

URI

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Circa 8/24/82

PDR - Return 396-55

URANIUM RESOURCES INC.
NORTH PLATTE PROJECT
QUARTERLY REPORT

APRIL 15, 1982 THROUGH JULY 15, 1982



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1.0 PROJECT DEVELOPMENT

Production continued from April 15 until June 20, 1982. During this time, URI determined that the North Platte Orebody was amenable to in-situ leaching. On June 1, 1982, the plant was shut down for ten days and the reverse osmosis unit was installed. On June 10, 1982, restoration began. Details of restoration progress are presented later in this report.

Monitoring at the project continued as specified within our license. No new problem areas were disclosed by monitoring in this period; however, problems with elevated calcium and alkalinity continued. Monitoring results are detailed within the appropriate section of this report.

2.0 HYDROLOGY

2.1 Net Flow Balance

A one percent bleed was maintained throughout the report period. URI used the batch bleed technique as was discussed in the previous quarterly report. Determination of the volume of fluid to be bled was accomplished by multiplying the previous day's extraction volume by .01. This volume was directed to the evaporation pond. Bleeding was also accomplished indirectly by periodic washing of resin and other process needs. Barren lixiviant is often used for this purpose.

As was the case in the previous quarterly report, URI continued to experience problems balancing the injection and extraction rates with the meters at the plant. As documented in my letter of August 12, 1982, to John Linehan, URI feels

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this problem can be attributed to occasional meter failure, resulting from calcium carbonate buildup, and even more so to CO₂ addition in the injection stream prior to the totalizer.

Attachment A contains a revised fluid balance tabulation for the first quarterly report period. This tabulation reflects the 65 pounds per day CO₂ which was added to the injection stream. Also within Attachment A is the fluid balance report for this reporting period. This has been adjusted for the 43 pounds of CO₂ which was added each day.

The addition of CO₂ does not correct the day-to-day bleed volumes to a point of correspondence with the batch bleed rates. This is because the CO₂ adjustment is an average based on the CO₂ inventory over a period of time. CO₂ is added to the lixiviant as pH adjustment is needed. It is not metered day-to-day and therefore only its volume, over a period of time, can be determined. By totalizing the corrected bleed over the entire production period, a volume of 113,099 can be documented. This corresponds to the volume of fluid in the ponds at the beginning of restoration.

2.2 Water Quality

Water quality data for individual monitor wells is presented in Attachments E and F. Attachment E contains tables and F contains plots.

As was discussed in the last quarterly report, wells NPMW-1 and NPMW-4 continue to exceed UCL for the parameters of Alkalinity and Calcium. Also, on June 8, 1982, this problem became apparent in well NPMW-3. At this time, the Wyoming DEQ has eliminated Alkalinity and Calcium as control parameters.



Also, the NRC has indicated that they will be eliminated in a forthcoming license ammendment. The reason for eliminating these parameters is because they indicate false excursions, as has been documented in much past correspondence (see previous quarterly report). Because of the general Regulatory/URI agreement as to the inadequacy of Calcium and Alkalinity as control parameters, URI will discount their results. All other parameters indicate no migration of lixiviant.

2.3 Bleed Water Quality

A quarterly analysis of bleed solution is within Attachment G.

2.4 Lixiviant Water Quality

Attachemnt H contains barren and pregnant lixiviant water quality for the project.

3.0 RESTORATION

3.1 Final Monitor Well Sample

As required within license condition 13, Attachment I contains the monitor well analysis at the termination of production and beginning of restoration.

3.2 Restoration Status

Restoration officially began on June 10, 1982. At this point, the reverse osmosis unit was put into service, wells P-1, I-3 and I-4 were placed on extraction and wells I-1 and I-2 on injection. On July 2, wells I-1 and I-2 were placed on extraction and I-3 and I-4 on injection.

Attachment J contains a table which shows the water



quality status at the termination of production, on May 28, 1982. This table shows that of the 44 parameters observed at the site, 24 were restored before any restoration attempt was made.

Attachemnt J also contains analysis of fluid which is being introduced to, produced from and rejected from the R.O. unit. The R.O. product mingled with R.O. feed is being reinjected during the restoration process.



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ATTACHMENT A
FLUID BALANCE REPORT

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FLUID BALANCE REPORT (REVISED)

Date	Injected		Extracted		Gal.	Calculated	Actual Batch Bleed CO ₂ Adj. @ 4,200 gal./day
	Gal.	Ave. GPM	Gal.	Ave. GPM			
Feb. 8	0	0	14,000	21.77	N/A	14,000	
9	7,721	5.36	7,915	20.82	N/A	194	
10	26,269	18.24	23,111	19.69	N/A	<3,158>	
11	12,097	8.40	22,467	21.86	N/A	10,370	
12	30,177	20.96	26,609	18.67	N/A	<3,568>	
13	0	0	23,093	18.84	N/A	23,093	
14	31,136	21.62	24,984	19.28	N/A	<6,152>	
15	26,401	18.33	9,717	17.04	N/A	<16,684>	
TOTAL						18,095	
16	11,419	7.93	12,962	15.64	N/A	1,543	5,743
17	1,976	1.37	14,580	12.80	N/A	12,604	16,804
18	19,490	13.53	N/A	N/A	N/A	N/A	N/A
19	8,035	5.58	9,564	14.74	N/A	1,529	5,729
20	8,620	5.98	N/A	N/A	N/A	N/A	N/A
21	0	0	0	0	N/A	N/A	N/A
22	18,110	12.58	14,062	10.93	N/A	<4,048>	160
23	14,300	9.93	13,931	12.05	N/A	<369>	3,831
24	6,323	4.39	10,701	7.86	N/A	4,378	<178>
25	0	0	8,665	15.28	N/A	8,665	<4,465>
26	0	0	0	0	N/A	N/A	N/A
27	0	0	0	0	N/A	N/A	N/A
28	0	0	0	0	N/A	N/A	N/A
March 1	8,541	5.93	649	20.39	N/A	<7,892>	<3,692>
2	32,053	22.26	26,528	20.10	N/A	<5,525>	<1,325>
3	25,341	17.60	24,055	19.15	N/A	<1,286>	2,914
4	28,250	19.62	24,832	19.80	N/A	<3,418>	782
5	25,221	17.51	15,618	13.96	N/A	<9,603>	<5,403>
6	30,967	21.50	8,298	18.59	N/A	<22,669>	<18,469>
7	16,130	11.20	6,383	17.25	N/A	<9,747>	<5,547>
8	28,489	19.78	9,333	12.41	N/A	<19,156>	<14,956>
9	41,191	28.60	15,914	22.10	N/A	<25,677>	<21,477>
10	35,140	24.40	34,588	24.02	N/A	<552>	3,648
11	33,212	23.06	32,818	22.79	N/A	<934>	3,266
12	29,896	20.76	29,184	20.27	N/A	<712>	3,488
13	30,263	21.02	29,723	20.64	N/A	<540>	3,660
14	28,251	19.62	29,675	20.61	N/A	1,424	5,624
15	27,589	19.16	28,896	20.07	N/A	1,307	5,507
16	28,251	19.62	23,320	16.19	N/A	<4,931>	<731>
17	26,124	18.14	21,434	14.88	N/A	<4,690>	<490>
18	23,586	16.38	19,480	13.53	N/A	<4,106>	94
19	22,725	15.78	18,751	13.02	N/A	<3,974>	226
20	22,567	15.67	17,839	12.39	N/A	<4,728>	<528>
21	22,574	15.67	18,521	12.86	187	<4,053>	147
22	25,260	17.54	21,044	14.61	185	<4,216>	<16>
23	28,082	19.50	23,739	16.49	210	<4,343>	<143>
24	16,173	11.23	14,010	13.93	0	<2,163>	2,037
25	27,542	19.13	22,965	18.28	0	<4,577>	<377>
26	27,973	19.42	23,383	16.24	0	<4,590>	390
27	30,269	21.02	25,393	17.63	234	<4,876>	<676>
28	25,499	17.71	23,794	16.65	0	<1,705>	2,495
29	25,703	17.85	26,711	18.55	56	1,008	3,192
30	27,642	19.20	26,376	18.32	47	<1,265>	2,934
31	28,999	20.14	27,245	18.92	264	<1,754>	2,446
April 1	27,529	19.12	26,659	19.01	273	<807>	3,393
2	28,342	19.68	27,444	19.06	267	<898>	3,302
3	28,437	19.75	27,651	19.20	0	<786>	3,414
4	29,303	20.35	27,293	18.95	0	<2,010>	2,190
5	29,602	20.56	26,511	19.11	0	<3,090>	1,110

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FLUID BALANCE REPORT (REVISED) - cont'd.

Date	Injected		Extracted		Actual Batch		Bleed
	Gal.	Ave. GPM	Gal.	Ave. GPM	Gal.	Calculated	CO ₂ Adj. @ 4,200 gal./day
April 6	30,311	21.05	27,439	19.05	275	<2,877>	1,323
7	28,456	19.76	25,447	17.67	250	<3,009>	1,191
8	25,889	17.98	23,295	16.27	266	<2,594>	1,606
9	26,593	18.47	24,006	16.67	233	<2,587>	1,613
10	27,630	19.19	24,555	17.05	240	<3,075>	1,125
11	25,602	17.78	23,970	16.67	245	<1,632>	2,568
12	26,503	18.40	24,015	16.68	367	<2,488>	1,712
13	26,210	18.20	23,589	16.38	120	<2,621>	1,579
14	24,673	17.13	22,283	15.63	319	<2,390>	1,810
15	24,743	17.18	21,960	15.25	219	<2,783>	17
TOTAL						-163,009	48,789
16	25,205	17.50	22,700	15.76	227	<2,505>	295
17	24,742	17.18	22,395	15.55	327	<2,347>	453
18	24,451	16.98	21,809	15.15	218	<2,642>	158
19	22,780	15.80	19,877	13.80	198	<2,903>	<103>
20	21,193	14.71	19,279	13.38	192	<1,914>	886
21	18,376	12.76	15,889	11.03	165	<2,487>	313
22	18,002	12.45	15,609	10.83	163	<2,393>	407
23	17,611	12.22	15,442	10.65	154	<2,169>	631
24	13,300	9.23	14,695	10.20	0	1,395	4,195
25	17,200	11.94	14,942	10.37	295	<2,258>	542
26	12,722	14.31	11,172	11.64	0	<1,550>	1,250
27	22,833	15.95	18,628	12.99	297	<4,205>	<1,405>
28	26,998	18.74	22,159	15.39	221	<4,839>	<2,039>
29	26,611	18.61	21,716	15.08	217	<4,895>	<2,095>
30	28,265	19.68	23,133	16.06	231	<5,132>	<2,332>
May 1	28,150	20.15	23,459	16.29	234	<4,691>	<1,891>
2	27,042	19.84	23,856	17.02	238	<3,186>	<386>
3	28,760	19.98	28,141	19.54	281	<619>	2,181
4	27,225	19.38	26,157	18.16	261	<1,068>	1,732
5	25,813	15.68	21,155	15.05	211	<658>	2,142
6	23,841	16.89	22,744	15.79	227	<1,097>	1,703
7	26,019	18.11	24,970	17.34	249	<1,049>	1,751
8	26,678	18.59	25,596	17.77	255	<1,082>	1,718
9	25,901	18.22	25,208	17.50	252	<693>	2,107
10	21,343	15.01	20,301	14.09	203	<1,042>	1,758
11	5,814	12.09	6,825	11.49	0	1,011	3,811
12	Down		Down		0		0
13			7,779	17.06	140		
14	21,239	14.96	19,732	13.77	197	<1,507>	1,295
15	19,414	13.48	18,745	13.02	187	<669>	2,131
16	20,543	14.27	19,368	13.41	0	<1,175>	1,625
17	18,697	15.32	8,088	13.73	547	<699>	2,131
18	20,661	14.34	20,107	13.96	201	<544>	2,256
19	19,916	18.35	19,312	13.41	193	<604>	2,196
20	22,734	16.80	21,243	14.82	212	<1,491>	1,309
21	23,871	16.57	22,581	15.75	226	<1,290>	1,510
22	22,730	15.85	21,796	15.14	218	<934>	1,866
23	24,462	16.98	23,079	16.03	230	<1,383>	1,417
24	24,527	17.03	23,443	16.28	234	<1,084>	1,716
25	23,212	16.12	22,393	15.55	223	<819>	1,981
26	22,999	15.97	21,470	14.91	214	<1,529>	1,271
27	23,613	16.40	27,708	15.77	277	4,095	1,295
28	22,984	15.92	22,525	16.64	225	<459>	2,351
29	22,855	15.92	21,861	15.18	218	<994>	1,806
30	26,186	18.18	25,095	17.43	250	<1,091>	1,709
31	20,384	16.99	17,990	16.66	180	<2,394>	406
TOTAL						-68,323	46,215

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FLUID BALANCE REPORT
RESTORATION

Date	Injected		Extacted		Bleed
	Gal.	Ave. GPM	Gal.	Ave. GPM	Gal.
June 1				Down	
2				Down	
3				Down	
4				Down	
5				Down	
6				Down	
7				Down	
8				Down	
9				Down	
10	11,196	15.55	15,285	21.23	4,089
11	19,265	13.38	29,016	20.15	9,751
12	19,320	13.42	27,418	19.04	8,098
13	20,840	14.47	28,510	19.80	7,670
14	21,510	14.94	26,630	18.49	5,120
15	24,760	17.19	27,520	19.11	2,760
16	23,071	16.02	27,978	19.42	4,907
17	23,751	17.20	26,396	19.64	2,645
18	27,423	19.03	29,630	20.56	2,207
19	27,231	18.90	29,714	20.63	2,483
20	27,518	19.10	30,134	20.91	2,616
21	26,192	18.18	29,070	20.18	2,878
22	25,651	19.51	27,842	21.13	2,191
23	27,670	19.22	29,547	20.51	1,877
24	26,965	18.72	29,173	20.25	2,208
25	26,760	18.56	29,527	20.50	2,767
26	23,529	16.34	25,297	17.57	1,768
27	28,427	19.74	26,894	18.68	1,533
28	29,247	20.31	31,854	22.12	2,593
29	23,810	18.87	25,682	21.42	1,872
30	15,063	17.93	24,407	16.95	9,344
July 1	0	0	19,633	13.64	19,633
2	21,365	14.80	8,476	17.70	12,889
3	25,608	17.79	26,397	19.14	789
4	21,840	15.16	24,810	18.99	2,970
5	24,540	17.04	26,810	18.61	2,270
6	19,487	16.44	21,228	18.06	1,741
7	15,573	13.63	17,138	14.90	1,565
8	18,503	12.83	20,737	15.98	2,234
9	19,061	13.22	21,033	14.61	1,972
10	19,353	13.43	21,097	14.64	1,744
11	18,963	13.17	21,121	14.67	2,158
12	19,040	13.22	21,000	14.58	1,960
13	14,964	11.34	16,995	12.88	2,031
14	7,451	12.36	8,618	14.24	1,167
15	19,626	13.63	21,668	15.05	2,042

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URANIUM RESOURCES INC.

MARK S PELIZZA
Environmental Manager

COPY

August 12, 1982

Mr. John J. Linehan, Section
Leader
Operating Facilities Section I
Uranium Recovery Licensing Branch
United States Nuclear Regulatory
Commission
4915 Eastern Avenue
Silver Springs, MD 20910

Dear Mr. Linehan:

The following is URI's response to your letter of July 23, 1982.

Item I: Concern over malfunctioning flow meters.

As documented in the first quarterly report, URI has experienced problems with the flow meters utilized at the project. The problem results from a number of factors. It was initially suspected that calcium buildup was the primary cause of meter failure; however, pursuant to the telephone call on August 6, 1982, from Fred Ross and Kristen Westbrook of your staff, URI felt the problem should be investigated further. Such further investigation disclosed a much more significant cause of meter error: CO₂ gas.

CO₂ is added to the injection stream as a liquid. Because of the drop in pressure, the CO₂ is converted from liquid to gas after entering the injection stream. One pound of CO₂ liquid will expand to 8.43 ft.³, or 63.06 gallons. CO₂ addition, up until April 15, was 450 pounds per week, which would account for 4,200 gallons of gas at atmospheric pressure. The meter problems result from measuring the injection rate after the addition of CO₂ gas and recording the volume of fluid and gas injected as though the volume were fluid alone.

Reflecting on this design, URI acknowledges that metering of injection fluid should have been performed prior to CO₂

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August 12, 1982

addition. URI will submit a revised Fluid Balance Report in the next quarterly report, corrected for CO₂ gas addition for the period through April 15, 1982. The next quarterly report will also contain corrected figures for April and May bleed rates.

URI is presently in the restoration phase of the project and therefore not adding CO₂ gas. The meters (the same used in production) are now working correctly, accurately measuring bleed. It is URI's conclusion, therefore, that CO₂ was the continuing source of meter error, while calcium carbonate buildup was the cause for occasional meter failure. As the meters are now functioning properly, there is no need for a design alteration; however, URI will monitor the situation closely.

Related to this discussion is NRC's statement, "In order to satisfy License Condition No. 20 and ensure environmentally safe operations, immediate action is needed to implement accurate flow measuring on each injection and production well." URI disagrees with this statement.

Within the original permit application (pages attached), URI proposes four techniques by which to determine the adequacy of the bleed; these are as follows:

- (1) Use of in-line totalizers
- (2) Continuous water level monitoring
- (3) Discontinuous water level monitoring
- (4) Water quality sampling and analysis

Even though technique (1) above is not adequate to measure the bleed volume, techniques (3) and (4) certainly have proved effective in preventing excursions. Water level measurements documented a definite sink. Also, water quality measurements documented no migration of lixiviant. In addition to planned monitoring techniques, the 140,000 gallons of overproduction were verified by the volume of fluid in the evaporation ponds.

It is our conclusion that, based upon the multiple safeguards implemented at the project, environmentally safe operations have been conducted.

Item II: Radiological Environmental Monitoring

The required information, as requested in Table 5.2.01 of the EIA, is within Attachment I.

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Page Three

Mr. John J. Linehan

August 12, 1982

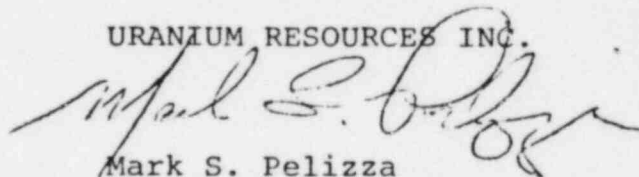
Item III: As Built Pond Specifications

As discussed during the July 6, 1982 telephone conversation, between K. Westbrook and myself, the ponds were built according to the design originally submitted; however, to complete our file, "as built plans" are within Attachment II. These plans are, in fact, the same as the original design plan.

If you have further questions pertaining to this response, please contact me.

Sincerely,

URANIUM RESOURCES INC.



Mark S. Pelizza
Environmental Manager

MSP:lac

Enc.

cc: Harry Anthony, URI

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ATTACHMENT B
WATER LEVEL TABLES

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Table 2

URANIUM RESOURCES INC.

NORTH PLATTE PROJECT **OFFICIAL DOCKET COPY**
 OPERATIONAL WATER LEVELS

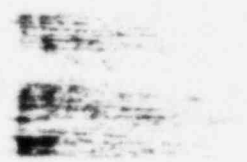
DATE	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	DM-1	SM-1	SM-2
4-16-82	150.2'	157.1'	160.1'	165'	173.3'	162.7'	169.8'	188.3'	149.2'
4-18-82	148.2'	156.3'	162.0'	159.6'	168.3'	163.0'	163.9'	165.2'	148.7'
4-22-82	148.0'	155.0'	162.3'	159.1'	170.0'	159.8'	162.3'	163.5'	148.8'
4-26-82	149.1'	155.1'	163.6'	158.1'	170.0'	161.3'	162.6'	165.0'	149.4'
4-28-82	153.4'	159.1'	166.9'	161.0'	172.8'	164.9'	199.8'	223.5'	149.2'
5-1-82	148.7'	155.3'	163.6'	156.1'	169.4'	158.3'	165.4'	166.0'	148.5'
5-4-82	148.2'	153.8'	161.9'	158.2'	168.6'	159.5'	161.5'	163.3'	148.2'
5-6-82	147.8'	154.3'	162.9'	157.0'	168.5'	159.8'	162.3'	163.6'	149.3'
5-10-82	146.3'	153.6'	162.2'	156.3'	167.4'	158.8'	161.6'	162.6'	148.8'
5-13-82	147.9'	152.3'	163.0'	158.3'	168.7'	160.3'	162.5'	165.8'	148.3'
5-16-82	148.2'	152.3'	162.3'	156.3'	168.6'	161.3'	161.3'	163.3'	147.8'
5-19-82	146.6'	150.8'	163.0'	154.9'	169.3'	160.3'	161.3'	163.3'	150.2'
5-23-82	147.7'	153.8'	162.3'	156.9'	168.0'	159.1'	162.0'	162.8'	148.8'
5-25-82	148.8'	152.0'	162.4'	155.9'	169.0'	156.5'	160.4'	163.3'	149.0'
5-30-82	147.6'	153.8'	162.3'	156.6'	167.1'	159.2'	162.8'	162.5'	148.9'
5-31-82	147.0'	153.6'	162.3'	155.9'	167.8'	158.6'	162.8'	162.3'	149.0'
6-7-82	145.9'	153.3'	162.0'	156.7'	167.4'	158.4'	161.7'	162.4'	149.0'
6-9-82	147.7'	154.8'	163.5'	158.2'	168.8'	159.9'	172.0'	196.9'	149.1'
6-12-82	151.1'	157.3'	169.5'	160.7'	176.0'	164.3'	162.3'	166.7'	148.7'
6-15-82	148.8'	155.3'	167.0'	165.5'	170.3'	159.8'	162.0'	165.3'	148.2'
6-18-82	149.5'	161.3'	165.6'	158.0'	171.2'	159.3'	165.4'	165.6'	148.3'
6-21-82	149.2'	157.3'	169.4'	160.8'	171.6'	157.8'	162.7'	165.9'	147.0'
7-2-82	148.0'	161.3'	167.3'	159.9'	170.8'		163.8'	164.3'	148.0'
7-3-82	150.3'	168.7'	165.3'	159.3'	169.3'		161.3'	162.9'	148.8'
7-6-82	148.5'	159.7'	166.2'	158.4'	172.1'	164.4'	162.7'	165.8'	149.1'
7-9-82	151.2'	158.5'	166.6'	158.3'	172.6'	163.3'	165.9'	165.0'	149.3'

URI

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ATTACHMENT C
WATER LEVEL GRAPHS



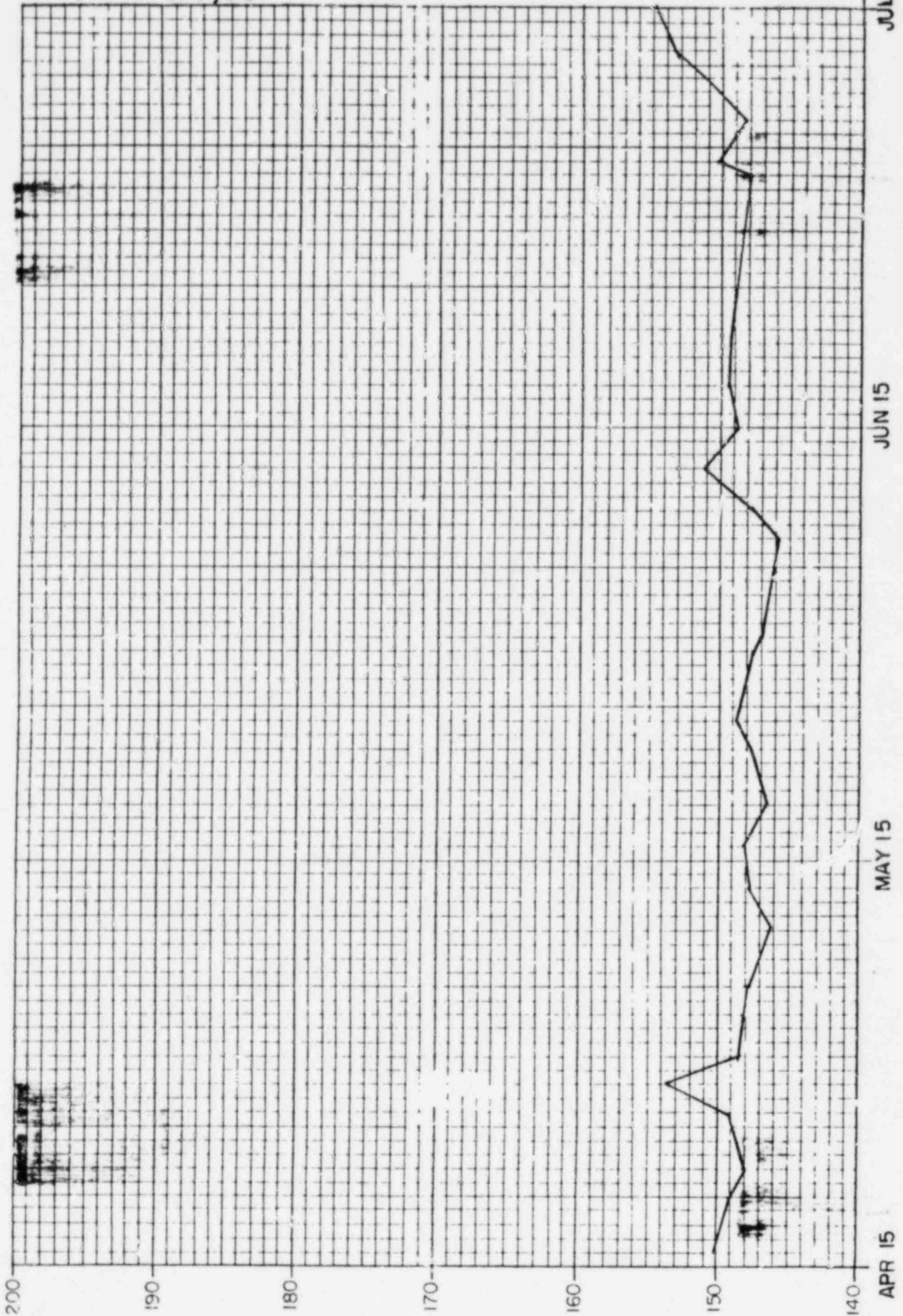
OFFICIAL DOCKET COPY

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MONITOR WELL
WATER LEVEL GRAPH
NPMW - 1



FEET FROM SURFACE

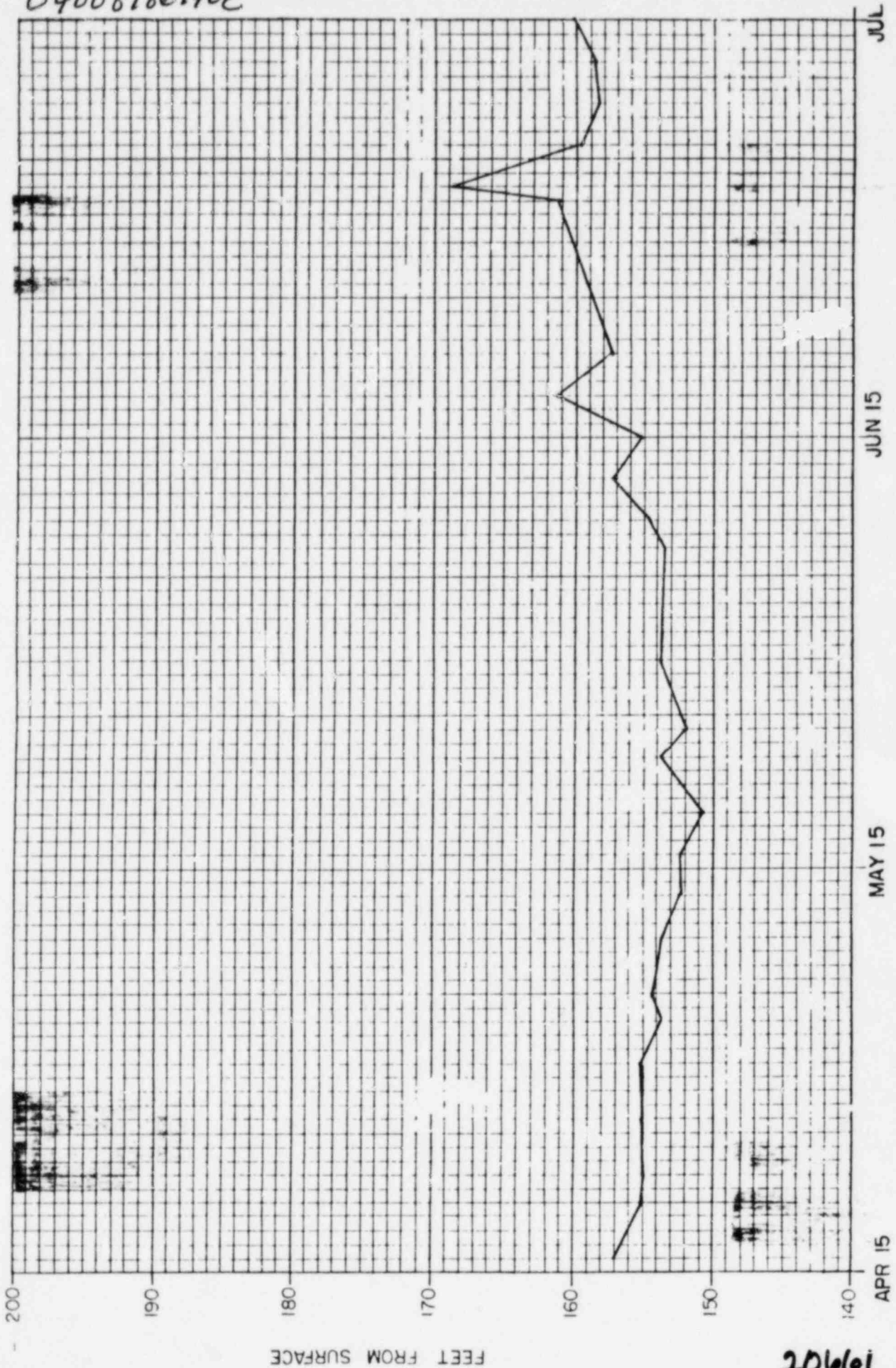
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DATE (1982)

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MONITOR WELL
WATER LEVEL GRAPH
NPMW - 2



FEET FROM SURFACE

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OFFICIAL DOCKET COPY

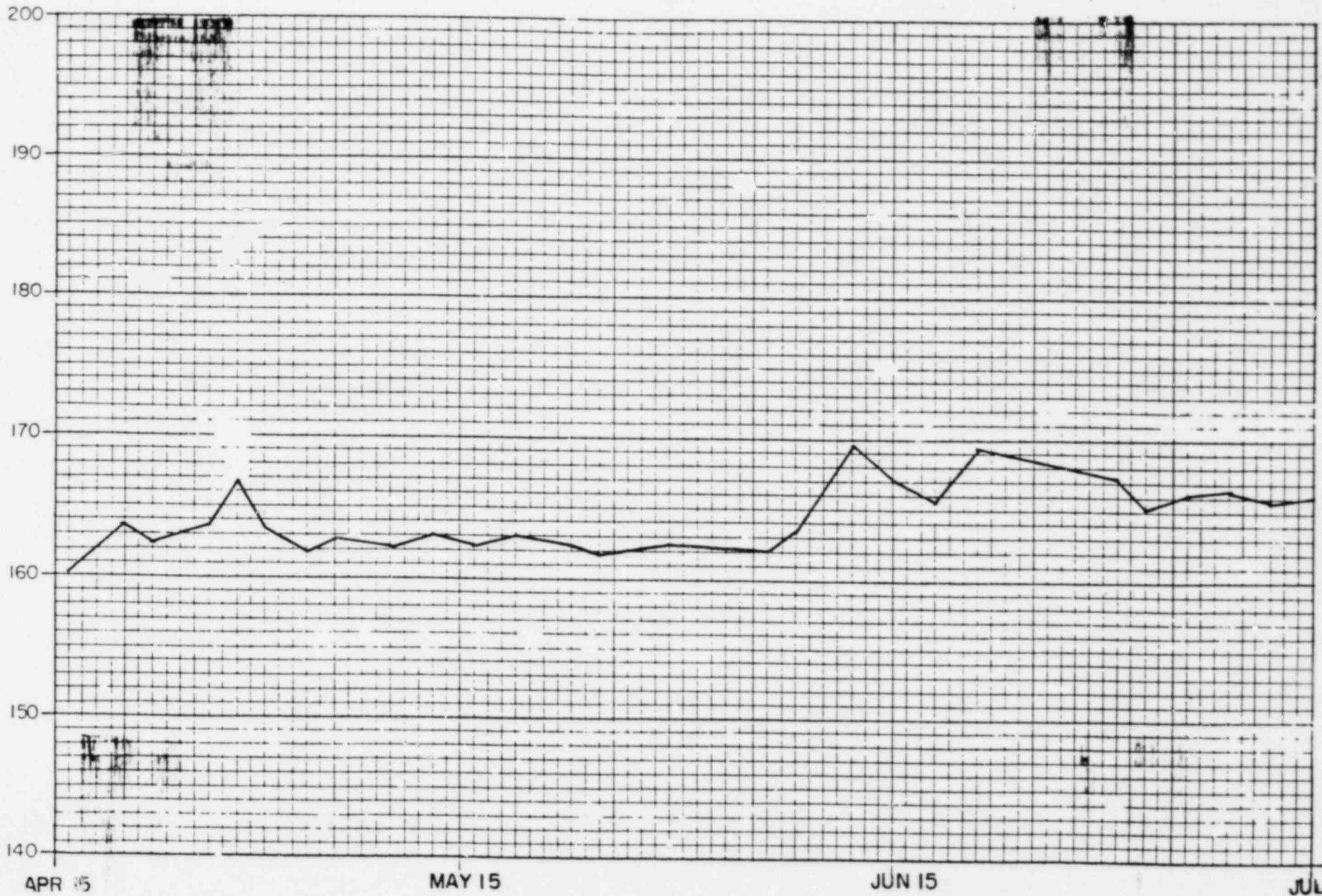
DATE (1982)

MONITOR WELL
WATER LEVEL GRAPH

NPMW - 3

OFFICIAL DOCKET COPY
FEET FROM SURFACE

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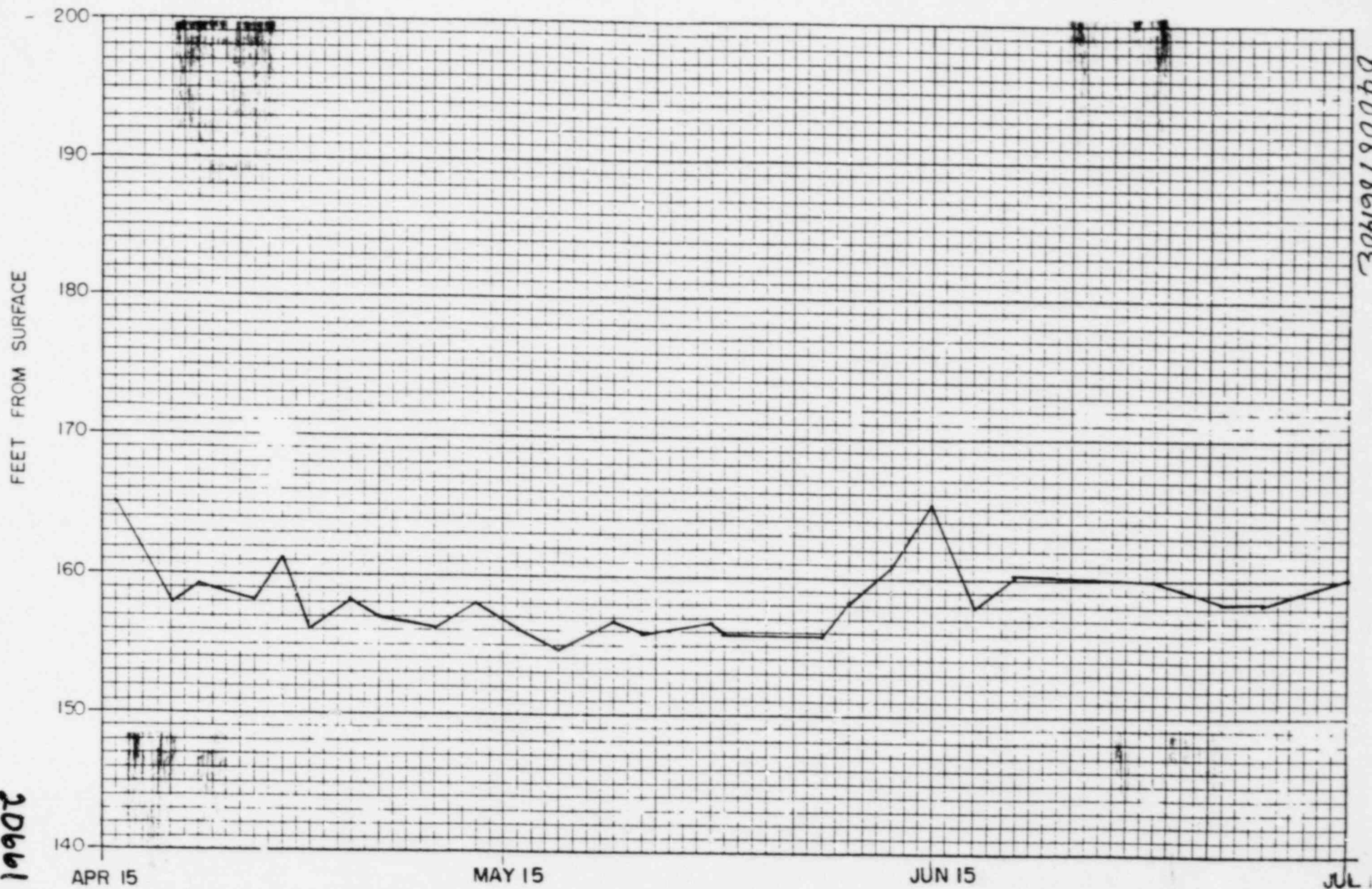


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DATE (1982)

MONITOR WELL
WATER LEVEL GRAPH

NPMW - 4



DATE (1982)

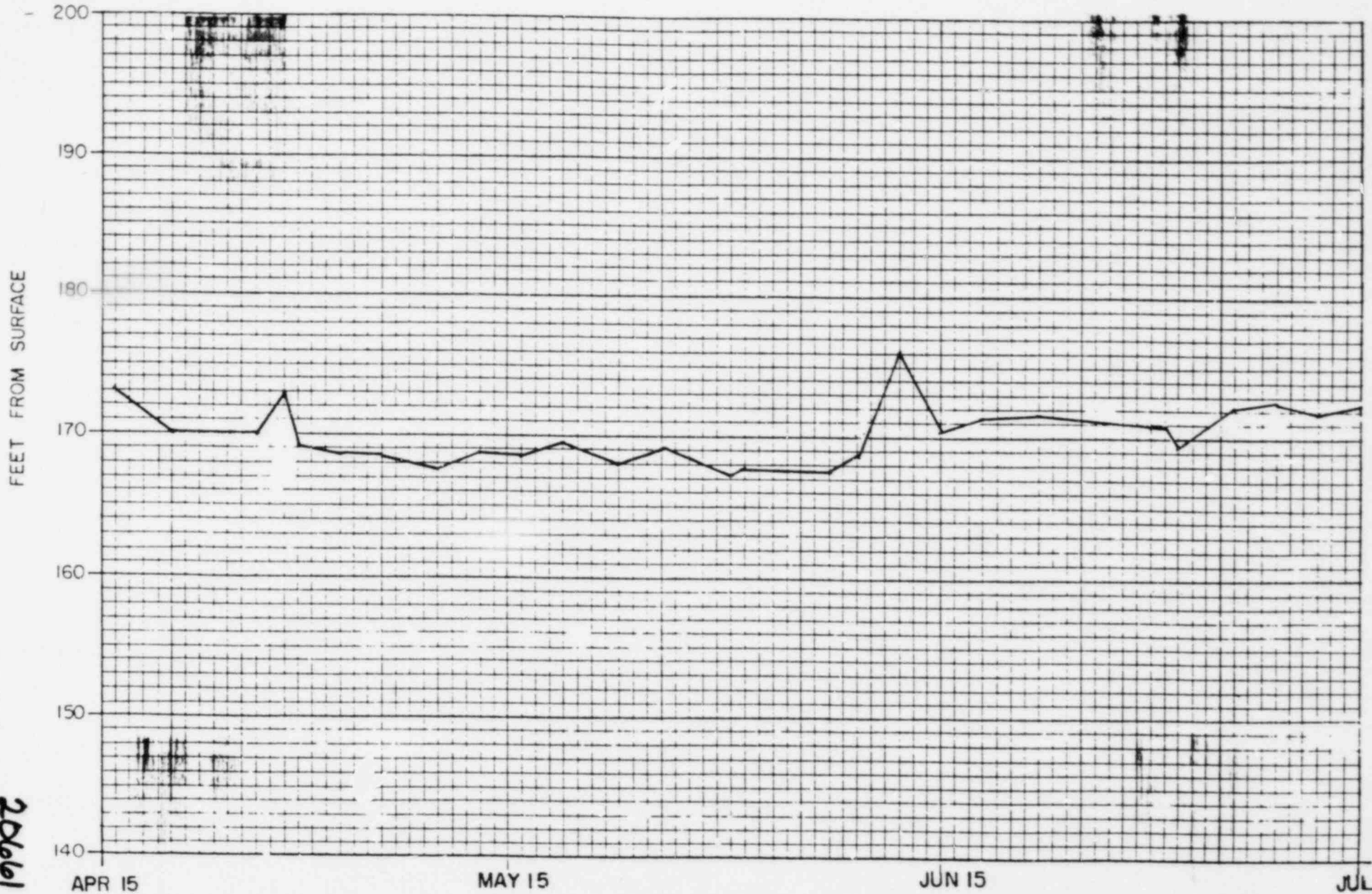
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MONITOR WELL
WATER LEVEL GRAPH

NPMW - 5



DATE (1982)

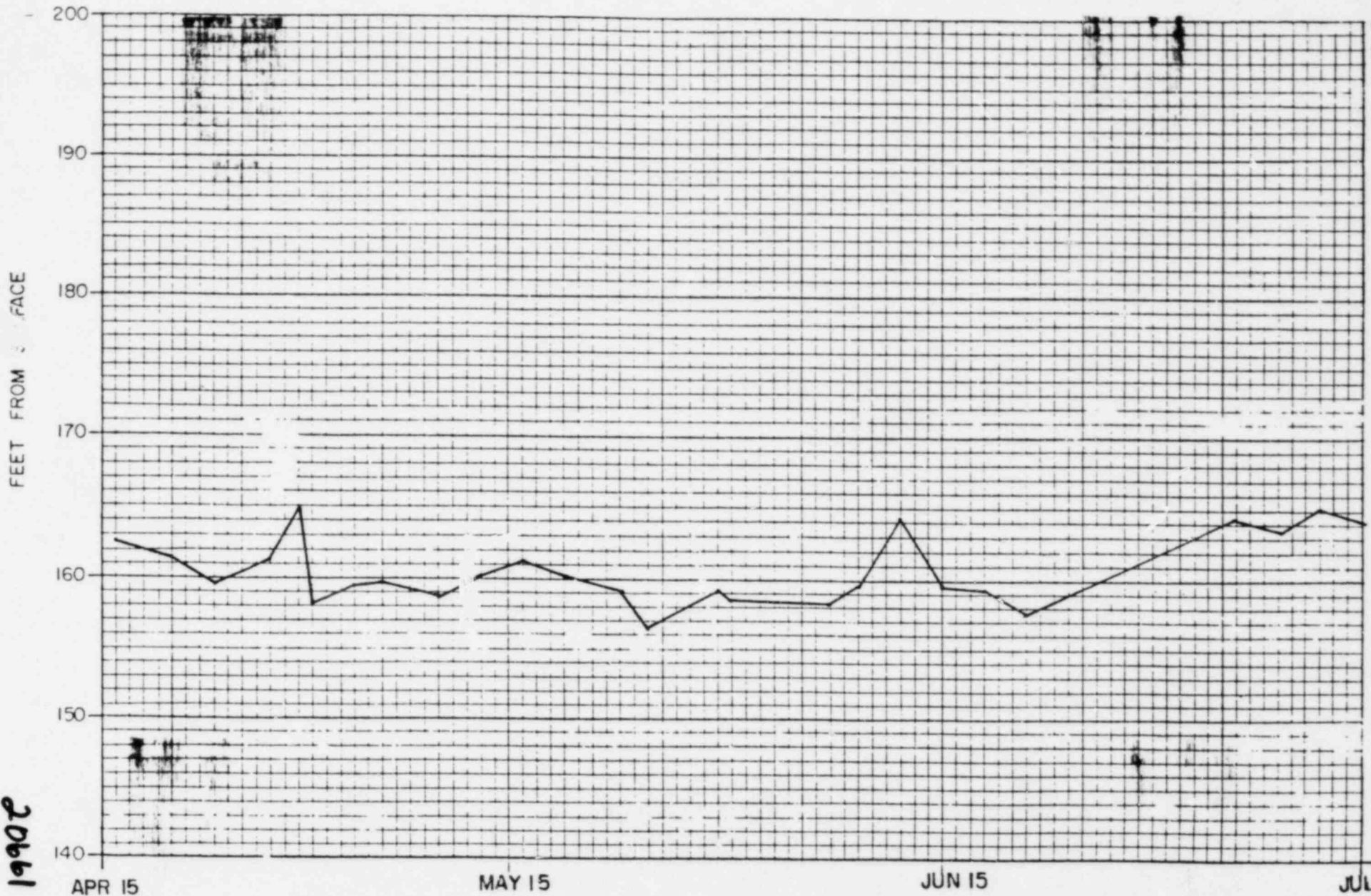
FEET FROM SURFACE

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MONITOR WELL
WATER LEVEL GRAPH

NPMW - 6



DATE (1982)

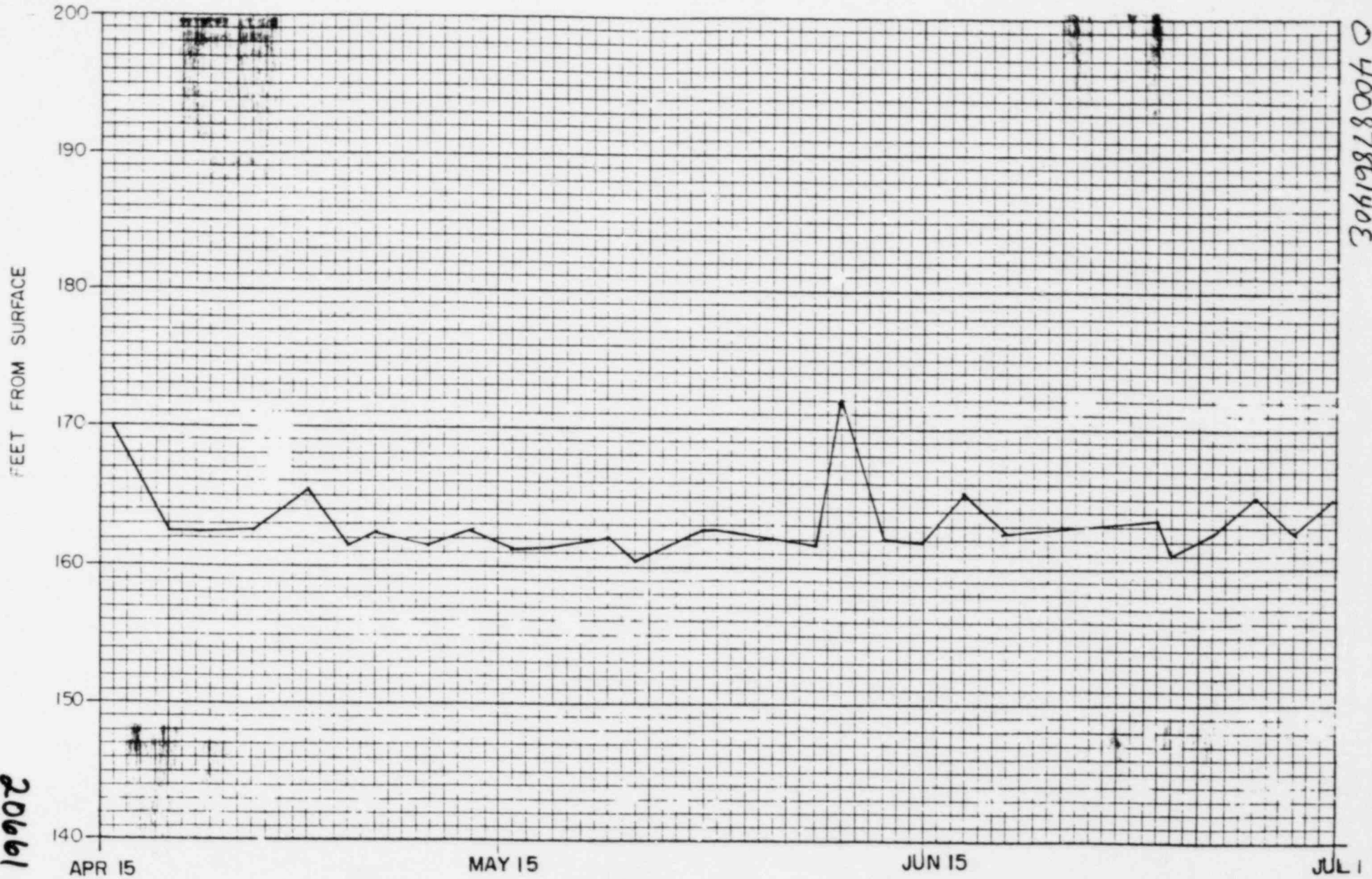
RECEIVED

19908

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MONITOR WELL
WATER LEVEL GRAPH

NPDM - 1



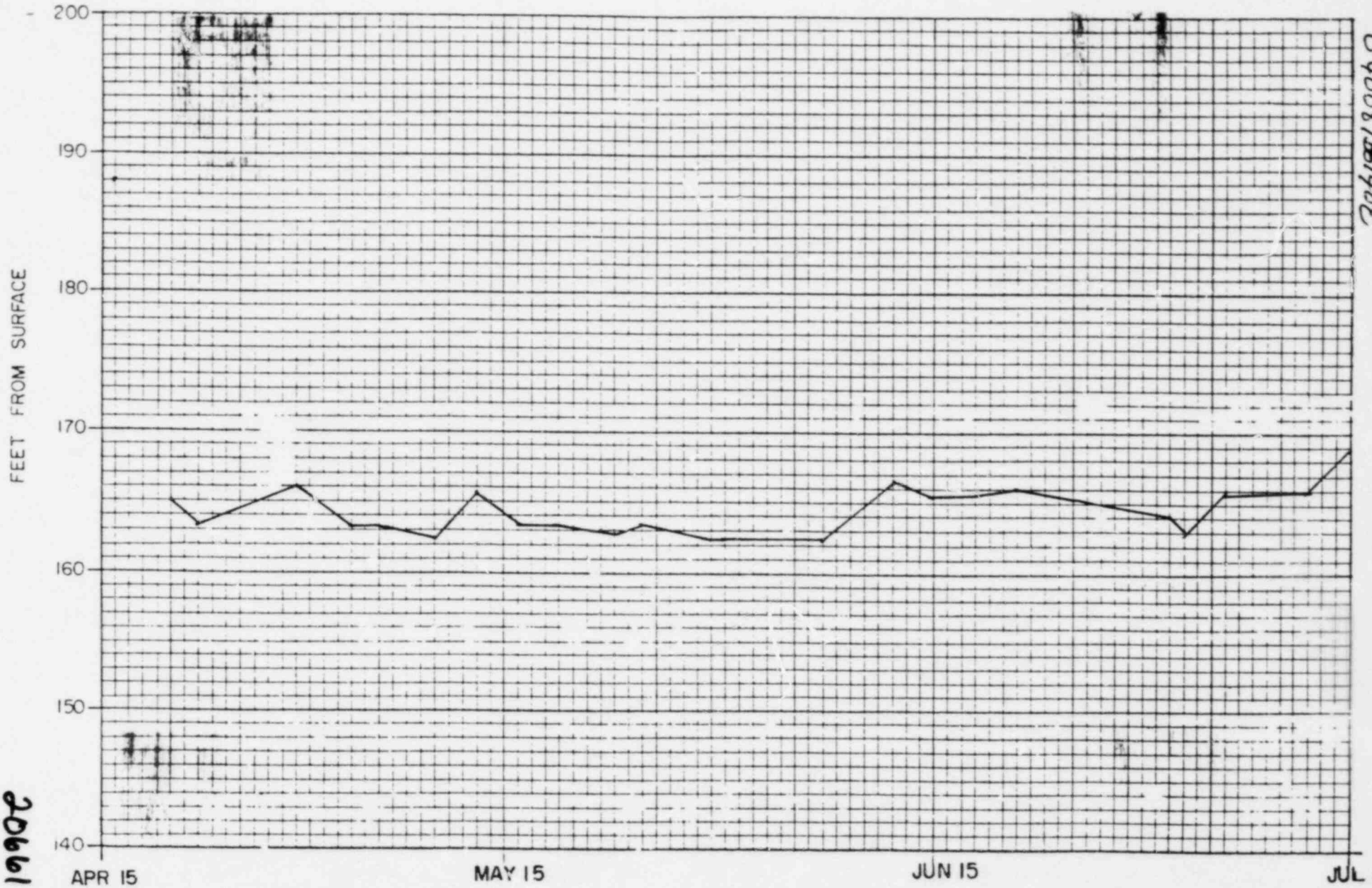
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306198280070

DATE (1982)

MONITOR WELL
WATER LEVEL GRAPH

NPMS - 1



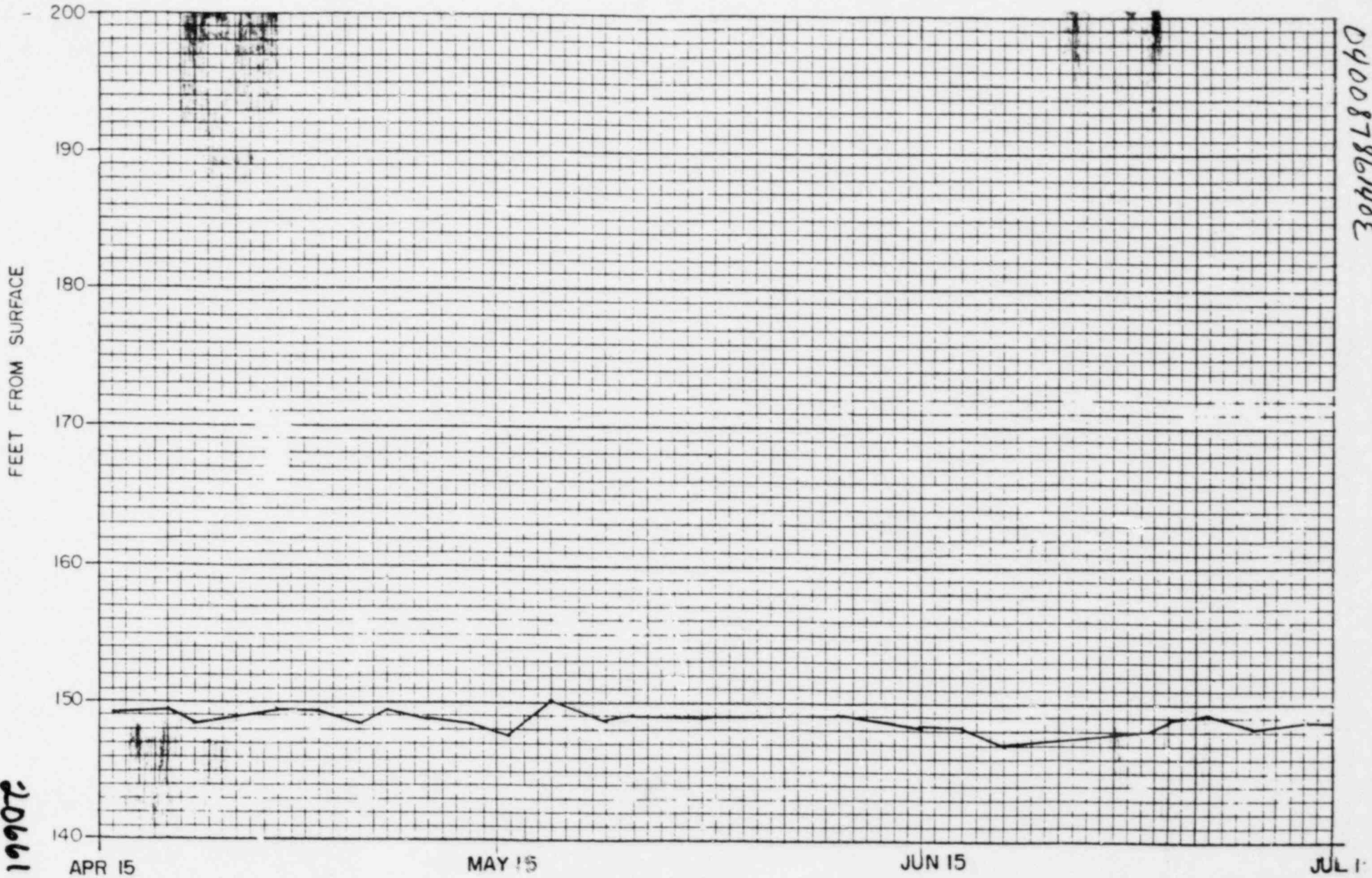
OFFICIAL DOCKET COPY

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04008796140E

DATE (1982)

MONITOR WELL
WATER LEVEL GRAPH
NPMS - 2



OFFICIAL DUPLICATE COPY

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040087861403

DATE (1982)

URI

04008786140E

ATTACHMENT D

BAROGRAPH

OFFICIAL DOCKET COPY

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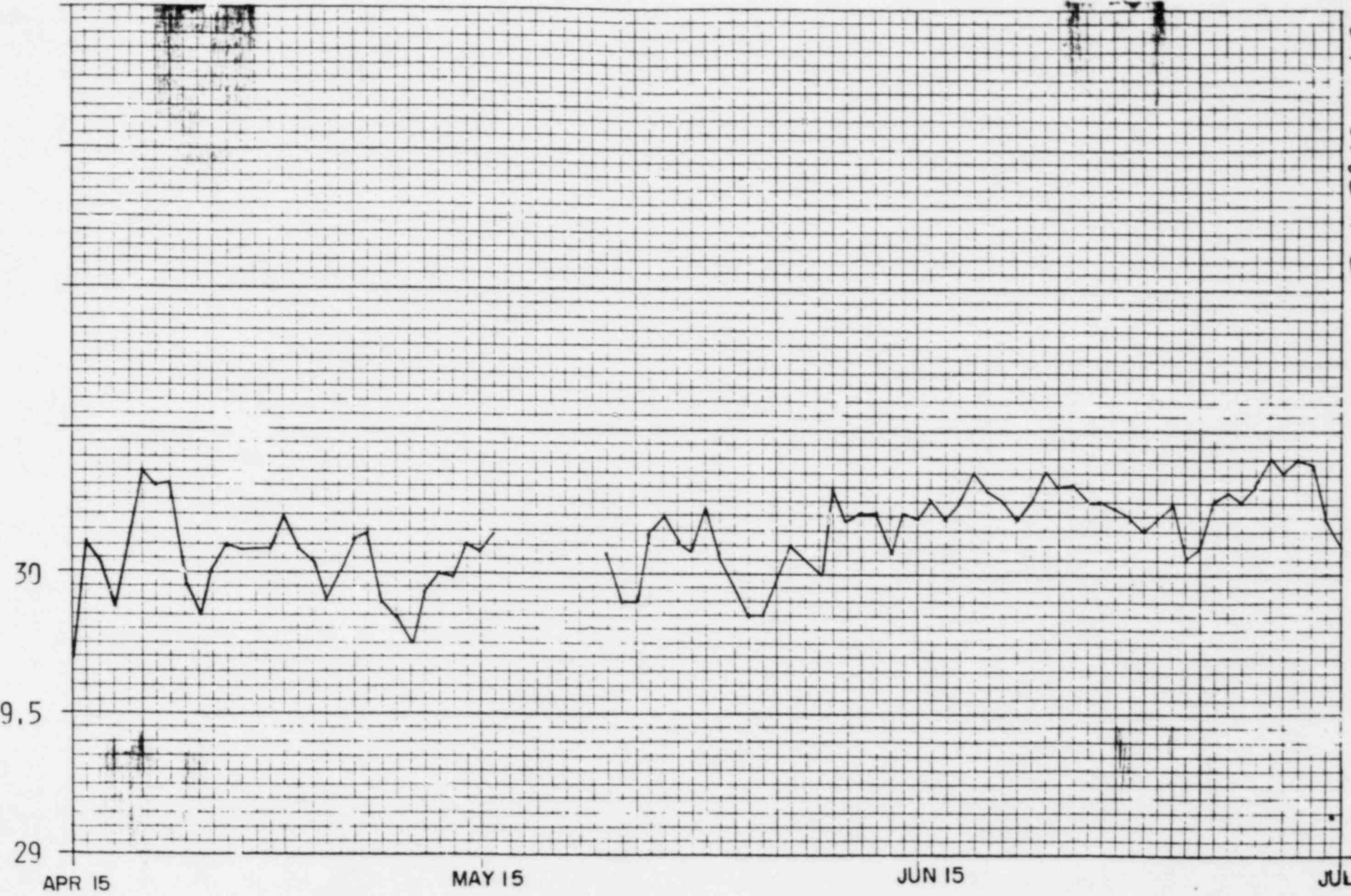


BAROMETRIC PRESSURE

OFFICIAL DOCKET COPY
INCHES HG

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DATE (1982)

URI

04008786140E

ATTACHMENT E
WATER QUALITY TABLES

OFFICIAL DOCKET COPY

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04008786140E

Form 1

URANIUM RESOURCES INC.

MONITOR WELL REPORT

Well # NPMW-1

UCL	576	18	141	14	.08	.06	120	
Date	Cond.	Cl	Alk.	Ca	U	V	Na	pH
1982								
1-29	500	6	144	17	.002	LT.05	99	8.9
2-3	510	6	134	18	.001	LT.05		9.11
2-11	490	6	147	19	LT.001	LT.05	97	8.4
2-15	460	4	130	15	.001	LT.05	96	8.8
3-8	500	2	150	20	.015	LT.05	92	8.2
3-11	490	4	138	16	.05	LT.05	95	8.7
3-22	510	4	145	19	.525	LT.05	97	8.1
3-29	490	4	146	19	.010	LT.05	95	8.2
3-31	530	7	146	17	LT.001	LT.05		8.2
4-7	502		142	18	.004	LT.05	87	7.96
4-7	504	4.8	144	16.8	LT.001	LT.05		8.3
4-9	500	4	145	18	.005	LT.05	98	8.2
4-14	560	2	140	19	LT.001	LT.05	90	8.2
4-16	500	2	140	19	LT.001			
4-28	500	6	140	16	LT.001	LT.05	95	8.2
5-13	500	6	141	19			98	8.1
5-20	510	6	142	19	.004	LT.05	94	8.1
5-27	500	7	141	18	.006	LT.05	94	8.0
6-8	518	6	144	21	.005	LT.05	98	8.3
6-11	520	6	143	15			89	8.4
6-21	540	5	142	20				8.2
6-28	470	5	140	17				7.57
7-6	456	5	133	15				8.09
7-12	490	6	140	18	.010	LT.05	95	7.67

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ATTACHMENT F
WATER QUALITY GRAPHS

OFFICIAL DOCKET COPY

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CHLORIDE (Mg/l), CALCIUM (Mg/l)

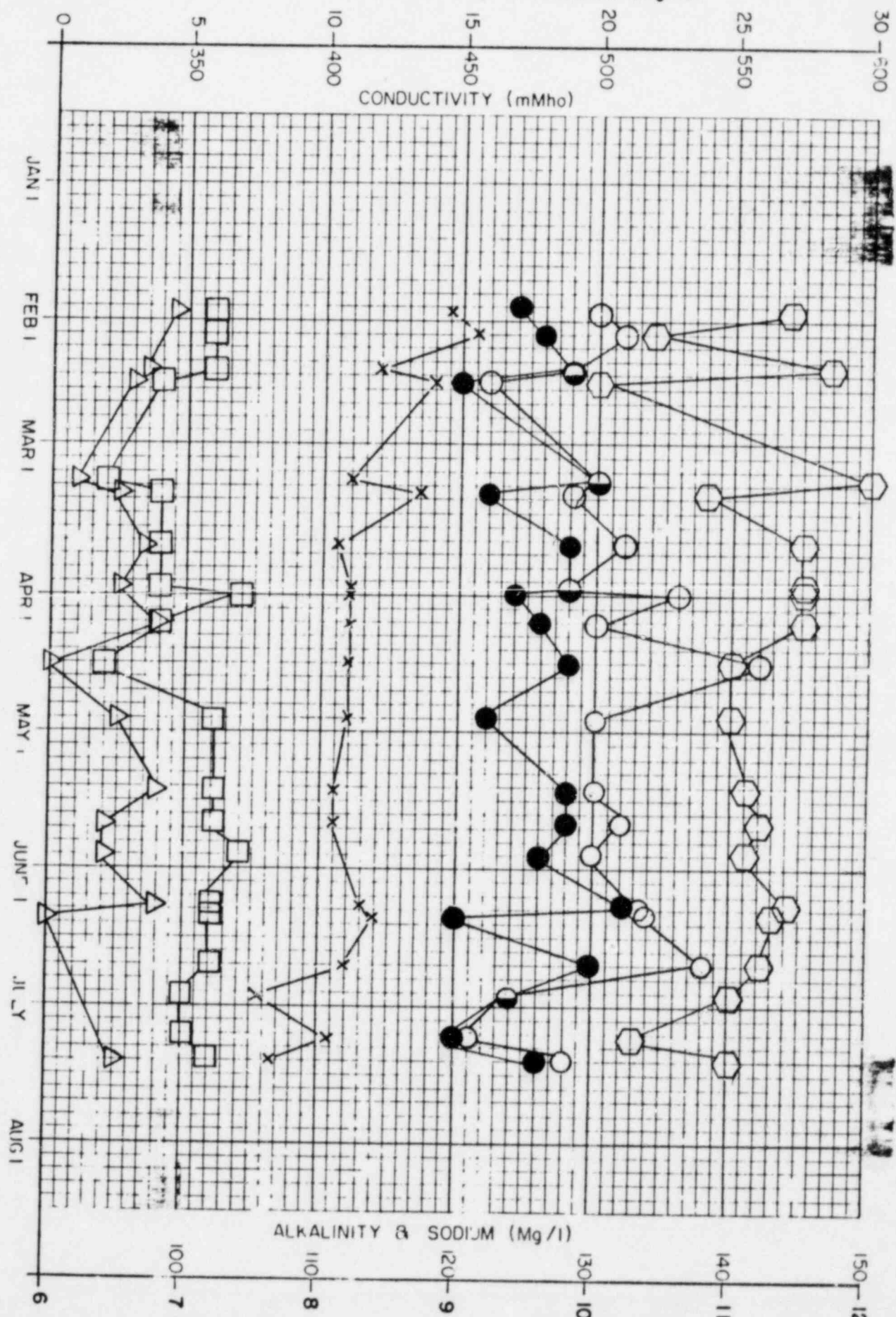
CONDUCTIVITY (mMho)

ALKALINITY & SODIUM (Mg/l)

pH (units)

MONITOR WELL
WATER QUALITY GRAPH
WELL #NPMW-1

COND - ○ CI - □ AKL - △ CA - ● PH - X



0400878140E

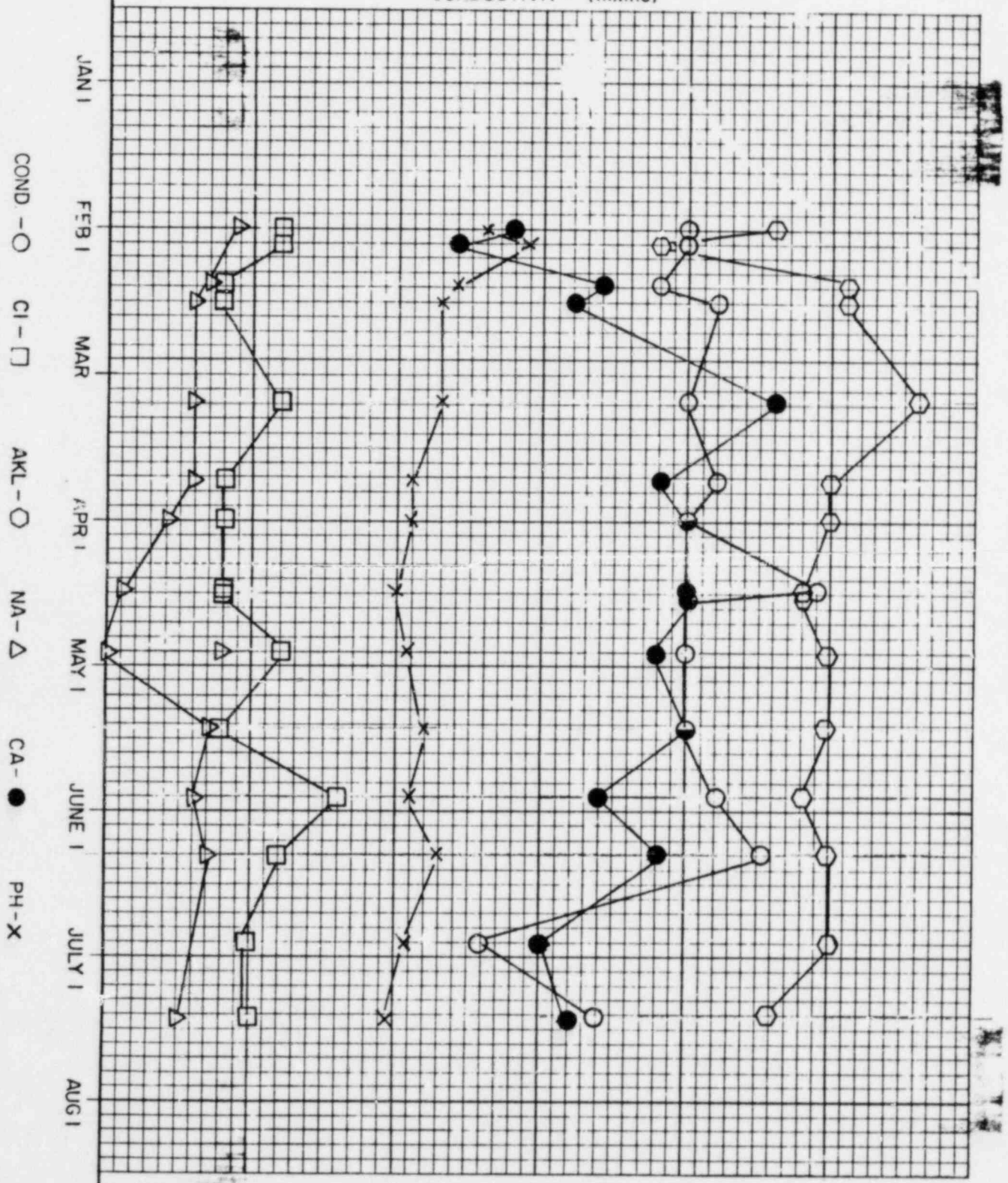
OFFICIAL BOOKER COPY

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CHLORIDE (Mg/l), CALCIUM (Mg/l)

CONDUCTIVITY (mMho)

MONITOR WELL
WATER QUALITY GRAPH
WELL #NPMW-2



304198L80040

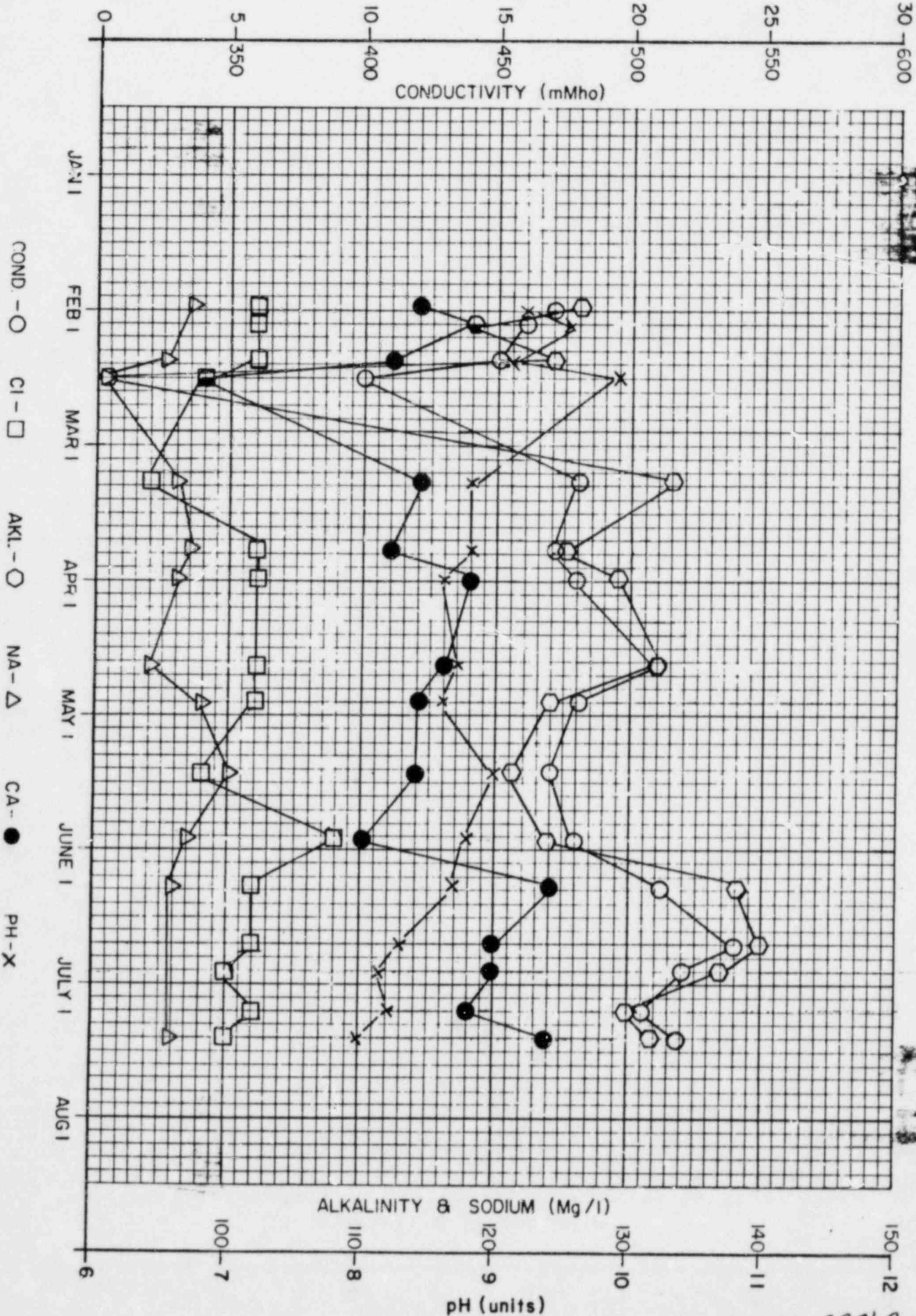
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CHLORIDE (Mg/l), CALCIUM (Mg/l)

CONDUCTIVITY (mMho)

MONITOR WELL WATER QUALITY GRAPH

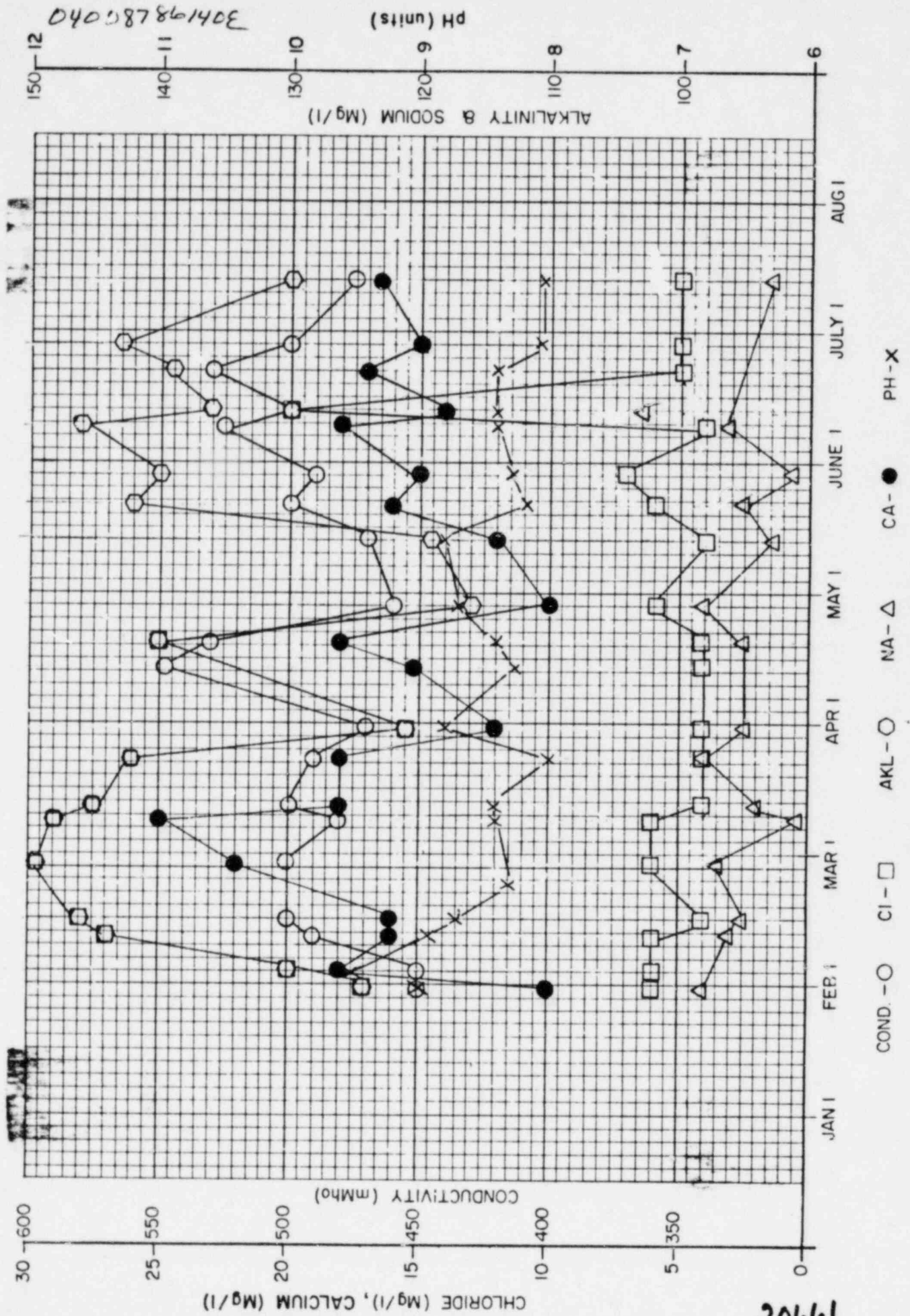
WELL #NPMW-3



04008786140E

MONITOR WELL WATER QUALITY GRAPH

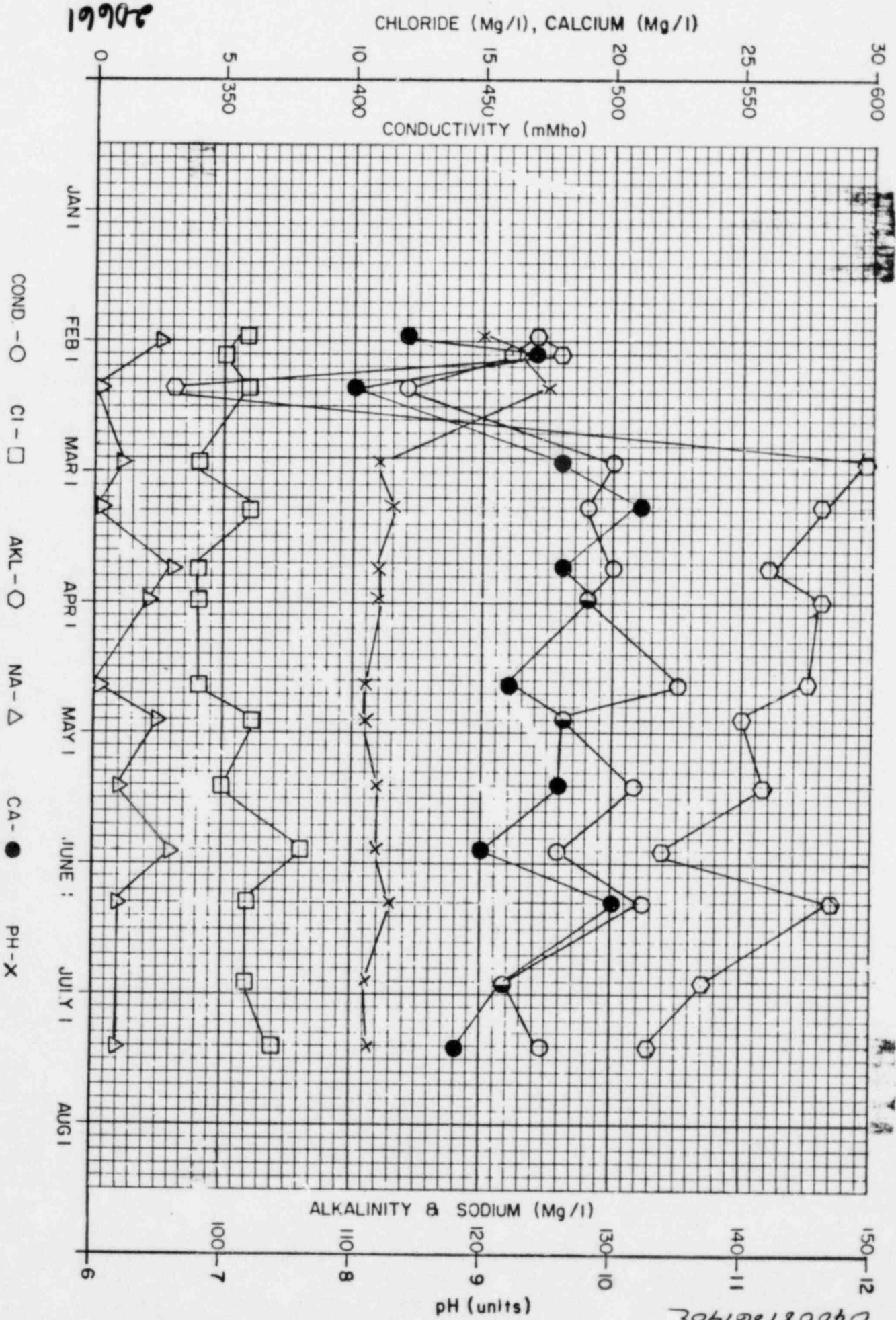
WELL #NPMW-4



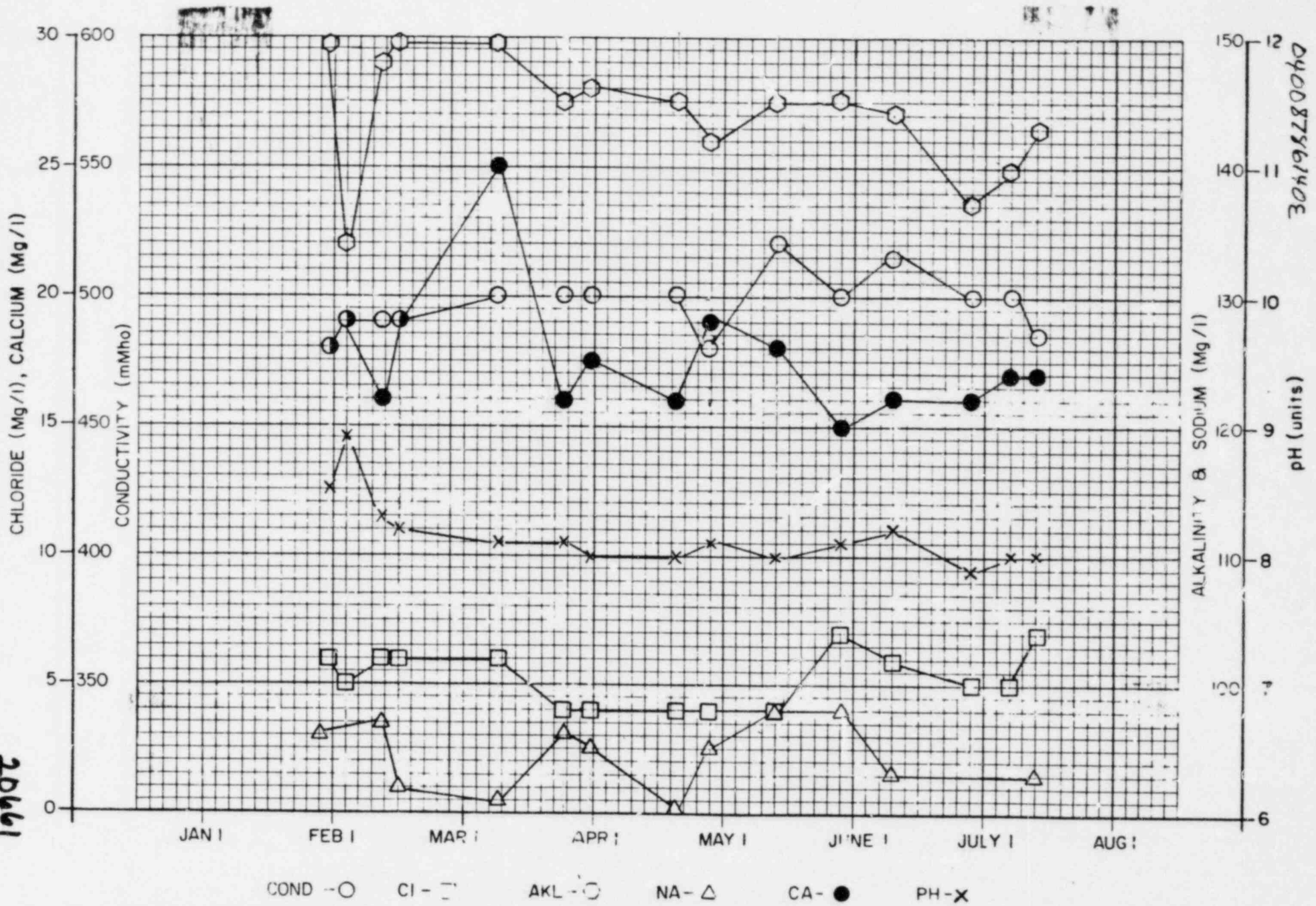
20661

MONITOR WELL
WATER QUALITY GRAPH

WELL #NPPMW-5



MONITOR WELL
WATER QUALITY GRAPH
WELL #NPMW-6



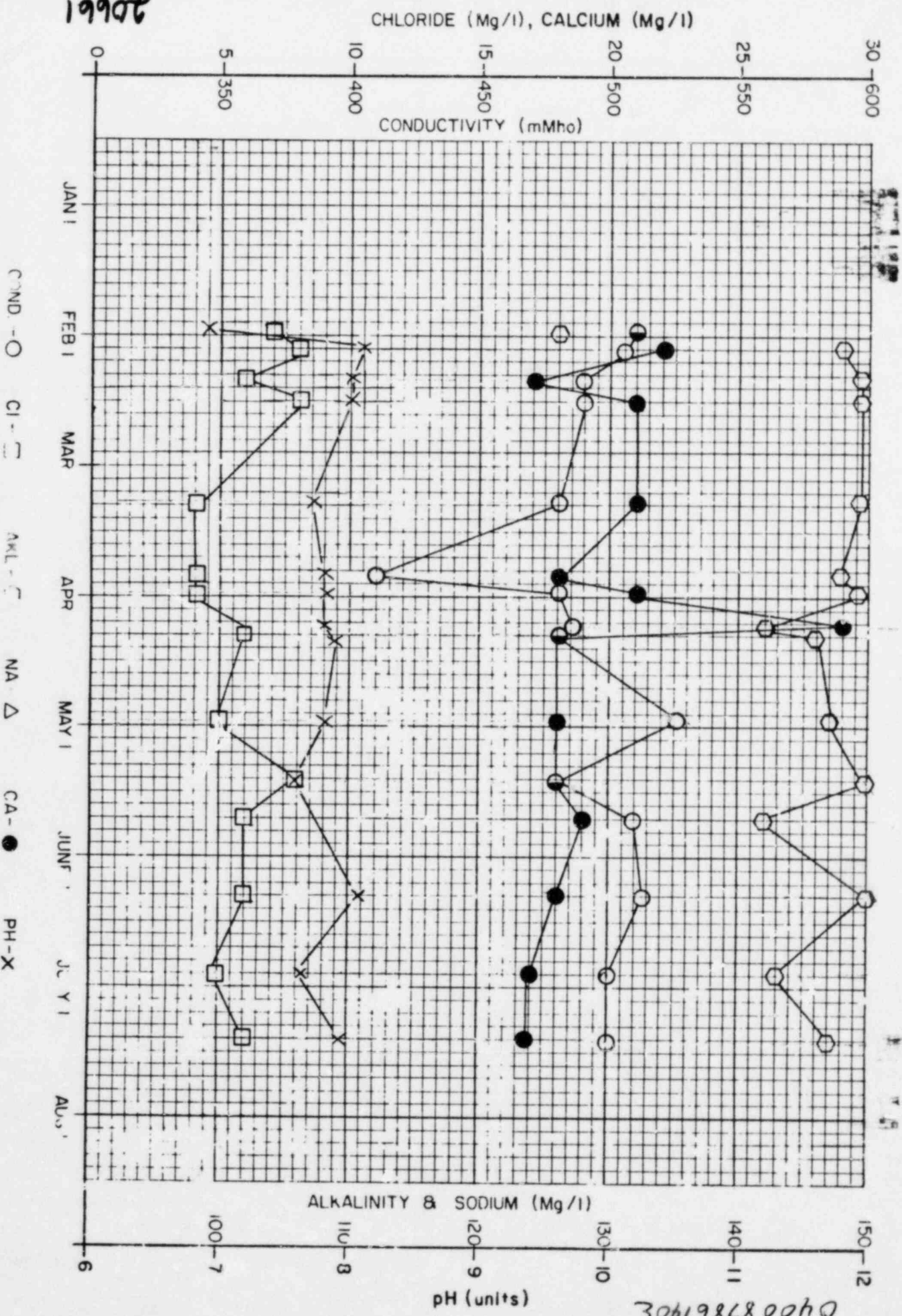
OFFICIAL DOCKET COPY

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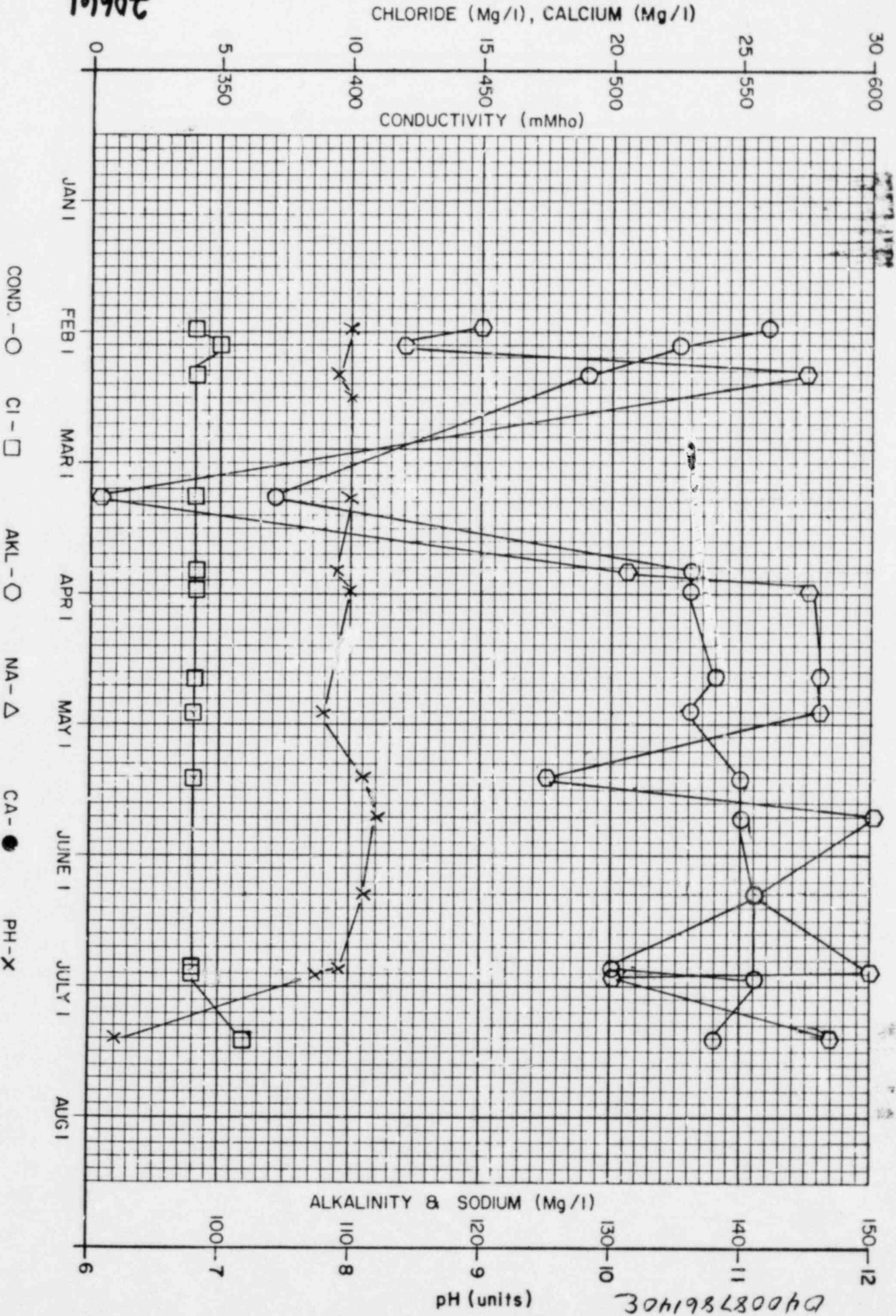
MONITOR WELL
WATER QUALITY GRAPH
WELL #NPMS-1



30619828000

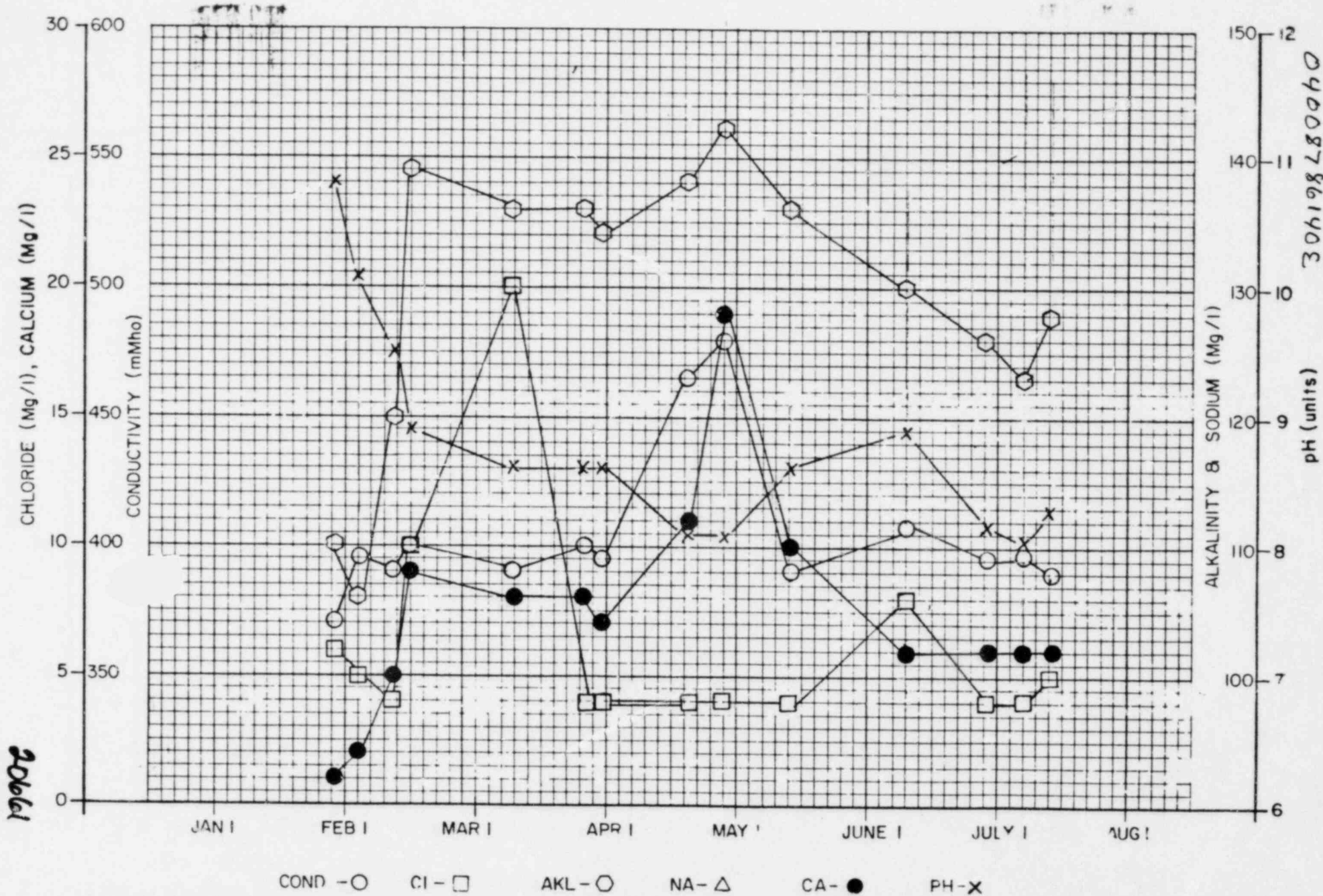
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MONITOR WELL
WATER QUALITY GRAPH
WELL #NPMS-2



3041982800A

MONITOR WELL
WATER QUALITY GRAPH
WELL #NPDM-1



URI

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ATTACHMENT G
BLEED WATER QUALITY

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CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794

Casper, Wyoming

ANALYTICAL REPORT

From Uranium Resources, Inc. Product Water
 Address Douglas, Wyoming Date 6-16-82
 Other Pertinent Data
 Analyzed by BHW, PL, MM, RJ, DLD Date 7-13-82 Lab No. 40845-2

WATER ANALYSIS

R-O Brine
 Sample taken June 15, 1982

	<u>mg/l</u>		<u>mg/l</u>
Total suspended solids ----- *		Chromium (Cr) -----	ND(0.05)
Total dissolved solids (calc.) ---- 6266		Copper (Cu) -----	0.02
Total dissolved solids (obs.) ---- 5976		Fluoride (F) -----	0.65
Conductivity @ 68°F., micromhos --- 7400		Iron (Fe)(total) -----	0.15
Total alkalinity as CaCO ₃ ----- 2570		Iron (Fe)(dissolved) -----	*
Total hardness as CaCO ₃ ----- 2207		Lead (Pb) -----	0.10
Sodium (Na) (calc.) ----- 1505		Manganese (Mn) -----	1.35
Sodium (Na) (obs.) ----- 1265		Mercury (Hg) -----	ND(0.001)
Potassium (K) ----- 45		Molybdenum (Mo) -----	ND(0.1)
Calcium (Ca) ----- 593		Nickel (Ni) -----	0.22
Magnesium (Mg) ----- 177		Nitrate (as N) -----	0.12
Sulfate (SO ₄) ----- 1145		Nitrite (as N) -----	ND(0.01)
Chloride (Cl) ----- 1260		Phenols -----	ND(0.05)
Carbonate (CO ₃) ----- 0		Phosphorus (PO ₄) -----	*
Bicarbonate (HCO ₃) ----- 3134		Selenium (Se) -----	0.01
pH, units ----- 6.4		Silica (SiO ₂) -----	77.0
Aluminum (Al) ----- 0.2		Silver (Ag) ² -----	ND(0.02)
Ammonia (as N) ----- 1.69		Sulfide (S) -----	*
Arsenic (As) ----- 0.02		Zinc (Zn) -----	4.6
Boron (B) ----- 0.20		Vanadium (V ₂ O ₅) -----	ND(0.05)
Barium (Ba) ----- 0.45		Uranium (U ₃ O ₈) ⁵ -----	87.5
Beryllium (Be) ----- *		Eh, millivolts -----	*
Bromide (Br) ----- *		Turbidity (JTU's) -----	*
Cation-Anion Balance ----- *		Oil and grease (Freon Method) -	*
Cadmium (Cd) ----- ND(0.01)		Chemical Oxygen Demand (COD) --	*
Cyanide (CN) ----- *		Cobalt (Co) -----	0.15
		Total Organic Carbon -----	*
ND = Not detected at level given in parentheses.		Gross alpha, pCi/l -----	41035 ± 3
* = Test not requested.		Gross beta, pCi/l -----	14896 ± 150
		Ra-226, pCi/l -----	4100 ± 5

Above tests were made in accordance with Standard Methods, 15th Edition, 1980, ASTM, WQO and AEC methods.

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CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794

Casper, Wyoming

ANALYTICAL REPORT

From Uranium Resources, Inc. Product Water
Address Douglas, Wyoming Date 6-16-82
Other Pertinent Data
Analyzed by BHW, PL, MM, RJ, DLD Date 7-13-82 Lab No. 40845-1

WATER ANALYSIS

East Pond
Sample taken June 15, 1982

Table with 2 columns of chemical parameters and their concentrations in mg/l. Parameters include Total suspended solids, Total dissolved solids, Conductivity, pH, and various metals like Sodium, Potassium, Calcium, Magnesium, Sulfate, Chloride, etc.

ND = Not detected at level given in parentheses.

* = Test not requested.

Above tests were made in accordance with Standard Methods, 15th Edition, 1980, ASTM, WQO and AEC methods.

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ATTACHMENT H
LIXIVIAN WATER QUALITY

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BARREN AND PREGNANT LIXIVIANT CONCENTRATIONS

Date	pH	Barren				Pregnant				
		HCO ₃	U	Cl ⁻	Ca	pH	HCO ₃	U	Cl ⁻	Ca
Apr. 16	7.04	576.8	5.47	107.41	85.20	6.65	369.55	79.32	98.99	87.1
19	6.90	615.0	4.94	91.77	76.38	6.70	478.86	103.97	91.80	94.5
22	6.95	597.3	3.89	61.59	93.60	6.59	463.60	117.28	89.56	94.53
25	6.83	765.2	8.00	61.50	93.64	6.67	405.93	128.98	99.44	116.90
28	6.67	658.06	7.42	95.0	98.50	6.59	542.05	133.46	93.27	98.20
30	6.66	645.07	7.92	63.09	101.50	6.52	539.85	136.85	78.38	106.30
May 1	6.68	628.3	11.13	97.08	112.12	6.56	558.89	133.44	116.40	107.60
3	6.74	637.5	6.77	124.40	109.20	6.53	616.50	138.20	110.24	118.85
6	7.03	681.8	5.88	162.59	118.50	6.54	559.16	118.77	103.42	120.70
9	6.86	592.4	4.05	124.64	116.80	6.56	580.51	124.04	111.65	125.70
13	6.38	866.2	2.44	62.03	120.40	6.48	564.25	122.62	97.13	134.80
15	6.60	1,000.1	.65	67.27	124.00	6.53	553.06	113.94	116.34	133.34
18	6.90	846.55	2.08	125.83	147.30	6.60	700.48	125.80	132.63	149.80-Shut off H ₂ O ₂
21	6.57	1,022.06	5.62	139.84	144.80	6.50	703.53	138.32	133.03	146.55
24	6.62	742.17	46.63	140.56	142.86	6.52	809.27	120.45	129.04	184.20-Shut off HCO ₃
27	6.65	671.00	1.66	141.62	148.60	6.48	737.08	121.01	141.53	152.50
30	6.87	687.6	3.65	135.96	144.00	6.53	723.87	99.47	134.52	147.80
31	6.85	675.88	14.67	137.89	138.66	6.56	727.12	92.42	196.64	140.27
June 3	Down									
6	Down									
9	Down									
										-Last production day
12	5.52	187.9	6.42	137.81	40.00	6.57	628.99	56.09	125.35	134.37-Place 3 & 4 on production
15	5.63	22.15	7.56	136.36	74.66	6.44	683.15	62.36	175.11	156.80
18	5.50	369.0	3.0	68.00	68.00	6.35	608.00	57.55	133.00	140.00
21	5.81	126.07	3.11	103.70	46.20	6.34	518.30	43.57	122.51	119.45
24	6.59	626.6	6.75	88.76	54.90	6.38	478.98	39.18	105.28	128.55
27	6.48	375.25	1.53	165.96	91.00	6.46	470.93	38.22	100.04	91.00
30	7.37	421.00	.60	82.2	59.50	6.47	443.00	31.25	94.00	105.50
July 1	7.43	409.00	.64	93.0	81.20	6.35	444.00	20.55	111.00	86.00
3	7.70	535.00	.88	91.20	54.00	6.52	477.33	18.28	99.48	77.28
6	7.13	390.20	.42	54.71	28.60	6.35	407.75	12.07	110.33	68.80
9	5.99	361.90	.22	52.93	8.76	6.34	466.70	29.09	99.49	78.30
12	6.14	286.70	.28	49.68	17.00	6.38	488.00	24.41	90.91	83.00
15	6.09	406.25	.045	53.80	13.60	6.46	533.60	23.31	82.92	68.50

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CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794

Casper, Wyoming

ANALYTICAL REPORT

From Uranium Resources, Inc. Product Water
 Address Douglas, Wyoming Date 5-21-82
 Other Pertinent Data
 Analyzed by MM, PL, RJ Date 6-11-82 Lab No. 40651-3

WATER ANALYSIS

Injection
 Sample taken May 20, 1982

	<u>mg/l</u>		<u>mg/l</u>
Total suspended solids -----	*	Chromium (Cr) -----	ND(0.05)
Total dissolved solids (calc.) ----	1790	Copper (Cu) -----	ND(0.02)
Total dissolved solids (obs.) ----	1754	Fluoride (F) -----	0.33
Conductivity @ 68°F., micromhos ---	2375	Iron (Fe)(total) -----	ND(0.03)
Total alkalinity as CaCO ₃ -----	885	Iron (Fe)(dissolved) -----	*
Total hardness as CaCO ₃ -----	524	Lead (Pb) -----	0.18
Sodium (Na) (calc.) -----	480	Manganese (Mn) -----	0.34
Sodium (Na) (obs.) -----	491	Mercury (Hg) -----	ND(0.001)
Potassium (K) -----	12	Molybdenum (Mo) -----	0.2
Calcium (Ca) -----	139	Nickel (Ni) -----	0.25
Magnesium (Mg) -----	43	Nitrate (as N) -----	0.05
Sulfate (SO ₄) -----	350	Nitrite (as N) -----	ND(0.01)
Chloride (Cl) -----	236	Phenols -----	0.03
Carbonate (CO ₃) -----	0	Phosphorus (PO ₄) -----	*
Bicarbonate (HCO ₃) -----	1079	Selenium (Se) -----	ND(0.01)
pH, units -----	6.7	Silica (SiO ₂) -----	10.0
Aluminum (Al) -----	ND(0.1)	Silver (Ag) -----	ND(0.02)
Ammonia (as N) -----	0.44	Sulfide (S) -----	*
Arsenic (As) -----	ND(0.01)	Zinc (Zn) -----	1.57
Boron (B) -----	0.2	Vanadium (V ₂ O ₅) -----	ND(0.05)
Barium (Ba) -----	0.13	Uranium (U ₃ O ₈) -----	3.0
Beryllium (Be) -----	*	Eh, millivolts -----	*
Bromine (Br) -----	*	Turbidity (JTU's) -----	*
Cation-Anion Balance -----	*	Oil and grease (Freon Method) -	*
Cadmium (Cd) -----	ND(0.01)	Chemical Oxygen Demand (COD) --	*
Cyanide (CN) -----	*	Cobalt (Co) -----	ND(0.05)
		Total organic carbon (TOC) ---	1
ND = Not detected at level given in parentheses.		Gross alpha, pCi/l -----	8845 ± 2'
* = Test not requested.		Gross beta, pCi/l -----	3199 ± 1'
		Ra-226, pCi/l -----	5288 ± 19'

Above tests were made in accordance with Standard Methods, 15th Edition, 1980, ASTM, WQO and AEC methods.

URI

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ATTACHMENT I

FINAL PRODUCTION MONITOR WELL SAMPLES

OFFICIAL DOCKET COPY

20661



04008786140E

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794

Casper, Wyoming

ANALYTICAL REPORT

From Uranium Resources, Inc. Product Water
 Address Douglas, Wyoming Date 5-29-82
 Other Pertinent Data
 Analyzed by MM,RJ,PL,BW,SW,DD Date 7-6-82 Lab No. 40711-5

WATER ANALYSIS

NPMW-1

Preserved samples taken May 28, 1982

	mg/l		mg/l
Total suspended solids	*	Chromium (Cr)	ND(0.05)
Total dissolved solids (calc.)	343	Copper (Cu)	ND(0.02)
Total dissolved solids (obs.)	318	Fluoride (F)	0.38
Conductivity @ 68°F., micromhos	500	Iron (Fe)(total)	ND(0.03)
Total alkalinity as CaCO ₃	141	Iron (Fe)(dissolved)	*
Total hardness as CaCO ₃	70	Lead (Pb)	ND(0.05)
Sodium (Na) (calc.)	96	Manganese (Mn)	0.01
Sodium (Na) (obs.)	94	Mercury (Hg)	ND(0.001)
Potassium (K)	4	Molybdenum (Mo)	ND(0.1)
Calcium (Ca)	18	Nickel (Ni)	ND(0.04)
Magnesium (Mg)	6	Nitrate (as N)	0.07
Sulfate (SO ₄)	127	Nitrite (as N)	ND(0.01)
Chloride (Cl)	7	Phenols	0.06
Carbonate (CO ₃)	0	Phosphorus (PO ₄)	*
Bicarbonate (HCO ₃)	173	Selenium (Se)	ND(0.01)
pH, units	8.0	Silica (SiO ₂)	11.1
Aluminum (Al)	ND(0.1)	Silver (Ag)	ND(0.02)
Ammonia (as N)	0.48	Sulfide (S)	*
Arsenic (As)	ND(0.01)	Zinc (Zn)	ND(0.01)
Boron (B)	0.1	Vanadium (V ₂ O ₅)	ND(0.05)
Barium (Ba)	ND(0.05)	Uranium (U ₃ O ₈)	0.006
Beryllium (Be)	*	Eh, millivolts	*
Bromide (Br)	*	Turbidity (JTU's)	*
Cation-Anion Balance	*	Oil and grease (Freon Method)	*
Cadmium (Cd)	ND(0.01)	Chemical Oxygen Demand (COD)	*
Cyanide (CN)	*	Cobalt (Co)	ND(0.05)
		TOC	1.0

Gross alpha, pCi/l 33 ± 3
 Gross beta, pCi/l 19 ± 3
 Ra-226, pCi/l 8.5 ± 0.6

ND = Not detected at level given in parentheses.

* = Test not requested.

Above tests were made in accordance with Standard Methods, 15th Edition, 1980, ASTM, WQO and AEC methods.

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CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794

Casper, Wyoming

ANALYTICAL REPORT

From Uranium Resources, Inc. Product Water
 Address Douglas, Wyoming Date 5-29-82
 Other Pertinent Data
 Analyzed by MM, RJ, PL, BW, SW, DD Date 7-6-82 Lab No. 40711-6

WATER ANALYSIS

NPMW-2

Preserved samples taken May 28, 1982

	mg/l		mg/l
Total suspended solids	*	Chromium (Cr)	ND(0.05)
Total dissolved solids (calc.)	341	Copper (Cu)	ND(0.02)
Total dissolved solids (obs.)	342	Fluoride (F)	0.38
Conductivity @ 68°F., micromhos	510	Iron (Fe)(total)	0.07
Total alkalinity as CaCO ₃	138	Iron (Fe)(dissolved)	*
Total hardness as CaCO ₃	67	Lead (Pb)	ND(0.05)
Sodium (Na) (calc.)	96	Manganese (Mn)	0.02
Sodium (Na) (obs.)	96	Mercury (Hg)	ND(0.001)
Potassium (K)	4	Molybdenum (Mo)	ND(0.1)
Calcium (Ca)	17	Nickel (Ni)	ND(0.04)
Magnesium (Mg)	6	Nitrate (as N)	0.08
Sulfate (SO ₄)	127	Nitrite (as N)	ND(0.01)
Chloride (Cl)	8	Phenols	0.02
Carbonate (CO ₃)	0	Phosphorus (PO ₄)	*
Bicarbonate (HCO ₃)	168	Selenium (Se)	ND(0.01)
pH, units	8.1	Silica (SiO ₂)	10.9
Aluminum (Al)	ND(0.1)	Silver (Ag)	ND(0.02)
Ammonia (as N)	0.47	Sulfide (S)	*
Arsenic (As)	ND(0.01)	Zinc (Zn)	ND(0.01)
Boron (B)	0.1	Vanadium (V ₂ O ₅)	ND(0.05)
Barium (Ba)	ND(0.05)	Uranium (U ₃ O ₈)	0.002
Beryllium (Be)	*	Eh, millivolts	*
Bromide (Br)	*	Turbidity (JTU's)	*
Cation-Anion Balance	*	Oil and grease (Freon Method)	*
Cadmium (Cd)	ND(0.01)	Chemical Oxygen Demand (COD)	*
Cyanide (CN)	*	Cobalt (Co)	ND(0.05)
		TOC	1.0
		Gross alpha, pCi/l	51 ± 6
		Gross beta, pCi/l	59 ± 6
		Ra-226, pCi/l	17 ± 1

ND = Not detected at level given in parentheses.

* = Test not requested.

Above tests were made in accordance with Standard Methods, 15th Edition, 1980, ASTM, WQO and AEC methods.

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CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794

Casper, Wyoming

ANALYTICAL REPORT

From Uranium Resources, Inc. Product Water

Address Douglas, Wyoming Date 5-29-82

Other Pertinent Data

Analyzed by MM,RJ,PL,BW,SW,DD Date 7-6-82 Lab No. 40711-7

WATER ANALYSIS

NPMW-3

Preserved samples taken May 28, 1982

	<u>mg/l</u>		<u>mg/l</u>
Total suspended solids ----- *		Chromium (Cr) -----	ND(0.05)
Total dissolved solids (calc.) ---- 322		Copper (Cu) -----	ND(0.02)
Total dissolved solids (obs.) ---- 306		Fluoride (F) -----	0.40
Conductivity @ 68°F., micromhos --- 480		Iron (Fe)(total) -----	ND(0.03)
Total alkalinity as CaCO ₃ ----- 124		Iron (Fe)(dissolved) -----	*
Total hardness as CaCO ₃ ----- 38		Lead (Pb) -----	ND(0.05)
Sodium (Na) (calc.) ----- 100		Manganese (Mn) -----	ND(0.01)
Sodium (Na) (obs.) ----- 97		Mercury (Hg) -----	ND(0.001)
Potassium (K) ----- 5		Molybdenum (Mo) -----	ND(0.1)
Calcium (Ca) ----- 10		Nickel (Ni) -----	ND(0.04)
Magnesium (Mg) ----- 3		Nitrate (as N) -----	0.08
Sulfate (SO ₄) ----- 120		Nitrite (as N) -----	ND(0.01)
Chloride (Cl) ----- 9		Phenols -----	0.07
Carbonate (CO ₃) ----- 41		Phosphorus (PO ₄) -----	*
Bicarbonate (HCO ₃) ----- 68		Selenium (Se) -----	ND(0.01)
pH, units ----- 8.8		Silica (SiO ₂) -----	11.3
Aluminum (Al) ----- ND(0.1)		Silver (Ag) -----	ND(0.02)
Ammonia (as N) ----- 0.49		Sulfide (S) -----	*
Arsenic (As) ----- ND(0.01)		Zinc (Zn) -----	ND(0.01)
Boron (B) ----- 0.1		Vanadium (V ₂ O ₅) -----	ND(0.05)
Barium (Ba) ----- ND(0.05)		Uranium (U ₃ O ₈) -----	ND(0.001)
Beryllium (Be) ----- *		Eh, millivolts -----	*
Bromide (Br) ----- *		Turbidity (JTU's) -----	*
Cation-Anion Balance ----- *		Oil and grease (Freon Method) -	*
Cadmium (Cd) ----- ND(0.01)		Chemical Oxygen Demand (COD) --	*
Cyanide (CN) ----- *		Cobalt (Co) -----	ND(0.05)
		TOC -----	1.0
ND = Not detected at level given in parentheses.		Gross alpha, pCi/l -----	4.1 ± 2.4
* = Test not requested.		Gross beta, pCi/l -----	12 ± 3
		Ra-226, pCi/l -----	0.8 ± 0.3

All tests were made in accordance with Standard Methods, 15th Edition, 1980, ASTM, WQO and AEC methods.

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CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794

Casper, Wyoming

ANALYTICAL REPORT

From Uranium Resources, Inc. Product Water.....
 Address Douglas, Wyoming Date 5-29-82.....
 Other Pertinent Data
 Analyzed by MM,RJ,PL,BW,SW,DD Date 7-6-82... Lab No..... 40711-8

WATER ANALYSIS

NPMW-4

Preserved samples taken May 28, 1982

	<u>mg/l</u>		<u>mg/l</u>
Total suspended solids -----	*	Chromium (Cr) -----	ND(0.05)
Total dissolved solids (calc.) ----	342	Copper (Cu) -----	ND(0.02)
Total dissolved solids (obs.) ----	324	Fluoride (F) -----	0.39
Conductivity @ 68°F., micromhos ---	490	Iron (Fe)(total) -----	0.13
Total alkalinity as CaCO ₃ -----	140	Iron (Fe)(dissolved) -----	*
Total hardness as CaCO ₃ -----	62	Lead (Pb) -----	ND(0.05)
Sodium (Na) (calc.) -----	99	Manganese (Mn) -----	0.01
Sodium (Na) (obs.) -----	91	Mercury (Hg) -----	ND(0.001)
Potassium (K) -----	4	Molybdenum (Mo) -----	ND(0.1)
Calcium (Ca) -----	15	Nickel (Ni) -----	ND(0.04)
Magnesium (Mg) -----	6	Nitrate (as N) -----	0.08
Sulfate (SO ₄) -----	127	Nitrite (as N) -----	ND(0.01)
Chloride (Cl) -----	7	Phenols -----	0.02
Carbonate (CO ₃) -----	0	Phosphorus (PO ₄) -----	*
Bicarbonate (HCO ₃) -----	171	Selenium (Se) -----	ND(0.01)
pH, units -----	8.3	Silica (SiO ₂) -----	12.4
Aluminum (Al) -----	ND(0.1)	Silver (Ag) ₂ -----	ND(0.02)
Ammonia (as N) -----	0.42	Sulfide (S) -----	*
Arsenic (As) -----	ND(0.01)	Zinc (Zn) -----	0.01
Boron (B) -----	0.1	Vanadium (V ₂ O ₅) -----	ND(0.05)
Barium (Ba) -----	ND(0.05)	Uranium (U ₃ O ₈) -----	0.015
Beryllium (Be) -----	*	Eh, millivolts -----	*
Bromide (Br) -----	*	Turbidity (JTU's) -----	*
Cation-Anion Balance -----	*	Oil and grease (Freon Method) -	*
Cadmium (Cd) -----	ND(0.01)	Chemical Oxygen Demand (COD) --	*
Cyanide (CN) -----	*	Cobalt (Co) -----	ND(0.05)
		TOC -----	1.0
ND = Not detected at level given in parentheses.		Gross alpha, pCi/l -----	584 ± 20
* = Test not requested.		Gross beta, pCi/l -----	427 ± 13
		Ra-226, pCi/l -----	196 ± 3

Above tests were made in accordance with Standard Methods, 15th Edition, 1980, ASTM, WQO and AEC methods.

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CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794

Casper, Wyoming

ANALYTICAL REPORT

From Uranium Resources, Inc. Product Water
 Address Douglas, Wyoming Date 5-29-82
 Other Pertinent Data
 Analyzed by MM, RJ, PL, BW, SW, DD Date 7-6-82 Lab No. 40711-9

WATER ANALYSIS

NPMW-5

Preserved samples taken May 28, 1982

	mg/l		mg/l
Total suspended solids ----- *		Chromium (Cr) -----	ND(0.05)
Total dissolved solids (calc.) ---- 320		Copper (Cu) -----	ND(0.02)
Total dissolved solids (obs.) ---- 318		Fluoride (F) -----	0.40
Conductivity @ 68°F., micromhos --- 480		Iron (Fe)(total) -----	0.05
Total alkalinity as CaCO ₃ ----- 134		Iron (Fe)(dissolved) -----	*
Total hardness as CaCO ₃ ----- 62		Lead (Pb) -----	ND(0.05)
Sodium (Na) (calc.) ----- 91		Manganese (Mn) -----	0.01
Sodium (Na) (obs.) ----- 96		Mercury (Hg) -----	ND(0.001)
Potassium (K) ----- 4		Molybdenum (Mo) -----	ND(0.1)
Calcium (Ca) ----- 15		Nickel (Ni) -----	ND(0.04)
Magnesium (Mg) ----- 6		Nitrate (as N) -----	0.07
Sulfate (SO ₄) ----- 116		Nitrite (as N) -----	ND(0.01)
Chloride (Cl) ----- 8		Phenols -----	0.03
Carbonate (CO ₃) ----- 0		Phosphorus (PO ₄) -----	*
Bicarbonate (HCO ₃) ----- 163		Selenium (Se) -----	ND(0.01)
pH, units ----- 8.2		Silica (SiO ₂) -----	11.8
Aluminum (Al) ----- ND(0.1)		Silver (Ag) ² -----	ND(0.02)
Ammonia (as N) ----- 0.34		Sulfide (S) -----	*
Arsenic (As) ----- ND(0.01)		Zinc (Zn) -----	ND(0.01)
Boron (B) ----- 0.1		Vanadium (V ₂ O ₅) -----	ND(0.05)
Barium (Ba) ----- ND(0.05)		Uranium (U ₃ O ₈) -----	0.002
Beryllium (Be) ----- *		Eh, millivolts -----	*
Bromide (Br) ----- *		Turbidity (JTU's) -----	*
Cation-Anion Balance ----- *		Oil and grease (Freon Method) -	*
Cadmium (Cd) ----- ND(0.01)		Chemical Oxygen Demand (COD) --	*
Cyanide (CN) ----- *		Cobalt (Co) -----	ND(0.05)
		TOC -----	1.0
ND = Not detected at level given in parentheses.		Gross alpha, pCi/l -----	168 ± 12
* = Test not requested.		Gross beta, pCi/l -----	124 ± 8
		Ra-226, pCi/l -----	49 ± 2

Above tests were made in accordance with Standard Methods, 15th Edition, 1980, ASTM, WQO and AEC methods.

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CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794

Casper, Wyoming

ANALYTICAL REPORT

From Uranium Resources, Inc. Product Water
Address Douglas, Wyoming Date 5-29-82
Other Pertinent Data
Analyzed by MM,RJ,PL,BW,SW,DD Date 7-6-82 Lab No. 40711-10

WATER ANALYSIS

NPMW-6

Preserved samples taken May 28, 1982

Table with 2 columns of chemical parameters and their concentrations in mg/l. Parameters include Total suspended solids, Total dissolved solids, Conductivity, Alkalinity, Hardness, Sodium, Potassium, Calcium, Magnesium, Sulfate, Chloride, Carbonate, Bicarbonate, pH, Aluminum, Ammonia, Arsenic, Boron, Barium, Beryllium, Bromide, Cation-Anion Balance, Cadmium, Cyanide, Chromium, Copper, Fluoride, Iron, Lead, Manganese, Mercury, Molybdenum, Nickel, Nitrate, Nitrite, Phenols, Phosphorus, Selenium, Silica, Silver, Sulfide, Zinc, Vanadium, Uranium, Eh, Turbidity, Oil and grease, Chemical Oxygen Demand, Cobalt, and TOC.

ND = Not detected at level given in parentheses.

* = Test not requested.

Above tests were made in accordance with Standard Methods, 15th Edition, 1980, ASTM, WQO and AEC methods.

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CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794

Casper, Wyoming

ANALYTICAL REPORT

From Uranium Resources, Inc. Product Water
 Address Douglas, Wyoming Date 5-29-82
 Other Pertinent Data
 Analyzed by MM, RJ, PL, BW, SW, DD Date 7-6-82 Lab No. 40711-3

WATER ANALYSIS

NPDM-1

Preserved samples taken May 28, 1982

	<u>mg/l</u>		<u>mg/l</u>
Total suspended solids -----	*	Chromium (Cr) -----	ND(0.05)
Total dissolved solids (calc.) ----	275	Copper (Cu) -----	ND(0.02)
Total dissolved solids (obs.) ----	244	Fluoride (F) -----	0.53
Conductivity @ 68°F., micromhos ---	490	Iron (Fe)(total) -----	ND(0.03)
Total alkalinity as CaCO ₃ -----	139	Iron (Fe)(dissolved) -----	*
Total hardness as CaCO ₃ -----	30	Lead (Pb) -----	ND(0.05)
Sodium (Na) (calc.) -----	91	Manganese (Mn) -----	ND(0.01)
Sodium (Na) (obs.) -----	88	Mercury (Hg) -----	ND(0.001)
Potassium (K) -----	4	Molybdenum (Mo) -----	ND(0.1)
Calcium (Ca) -----	7	Nickel (Ni) -----	ND(0.04)
Magnesium (Mg) -----	3	Nitrate (as N) -----	0.07
Sulfate (SO ₄) -----	80	Nitrite (as N) -----	ND(0.01)
Chloride (Cl) -----	7	Phenols -----	0.08
Carbonate (CO ₃) -----	14	Phosphorus (PO ₄) -----	*
Bicarbonate (HCO ₃) -----	141	Selenium (Se) -----	ND(0.01)
pH, units -----	8.6	Silica (SiO ₂) -----	12.4
Aluminum (Al) -----	ND(0.1)	Silver (Ag) -----	ND(0.02)
Ammonia (as N) -----	0.46	Sulfide (S) -----	*
Arsenic (As) -----	ND(0.01)	Zinc (Zn) -----	0.01
Boron (B) -----	0.1	Vanadium (V ₂ O ₅) -----	ND(0.05)
Barium (Ba) -----	ND(0.05)	Uranium (U ₃₀₈) -----	ND(0.001)
Beryllium (Be) -----	*	Eh, millivolts -----	*
Bromide (Br) -----	*	Turbidity (JTU's) -----	*
Cation-Anion Balance -----	*	Oil and grease (Freon Method) -	*
Cadmium (Cd) -----	ND(0.01)	Chemical Oxygen Demand (COD) --	*
Cyanide (CN) -----	*	Cobalt (Co) -----	ND(0.05)
		TOC -----	1.0

ND = Not detected at level given in parentheses.

* = Test not requested.

Gross alpha, pCi/l ----- 4.6 ± 2.2
 Gross beta, pCi/l ----- 11 ± 3
 Ra-226, pCi/l ----- 1.1 ± 0.4

Above tests were made in accordance with Standard Methods, 15th Edition, 1980, ASTM, WQO and AEC methods.

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CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794

Casper, Wyoming

ANALYTICAL REPORT

From Uranium Resources, Inc. Product Water
 Address Douglas, Wyoming Date 5-29-82
 Other Pertinent Data
 Analyzed by MM,RJ,PL,BW,SW,DD Date 7-6-82 Lab No. 40711-1

WATER ANALYSIS

NPSM-1

Preserved samples taken May 28, 1982

	mg/l		mg/l
Total suspended solids	*	Chromium (Cr)	ND(0.05)
Total dissolved solids (calc.)	315	Copper (Cu)	ND(0.02)
Total dissolved solids (obs.)	322	Fluoride (F)	0.50
Conductivity @ 68°F., micromhos	480	Iron (Fe)(total)	0.15
Total alkalinity as CaCO ₃	142	Iron (Fe)(dissolved)	*
Total hardness as CaCO ₃	64	Lead (Pb)	ND(0.05)
Sodium (Na) (calc.)	90	Manganese (Mn)	0.02
Sodium (Na) (obs.)	91	Mercury (Hg)	ND(0.001)
Potassium (K)	4	Molybdenum (Mo)	ND(0.1)
Calcium (Ca)	14	Nickel (Ni)	ND(0.04)
Magnesium (Mg)	7	Nitrate (as N)	0.08
Sulfate (SO ₄)	109	Nitrite (as N)	ND(0.01)
Chloride (Cl)	6	Phenols	0.03
Carbonate (CO ₃)	0	Phosphorus (PO ₄)	*
Bicarbonate (HCO ₃)	174	Selenium (Se)	ND(0.01)
pH, units	7.7	Silica (SiO ₂)	11.1
Aluminum (Al)	ND(0.1)	Silver (Ag)	ND(0.02)
Ammonia (as N)	0.37	Sulfide (S)	*
Arsenic (As)	ND(0.01)	Zinc (Zn)	ND(0.01)
Boron (B)	0.1	Vanadium (V ₂ O ₅)	ND(0.05)
Barium (Ba)	ND(0.05)	Uranium (U ₃ O ₈)	0.001
Beryllium (Be)	*	Eh, millivolts	*
Bromide (Br)	*	Turbidity (JTU's)	*
Cation-Anion Balance	*	Oil and grease (Freon Method)	*
Cadmium (Cd)	ND(0.01)	Chemical Oxygen Demand (COD)	*
Cyanide (CN)	*	Cobalt (Co)	ND(0.05)
		TOC	1.0
		Gross alpha, pCi/l	9.7 ± 3.5
		Gross beta, pCi/l	14 ± 4
		Ra-226, pCi/l	0.7 ± 0.3

ND = Not detected at level given in parentheses.

* = Test not requested.

Above tests were made in accordance with Standard Methods, 15th Edition, 1980, ASTM, WQO and AEC methods.

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CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794

Casper, Wyoming

ANALYTICAL REPORT

From Uranium Resources, Inc. Product Water
 Address Douglas, Wyoming Date 5-29-82
 Other Pertinent Data
 Analyzed by MM, RJ, PL, BW, SW, DD Date 7-6-82 Lab No. 40711-2

WATER ANALYSIS

NPSM-2

Preserved samples taken May 28, 1982

	mg/l		mg/l
Total suspended solids	*	Chromium (Cr)	ND(0.05)
Total dissolved solids (calc.)	364	Copper (Cu)	ND(0.02)
Total dissolved solids (obs.)	352	Fluoride (F)	0.29
Conductivity @ 68°F., micromhos	550	Iron (Fe)(total)	0.13
Total alkalinity as CaCO ₃	128	Iron (Fe)(dissolve)	*
Total hardness as CaCO ₃	177	Lead (Pb)	ND(0.05)
Sodium (Na) (calc.)	55	Manganese (Mn)	0.03
Sodium (Na) (obs.)	62	Mercury (Hg)	ND(0.001)
Potassium (K)	6	Molybdenum (Mo)	ND(0.1)
Calcium (Ca)	46	Nickel (Ni)	ND(0.04)
Magnesium (Mg)	15	Nitrate (as N)	0.07
Sulfate (SO ₄)	157	Nitrite (as N)	ND(0.01)
Chloride (Cl)	8	Phenols	0.04
Carbonate (CO ₃)	0	Phosphorus (PO ₄)	*
Bicarbonate (HCO ₃)	157	Selenium (Se)	ND(0.01)
pH, units	7.9	Silica (SiO ₂)	13.5
Aluminum (Al)	ND(0.1)	Silver (Ag)	ND(0.02)
Ammonia (as N)	0.36	Sulfide (S)	*
Arsenic (As)	ND(0.01)	Zinc (Zn)	ND(0.01)
Boron (B)	0.1	Vanadium (V ₂ O ₅)	ND(0.05)
Barium (Ba)	ND(0.05)	Uranium (U ₃ O ₈)	ND(0.001)
Beryllium (Be)	*	Eh, millivolts	*
Bromide (Br)	*	Turbidity (JTU's)	*
Cation-Anion Balance	*	Oil and grease (Freon Method)	*
Cadmium (Cd)	ND(0.01)	Chemical Oxygen Demand (COD)	*
Cyanide (CN)	*	Cobalt (Co)	ND(0.05)
		TOC	1.0

ND = Not detected at level given in parentheses.

* = Test not requested.

Gross alpha, pCi/l ----- 2.6 ± 2.9
 Gross beta, pCi/l ----- 16 ± 4
 Ra-226, pCi/l ----- 0.5 ± 0.2

Above tests were made in accordance with Standard Methods, 15th Edition, 1980, ASTM, WQO and AEC methods.

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ATTACHMENT J

FINAL PRODUCTION WATER QUALITY STATUS

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WELL P-1
WATER QUALITY STATUS - FINAL PRODUCTION

	BASELINE AVERAGE	BASELINE AVERAGE+3 σ	HIGH VALUE	FINAL PRODUCTION 5/28/82	WYOMING LIVESTOCK	STATUS* 5/28/82
TDS (Calc)	336.2	354.73	343	1428		X
TDS (OBS)	342.0	421.51	378	1554	5000	L
Conductivity	474.0	527.16	490	1850		X
Alkalinity	143.2	170.72	152	600		X
Hardness	65.4	85.71	73	535		X
Na (Calc)	94.6	103.42	100	325		X
Na (Obs)	96.6	115.82	106	303		X
K	6.4	11.63	9	12		X
Ca	14.8	22.25	17	140		X
Mg	6.8	11.21	8	45		X
SO ₄	119.20	129.13	124	308	3000	L
Cl	8.4	14.0	12		2000	L
CO ₃	12.40	60.80	43	0		R1
HCO ₃	149.20	279.96	185	732		X
pH	8.60	8.6 ^{+1.08}	9.1-8.27	6.4	6.5-8.5	R1
Al	1.34	5.22	3.7	LT .01	5.0	R1
NH ₄	.23	.40	.32	.74		X
As	LT .01	LT .01	LT .01	LT .01	.2	R1
B	LT 1.0	LT 1.0	LT 1.0	.2	5.0	L
Ba	.07	.20	.16	.17		R3
Cd	LT .01	LT .01	LT .01	LT .01	.05	R1
Co	LT .05	LT .05	LT .05	LT .05	1.0	R1
Cr	LT .05	LT .05	LT .05	LT .05	.05	R1
Cu	LT .02	LT .02	LT .02	LT .02	.5	R1
F	.54	.81	.61	.19		R1
Fe	.88	2.44	1.63	.51		R1
Lead	LT .05	LT .05	LT .05	LT .05	.01	R1
Manganese	.01	.04	.03	.32		X
Mercury	LT .001	LT .001	LT .001	LT .001	.00005	R1
Moly	LT .1	LT .1	LT .1	LT .01		R1
Nickel	LT .04	LT .04	LT .04	LT .04		R1
Nitrate	LT .01	LT .03	LT .02	.02	0	R3
Nitrite	LT .01	LT .01	LT .01	LT .01	10	R1
Phenols	.04	.24	.18	LT .03		R1
Selenium	LT .01	LT .01	LT .01	LT .01	.05	R1
Silica	12.22	24.57	20.1	17.8		R3
Silver	LT .02	LT .02	LT .02	LT .02		R1
Zinc	.48	1.9	1.6	1.35	25.0	R3
Vanadium	LT .05	LT .05	LT .05	LT .05	.10	R1
Uranium	.02	.04	.028	96	5	X
TOC	1.23	5.58	3.0	1.0		R1
Ra 226	248.34	808	593	3450	5 pCi l	X
Gross Alpha	427	1260	799	64800	15 pCi l	X
Gross Beta	448.6	1275.8	861	33500	50 pCi l	X

* Status Codes:

- R1 - Restored at or below baseline average
- R2 - Restored at or below baseline average plus 3 σ
- R3 - Restored at or below baseline high
- L - Restored below previous use standard
- X - Not restored satisfactorily

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CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794

Casper, Wyoming

ANALYTICAL REPORT

From Uranium Resources, Inc. Product Water
Address Douglas, Wyoming Date 5-29-82
Other Pertinent Data
Analyzed by MM, R.J., PL, BW, SW, DD Date 7-6-82 Lab No. 40711-4

WATER ANALYSIS

NPP-1

Preserved samples taken May 28, 1982

Table with 2 columns of parameters and their concentrations in mg/l. Parameters include Total suspended solids, Total dissolved solids, Conductivity, and various ions like Sodium, Calcium, Magnesium, Sulfate, Chloride, etc.

ND = Not detected at level given in parentheses.

* = Test not requested.

Gross alpha, pCi/l 64800 ± 1
Gross beta, pCi/l 33500 ± 1
Ra-226, pCi/l 3400 ± 1

Above tests were made in accordance with Standard Methods, 15th Edition, 1980, ASTM, WQO and AEC methods.

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CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794

Casper, Wyoming

ANALYTICAL REPORT

From Uranium Resources, Inc. Product Water
 Address Douglas, Wyoming Date 6-16-82
 Other Pertinent Data
 Analyzed by .. BHW, PL, MM, RJ, DLD Date 7-13-82 Lab No. ... 40845-4

WATER ANALYSIS

R-O Product
 Sample taken June 15, 1982

	<u>mg/l</u>		<u>mg/l</u>
Total suspended solids -----	*	Chromium (Cr) -----	ND(0.05)
Total dissolved solids (calc.) ----	149	Copper (Cu) -----	ND(0.02)
Total dissolved solids (obs.) ----	140	Fluoride (F) -----	0.06
Conductivity @ 68°F., micromhos ---	250	Iron (Fe)(total) -----	ND(0.03)
Total alkalinity as CaCO ₃ -----	40	Iron (Fe)(dissolved) -----	*
Total hardness as CaCO ₃ -----	16	Lead (Pb) -----	ND(0.05)
Sodium (Na) (calc.) -----	53	Manganese (Mn) -----	0.01
Sodium (Na) (obs.) -----	46	Mercury (Hg) -----	ND(0.001)
Potassium (K) -----	2	Molybdenum (Mo) -----	ND(0.1)
Calcium (Ca) -----	3	Nickel (Ni) -----	ND(0.04)
Magnesium (Mg) -----	2	Nitrate (as N) -----	0.18
Sulfate (SO ₄) -----	0	Nitrite (as N) -----	ND(0.01)
Chloride (Cl) -----	66	Phenols -----	0.06
Carbonate (CO ₃) -----	0	Phosphorus (PO ₄) -----	*
Bicarbonate (HCO ₃) -----	48	Selenium (Se) -----	ND(0.01)
pH, units -----	4.7	Silica (SiO ₂) -----	3.0
Aluminum (Al) -----	ND(0.1)	Silver (Ag) -----	ND(0.02)
Ammonia (as N) -----	0.25	Sulfide (S) -----	*
Arsenic (As) -----	ND(0.01)	Zinc (Zn) -----	0.04
Boron (B) -----	0.13	Vanadium (V ₂ O ₅) -----	ND(0.05)
Barium (Ba) -----	ND(0.05)	Uranium (U ₃₀₈) -----	0.170
Beryllium (Be) -----	*	Eh, millivolts -----	*
Bromide (Br) -----	*	Turbidity (JTU's) -----	*
Cation-Anion Balance -----	*	Oil and grease (Freon Method) -	*
Cadmium (Cd) -----	ND(0.01)	Chemical Oxygen Demand (COD) --	*
Cyanide (CN) -----	*	Cobalt (Co) -----	ND(0.05)
		Total Organic Carbon -----	6.0
		Gross alpha, pCi/l ----	92 ± 8
		Gross beta, pCi/l ----	30 ± 4
		Ra-226, pCi/l -----	43 ± 1

ND = Not detected at level given in parentheses.

* = Test not requested.

Above tests were made in accordance with Standard Methods, 15th Edition, 1980, ASTM, WQO and AEC methods.

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CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794

Casper, Wyoming

ANALYTICAL REPORT

From Uranium Resources, Inc. Product Water
 Address Douglas, Wyoming Date 6-16-82
 Other Pertinent Data
 Analyzed by BHW, PL, MM, RJ, DLD Date 7-13-82 Lab No. 40845-3

WATER ANALYSIS

R-O Feed

Sample taken June 15, 1982

	mg/l		mg/l
Total suspended solids	*	Chromium (Cr)	ND(0.05)
Total dissolved solids (calc.)	1490	Copper (Cu)	ND(0.02)
Total dissolved solids (obs.)	1392	Fluoride (F)	0.23
Conductivity @ 68°F., micromhos	2050	Iron (Fe)(total)	0.27
Total alkalinity as CaCO ₃	620	Iron (Fe)(dissolved)	*
Total hardness as CaCO ₃	517	Lead (Pb)	ND(0.05)
Sodium (Na) (calc.)	365	Manganese (Mn)	0.38
Sodium (Na) (obs.)	325	Mercury (Hg)	ND(0.001)
Potassium (K)	12	Molybdenum (Mo)	ND(0.1)
Calcium (Ca)	138	Nickel (Ni)	0.06
Magnesium (Mg)	42	Nitrate (as N)	0.10
Sulfate (SO ₄)	229	Nitrite (as N)	ND(0.01)
Chloride (Cl)	332	Phenols	ND(0.05)
Carbonate (CO ₃)	0	Phosphorus (PO ₄)	*
Bicarbonate (HCO ₃)	756	Selenium (Se)	ND(0.01)
pH, units	5.9	Silica (SiO ₂)	24.6
Aluminum (Al)	ND(0.1)	Silver (Ag)	ND(0.02)
Ammonia (as N)	0.58	Sulfide (S)	*
Arsenic (As)	ND(0.01)	Zinc (Zn)	1.30
Boron (B)	0.19	Vanadium (V ₂ O ₅)	ND(0.05)
Barium (Ba)	0.13	Uranium (U ₃ O ₈)	21.5
Beryllium (Be)	*	Eh, millivolts	*
Bromide (Br)	*	Turbidity (JTU's)	*
Cation-Anion Balance	*	Oil and grease (Freon Method)	*
Cadmium (Cd)	ND(0.01)	Chemical Oxygen Demand (COD)	*
Cyanide (CN)	*	Cobalt (Co)	ND(0.05)
		Total Organic Carbon	2.0
		Gross alpha, pCi/l	11590 ± 955
		Gross beta, pCi/l	4356 ± 6
		Ra-226, pCi/l	1215 ± 30

ND = Not detected at level given in parentheses.

* = Test not requested.

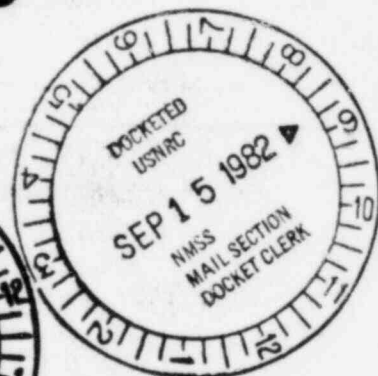
Above tests were made in accordance with Standard Methods, 15th Edition, 1980, ASTM, WQO and AEC methods.

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PDR-Return
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