing plant and water well, it is noted that the County Planning and Building Division is maintaining a register of new well permits.

Based on the work done as part of Phase I to identify wells in the study area, the conservative nature of the production estimate for those wells which was used in the determination of the range of safe yield reported in the Phase II report, and the fact that the County is identifying and registering new wells, no attempt was made to make a "final determination of how many wells exist in the basin".

SM4. Impact of "small scale" well drilled reasonable distance from the marsh.

SM4. [LSCE] - The scenario presented in the County's letter of February 27, 1992 consisted of a well located approximately 1,200 feet from the marsh and a minimum production of 1,000 gallons per day. Based on an average transmissivity of 700 gpd/ft., an average storativity of 0.001 (Phase II report), and the relatively low total daily water production, there would be no impact from pumping on ground-water levels underlying the marsh. Although the physical relationship of the well and typical pumping cycles would result in no impact on water levels beneath the marsh, potential effects of the additional production within the basin should be considered in the context of the results presented in the Phase II report. And, although low capacity wells have little immediate impact on water levels, the cumulative production from such wells will begin to have an impact.

Table 3.1
Surface-Water Flow Measurements in Denniston Creek
Half Moon Bay Airport/Pillar Point Marsh

Station	Stream	Location	Flow (3/16/89)	Flow (6/20/90)	Flow (3/30/92)
1	Denniston Creek	NE Edge of Basin	4934	35	3547
2	Denniston Creek Tributary	E Edge of Basin	717.6	0	247
3	Denniston Creek Tributary	E Edge of Basin	0	0	3
4	Denniston Creek Tributary	E Edge of Basin	269.1	0	105
5	Denniston Creek	Highway 1 Culverts	3408.6	55	1988
6	Denniston Creek	At Princeton	0	0	3107
7	Drainage from Airport	At Airport Road	0	0	190
8	Drainage from Airport	At Highway 1	314	0	128

Note: All flows in gpm

Revised April 1992

Adapted from Earth Sciences Associates, 1990, 1991, 1992

Table 3.2
Ground-Water Production
Half Moon Bay Airport/Pillar Point Marsh

Year	CCWD (Acre-Feet)	CUCC (Acre-Feet)	Total Production CUCC & CCWD (Acre-Feet)
1976	171.60	82.20	253.80
1977	194.30	60.20	254.50
1978	114.80	167.30	282.10
1979	135.30	169.90	305.20
1980	81.00	232.30	313.30
1981	172.20	147.70	319.90
1982	191.80	187.40	379.20
1983	98.50	223.30	321.80
1984	151.90	211.00	362.90
1985	122.40	232.20	354.60
1986	186.60	218.80	405.40
1987	169.42	237.39	406.81
1988	140.34	291.05	431.39
1989	147.00	265.00	412.00
1990	162.75	229.31	392.06
1991	132.24	203.93*	336.17

* The 1991 CUCC production does not include production from the three mobile home park wells.

Revised April 1992

Table 3.3
Ground-Water Elevations in Monitoring Network
Half Moon Bay Airport/ Pillar Point Marsh

Well	Reference Point Elevation	05/14/87	04/11/88	10/06/88	03/21/89	03/30/90	12/13/90	04/3/92
W1	45					7.58	-0.21	11.67
W2	52				4.48	4.57	0.24	13.41
W3	60					7.74	2.41	15.68
W4	58						-1.95	9.74
W5	50	21.35	28.85	34.42		1.76	-1.88	8.41
W6	65							
W7	75					60.47	57.60	67.06
W9	40				21.29	16.50	11.74	20.72
M1	25				18.10	11.15	6.71	15.73
M2	50	31.75	13.95	29.74	10.85	2.47	-1.49	12.73
M3	70	43.10	34.82	32.53	44.47	28.33	21.90	48.62
M4	28	20.00	NA	6.96	22.21	10.31	5.93	20.07
M5	22	16.45	9.79	11.96	10.45	5.73	1.98	8.5
M6	45	33.45	20.04	35.72	26.60	21.78	17.90	22.98
M7	25				16.68	na	na	na
CUCCN	59	26.50	-12.66p	9.75	13.56	11.22	7.23	14.17
CUCCS	57	21.75	-20.98p	5.41	9.17	7.17	3.20	11.29*
CCWDN	59	48.62	46.69	45.92	45.23	44.01	41.40	45.56
FV	32	14.65	6.47	10.58	6.59	5.82	-0.09	9.54
Michaelson	19.25	16.45	11.63	7.85		10.85	5.77	
Romeo	16	9.45						
Baranca	26	17.61	13.19	9.23	14.52	9.59	6.41	9.93
CODO	22		11.13	7.21	12.56	7.64	3.80	10.98
EG New	40	25.12	17.30	14.55	18.62	14.55	10.73	-6.71p
EG Old/DWR	36	23.18	14.87	11.43	15.13	11.56	7.71	Abandoned
Airport 3	50			3.42		4.27	0.39	6.48

Note: Elevations are in Feet, MSL.

na = well has not been accessible for measurement

p = pumping level

* measured abandoned well 100' south of CUCCS well

EGold/DWR = DWR Well 5S/6W-10J1

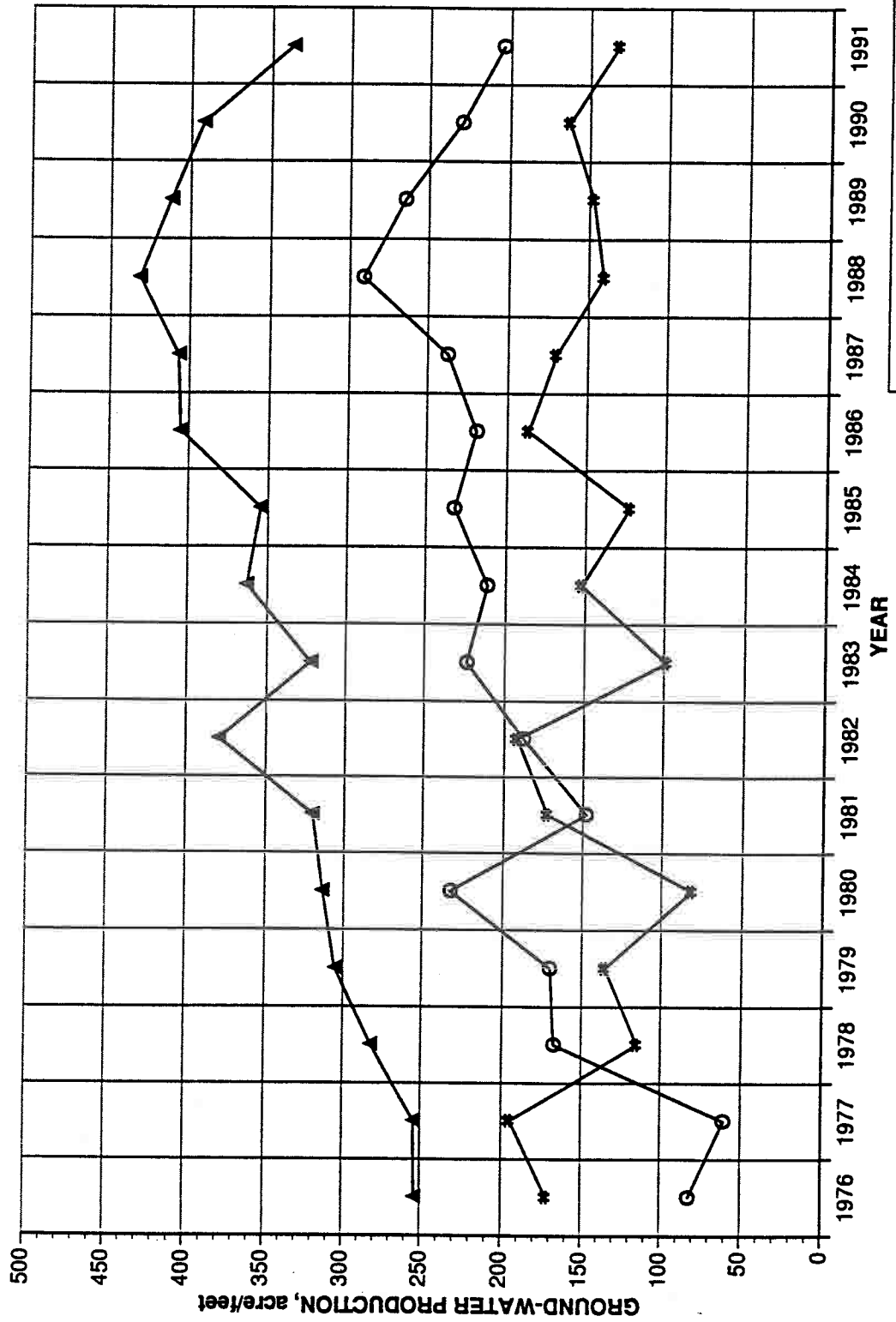
Revised April 1992

Table 3.4
Ground-Water Elevations in Piezometers
Half Moon Bay Airport/Pillar Point Marsh

	Piezometer P-1	Piezometer P-2	Piezometer P-3
Total Depth (Feet)	48.35	23.09	14.90
Reference Point Elevation	8.99	9.22	9.48
05/1/1989	6.09	4.82	4.48
05/03/89	6.04	4.47	4.19
05/10/89	6.04	4.32	4.19
07/21/89	5.15	1.84	1.89
10/24/89	4.17	3.02	3.28
12/07/89	4.66	3.84	4.06
01/12/90	4.20	3.94	4.29
02/19/90	4.95	4.49	4.31
06/20/90	4.91	3.72	3.67
08/23/90	3.41	1.94	2.45
10/10/90	2.75	0.72	1.11
04/19/91	4.93	4.46	4.19
04/14/92	5.99	4.94	4.61

Note: Elevations are in Feet, MSL.

Revised April 1992



Earth Sciences Associates
 Palo Alto, California

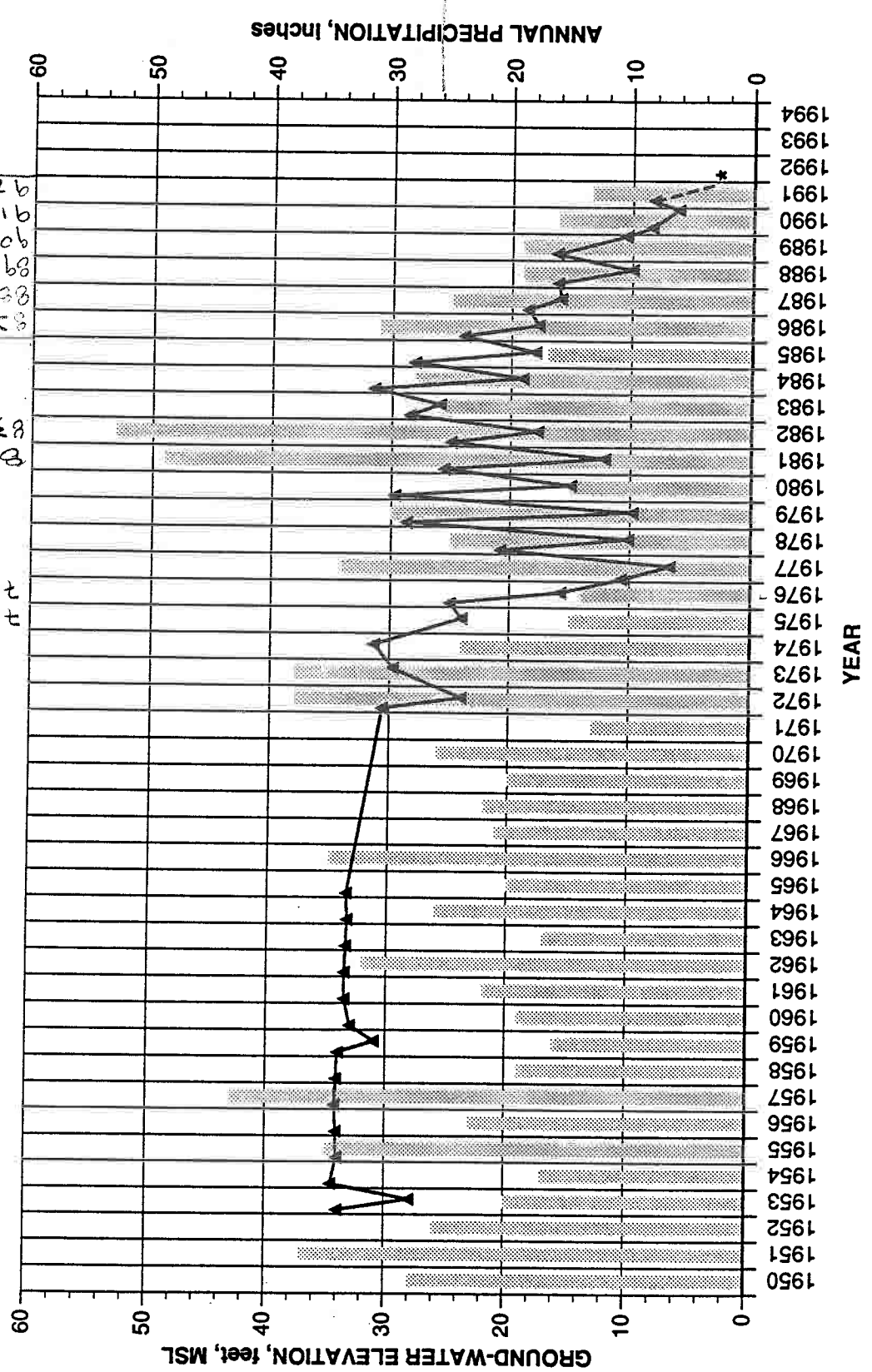
PHASE II PILLAR POINT GROUND-WATER STUDY - UPDATE
 GROUND-WATER PRODUCTION HYDROGRAPH

Checked By: _____ Date: _____
 Approved By: _____ Date: _____

Project No. 3539 Figure No. 3.3

—*— CCWD
 —○— CUCC
 —▲— Total

Revised April 1992



Earth Sciences Associates
 Palo Alto, California

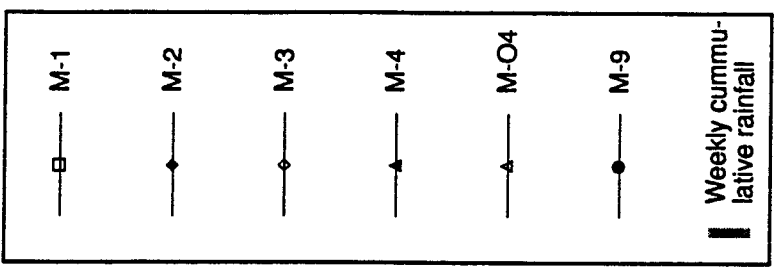
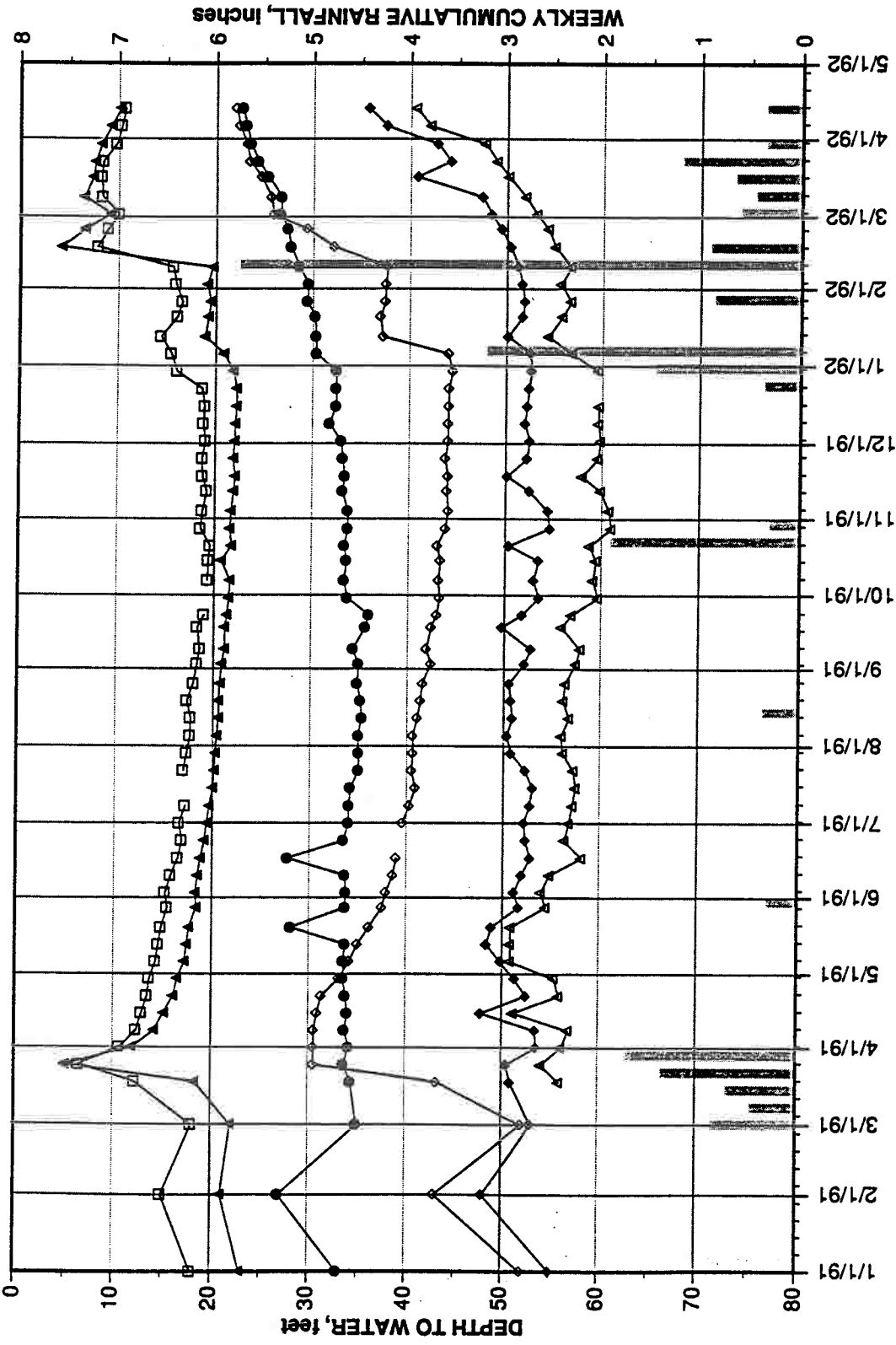
PHASE II PILLAR POINT GROUND-WATER STUDY - UPDATE
 GROUND-WATER HYDROGRAPH
 FOR DWR WELL 5S/6W-10J1

Checked By: _____ Date: _____
 Approved By: _____ Date: _____

Project No. 3539
 Figure No. 3.4

*Note:
 Well 5S/6W-10J1 was dry in Dec. 1991
 and abandoned in April 1992
 Revised April 1992.

▲ Well 5S/6W-10J1
 ■ Annual precipitation

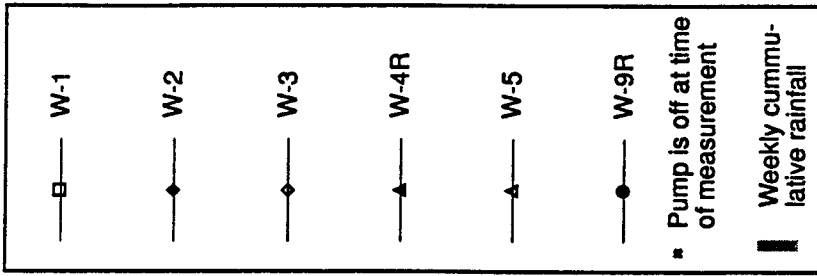
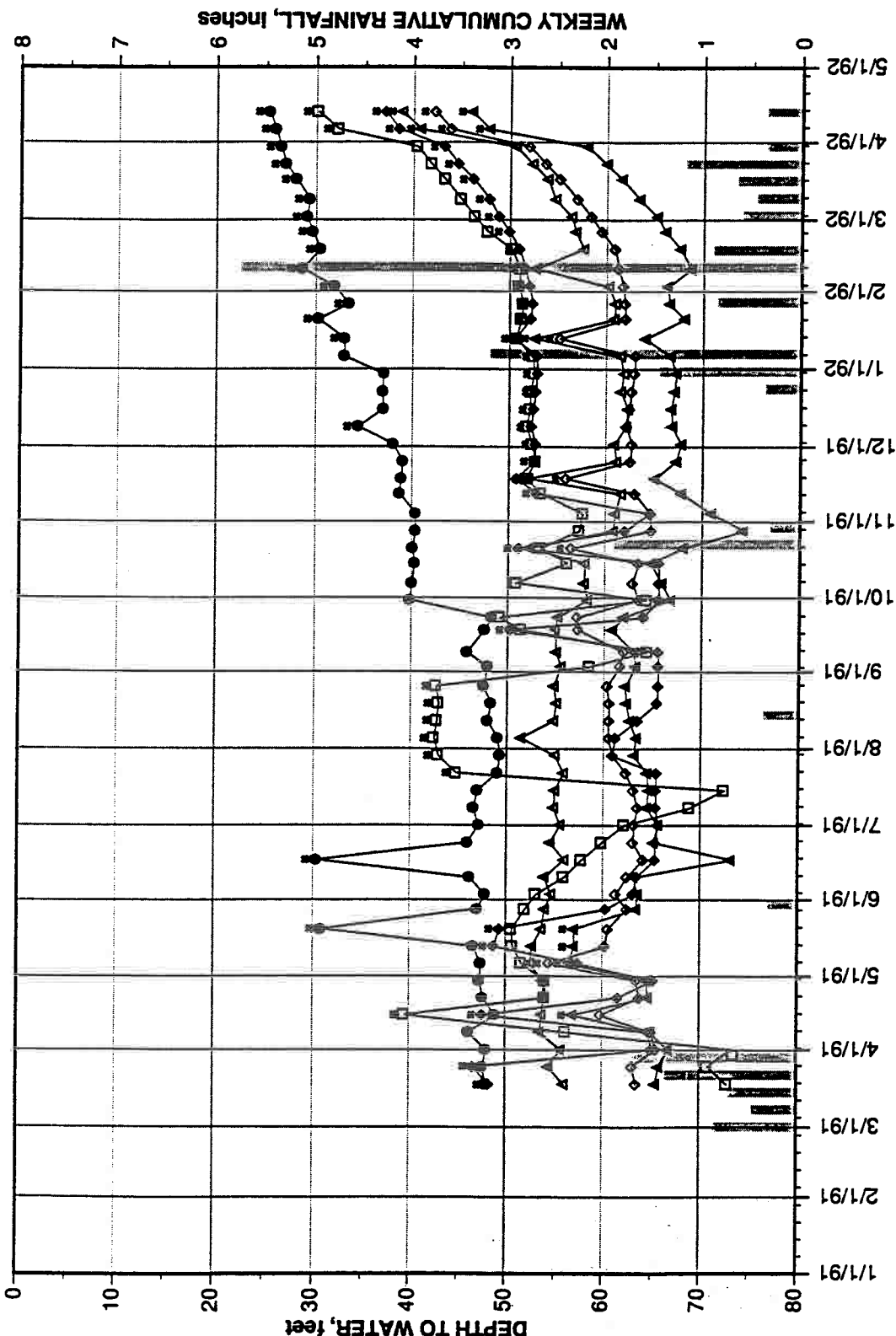


Earth Sciences Associates
Palo Alto, California

PHASE II PILLAR POINT GROUND-WATER STUDY - UPDATE
GROUND-WATER HYDROGRAPH
FOR CCWD MONITORING WELLS

Checked By _____	Date _____	Project No. 3539	Figure No. 3.6
Approved By _____	Date _____		

Revised April 1992

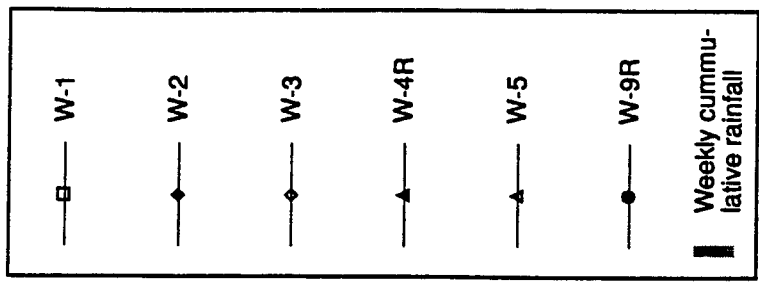
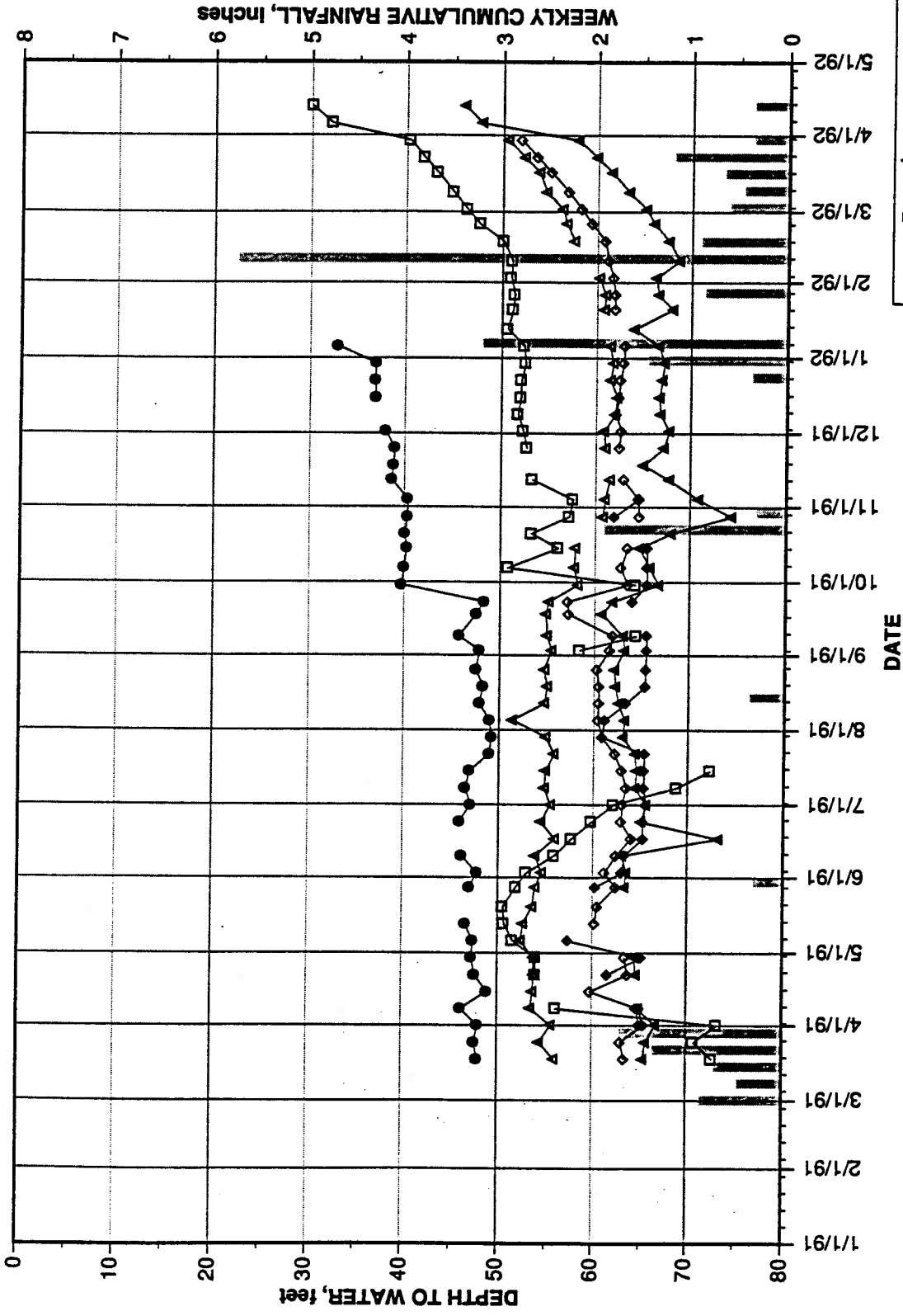


Earth Sciences Associates
Palo Alto, California

PHASE II PILLAR POINT GROUND-WATER STUDY - UPDATE
GROUND-WATER HYDROGRAPH
FOR CCWD PRODUCTION WELLS

Checked By _____	Date _____	Project No. 3539	Figure No. 3.7
Approved By _____	Date _____		

Revised April 1992



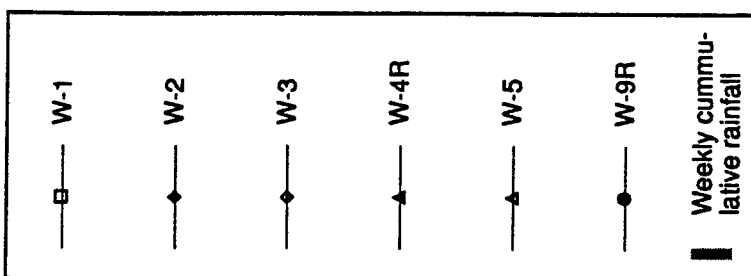
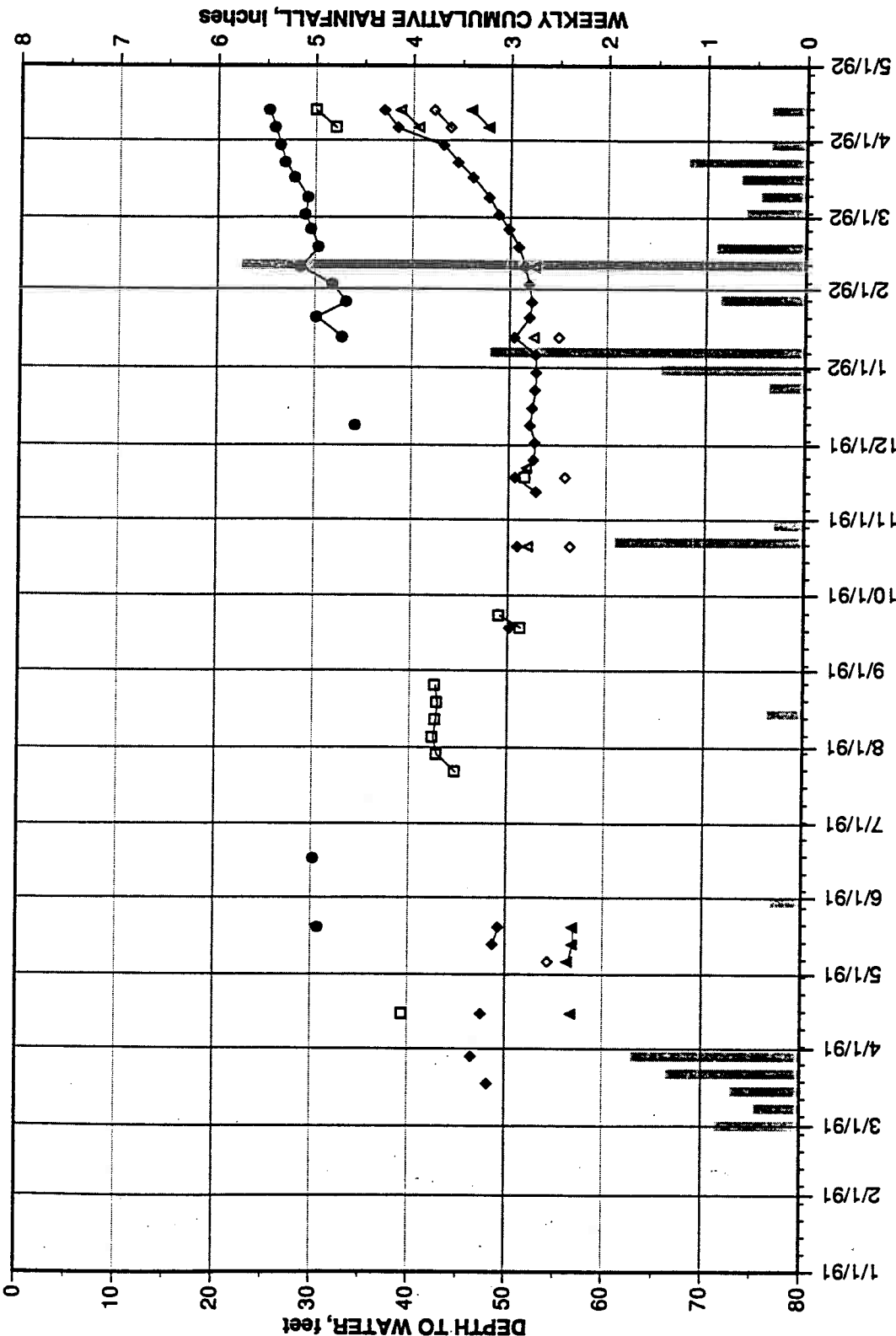
Earth Sciences Associates
 Palo Alto, California

PHASE II PILLAR POINT GROUND-WATER STUDY - UPDATE
 GROUND-WATER HYDROGRAPH FOR
 CCWD PRODUCTION WELLS - PUMPING LEVELS

Checked By: _____ Date: _____
 Approved By: _____ Date: _____

Project No. **3539** Figure No. **3.7a**

Revised April 1992

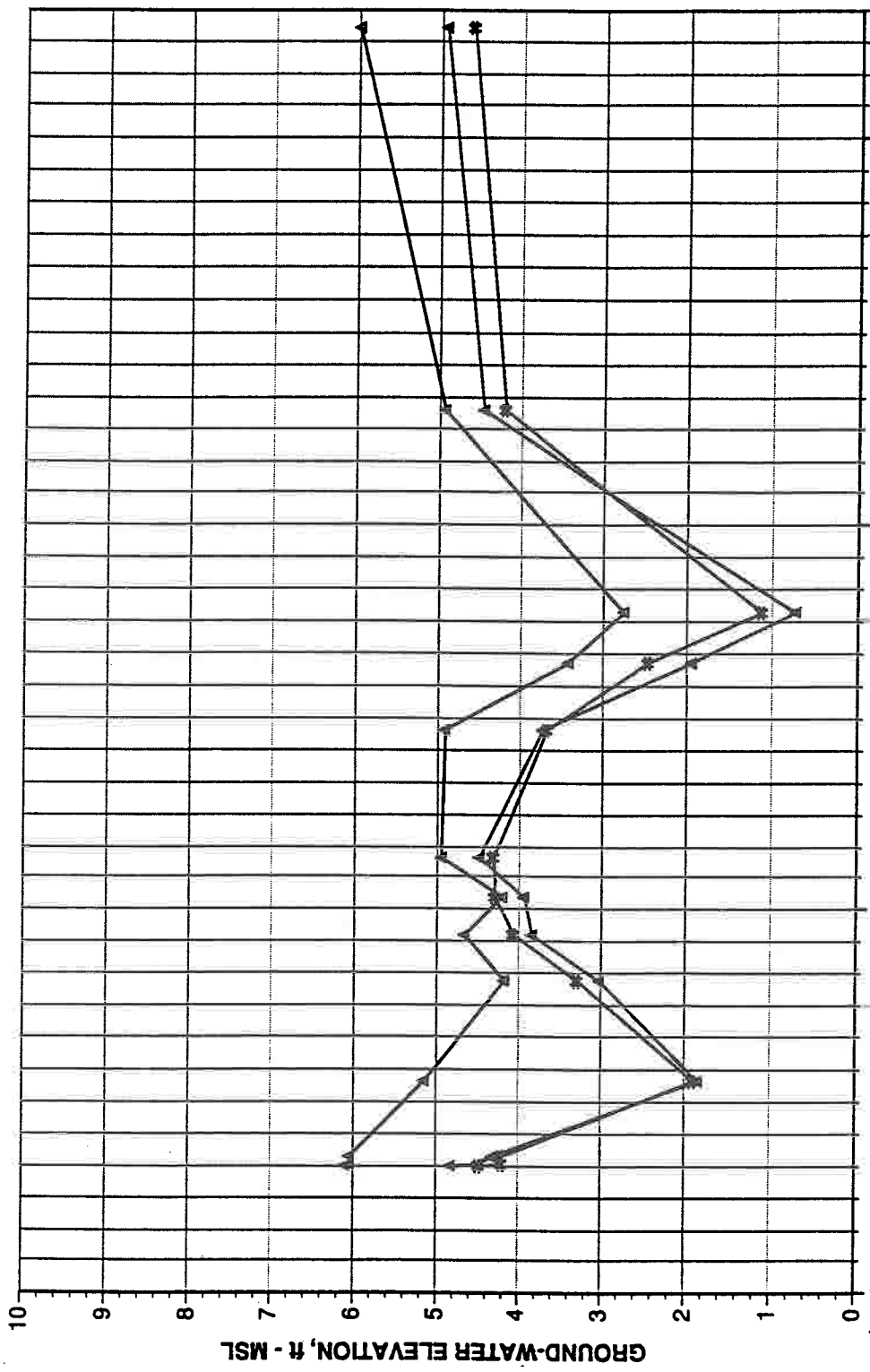


Earth Sciences Associates
Palo Alto, California

PHASE II PILLAR POINT GROUND-WATER STUDY - UPDATE
GROUND-WATER HYDROGRAPH FOR
CCWD PRODUCTION WELLS - STATIC LEVELS

Checked By _____ Date _____
Approved By _____ Date _____
Project No. 3539 Figure No. 3.7b

Revised April 1992



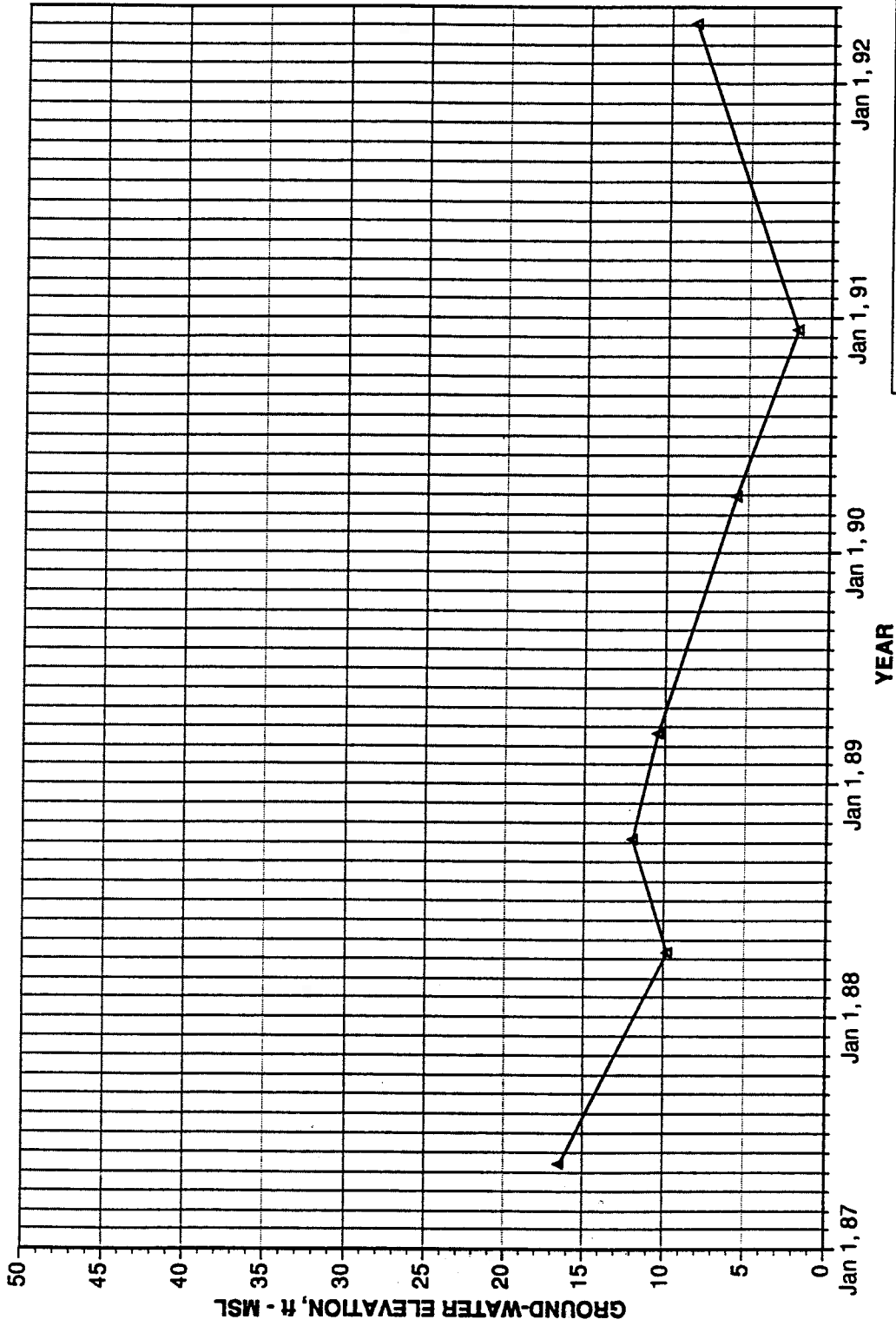
Earth Sciences Associates
 Palo Alto, California
 PHASE II PILLAR POINT GROUND-WATER STUDY - UPDATE
 GROUND-WATER ELEVATION HYDROGRAPH
 FOR PIEZOMETERS

Jan 1, 89 WY 89 24.5" 3/4
 Jan 1, 90 WY 90 16.4" 4/6
 Jan 1, 91 WY 91 20.8" 5/4
 Jan 1, 92 WY 92 24.2" 4/6

Checked By: _____ Date: _____
 Approved By: _____ Date: _____
 Project No. 3539 Figure No. 3.8

Revised April 1992

Rainfall
 24.5" 3/4
 20.8" 5/4
 16.4" 4/6
 24.2" 4/6



—▲— M5

Earth Sciences Associates
Palo Alto, California

PHASE II PILLAR POINT GROUND-WATER STUDY - UPDATE
M5 HYDROGRAPH

Checked By: _____	Date: _____	Project No. 3539	Figure No. _____
Approved By: _____	Date: _____		

Revised April 1992

CALIFORNIA COASTAL COMMISSION

CENTRAL COAST AREA OFFICE
 640 CAPITOLA ROAD
 SANTA CRUZ, CA 95062
 (408) 479-3511



February 21, 1992

L.J. D'Addio, General Manager
 Citizens Utilities
 P.O. Box 15468
 Sacramento, CA 95851

RE: Half Moon Bay Airport/Pillar Point Marsh
 Ground-Water Basin Report Phase II

Dear Mr. D'Addio:

This is in response to Coastal Commission staff receipt and review of the above-referenced document. This ground water report was a requirement of Permit A-3-SMC-86-155, approved by the Coastal Commission on November 14 1986. Condition 1.(b) of that permit requires that the report be reviewed and a determination made whether or not it meets the requirements of condition 1.(a) of that permit and San Mateo County Local Coastal Program policies 2.32 and 7.20.

While this report does contain sound background information that can be used to set up a use/monitoring program for this area, there are some problems. It does not appear that the report fully satisfies San Mateo County LCP policies 2.32 and 7.20, specifically with reference to determination of safe yield. The three following items must be addressed for an accurate understanding of the ground water situation in this basin and the safe yield:

1. It appears that all of the wells drawing water out of the basin were not counted and the amounts of water being pumped from them were not included in the groundwater pumpage totals. These wells are: a) the trailer park wells, b) the Farralone Vista well, c) agricultural wells east of Highway 1, and d) any other well drilled since the Phase I report. Information on these wells and the amount of water they are pumping is necessary to arrive at an accurate safe yield figure. Please also include a map or maps that show all wells in the subject ground water basin and which include the following information: identification, ownership, whether active or abandoned, and whether production or monitoring well. It would also be helpful to show all parcels where there is more than one well per single-family dwelling and areas of poor ground water quality (e.g., high specific conductance, high chloride levels).
 - CC1a.
 - CC1b.
 - CC1c.
2. Department of Water Resources monitoring well 5S/5W-10J1 has gone dry (see attached letter). This of course occurred after completion of the Phase II report, but the fact that this well was dewatered and the implication of that needs to be addressed. It is imperative that you determine why this well was dewatered and what that means for the other wells.
 - CC2.

L.J. D'Addio, General Manager
 Citizens Utilities
 February 21, 1992
 Page 2

- CC3. 3. The study area delineated on figure 2.1 overlaps with the study area described on figure 2 in the El Granada groundwater report by Kleinfelder (April 1988). This could create a problem with both reports if each one counts the overlap as a part of their basin, since the water in the overlap area would be counted as part of the water budget in each report. If this is the case one or both of the reports will need to redefine the water basin boundaries to determine a new safe yield.

It is critical to address the above three issues and incorporate the results into an addendum to the Phase II report. It is necessary to have an accurate, thorough, and complete report so that the Commission can make accurate findings and give competent direction to facilitate the development of adequate water supplies for this area, water that does not impact the maintenance and biologic stability of significant coastal resources.

Other problems found with the report are more concerned with the completeness and interpretation, or lack of interpretation of the information gathered:

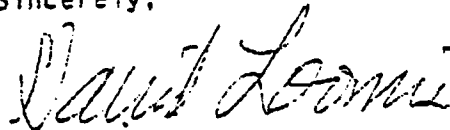
- CC4a. Figures 3.1 and 3.2 showing well locations would be much more useful if the ground-water basin boundaries were shown. It is helpful to use the same base map for all site locations, geology, and water elevations so they can be used together, to determine any interactions. A geologic map should be included showing the physical boundaries of the basin such as faults and contacts.
- CC4b.
- CC5. Table 3.3 showing ground-water elevations should have an additional column showing delta E, (E initial - E current), the net change in elevation. It may also even be possible to calculate an average change and a rate of change. These figures can be very useful for projecting future changes and water use.
- CC6. Figure 3.4, the ground water elevation hydrograph that compares annual precipitation with respect to ground-water elevation for DWR well 5S/6W-10J1, should be discussed in the text. The ground water elevation appears to have remained rather steady until the early 1970's. Since that time the ground water levels have fluctuated wildly while showing an overall drawdown. Apparently this site passed the equilibrium point, a pumping/recharge balance, in the early 1970's with an overall decline since. It could also be indicative of a sub-basin or fault bounded basin within the basin. This should also be discussed in the text. Note that this well is the DWR well that has gone dry.
- CC7. Figures 3.6 and 3.7 should show a full year of ground water elevations to determine if there is a seasonal fluctuation reflected on the overall downward trend. January to June does not constitute a hydrographic year and does not show the critical time that occurs much later in the season from August to November.

L.J. D'Addio, General Manager
Citizens Utilities
February 21, 1992
Page 3

- CC8. On page 15 is the statement that "outflow was nil"; was submarine outflow or seepage along fault zones eliminated? There must be some subterranean losses or there would be surficial runoff. It is also possible that the lack of outflow is an indication of overdraft. These possibilities should be discussed in the text.
- CC9. The ground-water hydrographs in Appendix i for the wells in the basin are good for showing the overall downward trend in ground-water elevations. This downward trend should be thoroughly discussed in the text.

Overall this report has produced good background information, but there are several issues that need to be addressed or clarified so that a true picture of the ground water parameters and safe yield may be seen. Staff is tentatively scheduled to take the Phase II report to the Coastal Commission at the April hearing. The more accurate, thorough, and complete the information is, the more realistic and workable will be the result. So that your comments and any additional information may be considered at the hearing, please respond to the concerns and issues raised above no later than March 11, 1992. If you have questions please contact Steve Guiney or Diane Landry at this office.

Sincerely,



David Loomis
Assistant District Director

DL/SG/JM/cm

Enclosure: letter from Department of
Water Resources, December 16, 1991

cc: Janice Jagelski, San Mateo County Planning Department
Martha Lennihan, Grueneich, Ellison & Schnider
Lenore Roberts, Committee for Green Foothills
Ray E. McDevitt, Hanson, Bridgett, Marcus, Vlahas & Rudy
Robert Rathborne, General Manager CCWD
Diane Landry, Legal Counsel, CC

0032E

*Responses to California Coastal Commission - Letter of
February 21, 1992*

CC1a. Request for additional information on ground-water pumpage.

CC1a. [LSCE] - There are three wells located in the El Granada Mobile Home Trailer Park which are operated by the park. These wells range in capacity from 5 to 20 gpm and pump a total average of approximately 46,000 gallons per day. These three wells have only been in operation since September 1991. Based on the above daily production, annual production is estimated to be approximately 52 acre-feet. As noted in Attachment 2, Table 3.2, the CUCC production in 1991 is reported to be about 204 acre-feet, or about 25 acre-feet less than the 229 acre-feet produced during 1990. Water was delivered by CUCC to the park prior to operation of the park wells. It is significant to note, therefore, that based on the ground-water budget for 1987 to 1990 study period, the estimated increase in pumpage which could be considered for the basin of 45 to 87 acre-feet per year is in addition to that produced by the park wells. The 1991 CUCC production in Table 3.2 does not account for the 1991 production from the three mobile home park wells.

There has been no production from the agricultural wells constructed east of Highway 1. Four of the eight "McComas Agricultural Wells" (San Mateo County letter of February 11, 1992) are reportedly located in the Half Moon Bay/Pillar Point Marsh Study Area. Only one of these four wells could be field located by ESA.

No production has occurred from the Farralone Vista well.

CC1b. Request for determination of how many wells exist in the basin and the type of well.

CC1b. [LSCE] - At the onset of the project, LSCE performed a thorough review of drillers' reports available through the Department of Water Resources to identify wells within and adjacent to the study area. In the **Half Moon Bay Airport/Pillar Point Marsh Ground-Water Basin Phase I Report** (LSCE, June 1987), the following was reported:

"Approximately 90 well logs within and adjacent to the study area have been obtained and reviewed in order to determine their potential for use in water level and water quality determinations. Most of the wells with logs, however, are located outside the study area. A fairly large number of recently constructed domestic wells are located in the El Granada area, a separate ground-water "basin" located east of the southern portion of this basin".

The predominant pumpage was identified as resulting from wells owned and operated by the Citizens Utilities Company of California (CUCC) and Coastside County Water District (CCWD). There were approximately 16 other existing wells identified in the study area as part of the Phase I work. The Phase II report estimated domestic production at approximately 25 acre-feet per year or approximately twice the production that might be expected based on a water usage of 750 gallons per well per day.

In the County of San Mateo Planning Division proposed negative declaration for the Fortado fish processing plant and water well, it is noted that the County Planning and Building Division is maintaining a register of new well permits.

Based on the work done as part of Phase I to identify wells in the study area, the conservative nature of the production estimate for those wells which was used in the determination of the range of safe yield reported in the Phase II report, and the fact that the County is identifying and registering new wells, no attempt was made to

make a "final determination of how many wells exist in the basin."

CC1c. Request for information showing areas of poor ground-water quality.

CC1c. [LSCE] - Table 3.5 in the Phase II report summarized selected ground-water quality parameters, including chloride and specific conductance, for wells in the study area that have been monitored by DWR, CUCC, and CCWD, as well as the three piezometers in the marsh area. The quality of water in the basin is generally good. There has been no apparent change in the quality of the ground water produced from the basin. Iron and manganese concentrations in some wells in the basin exceed secondary drinking water standards.

CC2. Discuss water level observations for Department of Water Resources monitoring well 5S/6W-10J1 (Figure 3.4)

CC2. [ESA/LSCE] - Following precipitation events during 1991 to 1992, there has been a substantial increase in ground-water elevations throughout the basin. All of the hydrographs show rising ground-water levels in 1992. As discussed in the Phase II report, page 11, "water levels within the basin have recovered seasonally, except during periods of temporary drought. Figure 3.4 (the hydrograph for the DWR well) illustrates the recovery of ground-water levels with increased precipitation following the drought of 1976 and 1977." It is expected that water levels in the DWR well (had it not been abandoned) would have exhibited increases consistent with the basin wide increase in ground-water elevations.

CC3. Discuss study area defined for the Kleinfelder El Granada Ground-Water Report versus study area for Half Moon Bay/Pillar Point Marsh Ground-Water Basin Report Phase II.

CC3. [LSCE] - A very small portion of the study area defined for the El Granada ground-water report by Kleinfelder overlaps the study area defined for the Half Moon Bay/Pillar Point ground-water evaluation. The El Granada study area is

located primarily east of Denniston Creek with the exception of the Princeton area to the west of Denniston Creek which is also included in the Half Moon Bay/Pillar Point study area. During Phase I, eight existing wells were identified in the Princeton area. Production from this area would be expected to be less than 10 acre-feet per year. Redefining basin boundaries is not warranted.

CC4a. Show ground-water basin boundaries on Figures 3.1 and 3.2.

CC4a. [LSCE] - The purpose of Figure 3.1 was not to show well locations but to show the Denniston Creek survey locations. That figure only illustrates a portion of the basin; therefore, no basin boundaries were shown. Figure 2.1 in the Phase II report illustrates the study area boundaries. Figure 3.2 has been updated to illustrate the basin boundaries (attached).

CC4b. Include a geologic map showing physical boundaries of the basin.

CC4b. [LSCE] - The study area, including descriptions of physical boundaries, was described on page 6 of the Phase II report. Also on page 6, it was noted that a previous study of the basin **Groundwater Investigation, Denniston Creek Vicinity** by Lowney-Kaldveer Associates (1974) presents a good description of geologic conditions within the basin. The study was primarily a geologic exploration report. For purposes of responding to the Commission's comment, a portion of the geologic map contained in the Lowney-Kaldveer report is attached. For purposes of the Half-Moon Bay/Pillar Point Marsh study, hydrogeologic conditions were discussed in Section IV of the report.

CC5. Table 3.3 should show the change between initial and current ground-water elevations "for projecting future changes and water use".

CC5. [LSCE] - It is not appropriate to show changes between initial and current ground-water elevations. Without considering hydrologic conditions affecting water

level changes, this comparison is meaningless. If the hydrologic study period reflects periods of minimum and maximum precipitation events and the hydrologic conditions during the periods being compared are similar, the concept of evaluating a change in water levels becomes more meaningful.

CC6. Discuss Figure 3.4 showing ground-water elevations for DWR well 5S/6W-10J1 relative to annual precipitation.

CC6. [LSCE] - See comments under Item CC2. The ground-water elevations depicted in Figure 3.4 do not exhibit an overall decline since the early 1970's. Following the middle to late 1970's drought and the subsequent above normal precipitation of the early 1980's, ground-water elevations in 1984 were comparable to elevations observed from 1953 to 1965. Declining ground-water elevations during 1987 through 1990 reflect the affect of drought conditions.

CC7 Update Figures 3.6 and 3.7 to show seasonal or other ground-water elevation trends.

CC7. [ESA] - See Attachment; Figures 3.6, 3.7, 3.7a and 3.7b.

CC8. Discuss statement of page 15 "outflow was nil".

CC8. [LSCE] - The statement on page 15 was strictly addressing surface water flows. As noted in Table 3.1, flow into the basin in the upper portion of Denniston Creek (Stations 1, 2, 4 and 5) totaled 6,235 gpm. No flow was observed at Station 6 on the lower portion of Denniston Creek near Princeton. **Subsurface** outflow (page 19) was estimated to be 136 acre-feet per year for the 1987 to 1990 period.

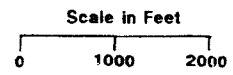
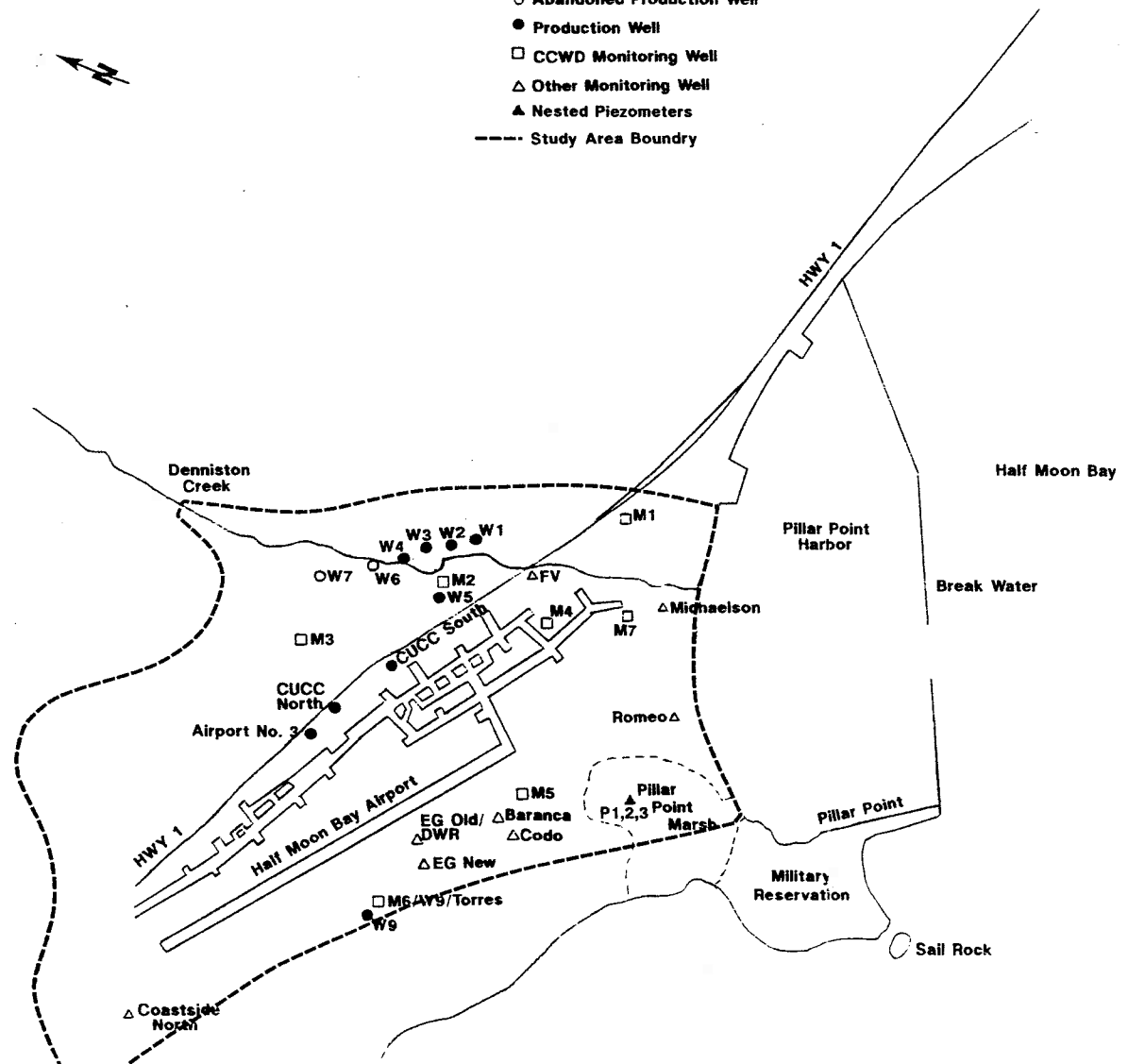
CC9. Discuss ground-water hydrographs included in Appendix 1 relative to the "overall downward trend in ground-water elevations".

CC9. [LSCE] - The water level data depicted in the hydrographs is discussed on page 11 of the Phase II report. It is important to note that the hydrographs included in Appendix 1 cover only the 1987 through 1990 period. As discussed above, the declining trends exhibited in those hydrographs reflect continuing drought conditions throughout the entire 1987 to 1990 period. The long term hydrograph for the DWR well (Figure 3.4) shows water levels declining during the study period. However, that hydrograph also illustrates the ability of water levels to recover following periods of drought.

To further illustrate ground-water conditions in the basin following more normal periods of precipitation, contours of equal ground-water elevation were prepared for spring 1992 (measurements obtained April 3, 1992). The contours continue to show that ground-water elevations remain above sea level along the Half Moon Bay coastline. Another figure has also been prepared to illustrate the changes in ground-water elevations from December 1990 to April 1992. As shown in that figure, ground-water elevations have increased significantly along the northern portion of Denniston Creek and the northern part of the basin. Between December 1990 and April 1992, ground-water elevations rose by about 10 to 25 feet in those areas. Along the southwest side of the basin and toward the marsh, ground-water elevations generally increased by more than five feet during that period. It is significant to note that wells MW3 and MW4, which are generally located further from pumping areas than other monitoring wells, in the network, exhibited ground-water elevations in April 1992 which equal or exceed those observed in May 1987 at the beginning of the study.

LEGEND

- Abandoned Production Well
- Production Well
- CCWD Monitoring Well
- △ Other Monitoring Well
- ▲ Nested Piezometers
- Study Area Boundary



Amended May 1992
To Add Study Area Boundary



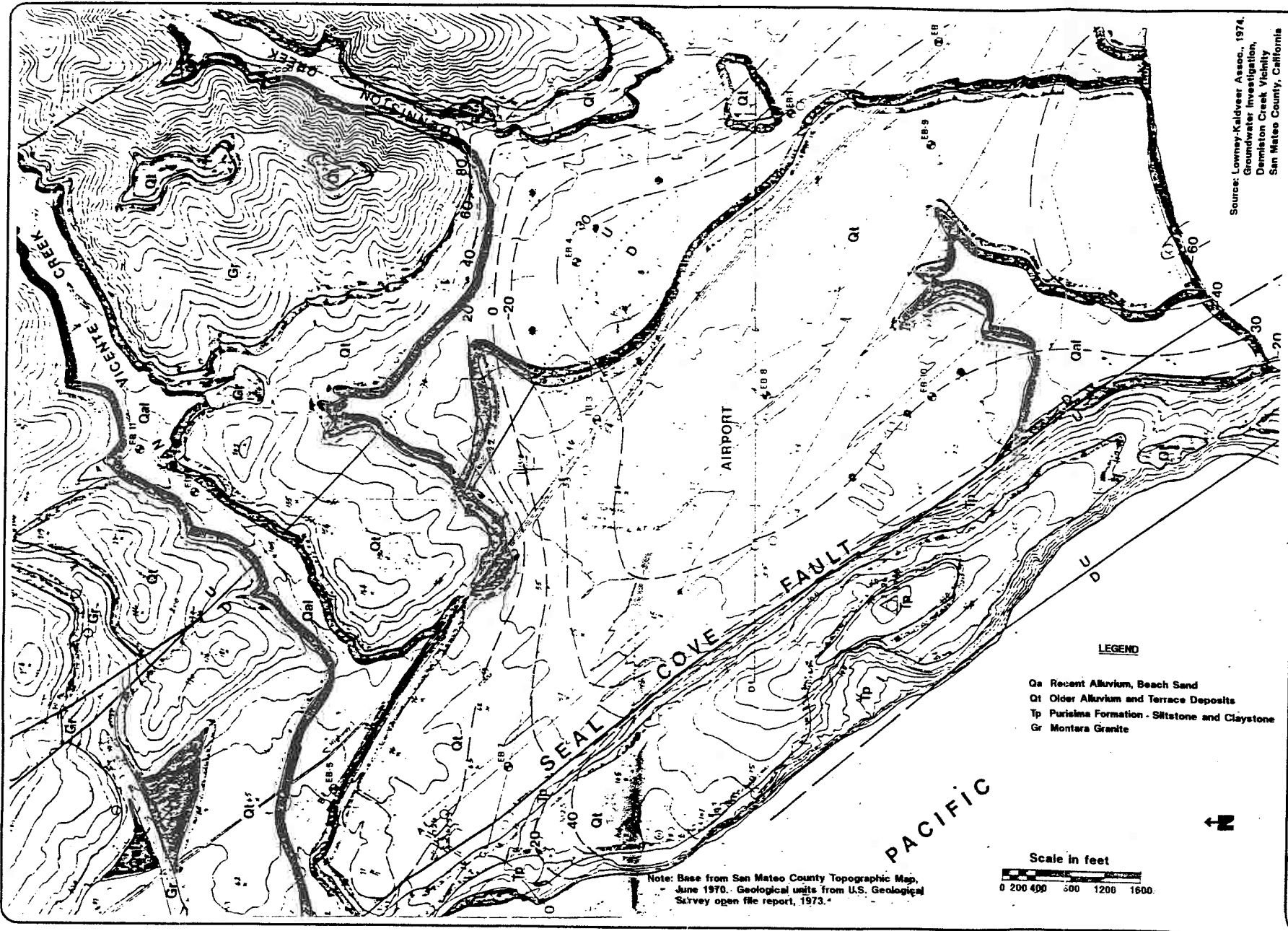
MONITORING NETWORK LOCATION
HALF MOON BAY AIRPORT/PILLAR POINT MARSH

FIGURE 3.2

Lohdorff & Soelmann
Consulting Engineers

PHASE II PILLAR POINT GROUND-WATER STUDY
CITIZENS UTILITIES COMPANY/COASTSIDE COUNTY WATER DISTRICT

87-1-074
SEPT 1991



Source: Lowmyer-Kaldveer Assoc., 1974.
 Groundwater Investigation,
 Denniston Creek Vicinity
 San Mateo County, California



SURFICIAL GEOLOGIC MAP

PHASE II PILLAR POINT GROUND-WATER STUDY
 CITIZENS UTILITIES COMPANY/COASTSIDE COUNTY WATER DISTRICT

Lohdorff & Scalmanini
 Consulting Engineers

FIGURE

87-1-074
 MAY 1992

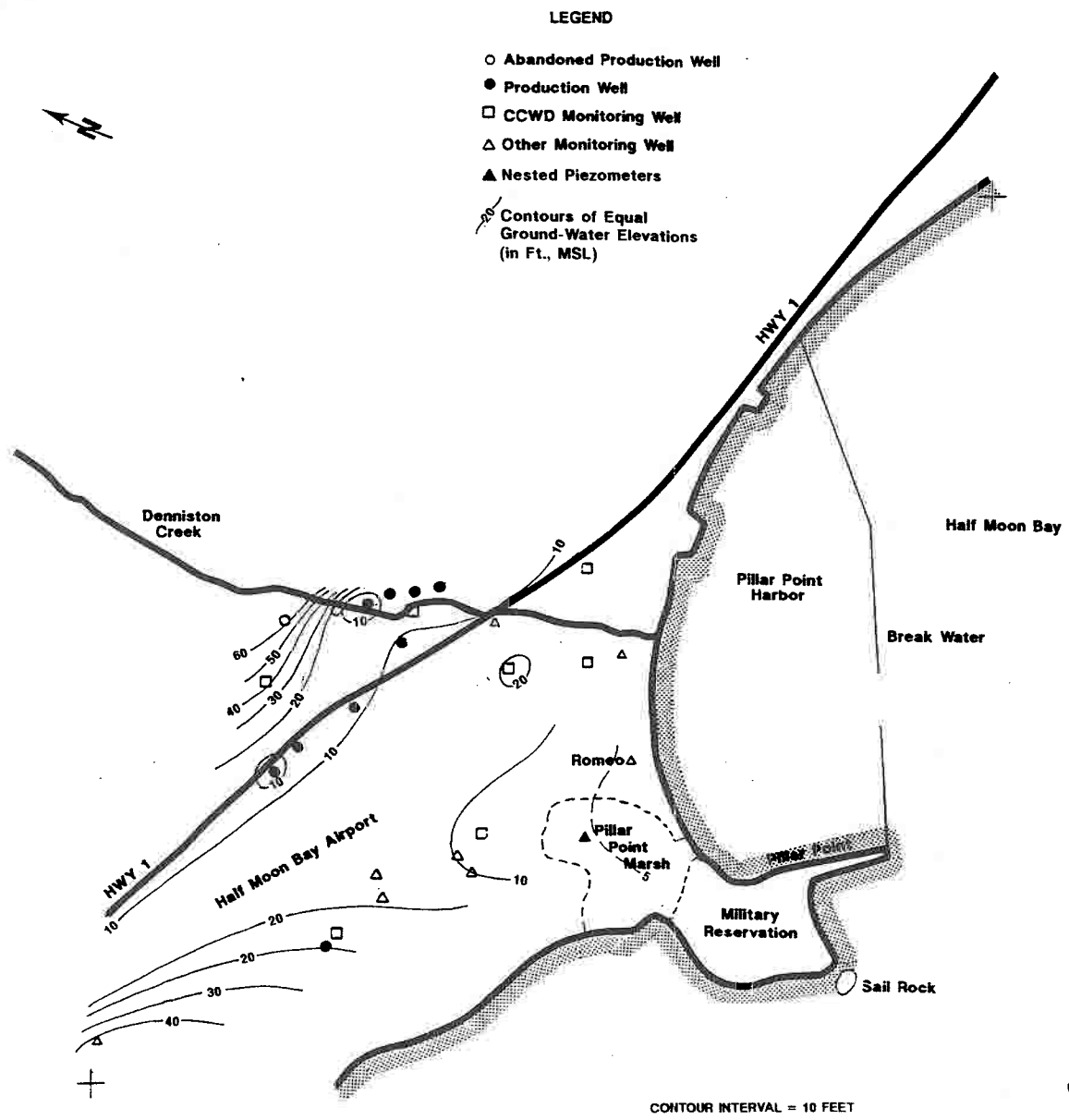
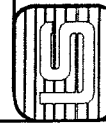


FIGURE
 CONTOURS OF EQUAL GROUND-WATER ELEVATIONS, APRIL 1992
 HALF MOON BAY AIRPORT/PILLAR POINT MARSH



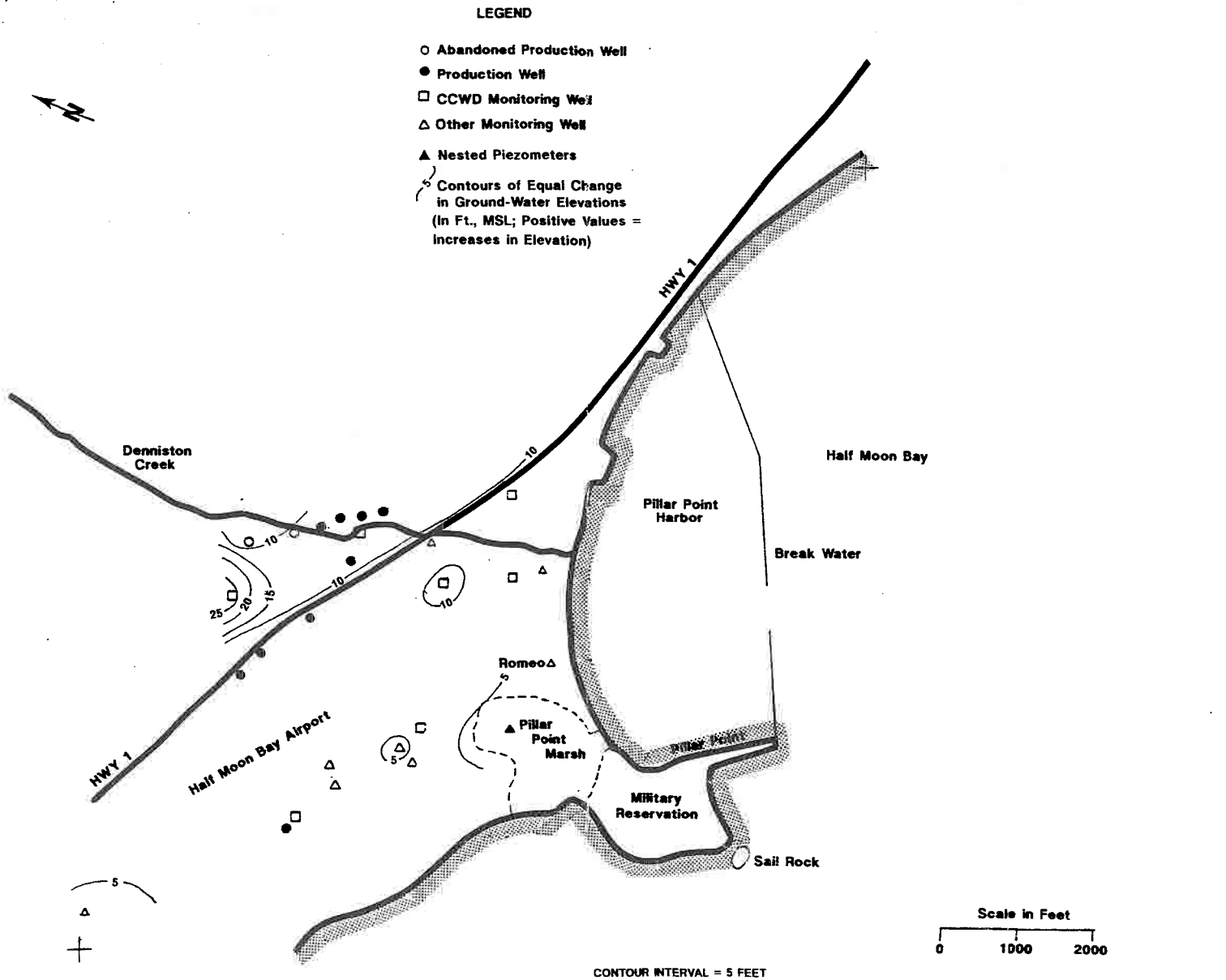


FIGURE
CONTOURS OF EQUAL CHANGE IN GROUND-WATER ELEVATIONS, 1990 TO 1992
HALF MOON BAY AIRPORT/PILLAR POINT MARSH
87-1-074
MAY 1992
CITIZENS UTILITIES COMPANY/COASTSIDE COUNTY WATER DISTRICT
Luhdorff & Scalmanini
Consulting Engineers

