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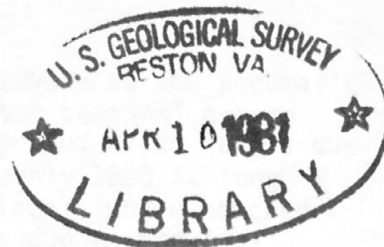
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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

[LEVEL]
GROUND WATER LEVEL AND PRECIPITATION DATA
FOR SLOPES NEAR LA HONDA, CALIFORNIA

By
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Open-File Report
81-367

This report is preliminary and has
not been reviewed for conformity
with U.S. Geological Survey
editorial standards.

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Ground Water Level and Precipitation Data for Slopes near La Honda, California

Gerald F. Wieczorek

Introduction

The ground water level and precipitation data tabulated in Table 1 and Table 2 were prepared in response to a request from Dwight Sangrey of Carnegie-Mellon University in January 1981 for the purpose of modeling ground water level response to precipitation as part of a USGS funded research proposal entitled: "Risk Evaluation for Landslide Hazards Produced by Precipitation-Related High Groundwater." Because this data may be useful to other groups and individuals for a variety of purposes, a brief text detailing methods of data collection and a discussion of the meaning and reliability of the data accompanies these tables.

Ground water levels and precipitation were measured on a regular basis over a five-year period between October 1975 and October 1980 on two slopes near La Honda, California (Fig. 1). This part of the Central Santa Cruz Mountains in San Mateo County ranges in elevation from 200 to 1200 feet and has a mean seasonal rainfall of approximately 30 inches (Rantz, 1971). Part of this data was previously published (Wieczorek, 1978).

Method

Twenty open standpipe, Casagrande porous stone piezometers, and pneumatic piezometers were installed during 1975 and 1976 to monitor seasonal ground water fluctuations as well as periodic fluctuations in ground water levels due to major storms. Piezometers were installed along a roughly 1600 ft long linear profile. Piezometers were installed at several levels where perched water tables were noted. Some perched water tables were due to previous episodes of landsliding. Locations of the piezometers and landslide boundaries are shown in figures 2 and 3.

Water levels in the standpipes and piezometers were measured periodically depending on the season. During the winter, measurements were made weekly or when storms permitted. During the summer months, when water level changes are relatively constant measurements were made on a monthly or bi-monthly basis. Water levels in the open standpipes and Casagrande porous stone piezometers were measured to an accuracy of .04 feet with an electrical probe, whereas the gage for the pneumatic piezometer could only be resolved to the nearest 0.1 psi., equivalent to 0.23 feet of head.

Because some piezometers are located above the normal ground water level, measurements were only made when ground water levels were recharged by heavy storms. Occasionally, water levels in porous stone piezometers could not be measured because the plastic tube connecting the piezometer to the surface had bent and the electric probe would not pass through the tube. In Table 1 no distinction is made between whether the piezometer was dry or whether it was not measured.

Daily rainfall was measured during the winter using a recording rain gage. However, frequent mechanical difficulties with this device made it

necessary to use bucket gages in conjunction with the recording gage. The bucket gages, one on each slope, were not read daily, but were used simply to measure storm totals over a period of days or weeks. These buckets have a capacity of 7 3/4 inches and are thus capable of containing all but the largest storms. When both recording gage and bucket gages were operable, total rainfall over a given period was very consistent between the two types of gages.

Rainfall measured on site was supplemented by rainfall data from cooperative farmers in the vicinity and from nearby NOAA stations at La Honda and San Gregorio-2SE. The NOAA data was the most reliable source of information on total daily rainfall. When rainfall data measured on site was not available for a particular period, measurements from these other sources were used as estimates of rainfall for the slopes. Indications are that the various measurements of rainfall do not differ significantly. Hence the small amount of variation in the figures of Table 2 should not effect measured or predicted ground water levels. The rainfall data from the various sources are presented in columns of Table 2 along with estimates of monthly and seasonal totals. Brackets are used to denote rainfall totals measured over a several day period.

Discussion

On these two slopes, it was generally observed that the rate and magnitude of ground water level response to precipitation depended upon previous cumulative seasonal rainfall, and storm duration and magnitude. Such generalizations regarding groundwater level response to precipitation are complicated by several additional factors:

- 1) The open standpipe and various piezometers used to measure ground water levels have inherently different response times, depending upon the volume of water required to equilibrate the piezometer and the permeability of the surrounding soil. The pneumatic piezometer has the most rapid response time, because there is essentially no change in volume of water within the transducer when pore pressures change. Measurement time lag for the Casagrande porous stone piezometers ranges from several hours to days depending upon the permeability of the silty clay soil surrounding the piezometer. The open stand pipe would require even longer, perhaps many days to equilibrate with surrounding ground water level.
- 2) The fact that these slopes consist of former landslide debris affects the hydrology considerably. Perched aquifer zones are common in areas underlain by shear zones. Ground water level response of these perched aquifers varies considerably from deeper ground water measured in adjacent piezometers.
- 3) The topographic position of a particular piezometer on the slope affects the ground water level response significantly. Piezometers on hilltops peak most rapidly whereas piezometers further downslope respond over a longer time period as a result of subsurface flow.

Each of these additional factors should be accounted for when modeling the ground water level response to precipitation.

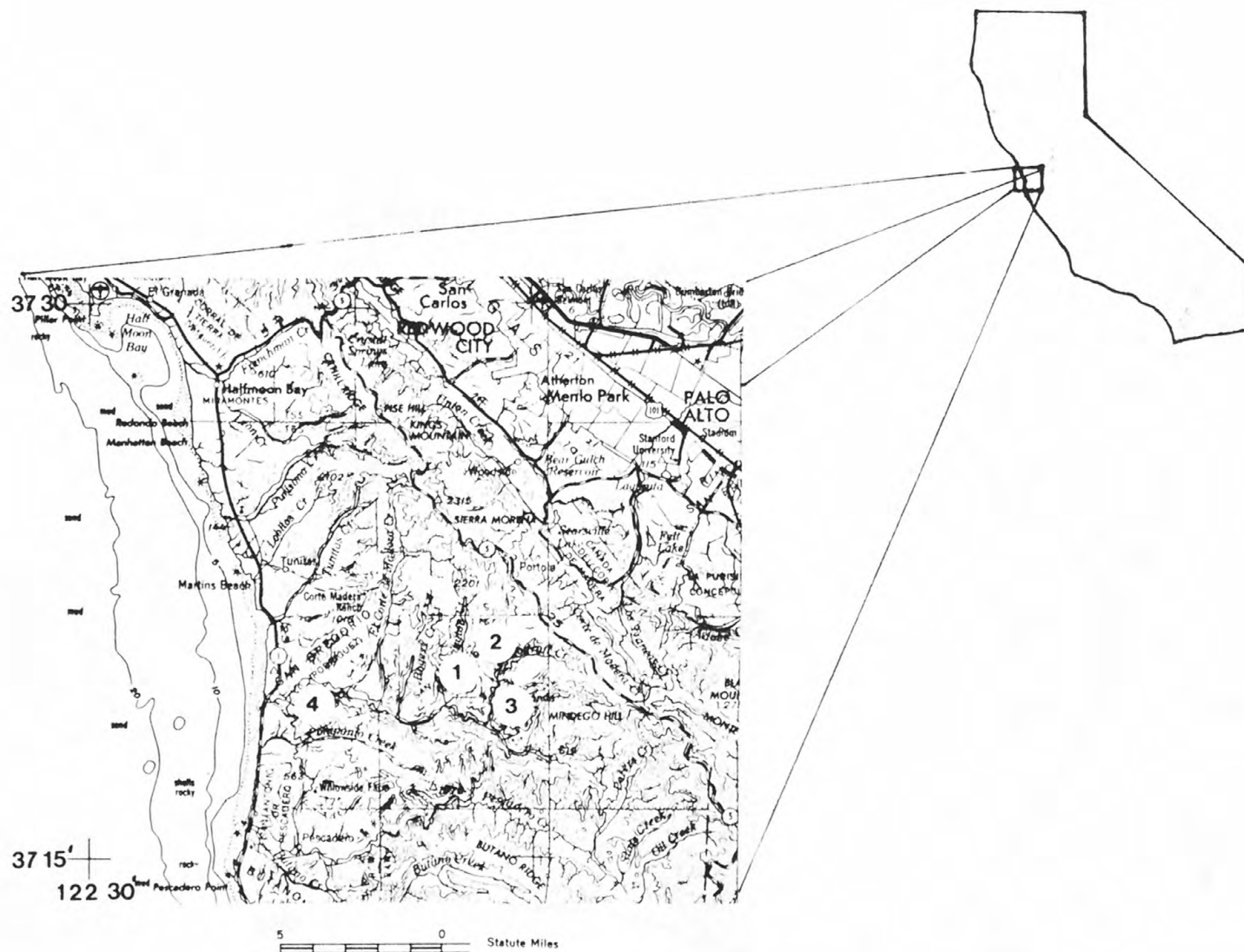


Fig. 1 - Locations of monitored slopes and NOAA rainfall stations: 1 - LH I monitored slope, 2 - LH II monitored slope, 3 - La Honda rainfall station, and 4 - San Gregorio 2SE rainfall station.

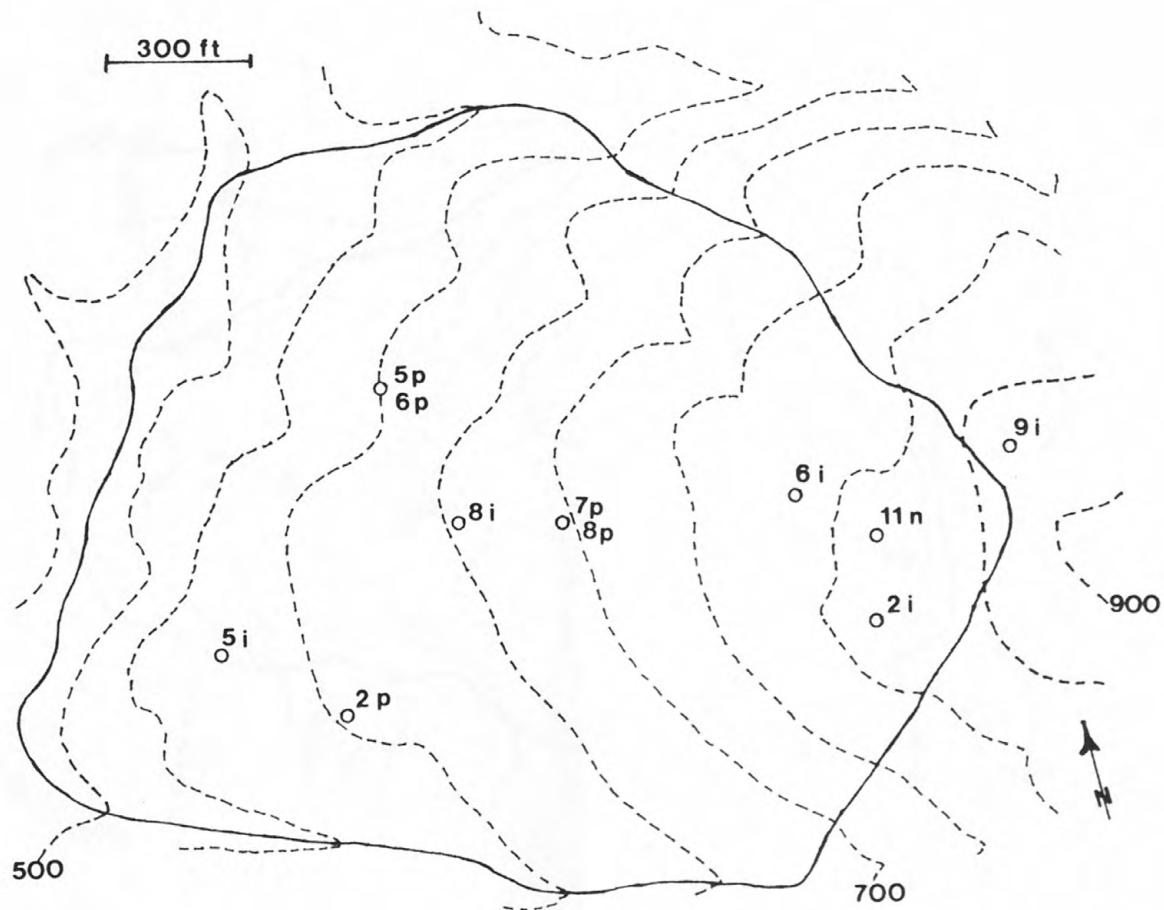


Fig. 2 - Ground water level measurement locations on LH I slope, near La Honda, California (Fig. 1). The landslide boundary is shown by a solid line. The contour interval is 50 feet. Letters indicate type of measurement; i - open standpipe, p - porous stone piezometer, and n - pneumatic piezometer.

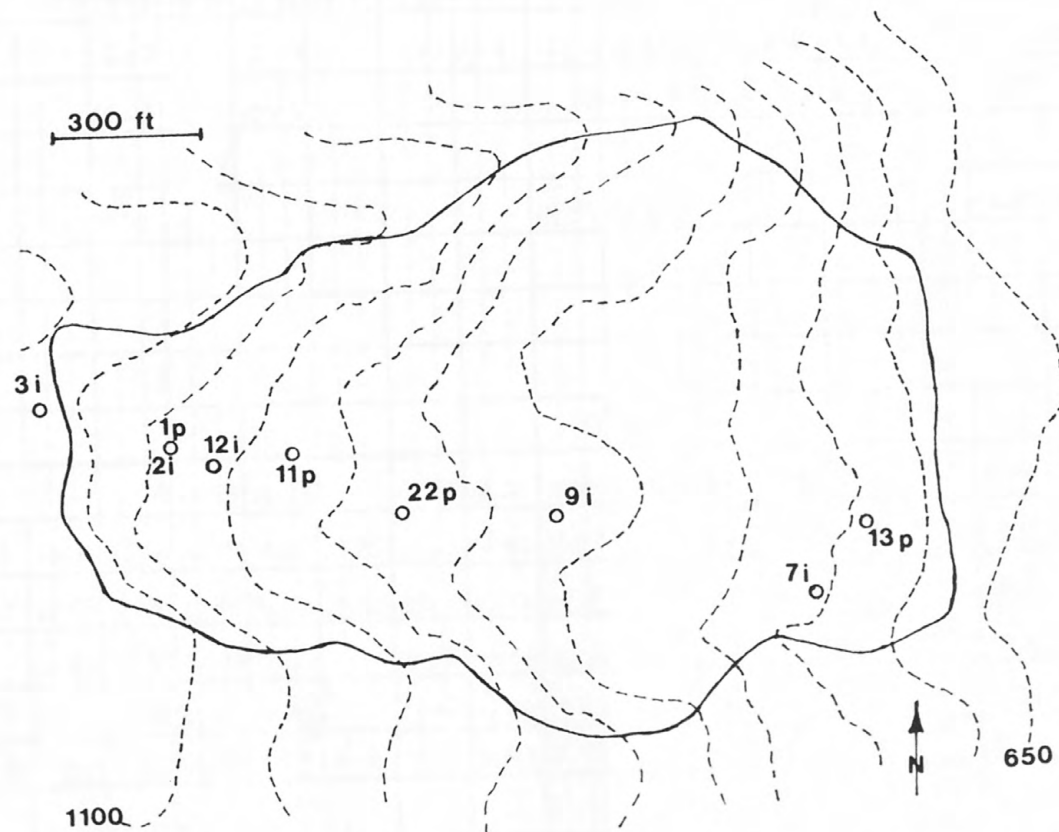


Fig. 3 - Ground water level measurement locations on LH II slope, near La Honda, California (Fig. 1). The landslide boundary is shown by a solid line. The contour interval is 50 feet. Letters indicate type of measurement; i - open standpipe, p - porous stone piezometer, and n - pneumatic piezometer.

PIEZOMETER

LH I SLOPE

LH II SLOPE

	DATE 9/19/75	10/07/75	10/15/75	10/21/75	11/09/75	11/26/75	12/05/75	12/10/75	12/18/75	12/29/75	1/22/76	1/29/76	2/04/76	2/12/76	2/17/76	2/25/76	3/05/76	3/11/76	3/17/76	3/22/76
2P			40.17														42.29	42.04	42.25	42.25
5I	44.67		43.42	43.25	43.33	43.46	43.5	43.58	43.71	43.88	44.21	44.21	44.25	44.33	44.54	44.5	44.63	44.63	44.79	44.79
6I	31.0'		29.58	29.58	29.75	29.75	29.92	30.04	30.17	30.38	30.67	30.67	30.71	31.0	31.0	31.0	31.0	31.46	31.17	31.21
7P	23.0'		16.67	17.92	17.83		17.71	17.92	17.83	18.42	18.54	18.46	18.58	18.75	18.83	18.88	18.83	19.21	19.33	
8P			10.83	10.75	10.83		11.0	11.08	11.25	11.38	11.46	11.38	11.13	11.33	11.5	11.17	11.5	11.67	11.92	
9I																				
11N	45.0								49.59	49.59						46.70	46.70	46.70	47.04	
2I																				
5P																				
6P																				
8I																				
1P	29.0'		15.58	15.83	15.96		16.13	16.21	16.33	16.42	16.67	16.42	16.46		16.46	16.63		17.08	17.17	
2I		16.0'	16.0	16.0	16.08	16.25	16.25	16.21	16.42	16.63	16.83	16.79	16.46	16.88		17.13	17.17	17.25	17.21	17.25
3I		23.0	21.83	22.0	22.42	23.0	23.63	23.75	23.96	24.5	25.13	25.21	25.33	25.96		26.21	26.46	26.38	26.75	26.83
7I			31.83	31.33	30.83	30.67		30.46	30.58	30.54	30.38	30.38	30.17	30.13		30.38	30.04	30.25	30.21	30.27
11P				11.75	11.42	11.42		11.46	11.63	11.75	11.92	11.92		11.71		11.79	11.75		11.79	11.88
12I	21.0'	9.0	8.0	8.0	8.17	8.42	8.46	8.33	8.58	8.79	8.92	8.92	8.67	9.08		9.21	9.13	9.21	9.17	9.25
9I																				
13P																				
22P																				

Table 1 - Depth to ground water in piezometers (depth measured in feet).
 Letters indicate type of piezometer; I-open standpipe,
 P-porous stone piezometer, N-pneumatic piezometer. Piezometer
 locations are shown in Fig. 1 and Fig. 2.

		DATE 11/04/76	11/19/76	12/02/76	12/16/76	1/20/77	1/28/77	2/17/77	2/25/77	3/11/77	3/21/77	4/07/77	4/21/77	5/31/77	10/18/77	12/29/77	1/20/78	1/27/78	2/07/78	2/15/78	2/24/78
LH I SLOPE	2P																36.17	36.21	37.71	32.92	32.92
	5I	46.75	46.96	46.83	47.08	47.33	47.42	47.5	47.33	47.46	47.5	47.67	47.75	47.92	48.83	49.04	39.67	39.04	39.46	36.13	37.54
	6I	33.25	32.92	33.0	33.13	33.33	33.42	33.83	33.71	34.04	33.88	33.88	33.85	34.21	35.17	33.29	23.75	21.67	21.67	18.54	19.83
	7P	21.67	21.71	21.79	22.04	22.13	22.25	22.42	22.42	22.54	22.5	22.63	22.75	22.83	23.83	23.71	9.21	12.83	14.25	8.88	10.38
	8P	13.83	13.71	13.79	13.83			14.33	14.29	14.46	14.54	14.67	14.71	14.96	15.58		1.38	2.42	1.25	1.75	2.25
	9I																17.17	37.42	26.0	20.33	36.75
	11N	48.43						51.32		51.09		50.16	50.16	50.16		51.20	32.26	50.28		28.22	35.96
	2I	49.29	49.38	49.5	49.54	49.79	49.92	50.08	50.13	50.13	50.33	50.42	50.5	50.71	51.29	51.21	24.5	32.46	34.63	26.21	33.63
	5P	26.96	27.0	27.08	27.08	27.08	27.21	27.33	27.29	27.38	27.38	27.46	27.46	27.54	28.58	28.42	19.5	20.58	23.33	17.29	19.92
	6P																8.42	16.88	17.58	16.5	16.54
LH II SLOPE	8I	16.25	16.29	16.5	16.5	16.67	16.75	17.0	16.96	16.96	17.08	17.17	17.21	17.42	18.33	9.08	1.75	3.46	1.08	1.50	2.92
	1P	18.33	18.17	18.25	18.29	18.54	18.58	18.67	18.79	18.83	18.88	18.83	19.0	19.0	19.58	18.42	10.0	15.96	12.38	10.67	13.79
	2I	18.25	18.29	18.46	18.46	18.63	18.67	18.83	18.83	18.83	18.88	18.96	18.92	19.04	19.29	18.42	8.75	13.04	7.79	10.04	12.42
	3I	30.08	30.21	30.46	30.63	30.83	31.0		31.25	31.63	31.42	31.63	31.75	32.0	32.96	32.92	23.46	25.63	26.58	20.13	20.5
	7I	34.71	34.75	35.04	35.33	35.63	35.75	36.04	36.13	36.29	36.33	36.46	36.67	37.0	38.0	31.72	23.63	30.54	29.71	28.21	32.04
	11P	11.92	11.83	11.88	11.79	11.79	12.0	11.88	12.08	12.0	11.88	12.08	12.0	11.96	12.04	11.71	6.38	8.23	10.5	7.46	9.79
	12I	10.5	10.71	11.04	10.92	11.21	11.33	11.5	11.67	11.67	11.67	11.83	11.83	12.17	12.75	13.0	11.5	11.25	10.58	9.79	8.54
	9I	21.08	21.13	21.17	21.25	21.88	22.67	22.92	22.83	23.0	22.83	22.96	23.13	23.38	24.13	24.25	16.25	14.58	15.67	13.17	16.33
	13P																17.08	17.0	16.67	16.38	
	22P	7.83	7.75	7.75	7.71	7.92	7.96	8.0	8.04	7.04		7.17	7.17		8.96	8.5	-0.5	-1.25	-0.79		

Table 1 - Depth to ground water in piezometers (depth measured in feet).
 Letters indicate type of piezometer; I-open standpipe,
 P-porous stone piezometer, N-pneumatic piezometer. Piezometer
 locations are shown in Fig. 1 and Fig. 2.

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		3/07/78	3/14/78	3/20/78	4/19/78	5/05/78	6/01/78	6/30/78	8/01/78	9/06/78	9/21/78	10/05/78	11/07/78	11/22/78	12/11/78	12/21/78	1/12/79	1/22/79	2/06/79	2/23/79	3/13/79																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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PIEZOMETER

LH I SLOPE

LH II SLOPE

	DATE 3/21/79	4/04/79	5/02/79	5/15/79	9/28/79	10/31/79	11/16/79	11/30/79	12/28/79	2/05/80	3/04/80	3/06/80	3/18/80	4/09/80	4/24/80	6/20/80	10/07/80	11/14/80	12/18/80	1/09/81
2P	34.83	28.92	30.83	32.04						20.5	25.92	24.58								
5I	41.08	35.92	38.25	38.67	44.38	44.58	45.0	44.75	42.75	36.58	34.08	33.67	35.25	37.67	38.42	41.17	43.75	44.29	44.75	44.75
6I	25.75	24.67	24.83	25.83	29.75	30.25	30.5	30.75	29.67	22.83	19.71	17.83	30.67	24.33	25.75	27.92	29.83	34.25	30.67	33.58
7P	15.67	11.42	14.21	15.0	18.67		19.58	19.75		12.33	8.25	7.67	10.67		14.75	16.83	18.75	19.38	19.17	20.08
8P	4.83	1.42	2.25	2.33	3.83	4.92	5.42	5.5	5.83	6.17	3.42	2.63								
9I	37.0	26.5	36.67	36.29		37.46	37.58	37.67	29.67	37.75	21.75	15.42	27.42	34.5						
11N	38.61		40.92	43.23	47.28	47.85			47.28	39.77		33.99	36.88	41.5	42.08	44.97	46.12	47.28	44.97	46.12
2I	40.54	36.96	40.13	42.2	47.29	46.63	46.88	47.13	42.79	37.42	30.0	31.25	33.67	37.82	39.17					
5P	23.42	20.5	20.75	21.92	24.92		25.83	26.0	25.75	17.5	17.0	16.25	17.67	20.17	20.75	22.58	25.58	25.88	26.42	26.5
6P	10.75	10.96	16.5	17.13					10.92	18.25	15.25	13.92	15.92	17.67	18.58					
8I	9.0	4.75	7.75	5.25		12.58	12.25	11.58		5.5	3.96	3.33	5.17	7.0	8.0	10.33	12.0	11.08	13.0	13.42
1P		12.08	17.58	15.38	17.0	17.25	17.5			14.5	11.67		12.75		16.25	17.04	17.25			
2I	13.46	11.5		13.96	14.88	16.13	16.63	16.54	9.96	13.29	7.38	6.04	10.13	12.71	13.88	14.88	14.63	15.88	17.96	18.88
3I	18.5	17.21		15.21	21.08	21.92	22.67	23.0	23.0	18.67	12.79	12.25	12.5	14.33	15.17	16.67		24.33	22.5	22.67
7I	30.04	26.71		29.63	33.5	33.79	34.13	33.88	28.13	28.13	17.29	15.46	24.96	28.75	26.63	29.71	31.46	31.88	31.88	33.67
11P	13.38	9.71		11.42	11.71	11.96	11.79	11.79	8.63	10.99	9.46	9.13	10.13	11.21	11.46	11.71	11.88	11.83	11.88	11.63
12I	8.88	5.54	9.75	7.33	10.0	10.04	10.42	10.42	7.75	7.08	6.0	5.67	5.33	6.67	7.67	8.58	9.46	9.67	10.42	13.0
9I	19.75	14.83		18.25	19.75	19.92	20.33	20.17	17.83	17.25	15.38	15.08	17.42	18.08	18.42	25.0	19.79	20.0	20.33	22.25
13P		16.17	16.46	16.25	16.5	16.5	16.58	16.5	16.58	16.58	16.75	11.5	16.67	16.75	17.75	19.5	16.75	16.71	17.33	17.08
22P																				

Table 1 - Depth to ground water in piezometers (depth measured in feet).
 Letters indicate type of piezometer; I-open standpipe,
 P-porous stone piezometer, N-pneumatic piezometer. Piezometer
 locations are shown in Fig. 1 and Fig. 2.

Table 2. La Honda Rainfall Data.

Date	Bucket LHI	Bucket LHII	Other Data	Recording Gage LHI	NOAA Data ¹		Monthly Total
7-11-75	---	---	---	---	0.00	0.01	
7-15	---	---	---	---	0.20	0.18	
7-17	---	---	---	---	0.00	0.01	
7-18	---	---	---	---	0.00	0.04	
7-19	---	---	---	---	0.00	0.02	
7-29	---	---	---	---	0.11	0.02	0.31
<hr/>							
8-11	---	---	---	---	0.00	0.01	
8-12	---	---	---	---	0.00	0.01	
8-18	---	---	---	---	0.43	0.34	0.43
<hr/>							
9-12	---	---	---	---	0.00	0.01	
9-30	---	---	---	---	0.00	0.01	0.00
<hr/>							
10- 6	---	---	---	---	0.06	0.13	
10- 7	---	---	---	---	0.05	0.08	
10- 9	---	---	---	---	0.50	0.81	
10-10	---	---	---	---	0.72	0.64	
10-11	---	---	---	---	0.32	0.06	
10-18	---	---	---	---	0.02	0.02	
10-22	---	---	---	---	0.00	0.04	
10-26	---	---	---	---	1.12	1.23	
10-27	---	---	---	---	0.02	0.00	
10-29	---	---	---	---	0.00	0.04	
10-30	---	---	---	---	0.58	0.48	3.39
<hr/>							
11- 5	---	---	---	---	0.00	0.09	
11- 6	---	---	---	---	0.08	0.01	
11- 7	---	---	---	---	0.16	0.02	
11-10	---	---	---	---	0.40	0.35	
11-15	---	---	---	0.21	0.03	0.12	
11-16	---	---	---	0.09	0.22	0.13	
11-19	---	---	---	0.01	0.00	0.00	
11-26	---	---	---	0.21	0.16	0.10	
11-27	---	---	---	0.05	0.16	0.12	1.21
<hr/>							
12-11	---	---	---	0.02	0.00	0.00	
12-12	---	---	---	0.13	0.21	0.19	

Table 2. La Honda Rainfall Data.--Continued.

Date	Bucket LHI	Bucket LHII	Other Data	Recording Gage LHI	NOAA Data1	Monthly Total
12-13-75	---	---	---	0.01	0.03	0.01
12-21	---	---	---	0.12	0.07	0.08
12-22	---	---	---	0.01	0.10	0.20
						0.29
1- 5-76	---	---	---	0.11	0.11	0.05
1- 6	---	---	---	0.01	0.00	0.00
1- 9	---	---	---	0.32	0.37	0.38
						0.44
2- 4	---	---	---	---	0.04	0.04
2- 5	---	---	---	---	0.09	0.07
2- 8	---	---	---	0.11	0.17	0.12
2-13	---	---	---	0.29	0.11	0.12
2-14	---	---	---	0.13	0.21	0.24
2-15	---	---	2.582	0.06	0.24	0.15
2-16	---	---	---	0.01	0.12	0.09
2-17	---	---	---	0.00	0.03	0.03
2-18	---	---	---	0.07	0.00	0.02
2-19	---	---	---	0.11	0.30	0.21
2-28	---	---	---	0.23	0.00	0.00
2-29	---	---	---	---	1.60	1.09
						2.74
3- 1	---	---	---	---	0.15	0.15
3- 2	---	---	---	---	1.24	0.63
3- 3	---	---	---	---	0.28	0.12
3- 8	---	---	---	---	0.00	0.03
3-10	---	---	---	---	0.03	0.03
3-17	---	---	---	0.03	0.00	0.00
3-18	---	---	---	0.08	0.15	0.15
3-19	---	---	---	0.00	0.00	0.04
3-24	---	---	---	0.02	0.02	0.02
3-28	---	---	---	0.01	0.01	0.02
3-31	---	---	---	0.03	0.03	0.06
						1.87
4- 3	---	---	---	0.22	0.30	0.09
4- 4	---	---	---	0.00	0.01	0.01
4- 5	---	---	---	0.05	0.07	0.07
4- 6	---	---	---	0.08	0.11	0.11
4- 7	---	---	---	0.79	0.43	0.69
4- 8	---	---	---	0.16	0.54	0.39
4-10	---	---	---	0.36	0.30	0.43

Table 2. La Honda Rainfall Data.--Continued.

Date	Bucket LHI	Bucket LHII	Other Data	Recording Gage LHI	NOAA Data	Monthly Total
4-11-76	---	---	---	0.19	0.06	0.20
4-12	---	---	---	0.09	0.18	0.13
4-15	---	---	---	0.10	0.12	0.13
4-18	---	---	---	---	0.23	0.08
4-22	---	---	---	---	0.04	0.02
						2.31
5- 5	---	---	---	---	0.07	0.07
5-25	---	---	---	---	0.00	0.07
5-30	---	---	---	---	0.09	0.08
5-31	---	---	---	---	0.07	0.04
						0.23
6- 9	---	---	---	---	0.02	0.01
6-10	0.15	---	---	---	0.16	0.14
6-11	---	---	---	---	0.00	0.03
						0.15
Seasonal Total 1975-76					13.85	12.24
						13.37
7- 7-76	---	---	---	---	0.00	0.02
7- 8	---	---	---	---	0.00	0.02
7-11	---	---	---	---	0.00	0.01
7-12	---	---	---	---	0.00	0.05
7-17	---	---	---	---	0.00	0.01
7-18	---	---	---	---	0.00	0.02
7-20	---	---	---	---	0.00	0.01
						0.00
8- 3	---	---	---	---	0.00	0.01
8- 6	---	---	---	---	0.00	0.01
8-12	0.07	---	---	---	0.00	0.03
8-13	---	---	---	---	0.00	0.05
8-14	0.60	---	---	---	0.15	0.07
8-15	---	---	---	---	0.52	0.53
8-16	---	---	---	---	0.26	0.00
8-17	---	---	---	0.35	0.58	0.28
8-18	0.74	---	---	0.55	0.21	0.50
8-19	---	---	---	0.12	0.00	0.15
						1.69

Table 2. La Honda Rainfall Data.--Continued.

Date	Bucket LHI	Bucket LHII	Other Data	Recording Gage LHI	NOAA Data ¹		Monthly Total
9-27-76	—	---	---	0.11	0.00	0.00	
9-28	0.50	---	---	0.13	0.25	0.41	
9-29		0.37	---	0.07		0.35	
9-30	—	—	---	0.20	0.80	0.27	0.51
10- 1	—	—	---	0.40	0.00	0.45	
10- 2	0.42	0.47	---	0.01	0.00	0.02	
10-30	—	—	---	0.00	0.00	0.04	0.41
11-11	—	—	---	0.79	0.82	0.83	
11-12			---	0.00	0.06	0.10	
11-13			---	0.08	---	0.04	
11-14	1.50	1.44	---	0.54	0.65	0.92	
11-15			---	0.00	0.05	0.01	
11-18			---	0.01	0.00	0.00	
11-19	—	—	---	0.00	0.00	0.01	1.45
12- 9	0.00	0.00	---	0.02	0.03	0.06	
12-29			---	0.00	0.00	0.02	
12-30			---	---	1.50	1.80	
12-31	3.52	3.20	---	---	0.04	0.00	1.56
1- 1-77			---	---	0.07	0.08	
1- 2			---	---	1.35	0.94	
1- 3	---	---	---	---	0.72	0.32	
1- 5	---	---	---	---	0.05	0.00	
1- 6	---	---	---	---	0.11	0.00	
1-12	---	---	---	---	0.09	0.17	2.39
2- 6	—	—	---	0.00	0.00	0.01	
2- 8	0.50	0.55	---	0.50	0.52	0.41	
2- 9			---	0.02	0.02	0.02	
2-20	—	—	---	0.08		0.14	
2-21	1.37	1.53	---	0.76	1.36	0.60	
2-22			---	0.04		0.04	
2-23			---	0.44		0.45	
2-28	---	—	---	0.03	---	0.05	1.87

Table 2. La Honda Rainfall Data.--Continued.

Date	Bucket LHI	Bucket LHII	Other Data	Recording Gage LHI	NOAA Data1	Monthly Total
3- 2-77	—		---	0.00	0.08	0.00
3- 3	0.29	0.41	---	0.01	0.00	0.04
3- 9	—	—	---	0.21	0.22	0.17
3-12			---	0.04	0.07	0.11
3-13			---	0.11	0.12	0.12
3-15	2.23	2.16	---	1.95	1.42	1.68
3-16			---	0.00	0.66	0.38
3-17	—	—	---	0.00	0.03	0.02
3-23			---	0.07	0.10	0.10
3-24	0.31	0.37	---	0.19	0.20	0.12
3-25	—	—	---	0.00	0.02	0.05
						2.58
4- 7	---	---	---	0.00	0.00	0.01
4- 8	---	---	---	0.05	0.06	0.11
4- 9	---	---	---	0.00	0.00	0.02
4-25	---	---	---	0.01	0.03	0.06
4-30	---	---	---	0.03	0.00	0.04
						0.09
5- 1	---	---	—	0.19	0.52	0.13
5- 3	---	---		0.06	0.00	0.05
5- 7	---	---		0.23	0.29	0.61
5- 8	---	---		0.28	0.30	0.25
5- 9	---	---		0.11	0.16	0.19
5-10	---	---		0.15	0.04	0.11
5-11	---	---	1.75 ²	0.22	0.28	0.17
5-12	---	---		0.01	0.03	0.15
5-18	---	---		0.11	0.00	0.02
5-19	---	---		0.02	0.15	0.10
5-21	---	---		0.00	0.00	0.05
5-22	---	---		0.00	0.04	0.01
5-26	---	---	—	0.00	0.00	0.05
						1.38
6- 9	---	---	---	---	0.00	0.03
6-10	---	---	---	---	0.00	0.05
6-17	---	---	---	---	0.00	0.04
6-18	---	---	---	---	0.00	0.05
6-19	---	---	---	---	0.19	0.06
						0.19
Season Total 1976-77					15.22	15.48
						14.12

Table 2. La Honda Rainfall Data.--Continued.

Date	Bucket LHI	Bucket LHII	Other Data	Recording Gage LHI	NOAA ₁ Data ¹		Monthly Total
7- 2-77	---	---	---	---	0.06	0.04	0.06
7- 9	---	---	---	---	0.00	0.02	
7-24	---	---	---	---	0.00	0.03	
8- 6	---	---	---	---	0.00	0.01	0.15
8- 9	---	---	---	---	0.00	0.02	
8-10	---	---	---	---	0.00	0.01	
8-24	---	---	---	---	0.07	0.04	
8-25	---	---	---	---	0.00	0.04	
8-26	---	---	---	---	0.08	0.02	
9-16	---	---	---	---	0.02	0.13	0.35
9-17	---	---	---	---	0.03	0.07	
9-19	---	---	---	---	0.00	0.50	
9-27	---	---	---	---	0.05	0.15	
9-28	---	---	---	---	0.11	0.20	
9-29	---	---	---	---	0.14	0.10	
10-16	---	---	---	---	0.00	0.02	0.98
10-27	---	---	---	---	0.00	0.32	
10-28	---	---	---	---	0.00	0.42	
10-29	---	---	---	---	0.00	0.15	
10-30	---	---	---	---	0.00	0.07	
11- 5	---	---	---	---	---	0.43	3.65
11-20	---	---	---	---	---	0.03	
11-21	---	---	---	---	---	2.11	
11-22	---	---	---	---	---	1.08	
12-12			---	---	---	0.05	0.60
12-14			---	---	---	0.18	
12-15			---	---	---	0.48	
12-16			---	---	---	0.12	
12-17	7.75	7.75	---	---	---	1.68	
12-18	(min)	(min)	---	---	---	0.16	
12-21			---	---	---	0.45	
12-22			---	---	---	1.12	
12-23			---	---	---	0.60	

Table 2. La Honda Rainfall Data.--Continued.

Date	Bucket LHI	Bucket LHII	Other Data	Recording Gage LHI	NOAA ¹ Data ¹	Monthly Total
12-26-77			---	---	---	0.32
12-27			---	---	---	0.13
12-28			---	---	---	0.11
12-29	—	—	---	---	---	0.21
12-30			---	---	---	0.21
12-31			---	---	---	0.01
						5.83
1- 2-78			---	---	---	0.22
1- 3			---	---	---	0.40
1- 4			---	---	---	0.70
1- 5			0.81 ³	---	---	0.90
1- 6			1.20	---	---	0.01
1- 9			1.60	---	---	1.97
1-12	7.75	7.75		---	---	0.07
1-13	(min)	(min)	2.25	---	---	0.57
1-14				---	---	2.07
1-15			2.76	---	---	0.39
1-16				---	---	1.38
1-17			1.15	---	---	0.25
1-18				---	---	0.80
1-19	—	—	1.00	---	---	0.29
						10.77
2- 1	---	—		---	---	0.01
2- 5	---	2.75		---	---	0.94
2- 6	---		1.60 ³	---	---	0.77
2- 7	---		0.95	---	---	1.12
2- 8	—	—	0.00	---	---	0.74
2- 9	2.65	3.13	1.20	---	---	0.49
2-12				---	---	1.30
2-13			1.90	---	---	0.50
2-14	---	---		---	---	0.01
2-15	---	---		---	---	0.11
2-16	---	---	0.16	---	---	0.03
						5.88
3- 1	—	—		---	---	0.24
3- 2				---	---	0.70
3- 3	2.20	2.50		---	---	0.01
3- 4			1.90 ³	---	---	0.79
3- 5				---	---	0.20
3- 6			0.50	---	---	0.00
3- 8	---	---		---	---	1.45
3- 9	---	---		---	---	0.22

Table 2. La Honda Rainfall Data.--Continued.

Date	Bucket LHI	Bucket LHII	Other Data	Recording Gage LHI	NOAA Data ¹	Monthly Total	
3-11-78	---	---	1.45 ³	---	---	0.01	
3-13	---	---		---	---	0.10	
3-21	---	---		---	---	0.48	
3-22	---	---	0.80	---	---	0.25	
3-23			0.25	---	---	0.22	
3-28				---	---	0.05	
3-30				---	---	0.01	
3-31				---	---	0.72	4.90
4- 1				---	---	0.72	
4- 2	5.20	5.25	1.15 ³	---	---	0.03	
4- 3				---	---	0.00	
4- 4			0.55	---	---	0.89	
4- 6				---	---	1.28	
4- 7			1.25	---	---	0.03	
4- 9			1.95	---	---	0.00	
4-13				---	---	0.02	
4-14				---	---	0.06	
4-15				---	---	1.77	
4-16				---	---	0.18	
4-19	---	---	0.45	---	---	0.00	
4-20	---	---	0.65	---	---	0.18	
4-21		---		---	---	0.01	
4-24	1.10	---		---	---	0.31	
4-25		---	0.30	---	---	0.44	
4-26		---		---	---	0.20	
4-30	---	---	---	---	---	0.08	6.30
5-15	---	---	---	---	---	0.05	0.05
6-26	0.06	---	---	---	---	0.07	0.07
Seasonal Total 1977-78						37.98	38.99
7- 7-78	---	---	---	---	---	0.01	
7-11	---	---	---	---	---	0.02	
7-16	---	---	---	---	---	0.02	
7-27	---	---	---	---	---	0.01	

Table 2. La Honda Rainfall Data.--Continued

Date	Bucket LHI	Bucket LHII	Other Data	Recording Gage LHI	NOAA Data ¹	Monthly Total
7-29-78	---	---	---	---	---	0.01
7-30	---	---	---	---	---	0.01
						0.08
8-25	---	---	---	---	---	0.01
8-30	---	---	---	---	---	0.06
						0.07
9- 9	0.43	---	---	0.55	---	0.42
9-10	—	---	---	0.01	---	0.00
						0.43
10- 9	---	---	---	0.00	---	0.03
10-16	---	---	---	0.00	---	0.04
10-19	---	---	---	0.00	---	0.01
						0.00
11-12	---	—	—	0.31	---	0.33
11-13	---			0.07	---	0.05
11-19	---	2.54	2.50 ³	0.13	---	0.10
11-20	---			1.37	---	1.27
11-21	---			0.47	---	2.00
11-22	---	—	—	0.06	---	0.20
						2.54
12- 1	0.67	0.63	---	---	---	0.47
12- 5			---	---	---	0.09
12-17	0.53	0.53	0.55 ³	0.46	---	0.51
12-18	—	—	—	0.01	---	0.04
						1.20
1- 3-79	---	—	—	0.02	---	0.02
1- 5	---			0.09	---	0.07
1- 7	---			0.34	---	0.38
1- 8	---	4.30	5.00 ³	1.63	---	1.46
1- 9	---			0.17	---	0.30
1-10	---			0.60	---	0.01
1-11	---			1.28	---	1.62
1-12	---			0.07	---	0.08
1-14	—	—	—	2.50	---	2.22
1-15	3.06	2.60	---	0.21	---	0.88
1-17			---	0.25	---	0.16

Table 2. La Honda Rainfall Data.--Continued

Date	Bucket LHI	Bucket LHII	Other Data	Recording Gage LHI	NOAA Data ¹	Monthly Total
1-18-79	—	—	---	0.01	---	0.14
1-25	—	—	---	0.02	---	0.01
1-30	0.49	0.60	---	0.31	---	0.31
						7.50
2- 1	—	—	---	0.10	---	0.02
2- 2	---	---	---	---	---	0.10
2-13	—	—	---	---	---	2.07
2-14	—	—	3.60 ³	---	---	0.96
2-15	—	—	---	---	---	0.02
2-16	—	—	---	---	---	0.35
2-18	6.35	5.85	---	---	---	0.42
2-19	—	—	2.40	---	---	0.11
2-20	—	—	---	---	---	0.96
2-21	—	—	---	---	---	0.21
2-22	—	—	1.20	---	---	0.91
2-23	—	—	0.45	---	---	0.20
2-26	—	—	---	---	---	0.56
2-28	—	—	---	---	---	0.56
						8.77
3- 1	—	—	---	---	---	0.10
3- 2	1.53	1.20	---	---	---	0.06
3- 3	—	—	---	---	---	0.08
3- 9	—	—	---	---	---	0.01
3-13	—	—	---	---	---	0.00
3-15	—	—	---	---	---	0.37
3-16	—	—	---	---	---	0.49
3-17	0.78	0.81	---	---	---	0.03
3-18	—	—	---	---	---	0.09
3-19	—	—	---	---	---	0.36
3-21	—	—	---	---	---	0.03
3-22	—	—	---	---	---	0.09
3-26	2.77	2.83	---	---	---	0.30
3-27	—	—	---	---	---	1.75
3-28	—	—	---	---	---	1.05
						3.55
4- 6	—	---	---	---	---	0.14
4- 9	—	---	---	---	---	0.09
4-11	—	---	---	---	---	0.02
4-16	—	---	---	---	---	0.14
4-17	1.32	---	---	---	---	0.07
4-22	—	---	---	---	---	0.06

Table 2. La Honda Rainfall Data.--Continued.

Date	Bucket LHI	Bucket LHII	Other Data	Recording Gage LHI	NOAA Data ¹	Monthly Total
4-23-79		---	---	---	---	0.15
4-24		---	---	---	---	0.05
4-26	—	---	---	---	---	0.23
						1.32
5- 1	—	---	---	---	---	0.02
5- 3		---	---	---	---	0.02
5- 5		---	---	---	---	0.18
5- 6		---	---	---	---	0.10
5- 7	0.56	---	---	---	---	0.12
5- 8		---	---	---	---	0.04
5-15		---	---	---	---	0.03
5-16		---	---	---	---	0.03
5-26	—	---	---	---	---	0.01
						0.56
6-26	---	---	---	---	---	0.04
6-27	---	---	---	---	---	0.01
						0.05
Seasonal Total 1978-79					27.18	26.07
7- 3-79	---	---	—	---	---	0.03
7- 4	---	---		---	---	0.03
7- 5	---	---	0.16 ⁴	---	---	0.02
7-21	---	---		---	---	0.08
7-27	---	---	—	---	---	0.02
						0.18
8-13	---	---	---	---	---	0.02
8-29	---	---	---	---	---	0.05
						0.07
9- 2	---	---	---	---	---	0.02
						0.02
10-13	—	—	0.06 ⁴	---	---	0.00
10-14				---	---	0.02
10-15				---	---	0.03
10-18				---	---	0.04

Table 2. La Honda Rainfall Data.--Continued.

Date	Bucket LHI	Bucket LHII	Other Data	Recording Gage LHI	NOAA ¹ Data ¹	Monthly Total
10-19-79			0.92 ⁴	---	---	1.16
10-20	4.04	3.59		---	---	0.50
10-22			1.08	---	---	0.00
10-24				---	---	0.05
10-25			1.85	---	---	2.49
10-26			0.46	---	---	0.00
10-30				---	---	0.05
10-31	—	—		---	---	0.11
						4.04
11- 3	—	—		---	---	1.15
11- 4				---	---	0.08
11- 5			0.90 ⁴	---	---	0.00
11- 6	1.58	1.55		---	---	0.73
11- 7			0.18	---	---	0.08
11- 8				---	---	0.01
11-16				---	---	1.08
11-17	—	—	1.24	---	---	0.08
11-22				---	---	0.48
11-24	2.27	2.32		---	---	0.08
11-25				---	---	0.13
11-26	—	—	0.90	---	---	0.02
						3.87
12-19	—	---	0.26 ⁴	---	---	0.66
12-20		---		---	---	0.15
12-21	4.75	---	0.34	---	---	0.14
12-23		---		---	---	1.21
12-24		---	2.70	---	---	3.52
12-25	—	---	1.28	---	---	0.33
12-30	---	---	0.68	---	---	0.55
12-31	---	---	1.05	---	---	0.10
						5.78
1- 1-80	—	---		---	---	0.02
1- 4		---		---	---	0.02
1- 8		---		---	---	0.11
1- 9		---	0.60 ⁴	---	---	0.49
1-10		---	0.45	---	---	0.12
1-11		---	1.12	---	---	1.23
1-12	5.75	---		---	---	0.69
1-13		---		---	---	1.34
1-14		---	3.40	---	---	0.06
1-15		---	0.30	---	---	0.31
1-16		---	0.18	---	---	0.16

Table 2. La Honda Rainfall Data.--Continued.

Date	Bucket LHI	Bucket LHII	Other Data	Recording Gage LHI	NOAA Data ¹	Monthly Total
1-17-80		---		---	---	0.35
1-18	---	---	0.36 ⁴	---	---	0.00
						5.75
2-13	---	---		---	---	0.05
2-14		---	0.40 ⁴	---	---	0.70
2-15		---	0.60	---	---	0.58
2-16		---		---	---	1.47
2-17		---		---	---	0.67
2-18		---		---	---	0.13
2-19		---	6.12	---	---	2.05
2-20		---	0.56	---	---	0.40
2-21	7.38	---	1.46	---	---	0.55
2-22		---	0.22	---	---	0.40
2-24		---		---	---	0.04
2-25		---		---	---	0.01
2-27		---		---	---	0.57
2-28		---	0.86	---	---	0.15
						7.18
3- 2		---		---	---	0.30
3- 3		---	0.20 ⁴	---	---	0.07
3- 4		---	0.20	---	---	0.00
3- 5	1.17	---	0.75	---	---	0.99
3- 6	---	---	0.62	---	---	0.24
3- 7		---		---	---	0.02
3-11		---		---	---	0.09
3-12	0.16	---	0.20	---	---	0.00
3-14		---		---	---	0.05
3-15		---		---	---	0.18
3-17	---	---	0.10	---	---	0.06
3-21	---	---	0.14	---	---	0.21
3-25	---	---	0.21	---	---	0.27
3-26	---	---	0.07	---	---	0.00
						2.05
4- 4	---	---		---	---	0.15
4- 5	---	---	1.85 ⁴	---	---	1.24
4- 9	---	---		---	---	0.04
4-20	---	---		---	---	0.33
4-21	0.70	---	0.42	---	---	0.30
4-22		---	0.14	---	---	0.30
4-23		---	0.46	---	---	0.02
4-28	---	---		---	---	0.02
						2.13

Table 2. La Honda Rainfall Data.--Continued.

Date	Bucket LHI	Bucket LHII	Other Data	Recording Gage LHI	NOAA Data ¹	Monthly Total
5- 9-80	---	---	0.52 ⁴	---	---	0.36
5-10	---	---		---	---	0.14
5-11	---	---		---	---	0.03
5-12	---	---		---	---	0.02
5-13	---	---		---	---	0.02
5-21	---	---		---	---	0.02
						0.55
6- 1	---	---	0.10 ⁴	---	---	0.04
6- 4	---	---		---	---	0.11
6-16	---	---		---	---	0.03
6-20	---	---		---	---	0.01
						0.19
Season Total 1979-80					33.63	31.81

1--La Honda/San Gregorio

2--A. J. Wool

3--Fred Cunha

4--Camp Glenwood, San Mateo

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