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# Umetco Minerals Corporation

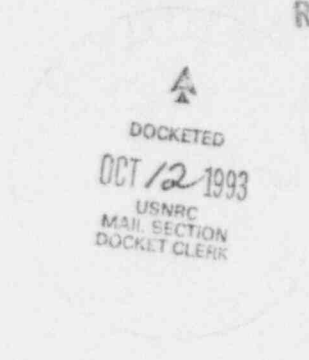


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October 7, 1993

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Attn: Mr. Ramon Hall

Subject: Groundwater Corrective Action Review, 1992

Reference: NRC License Number SUA-648, L.C. 35C

Dear Mr. Hall:

We send you herewith the subject review titled "Annual Report, Groundwater Remediation Program," by Jack C. Moore.

Please contact Mr. Jack Moore or the undersigned if you have any questions.

Sincerely,

P. J. L. Lyons  
General Superintendent

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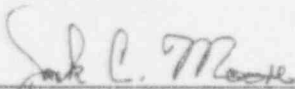
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Umetco Minerals Corporation  
Annual Report  
Groundwater Remediation Program

Inactive Tailings Pile - LWR Aquifer  
A-9 Below-Grade Tailings Area - UWR Aquifer  
September 30, 1993

NRC License Number SUA-648, Docket 40-0299, LC 35-C

Prepared by:

  
\_\_\_\_\_  
Jack C. Moore  
Environmental Coordinator

w/lt 10/7/93  
94-0015

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Introduction

1.0

Subject: Annual Report for Groundwater Remediation Program in the Inactive Tailings and A-9 Areas, EGH, Wyoming. Year ending September 30, 1993.

RE: Source Material License SUA-648  
Docket No. 40.299  
License Condition 35 subpart C  
LWR Corrective Action Program December 4, 1989  
UWR Corrective Action Program August 28, 1989

#### Introduction

The Groundwater Remediation program for the Upper and Lower Wind River formation aquifers at the Umetco East Gas Hills uranium facility in Wyoming has been operating effectively during the past twelve months.

A change in operating procedures was initiated in November, 1992 when the water being treated began to receive only IX treatment, by-passing the RO membrane final polishing procedure. This action was taken after observing the clean-up phase in the IX units for a six month period during which only minimal improvement in the water clean-up could be noted by passage through the RO membranes.

Total through-put of the IX/RO system for the year was 30,341,500 gallons, with 2,662,000 gallons of permeate, 1,687,000 gallons of reject and 25,992,455 gallons of IX waters produced. A total of 28,220,700 gallons of clean water was reinjected. Of this total, 17,492,400 gallons were injected through 11 wells in the Inactive Tailings pile area into the Lower Wind River (LWR) aquifer. 10,728,300 gallons were injected through 7 wells in the A-9 below-grade tailings area into the Upper Wind River (UWR) aquifer. Location of the wells in each area are shown on maps NRC-DEQ-93-09 and NRC-DEQ-93-10.

Total gallonage of clean water produced and reinjected since the December, 1990 start-up of the groundwater remediation program is 48,736,800 gallons.

Quality of the RO permeate/IX water being injected is shown for the period 11/04/92 through 08/23/93 on the water analysis tabulations of samples taken from the IX/RO facility. Samples are taken at four sample points when operating with the RO unit. These points are the raw water blend collected from a well in each of the Inactive Tailings and A-9 areas; the water following treatment in the water softener unit (cation sodium resin exchange); and the water following treatment in the RO membrane unit (permeate produced). Three sample points are utilized when the RO membrane unit is bypassed. In June, 1993 a fourth water sample was begun to be obtained from the clean water storage pond as a final quality assurance check for injected water.

Analysis of the data collected from the producing (collection), injection and monitor wells indicate improvements in the groundwater quality in both aquifers.

A drilling program was completed in June, 1993 with the installation of nine wells in the Inactive Tailings pile area and four wells in the A-9 below-grade tailings area. Location of these wells are shown on maps NRC-DEQ-93-09 and NRC-DEQ-93-10. Final hookup to the treatment system of all wells was completed in September, 1993.

Inactive Tailings Pile  
Groundwater Remediation - LWR Aquifer

2.0

## Inactive Tailings Pile Groundwater Remediation of LWR Aquifer

Groundwater remediation of the Lower Wind River (LWR) aquifer in the vicinity underlying the Inactive Tailings pile is being done in accordance with plans submitted August and December, 1989 and License Condition 35. Eleven collection wells were pumped during some portions of the past twelve months with ten wells active on September 30, 1993. These wells are tabulated in the appendix 5-1 and 5-2. Eleven injection wells received clean water for reinjection during some portions of the past twelve months with eight wells active on September 30, 1993. These wells are tabulated in the appendix 5-3. The eleven collection wells, eleven injection wells and fourteen monitor wells are shown at locations on Map NRC-DEQ-93-09. Data for each well are tabulated and certain data are graphed for each well following this analysis.

Nine new wells were drilled in the Inactive Tailings pile area in June, 1993. Each well was drilled, cased, packed and completed with system hook-up completed by September, 1993. A tabulation of these wells and their use, along with information about former wells replaced by some of the new wells is on Table 2.0.1. Wells MWC-33, 34, 35 and 36 ceased producing because of very low transmissivity for recharging and a lowering of the water table in their vicinity. Wells MWC-56, 57, 58 and 59 were drilled in June, 1993 at locations mid-way between the dried up wells and to an average 50 feet deeper into the aquifer.

The potentiometric contours displayed on map NRC-DEQ-93-09 indicate the flow patterns are to the west and influenced by the pumping and injection activities. An indication of changes in the groundwater quality may be noted in a comparison of initial water assays from wells MWC-33, 34, 35 and 36 and the initial water assays from replacement wells MWC-56, 57, 58 and 59. This comparison is:

<u>Well</u>	<u>Unat</u> <u>pCi/l</u>	<u>Ra 226</u> <u>pCi/l</u>	<u>SO<sub>4</sub></u> <u>mg/l</u>	<u>TDS</u> <u>mg/l</u>
MWC-33	22962	498	6529	9929
MWC-56	121.9	17.5	2373	3369
MWC-34	35322	191	7118	10768
MWC-57	124.6	19	1111	1535
MWC-35	2979	106	7902	11782
MWC-58	12.2	27	1048	1444
MWC-36	989	55.6	6938	10398
MWC-59	153	38	2864	4401



In each case, the water quality from wells MWC-33, 34, 35 and 36 showed marked improvement after being pumped for period of time. It is expected that similar improvement will be noted in the new wells after being pumped for related period of time.

Review of the water analyses of the wells being pumped show compliance with standards of L.C. 35 in the radionuclides and other elements except for nickel. Nickel is still above compliance in wells MWC-42, 45, 47 and 48. In all MWC-46, the radionuclides, arsenic and nickel all remain above compliance standards. Well MWC-46 was destroyed by dropping the pump into the well casing during a routine pump-cleaning procedure done in all pumping wells on an as-needed basis.

Review of the water analyses of the monitor wells lying about the perimeter of the Inactive Tailings pile continues to show compliance in most instances and continuing improvement in the remaining wells. Analysis data are presented in tabular form for each well over the most recent 2 year period for comparative purposes. Additionally, data for natural uranium (Unat), Ra226 + Ra228 (Ra), Chloride (Cl), Total Dissolved Solids (TDS), pH and top of water elevations are presented graphically for each well. On the Unat and Ra226 + Ra228 graphs, site compliance values are shown for ease in evaluation. Location of each well and potentiometric contours are shown on map NRC-DEQ-93-09. Analysis of the data presented has been done for four sectors around and on the Inactive Tailings pile.

Monitor wells MW-2, MW-17, MW-26, MW-23, MW-18, MW-1 and MW-4 are all located in the sector north of the Inactive Tailings pile. Of these wells, MW-1, a compliance well, does not yet meet compliance standards in Unat, Ra, Se and Ni; MW-2, the background well, does not yet meet compliance standards in Ni; MW-4 does not yet meet compliance standards in Unat, Se and Ni; MW-26 does not meet compliance standards in Unat and Ra. Somewhat higher amounts of Unat and Ra were noted in the wells which may be seasonal effect with the overall trend showing improvement toward the compliance standards.

Monitor wells MW-19, MW-20 and MW-27 are located in the sector up-dip and east of the Inactive Tailings pile. Well MW-20 is above compliance standards in Unat and Ra with an improving trend. The other wells are in compliance with standards in this sector.

Monitor well DW-3 is located in the sector south of the Inactive Tailings pile. The lower Wind River aquifer being tested here is outside the principal groundwater flow pattern underlying the Inactive Tailings pile. The elements Ra and Ni are slightly out of compliance with standards but this is related to uranium mineralization occurring in the formation rather than to contamination from the tailings pile.

Monitor wells MW-21A (new compliance well), MW-25 and MW-28 are located in the sector west of the Inactive Tailings pile, down gradient of the groundwater flow in the lower Wind River aquifer underlying the tailings pile. MW-21A and MW-25 are not yet in compliance with standards for Ni. All of the wells meet compliance standards for all of the other monitored elements. Injection wells MWI-37, 38 and 39 also are located in this sector. Injection has been discontinued into these wells beginning September 20, 1993. The wells will be allowed to recover to a natural flow regime for nine months at which time they will be pumped and sampled to determine changes in the water quality.

Sampling of all of the wells associated with the lower Wind River aquifer in the Inactive Tailings pile area will be done on a quarterly basis beginning in March, 1994 in an effort to obtain additional data points for statistical evaluation of clean-up progress.

Table 2.0.1  
New Wells - Inactive Tailings Pile Area

<u>Well No.</u>	<u>Depth</u>	<u>Type</u>	<u>Slotted Casing</u>	<u>Comments</u>
MWC-55	170	Collection	90-170	Offset MW-1
MWC-56	260	Collection	180-260	Replace Abandoned MWC-33 - dried up
MWC-57	250	Collection	170-250	Replace Abandoned MWC-34 - dried up
MWC-58	250	Collection	170-250	Replace Abandoned MWC-35 - dried up
MWC-59	250	Collection	150-250	Replace Abandoned MWC-36 - dried up
MWI-64	260	Injection	180-260	Replace Abandoned MW-16A - casing plugged
MWI-65	180	Injection	100-180	Offset HW-4, DW-3. Uranium mineral intercepts.
MWI-66	190	Injection	130-180	Replace MWC-46, well had pump dropped into casing, damaged casing, unable to retrieve pump, cables. New well MWI-66 lost water during completion phase, now being used as injection well.
MW-67	260	Monitor		May be used later as a collection or injection well.

Note: Each well was drilled 9 7/8" and cased with 5" Schedule 40 PVC pipe. Factory slotted casing (.04 slot) was installed as indicated. The slotted casing intervals plus 20 feet above were sand packed with 80-3/8" sand and the remainder of the cased hole was packed with 3/8" bentonite pellets.

NRC Standards

Lower Wind River Aquifer

Point of compliance wells MW-1 and MW-21A

Background well MW-2

<u>Element</u>	<u>L.C. 35-B</u> <u>mg/l</u>	<u>L.C. 35-B</u> <u>pCi/l</u>	<u>10 CFR Pt 20</u> <u>pCi/l</u> <u>(M.P.C.)</u>
As	0.05		
Be	0.05		
Cd	0.01		
Cr	0.05		
Pb	0.05		
Mo	0.02		
Ni	0.06		
Se	0.01		
Ag	0.05		
Unat		89.0	3,000
Ra226 + Ra228		31.5	60
Th 230		6.6	2,000
Pb 210		5.0	100
Gross Alpha		146.5	-

Collection Well Data and Graphics

GROUND WATER ANALYSES FOR M.W.C. 33

Date Sampled	07/20/90	08/14/90	09/19/90	*****
UNat pCi/l	22962.00	12309.00	28257.00	
UNat % M.P.C.	76.54	41.03	94.19	
Ra226 pCi/l	498.00	134.00	488.00	
Ra226 Error +/-	10.80	5.10	8.10	
Ra226 % M.P.C.	1660.00	446.67	1626.67	
Ra228 pCi/l	62.40	10.80	66.30	
Ra228 Error +/-	3.80	3.20	5.70	
Ra228 % M.P.C.	208.00	36.00	221.00	
Th230 pCi/l	<0.2	26.10	1.20	
Th230 Error +/-		3.90	3.30	
Th230 % M.P.C.		1.31	0.06	
Pb210 pCi/l	17.40	8.20	17.00	
Pb210 Error +/-	1.90	2.60	3.30	
Pb210 % M.P.C.	17.40	8.20	17.00	
Gross Alpha -- U & m pCi/l	550.00	165.10	500.00	
Gross Alpha Error +/-	11.00	12.90	22.00	
As mg/l	0.004	<0.01	<0.01	
Se mg/l	0.176	0.272	0.117	
Fe mg/l	154.00	10.20	300.00	
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	<0.01	<0.01	<0.01	
Al mg/l	174.00	191.00		
Be mg/l	0.54	0.28	0.72	
Ni mg/l	7.96	4.07	10.00	
Ag mg/l	0.07	<0.01	0.06	
V mg/l	<0.01	<0.01	<0.01	
Cd mg/l	0.11	0.04	0.02	
Cr mg/l	0.14	0.02	0.05	
Ca mg/l	506.00	620.00	440.00	
Mg mg/l	527.00	415.00	729.00	
Na mg/l	333.00	568.00	313.00	
K mg/l	51.70	36.00	67.80	
NH4 mg/l	265.00	4.31	409.00	
NH3 mg/l				
NO3 mg/l	12.20		2.13	
SO4 mg/l	6529.00	4742.00	8203.00	
Cl mg/l	137.00	142.00	210.00	
TDS mg/l	9929.00	7716.00	12405.00	
pH	4.10		4.23	
Water Elevation	n/a	n/a	6833.83	

\*\*\*\*\* This well is dry and was subsequently abandoned on 11/16/92.

## GROUND WATER ANALYSES FOR M.W.C. 34

Date Sampled	09/19/90	06/13/91	12/12/91	06/17/92
UNat pCi/l	35322.00	203.00	4687.00	4377.00
UNat % M.P.C.	117.74	0.68	15.62	14.59
Ra226 pCi/l	191.00	46.10	458.00	202.00
Ra226 Error +/-	4.60	1.70	8.00	5.80
Ra226 % M.P.C.	636.67	153.67	1526.67	673.33
Ra228 pCi/l	40.80	7.50	116.00	43.00
Ra228 Error +/-	4.90	0.50	1.80	4.10
Ra228 % M.P.C.	136.00	25.00	386.67	143.33
Th230 pCi/l	1.30	<1.0	30.80	9.80
Th230 Error +/-	0.30		2.10	2.10
Th230 % M.P.C.	0.07		1.54	0.49
Pb210 pCi/l	8.50	<1.0	9.10	12.80
Pb210 Error +/-	1.70		0.90	0.80
Pb210 % M.P.C.	8.50		9.10	12.80
Gross Alpha - U & Rn pCi/l	200.00	48.00	500.00	203.00
Gross Alpha Error +/-	14.00	6.90	22.40	14.30
As mg/l	0.014	<0.01	0.016	<0.01
Se mg/l	0.114	0.009	0.145	0.045
Fe mg/l	210.00	46.20	256.00	181.00
Pb mg/l	<0.01	<0.01	<0.01	0.01
Mo mg/l	<0.01	0.01	0.01	<0.01
Al mg/l		1.76	99.20	72.00
Be mg/l	0.28	<0.01	0.33	0.20
Ni mg/l	11.00	1.52	11.00	6.69
Ag mg/l	0.04	<0.01	0.05	0.03
V mg/l	<0.01	<0.01	<0.01	<0.01
Cd mg/l	<0.005	0.007	0.046	0.013
Cr mg/l	0.05	0.01	0.19	<0.01
Ca mg/l	440.00	370.00	369.00	261.00
Mg mg/l	677.00	148.00	573.00	405.00
Na mg/l	261.00	97.50	270.00	15.00
K mg/l	75.20	16.30	69.80	51.40
NH4 mg/l	541.00	60.60		
NH3 mg/l			720.00	411.00
NO3 mg/l	46.80	2.33	20.90	12.30
SO4 mg/l	7118.00	1924.00	7382.00	4877.00
Cl mg/l	186.00	85.00	88.20	114.00
TDS mg/l	10768.00	2696.00	11342.00	7500.00
pH	5.01	6.01	4.39	4.51
Water Elevation	6851.67	n/a	n/a	6797.84

\*\*\*\*\* This well is dry and was subsequently abandoned on 11/16/92.

GROUND WATER ANALYSES FOR M.W.C. 35

Date Sampled	09/20/90	06/13/91	12/12/91	06/17/92
UNat pCi/l	2979.00	13.00	1562.00	2393.00
UNat % M.P.C.	9.93	0.04	5.21	7.98
Ra226 pCi/l	106.00	39.10	95.00	48.70
Ra226 Error +/-	3.60	1.50	4.10	2.20
Ra226 % M.P.C.	353.33	130.33	316.67	162.33
Ra228 pCi/l	15.90	9.10	23.30	13.40
Ra228 Error +/-	3.80	0.60	1.10	0.70
Ra228 % M.P.C.	53.00	30.33	77.67	44.67
Th230 pCi/l	<0.2	<1.0	22.30	4.70
Th230 Error +/-			1.90	1.70
Th230 % M.P.C.			1.12	0.24
Pb210 pCi/l	5.40	3.30	<1.0	8.60
Pb210 Error +/-	1.60	0.70		
Pb210 % M.P.C.	5.40	3.30		8.60
Gross Alpha - U & Rn pCi/l	110.00	40.00	120.00	51.40
Gross Alpha Error +/-	10.50	6.30	11.00	7.20
As mg/l	<0.01	<0.01	<0.01	<0.01
Se mg/l	0.137	0.009	0.093	0.038
Fe mg/l	2.30	47.50	20.20	24.80
Pb mg/l	<0.01	<0.01	<0.01	<0.01
Mo mg/l	<0.01	0.01	<0.01	<0.01
Al mg/l		1.36	80.20	180.00
Be mg/l	0.26	<0.01	0.16	0.15
Ni mg/l	10.00	1.13	5.94	5.34
Ag mg/l	0.07	<0.01	0.03	0.03
V mg/l	<0.01	<0.01	<0.01	<0.01
Cd mg/l	<0.005	0.012	0.014	0.011
Cr mg/l	0.07	0.01	0.12	<0.01
Ca mg/l	449.00	241.00	328.00	273.00
Mg mg/l	756.00	157.00	470.00	417.00
Na mg/l	338.00	102.00	224.00	21.50
K mg/l	80.90	10.30	49.80	44.30
NH4 mg/l	559.00			
NH3 mg/l			390.00	325.00
NO3 mg/l	11.80	0.32	4.50	<0.01
SO4 mg/l	7902.00	1733.00	5173.00	4364.00
Cl mg/l	266.00	62.60	161.00	137.00
TDS mg/l	11782.00	1733.00	7714.00	6937.00
pH	4.27	5.82	4.46	4.58
Water Elevation	6807.51	n/a	n/a	6800.75

\*\*\*\*\* This well is dry and was subsequently abandoned on 11/16/92.



## GROUND WATER ANALYSES FOR M. W. C. 36

Date Sampled	09/20/90	06/13/91	12/12/91	11/11/92
UNat pCi/l	989.00	47.40	4166.00	5.80
UNat % M.P.C.	3.30	0.16	13.89	0.02
Ra226 pCi/l	55.60	81.20	101.00	5.20
Ra226 Error +/-	2.80	2.10	3.70	0.50
Ra226 % M.P.C.	185.33	270.67	336.67	17.33
Ra228 pCi/l	20.50	11.80	29.70	8.30
Ra228 Error +/-	2.40	0.60	1.30	0.60
Ra228 % M.P.C.	68.33	39.33	99.00	27.67
Th230 pCi/l		<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	2.60	4.10	<1.0	4.50
Pb210 Error +/-	0.90	0.70		0.80
Pb210 % M.P.C.	2.60	4.10		4.50
Gross Alpha - U & Rn pCi/l	50.00	85.00	100.00	5.30
Gross Alpha Error +/-	7.10	9.20	10.00	2.30
As mg/l	<0.01	0.030	0.017	<0.01
Se mg/l	0.095	0.006	0.056	0.015
Fe mg/l	0.87	15.50	144.00	10.50
Pb mg/l	<0.01	<0.01	<0.01	<0.01
Mo mg/l	<0.01	0.02	<0.01	<0.01
Al mg/l		1.36	30.60	<0.10
Be mg/l	0.12	0.02	0.06	<0.01
Ni mg/l	6.40	1.00	4.50	0.16
Ag mg/l	0.06	<0.01	0.03	<0.01
V mg/l	<0.01	0.02	<0.01	<0.01
Cd mg/l	<0.005	0.034	<0.005	<0.005
Cr mg/l	0.04	<0.01	0.11	<0.01
Ca mg/l	435.00	380.00	398.00	213.00
Mg mg/l	764.00	179.00	444.00	37.40
Na mg/l	442.00	101.00	291.00	58.60
K mg/l	64.40	10.30	48.00	12.70
NH4 mg/l	381.00			
NH3 mg/l		50.10	374.00	41.90
NO3 mg/l	10.50	0.10	1.10	<0.10
SO4 mg/l	6938.00	2164.00	5139.00	785.00
Cl mg/l	297.00	70.70	194.00	27.50
TDS mg/l	10398.00	3737.00	7429.00	1276.00
pH	4.64	5.94	4.27	7.38
Water Elevation	6810.63	n/a	n/a	6789.49

GROUND WATER ANALYSES FOR M.W.C. 42

Date Sampled	12/12/91	06/17/92	11/16/92	06/10/93
UNat pCi/l	20.50	17.00	4.80	8.12
UNat % M.P.C.	0.07	0.06	0.02	0.03
Ra226 pCi/l	19.90	13.80	5.30	18.00
Ra226 Error +/-	0.90	0.60	0.50	1.10
Ra226 % M.P.C.	66.33	46.00	17.67	60.00
Ra228 pCi/l	14.60	8.00	9.00	12.80
Ra228 Error +/-	1.40	0.70	0.40	0.50
Ra228 % M.P.C.	48.67	26.67	30.00	42.67
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	<1.0	<1.0	6.00	<1.0
Pb210 Error +/-			0.60	
Pb210 % M.P.C.			6.00	
Gross Alpha - U & Rn pCi/l	20.00	13.90	5.50	21.50
Gross Alpha Error +/-	4.50	3.80	2.30	4.60
As mg/l	0.015	<0.01	0.01	0.02
Se mg/l	<0.005	<0.005	0.007	<0.005
Fe mg/l	14.90	5.63	10.50	11.50
Pb mg/l	<0.01	<0.01	<0.01	<0.01
Mo mg/l	<0.01	<0.01	<0.01	<0.01
Al mg/l	0.42	<0.10	<0.10	0.18
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	0.27	0.08	0.13	0.09
Ag mg/l	<0.01	<0.01	<0.01	<0.01
V mg/l	<0.01	<0.01	<0.01	<0.01
Cd mg/l	<0.005	<0.005	<0.005	<0.005
Cr mg/l	<0.01	<0.01	<0.01	<0.01
Ca mg/l	206.00	175.00	299.00	301.00
Mg mg/l	65.20	36.90	48.60	42.20
Na mg/l	67.40	59.90	59.90	58.10
K mg/l	11.50	12.20	12.30	11.10
NH4 mg/l				
NH3 mg/l	4.40	6.54	3.87	3.23
NO3 mg/l	5.10	<0.01	0.22	<0.10
SO4 mg/l	725.00	589.00	717.00	742.00
Cl mg/l	27.50	18.70	26.60	28.00
TDS mg/l	1362.00	1137.00	1313.00	1375.00
pH	6.61	6.50	6.63	6.89
Water Elevation		6773.05	6786.71	6881.77

## GROUND WATER ANALYSES FOR M.W.C. 45

Date Sampled	05/05/92	11/11/92	01/13/93
UNat pCi/l	16.20	45.20	24.30
UNat % M.P.C.	0.05	0.15	0.08
Ra226 pCi/l	13.80	2.30	23.50
Ra226 Error +/-	0.80	0.40	1.80
Ra226 % M.P.C.	46.00	7.67	78.33
Ra228 pCi/l	1.20	<1.0	6.70
Ra228 Error +/-	0.50		3.20
Ra228 % M.P.C.	4.00		22.33
Th230 pCi/l	<1.0	<1.0	<1.0
Th230 Error +/-			
Th230 % M.P.C.			
Pb210 pCi/l	<1.0	3.40	1.30
Pb210 Error +/-		0.80	0.80
Pb210 % M.P.C.		3.40	1.30
Gross Alpha - U & Rn pCi/l	15.40	<5.0	23.90
Gross Alpha Error +/-	3.90		4.90
As mg/l	0.007	<0.01	<0.01
Se mg/l	<0.001	0.011	0.010
Fe mg/l	2.11	0.87	2.20
Pb mg/l	<0.01	<0.01	
Mo mg/l	<0.10	0.02	
Al mg/l	0.12	0.10	<0.10
Be mg/l	<0.01	<0.01	<0.01
Ni mg/l	0.38	0.11	0.10
Ag mg/l	<0.01	0.02	
V mg/l	<0.10	<0.01	
Cd mg/l	<0.005	<0.005	
Cr mg/l	<0.05	<0.01	
Ca mg/l	243.00	86.00	198.00
Mg mg/l	78.60	31.30	41.40
Na mg/l	521.00	377.00	113.00
K mg/l	12.80	6.80	
NH4 mg/l			
NH3 mg/l	28.50	10.70	
NO3 mg/l	<0.10	<0.10	<0.10
SO4 mg/l	1841.00	797.00	593.00
Cl mg/l	234.00	197.00	63.00
TDS mg/l	3223.00	1513.00	1155.00
pH	6.27	6.92	6.59
Water Elevation	6890.53		6804.49

GROUND WATER ANALYSES FOR M.W.C. 46

Date Sampled	07/09/91	05/11/92	11/04/92	01/14/93
UNat pCi/l	1946.00	140.40	352.00	501.00
UNat % M.P.C.	6.49	0.47	1.17	1.67
Ra226 pCi/l	55.80	11.50	29.30	39.40
Ra226 Error +/-	3.30	0.70	2.10	2.00
Ra226 % M.P.C.	186.00	38.33	97.67	131.33
Ra228 pCi/l	50.50	<1.0	6.80	18.50
Ra228 Error +/-	2.20		0.40	3.70
Ra228 % M.P.C.	168.33		22.67	61.67
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	5.10	<1.0	4.30	<1.0
Pb210 Error +/-	1.00		1.10	
Pb210 % M.P.C.	5.10		4.30	
Gross Alpha - U & Rn pCi/l	60.00	11.70	31.50	41.50
Gross Alpha Error +/-	7.70	3.40	5.60	6.40
As mg/l	0.020	0.020	0.138	0.590
Se mg/l	0.149	0.038	<0.005	0.013
Fe mg/l	24.00	0.95	59.00	61.20
Pb mg/l	<0.01	<0.01	<0.01	<0.01
Mo mg/l	<0.01	0.01	<0.01	<0.01
Mn mg/l			<0.10	37.40
Al mg/l	6.35	0.42	0.72	2.56
Be mg/l	0.03	<0.01	0.01	0.02
Ni mg/l	1.52	0.60	0.17	0.78
Ag mg/l	<0.01	0.01	<0.01	<0.01
V mg/l	<0.01	<0.01	<0.01	<0.01
Cd mg/l	0.008	<0.005	0.041	<0.01
Cr mg/l	0.02	<0.01	0.01	10.00
Ca mg/l	486.00	267.00	289.00	420.00
Mg mg/l	233.00	87.40	66.80	126.00
Na mg/l	493.00	530.00	332.00	292.00
K mg/l	40.80	14.10	12.30	
NH4 mg/l			0.12	0.30
NH3 mg/l	147.00	34.33	5.83	40.00
NO3 mg/l	22.20	3.57	<0.10	2.50
SO4 mg/l	3622.00	1936.00	1638.00	2172.00
Cl mg/l	131.00	148.00	158.00	117.00
TDS mg/l	5720.00	3173.00	2358.00	3258.00
pH	5.51	6.09	5.54	n/a
Water Elevation	6829.04	6883.77	n/a	6801.91

## GROUND WATER ANALYSES FOR M.W.C. 47

Date Sampled	06/13/91	06/17/92	11/16/92	06/10/93
UNat pCi/l	197.00	26.60	33.70	4.06
UNat % M.P.C.	0.66	0.09	0.11	0.01
Ra226 pCi/l	32.30	14.00	4.20	12.90
Ra226 Error +/-	1.30	0.60	0.40	1.00
Ra226 % M.P.C.	107.67	46.67	14.00	43.00
Ra228 pCi/l	8.10	14.20	12.90	9.00
Ra228 Error +/-	0.70	0.80	0.50	0.50
Ra228 % M.P.C.	27.00	47.33	43.00	30.00
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	<1.0	4.20	1.70	2.40
Pb210 Error +/-			0.50	0.90
Pb210 % M.P.C.		4.20	1.70	2.40
Gross Alpha - U & Rn pCi/l	35.00	14.90	<5.0	13.50
Gross Alpha Error +/-	5.90	3.90		3.70
As mg/l	0.020	<0.01	0.010	<0.01
Se mg/l	0.014	<0.005	0.010	<0.005
Fe mg/l	7.58	18.70	7.60	8.40
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	0.36	0.03	<0.01	
Al mg/l	0.28	<0.10	<0.10	<0.10
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	0.17	0.03	0.07	0.06
Ag mg/l	<0.01	<0.01	<0.01	
V mg/l	<0.01	<0.01	<0.01	
Cd mg/l	<0.005	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	278.00	259.00	206.00	254.00
Mg mg/l	165.00	54.00	42.40	43.40
Na mg/l	80.70	43.90	57.70	41.60
K mg/l	15.10	13.90	12.00	
NH3 mg/l	16.30	0.35	1.43	
NO3 mg/l	7.00	<0.01	<0.10	<0.10
SO4 mg/l	1368.00	872.00	671.00	667.00
Cl mg/l	25.70	34.80	26.30	33.50
TDS mg/l	217.00	1518.00	1105.00	1165.00
pH	6.70	6.77	6.68	6.90
Water Elevation	n/a	6779.50	n/a	n/a

GROUND WATER ANALYSES FOR M.W.C. 48

Date Sampled	12/05/91	06/17/92	11/16/92	06/10/93
UNat pCi/l	13.50	7.50	9.80	4.06
UNat % M.P.C.	0.05	0.03	0.03	0.01
Ra226 pCi/l	9.80	4.30	2.20	7.40
Ra226 Error +/-	0.70	0.40	0.30	1.00
Ra226 % M.P.C.	32.67	14.33	7.33	24.67
Ra228 pCi/l	<1.0	5.10	6.80	4.60
Ra228 Error +/-		0.70	0.50	0.90
Ra228 % M.P.C.		17.00	22.67	15.33
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	<1.0	14.10	2.00	1.90
Pb210 Error +/-		0.80	0.50	0.90
Pb210 % M.P.C.		14.10	2.00	1.90
Gross Alpha - U & Rn pCi/l	10.00	4.90	<5.0	7.90
Gross Alpha Error +/-	3.20	2.20		2.80
As mg/l	<0.01	<0.01	<0.01	0.01
Se mg/l	<0.005	<0.005	0.006	<0.005
Fe mg/l	2.26	1.45	2.30	2.01
Pb mg/l	<0.01	<0.01	<0.01	0.01
Mo mg/l	<0.01	<0.01	<0.01	<0.01
Al mg/l	<0.10	<0.10	<0.10	<0.10
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	<0.01	<0.01	0.01	0.01
Ag mg/l	<0.01	<0.01	<0.01	<0.01
V mg/l	<0.01	<0.01	0.01	<0.01
Cd mg/l	<0.005	<0.005	<0.01	<0.005
Cr mg/l	<0.01	<0.01	<0.01	<0.01
Ca mg/l	119.00	109.40	159.00	159.00
Mg mg/l	21.90	22.90	29.40	27.00
Na mg/l	40.90	34.20	34.70	57.20
K mg/l	8.80	9.84	9.30	10.20
NH3 mg/l	0.12	0.16	0.07	0.12
NO3 mg/l	0.16	<0.01	<0.10	0.10
SO4 mg/l	252.00	304.00	380.00	410.00
Cl mg/l	13.10	10.50	18.00	29.10
TDS mg/l	604.00	718.00	709.00	820.00
pH	7.59	7.01	6.70	7.20
Water Elevation	6779.30	6780.69	6800.90	n/a

## GROUND WATER ANALYSES FOR M. W. C. 49

Date Sampled	12/05/91	06/17/92	11/16/92	06/10/93
UNat pCi/l	27.10	288.00	6.50	16.25
UNat % M.P.C.	0.09	0.96	0.02	0.05
Ra226 pCi/l	10.60	11.00	4.40	14.00
Ra226 Error +/-	0.70	0.60	0.40	1.00
Ra226 % M.P.C.	35.33	36.67	14.67	46.67
Ra228 pCi/l	4.90	10.50	4.00	6.70
Ra228 Error +/-	0.80	0.80	0.40	0.60
Ra228 % M.P.C.	16.33	35.00	13.33	22.33
Th230 pCi/l	<1.0	<1.0	<1.0	135.00
Th230 Error +/-				7.50
Th230 % M.P.C.				6.75
Pb210 pCi/l	<1.0	<1.0	2.40	3.00
Pb210 Error +/-			0.50	0.90
Pb210 % M.P.C.			2.40	3.00
Gross Alpha - U & Rn pCi/l	10.00	11.70	<5.0	150.00
Gross Alpha Error +/-	3.20	3.40		12.20
As mg/l	<0.01	<0.01	0.010	0.01
Se mg/l	<0.005	<0.005	0.006	<0.005
Fe mg/l	1.90	5.73	9.10	12.80
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	<0.01	<0.01	0.04	
Al mg/l	<0.10	<0.10	<0.10	<0.10
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	0.05	<0.01	0.04	0.07
Ag mg/l	<0.01	<0.01	<0.01	
V mg/l	<0.01	<0.01	<0.01	
Cd mg/l	<0.005	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	114.00	150.20	259.00	223.00
Mg mg/l	22.30	33.80	49.10	39.60
Na mg/l	53.80	51.80	44.40	50.90
K mg/l	9.80	12.15	12.00	
NH3 mg/l	0.45	0.71	0.07	
NO3 mg/l	0.61	<0.01	<0.10	0.30
SO4 mg/l	252.00	465.00	722.00	619.00
Cl mg/l	14.20	13.90	30.60	20.30
TDS mg/l	642.00	961.00	1241.00	1080.00
pH	7.50	6.93	6.56	6.83
Water Elevation	6801.40	6804.04	n/a	n/a

GROUND WATER ANALYSES FOR M.W.C. 52

Date Sampled	12/05/91	06/17/92	11/16/92	06/10/93
UNat pCi/l	2.70	268.00	4.50	18.28
UNat % M.P.C.	0.01	0.96	0.02	0.06
Ra226 pCi/l	15.70	12.00	3.05	17.20
Ra226 Error +/-	0.80	0.60	0.50	1.10
Ra226 % M.P.C.	52.33	40.00	10.17	57.33
Ra228 pCi/l	5.90	8.40	4.20	6.50
Ra228 Error +/-	0.90	0.90	0.80	0.60
Ra228 % M.P.C.	19.67	28.00	14.00	21.67
Th230 pCi/l	<1.0	<1.0	<1.0	10.20
Th230 Error +/-				0.50
Th230 % M.P.C.				0.51
Pb210 pCi/l	<1.0	<1.0	4.40	1.60
Pb210 Error +/-			0.60	0.90
Pb210 % M.P.C.			4.40	1.60
Gross Alpha - U & Rn pCi/l	16.00	13.00	<5.0	29.40
Gross Alpha Error +/-	4.00	3.50	4.30	5.40
As mg/l	0.190	<0.01	<0.01	<0.01
Se mg/l	<0.005	<0.005	0.006	<0.005
Fe mg/l	7.20	5.00	5.50	9.03
Pb mg/l	<0.01	0.01	<0.01	
Mo mg/l	<0.01	<0.01	<0.01	
Al mg/l	<0.10	<0.10	<0.10	<0.10
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	<0.01	<0.01	<0.01	0.02
Ag mg/l	<0.01	<0.01	<0.01	
V mg/l	<0.01	<0.01	<0.01	
Cd mg/l	<0.005	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	189.00	159.00	200.00	274.00
Mg mg/l	33.60	37.00	37.40	46.30
Na mg/l	39.80	34.70	32.30	36.70
K mg/l	9.50	10.30	9.60	
NH4 mg/l				
NH3 mg/l	0.12	0.00	0.07	
NO3 mg/l	<0.01	<0.01	<0.01	<0.10
SO4 mg/l	438.00	451.00	536.00	621.00
Cl mg/l	11.00	13.00	20.10	34.10
TDS mg/l	866.00	950.00	957.00	1180.00
pH	6.88	7.09	6.80	6.97
Water Elevation	n/a	6803.65	6805.59	n/a



## GROUND WATER ANALYSES FOR M.W.C. 55

Date Sampled	05/03/93
UNat pCi/l	1566.00
UNat % M.P.C.	5.22
Ra <sup>226</sup> pCi/l	32.50
Ra <sup>226</sup> Error +/-	1.60
Ra <sup>226</sup> % M.P.C.	108.33
Ra <sup>228</sup> pCi/l	29.30
Ra <sup>228</sup> Error +/-	3.60
Ra <sup>228</sup> % M.P.C.	97.67
Th <sup>230</sup> pCi/l	<1.0
Th <sup>230</sup> Error +/-	
Th <sup>230</sup> % M.P.C.	
Pb <sup>210</sup> pCi/l	9.60
Pb <sup>210</sup> Error +/-	2.20
Pb <sup>210</sup> % M.P.C.	9.60
Gross Alpha - U & Rn pCi/l	35.60
Gross Alpha Error +/-	3.30
As mg/l	<0.01
Se mg/l	0.028
Fe mg/l	39.10
Pb mg/l	
Mo mg/l	
Al mg/l	
Be mg/l	0.06
Ni mg/l	5.61
Ag mg/l	
V mg/l	
Cd mg/l	
Cr mg/l	
Ca mg/l	465.00
Mg mg/l	286.00
Na mg/l	263.00
K mg/l	
NH <sub>4</sub> mg/l	
NH <sub>3</sub> mg/l	
NO <sub>3</sub> mg/l	1.90
SO <sub>4</sub> mg/l	4573.00
Cl mg/l	202.00
TDS mg/l	6673.00
pH	4.40
Water Elevation	6811.70

GROUND WATER ANALYSES FOR M.W.C. 56

Date Sampled	06/03/93	
UNat pCi/l	121.90	
UNat % M.P.C.	0.41	
Ra226 pCi/l	17.50	
Ra226 Error +/-	1.00	
Ra226 % M.P.C.	58.33	
Ra228 pCi/l	14.80	
Ra228 Error +/-	1.60	
Ra228 % M.P.C.	49.33	
Th230 pCi/l	<1.0	
Th230 Error +/-		
Th230 % M.P.C.		
Pb210 pCi/l	<1.0	
Pb210 Error +/-		0.00
Pb210 % M.P.C.	0.00	2.50
Gross Alpha - U & Rn pCi/l	18.40	28.10
Gross Alpha Error +/-	4.30	5.30
As mg/l	0.770	0.010
Se mg/l	<0.005	<0.005
Fe mg/l	230.00	27.50
Pb mg/l		
Mo mg/l		
Al mg/l	2.05	0.16
Be mg/l	0.06	<0.01
Ni mg/l	1.44	0.08
Ag mg/l		
V mg/l		
Cd mg/l		
Cr mg/l		
Ca mg/l	478.00	273.00
Mg mg/l	138.00	51.80
Na mg/l	90.80	43.20
K mg/l		
NH4 mg/l	SO2 mg/l	11.70
NH3 mg/l	NH3 mg/l	
NO3 mg/l	NO3 mg/l	<0.10
SO4 mg/l	SO4 mg/l	2373.00
Cl mg/l	Cl mg/l	32.20
TDS mg/l	TDS mg/l	3369.00
pH	pH	4.48
Water Elevation	Water Elevation	6802.31

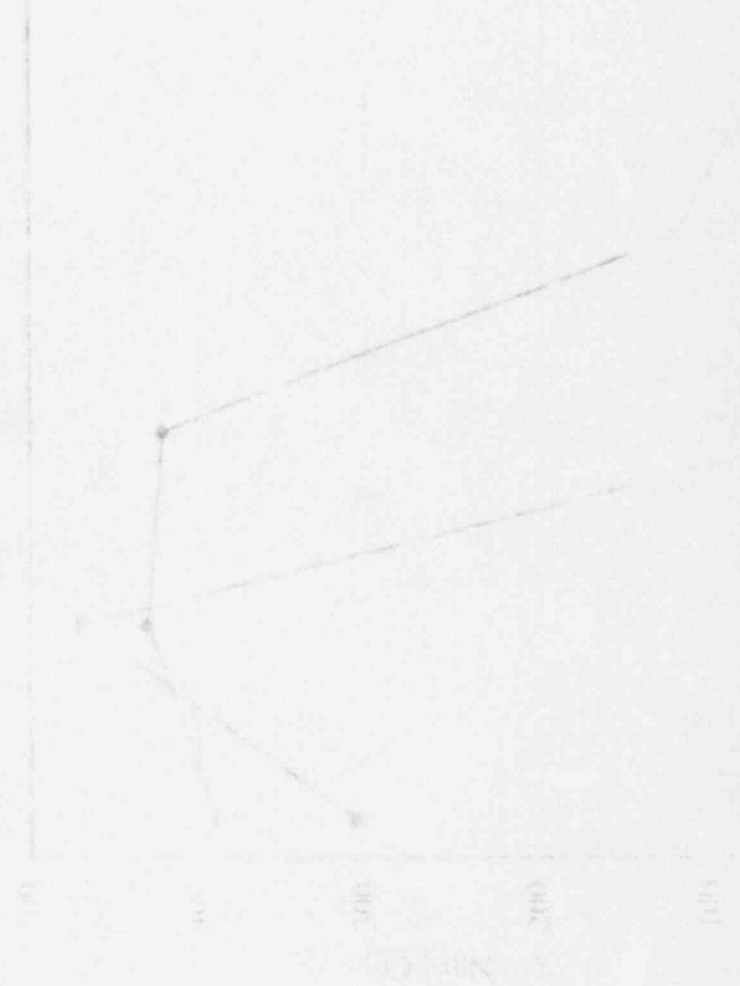
## GROUND WATER ANALYSES FOR M.W.C. 57

Date Sampled	06/02/93
UNat pCi/l	124.60
UNat % M.P.C.	0.42
Ra226 pCi/l	19.00
Ra226 Error +/-	0.60
Ra226 % M.P.C.	63.33
Ra228 pCi/l	12.60
Ra228 Error +/-	0.40
Ra228 % M.P.C.	42.00
Th230 pCi/l	<1.0
Th230 Error +/-	
Th230 % M.P.C.	
Pb210 pCi/l	<1.0
Pb210 Error +/-	
Pb210 % M.P.C.	0.00
Gross Alpha - U & Rn pCi/l	20.30
Gross Alpha Error +/-	4.50
As mg/l	0.010
Se mg/l	<0.005
Fe mg/l	18.40
Pb mg/l	
Mo mg/l	
Al mg/l	0.15
Be mg/l	<0.01
Ni mg/l	0.11
Ag mg/l	
V mg/l	
Cd mg/l	
Cr mg/l	
Ca mg/l	337.00
Mg mg/l	58.30
Na mg/l	39.40
K mg/l	
SiO2 mg/l	17.60
NH3 mg/l	
NO3 mg/l	<0.10
SO4 mg/l	1111.00
Cl mg/l	13.20
TDS mg/l	1535.00
pH	6.99
Water Elevation	6802.29

GROUND WATER ANALYSES FOR M.W.C. 58

Date Sampled	06/02/93
UNat pCi/l	12.20
UNat % M.P.C.	0.04
Ra226 pCi/l	27.33
Ra226 Error +/-	0.70
Ra226 % M.P.C.	91.00
Ra228 pCi/l	11.20
Ra228 Error +/-	0.40
Ra228 % M.P.C.	37.33
Th230 pCi/l	<1.0
Th230 Error +/-	
Th230 % M.P.C.	
Pb210 pCi/l	2.50
Pb210 Error +/-	0.60
Pb210 % M.P.C.	2.50
Gross Alpha - U & Rn pCi/l	28.10
Gross Alpha Error +/-	5.30
As mg/l	0.010
Se mg/l	<0.005
Fe mg/l	27.50
Pb mg/l	
Mo mg/l	
Al mg/l	0.18
Be mg/l	<0.01
Ni mg/l	0.08
Ag mg/l	
V mg/l	
Cd mg/l	
Cr mg/l	
Ca mg/l	273.06
Mg mg/l	51.80
Na mg/l	48.20
K mg/l	
SiO2 mg/l	11.70
NH3 mg/l	
NO3 mg/l	<0.10
SO4 mg/l	1048.00
Cl mg/l	20.40
TDS mg/l	1444.00
pH	6.90
Water Elevation	6800.89

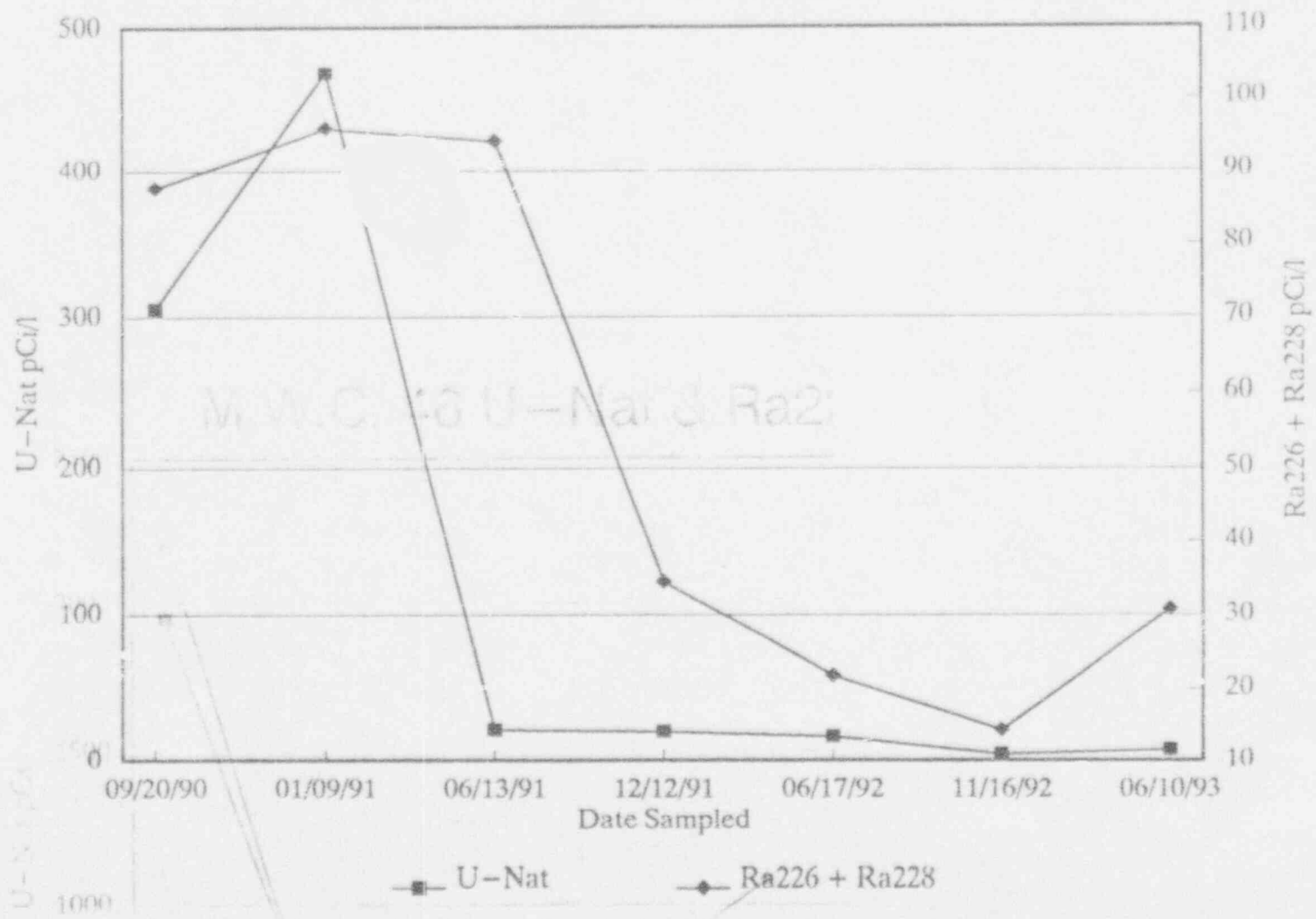
M.W.C. 58 UNat R226



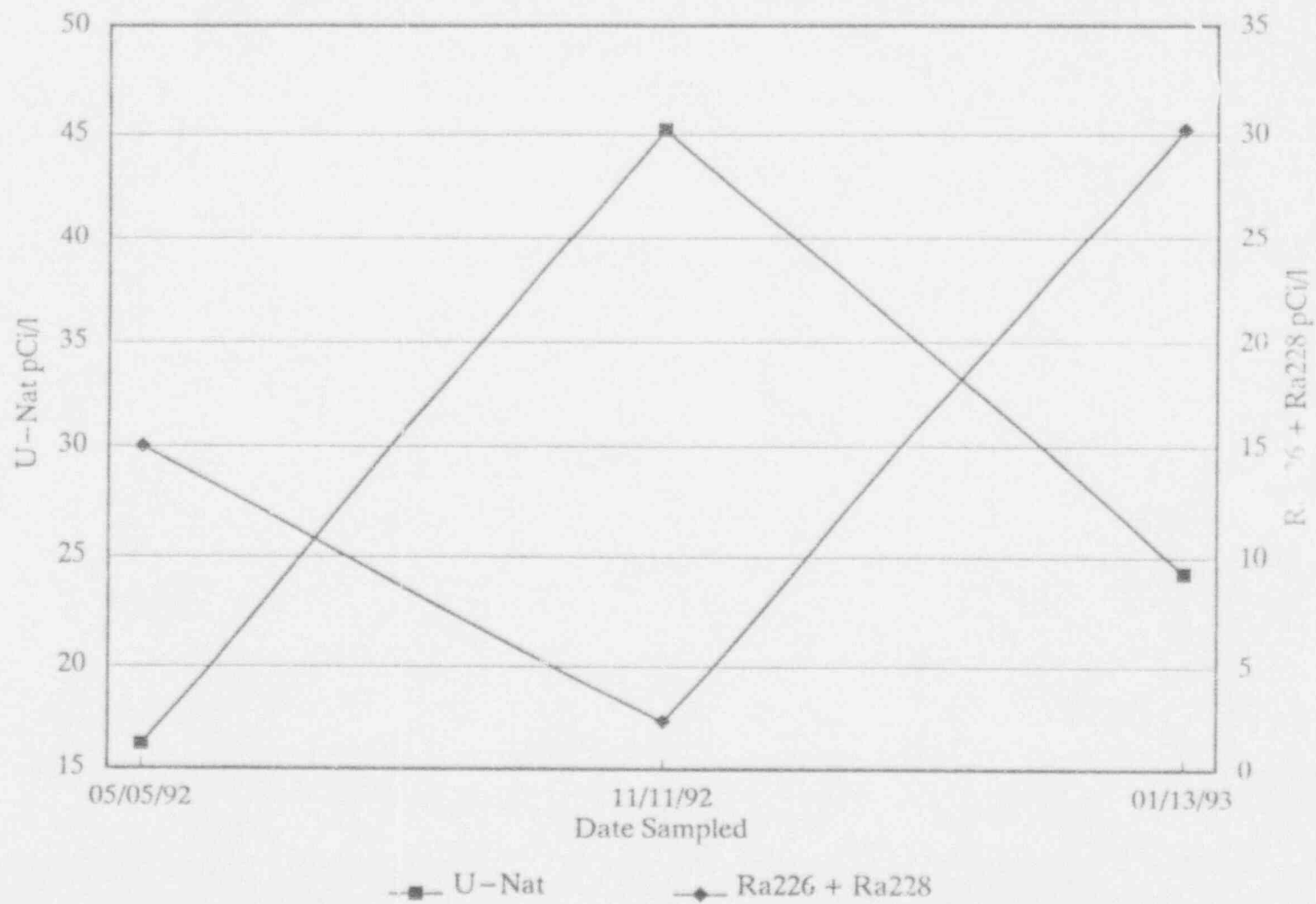
## GROUND WATER ANALYSES FOR M.W.C. 59

Date Sampled	06/01/93
UNat pCi/l	153.00
UNat % M.P.C.	0.51
Ra226 pCi/l	38.00
Ra226 Error +/-	1.40
Ra226 % M.P.C.	126.67
Ra228 pCi/l	53.80
Ra228 Error +/-	4.20
Ra228 % M.P.C.	179.33
Th230 pCi/l	<1.0
Th230 Error +/-	
Th230 % M.P.C.	
Pb210 pCi/l	6.40
Pb210 Error +/-	0.60
Pb210 % M.P.C.	6.40
Gross Alpha -- U & Rn pCi/l	41.40
Gross Alpha Error +/-	3.50
As mg/l	<0.01
Se mg/l	<0.005
Fe mg/l	177.00
Pb mg/l	
Mo mg/l	
Al mg/l	
Be mg/l	0.13
Ni mg/l	1.62
Ag mg/l	
V mg/l	
Cd mg/l	
Cr mg/l	
Ca mg/l	489.00
Mg mg/l	209.00
Na mg/l	216.00
K mg/l	
SiO2 mg/l	
NH3 mg/l	
NO3 mg/l	<0.10
SO4 mg/l	2664.00
Cl mg/l	122.00
TDS mg/l	4401.00
pH	4.49
Water Elevation	6802.64

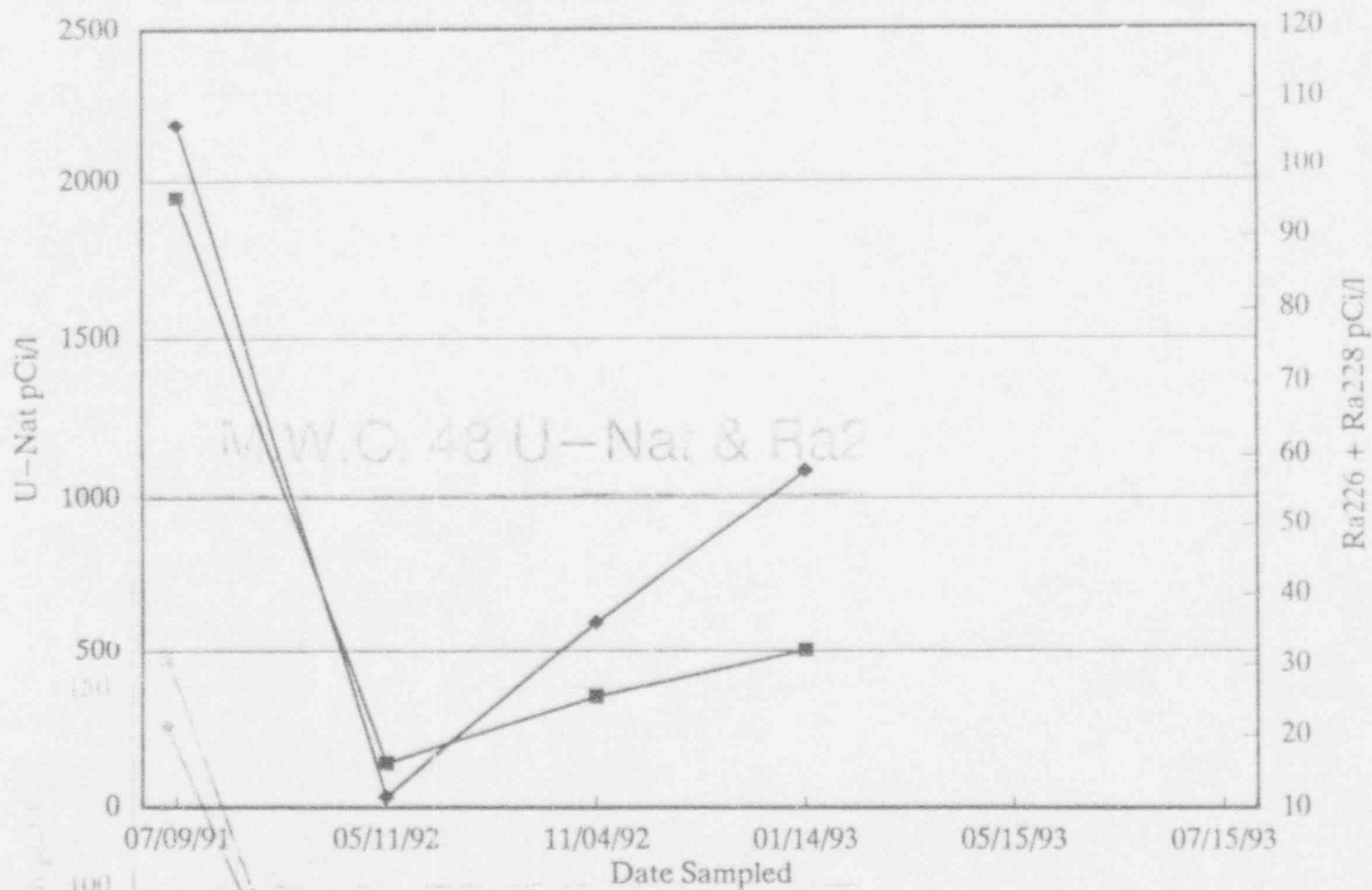
# M.W.C. 42 U-Nat & Ra226 + Ra228



# M.W.C. 45 U-Nat & Ra226 + Ra228



# M.W.C. 46 U-Nat & Ra226 + Ra228



U-Nat pCi/l

Ra226 + Ra228 pCi/l

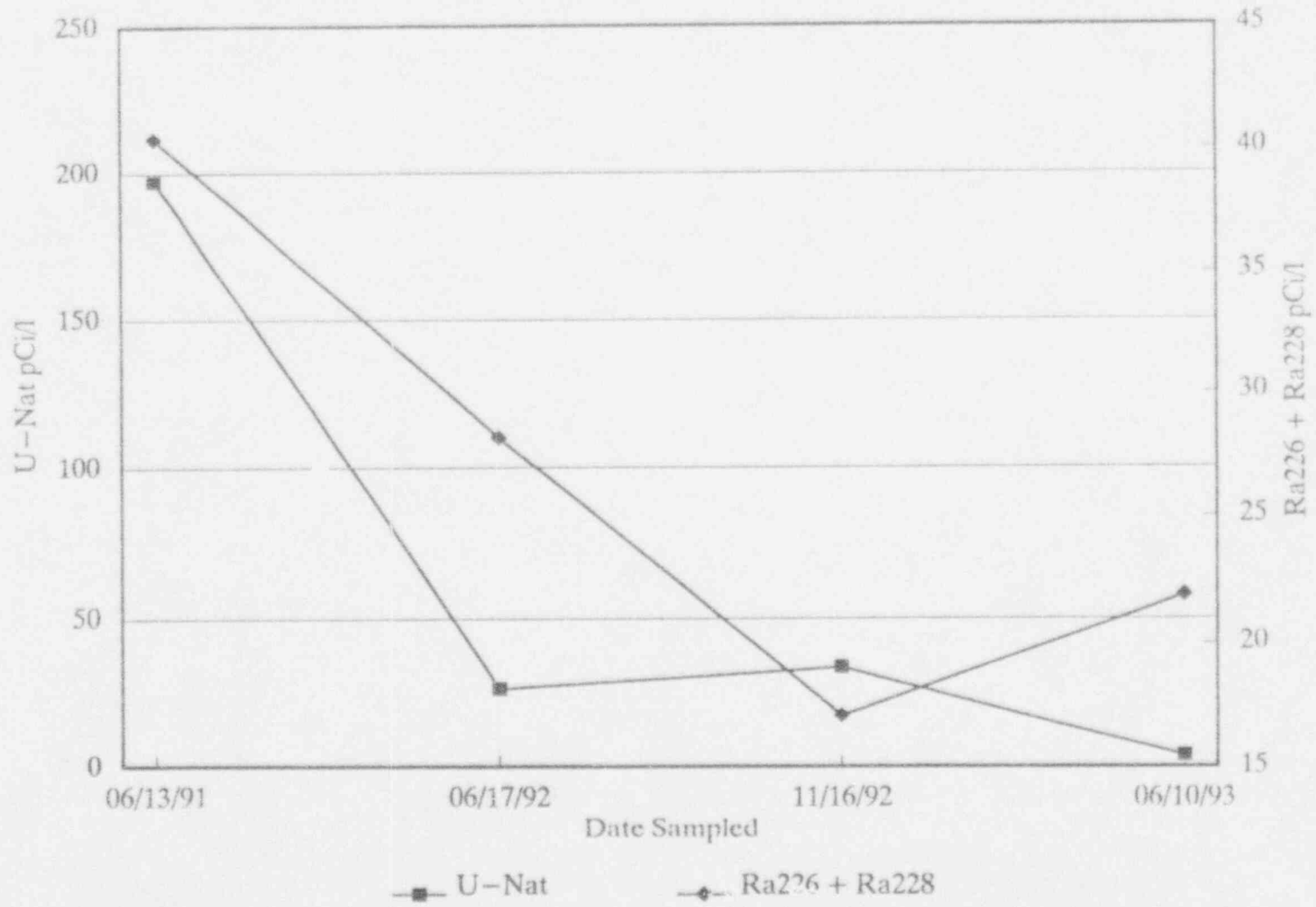
Date Sampled

U-Nat Ra226 + Ra228

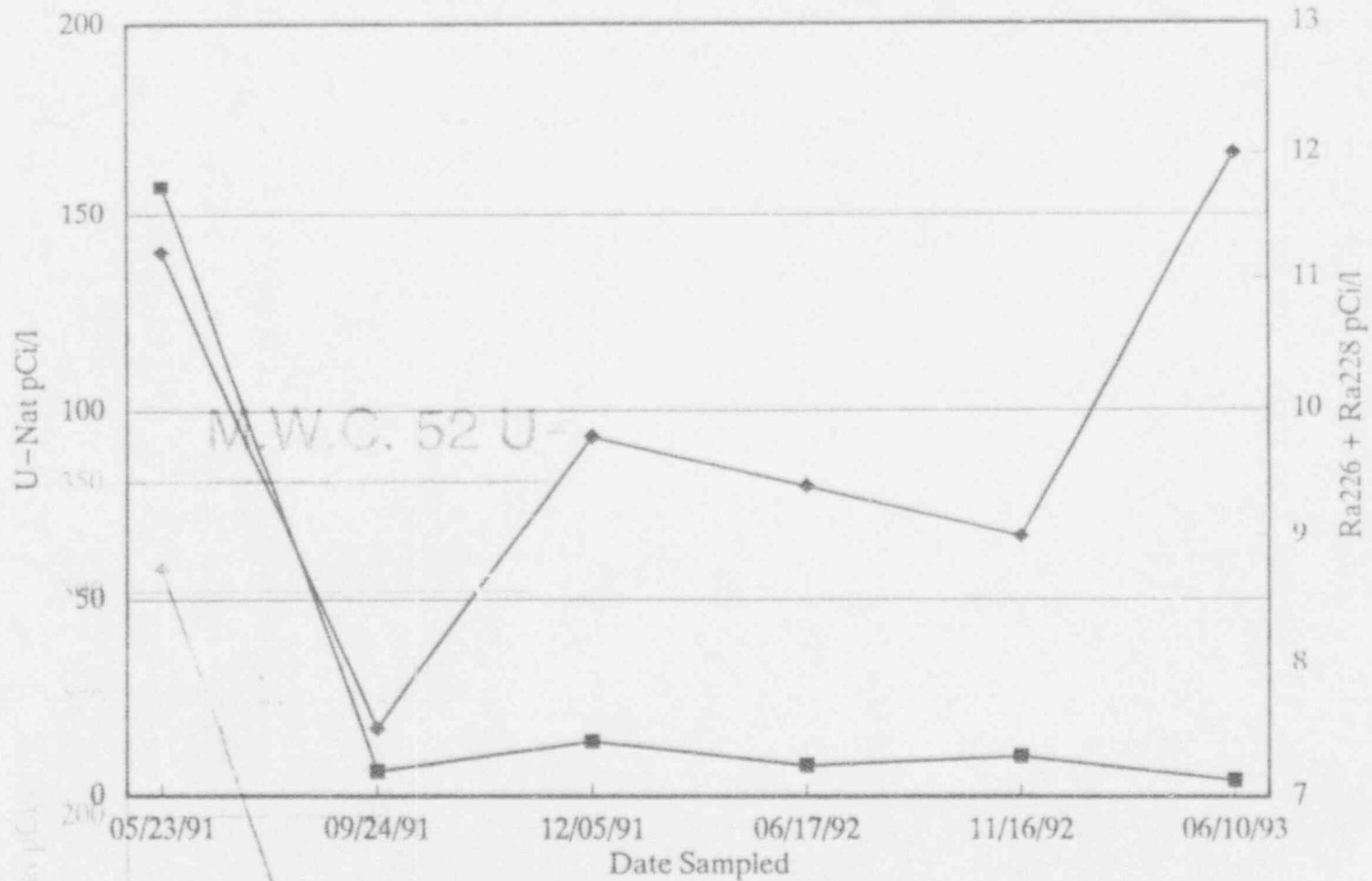
M.W.C. 48 U-Nat & Ra2



# M.W.C. 47 U-Nat & Ra226 + Ra228



# M.W.C. 48 U-Nat & Ra226 + Ra228



U-Nat pCi/l

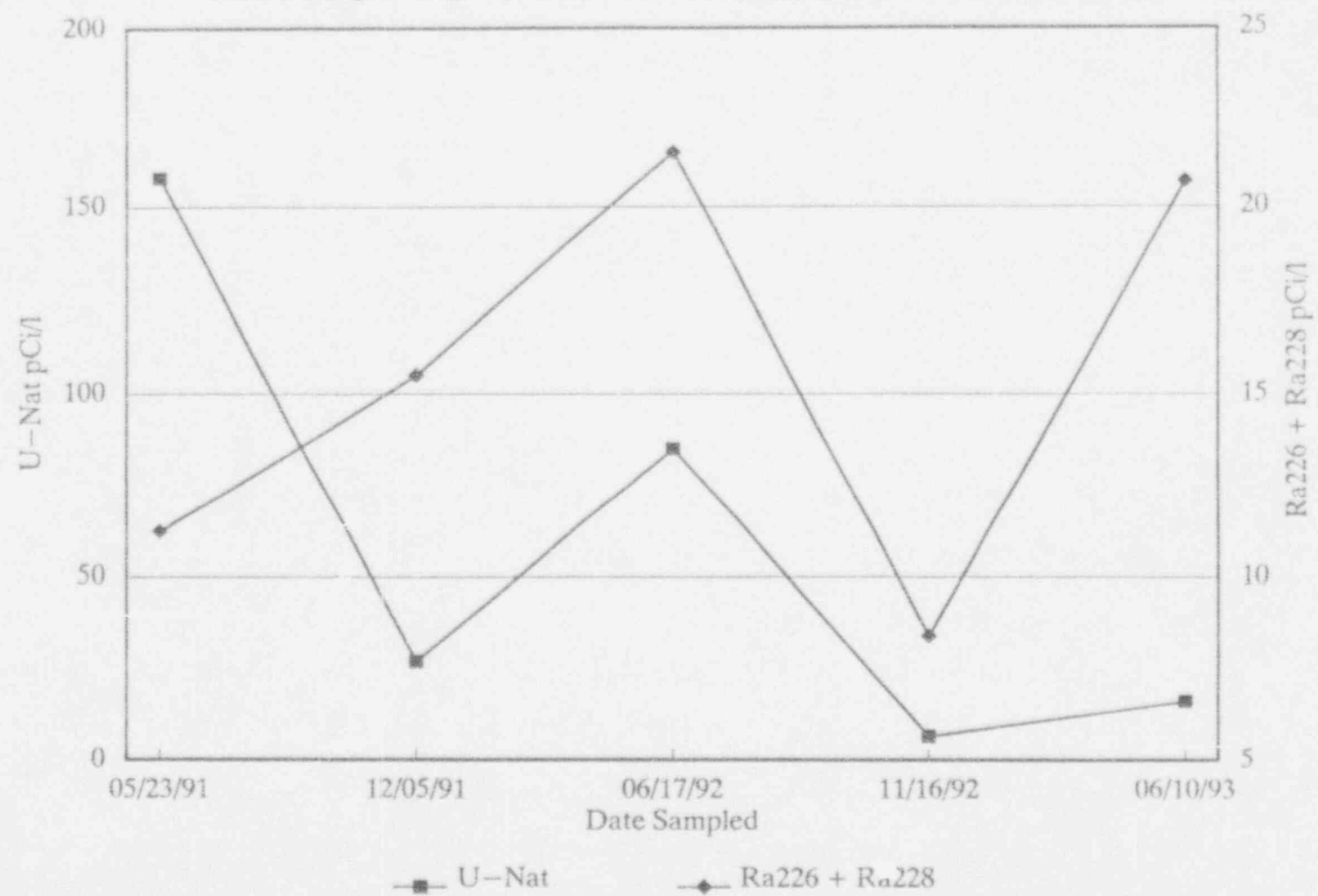
U-Nat

Ra226 + Ra228

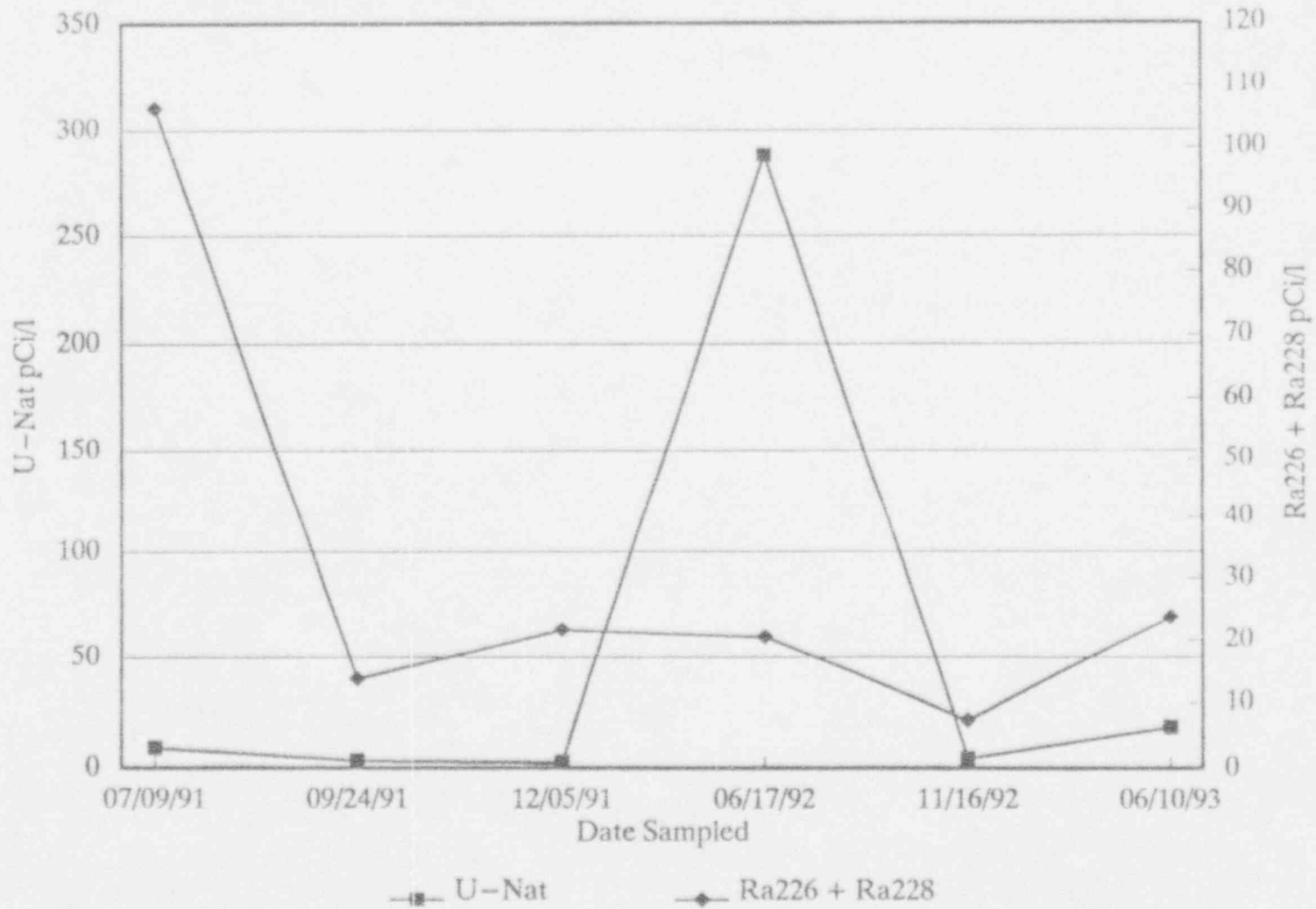
Date Sampled

M.W.C. 52 U-

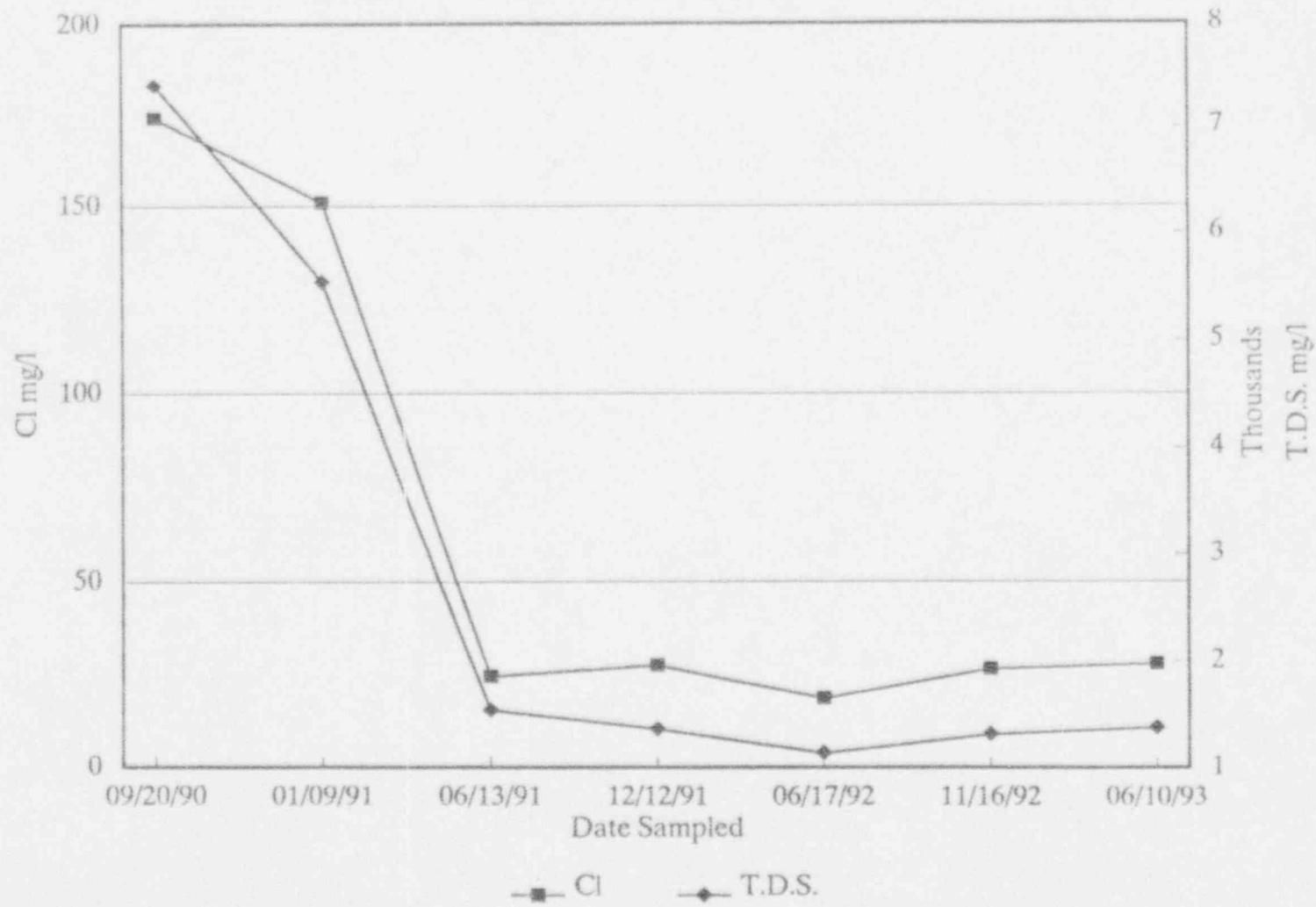
# M.W.C. 49 U-Nat & Ra226 + Ra228



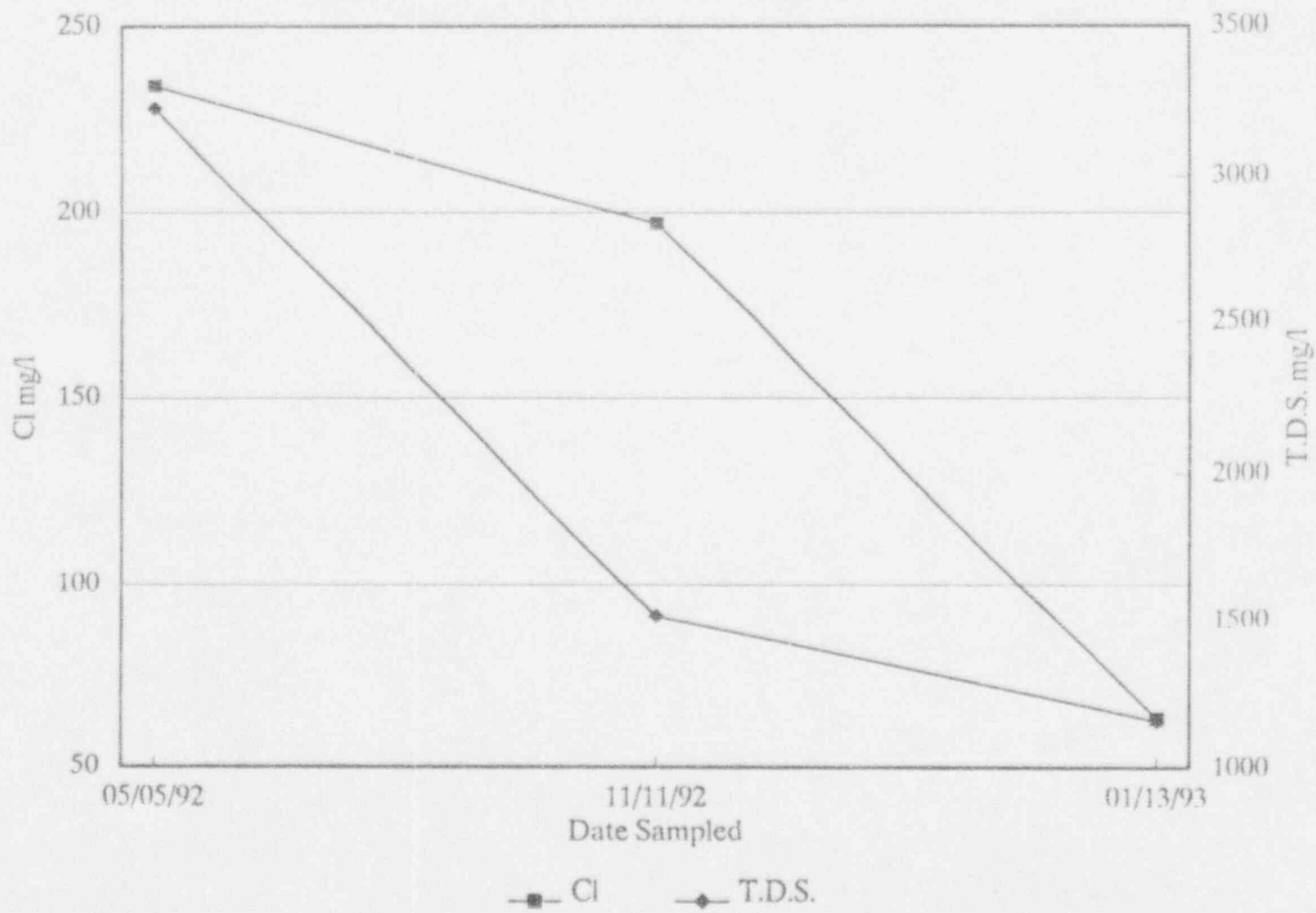
# M.W.C. 52 U-Nat & Ra226 + Ra228



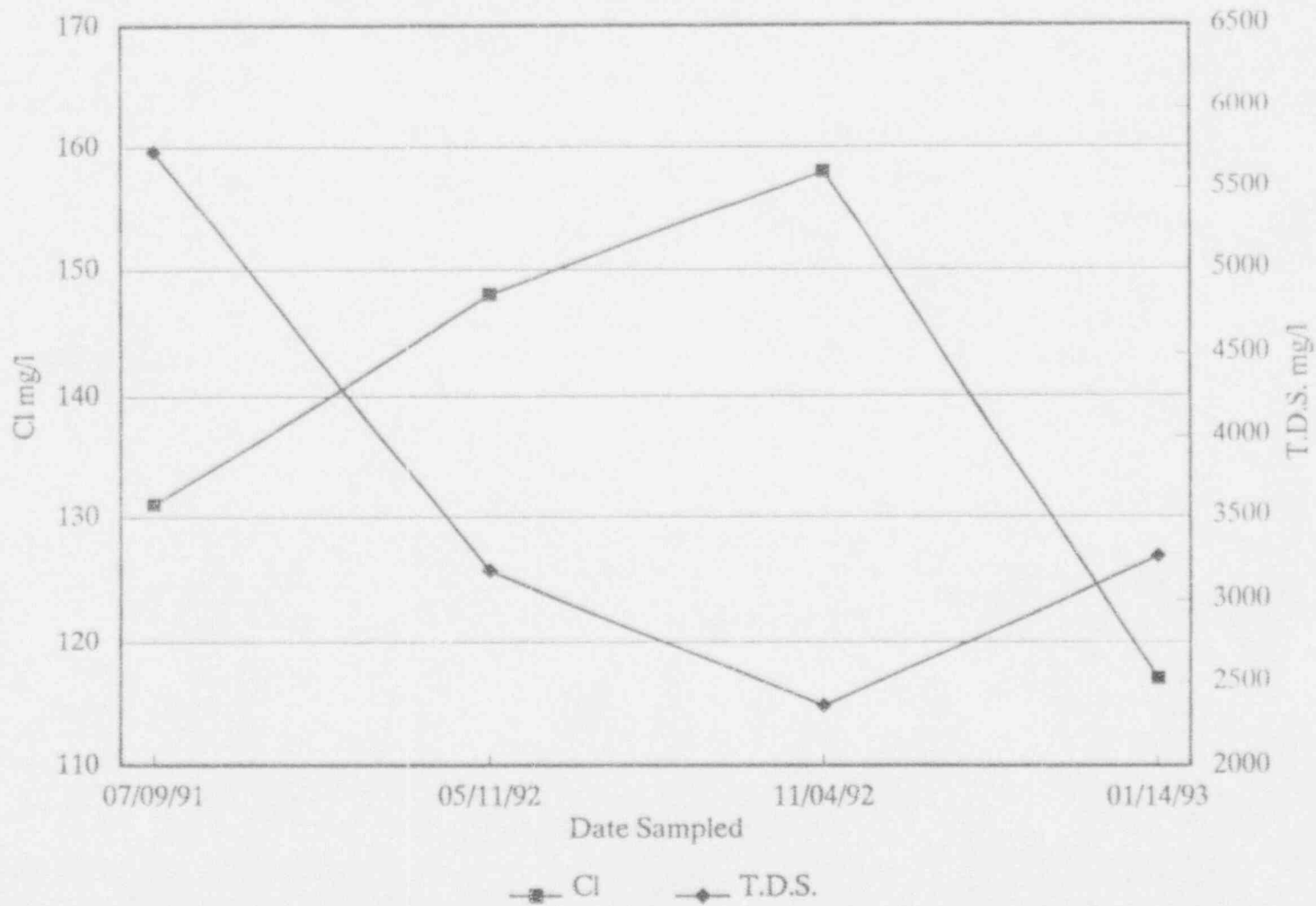
# M.W.C. 42 Chloride & T.D.S.



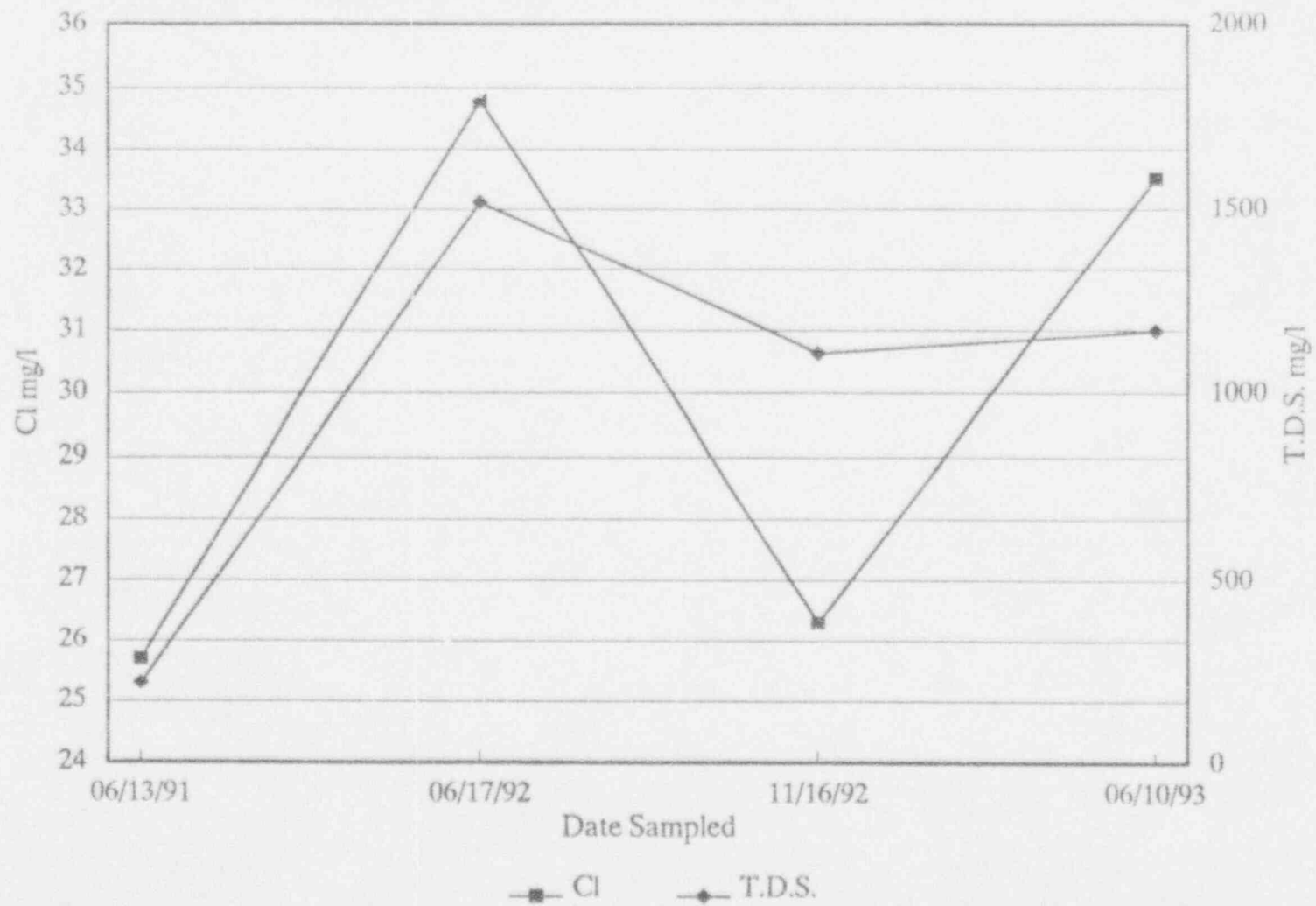
# M.W.C. 45 Chloride & T.D.S.



# M.W.C. 46 Chloride & T.D.S.

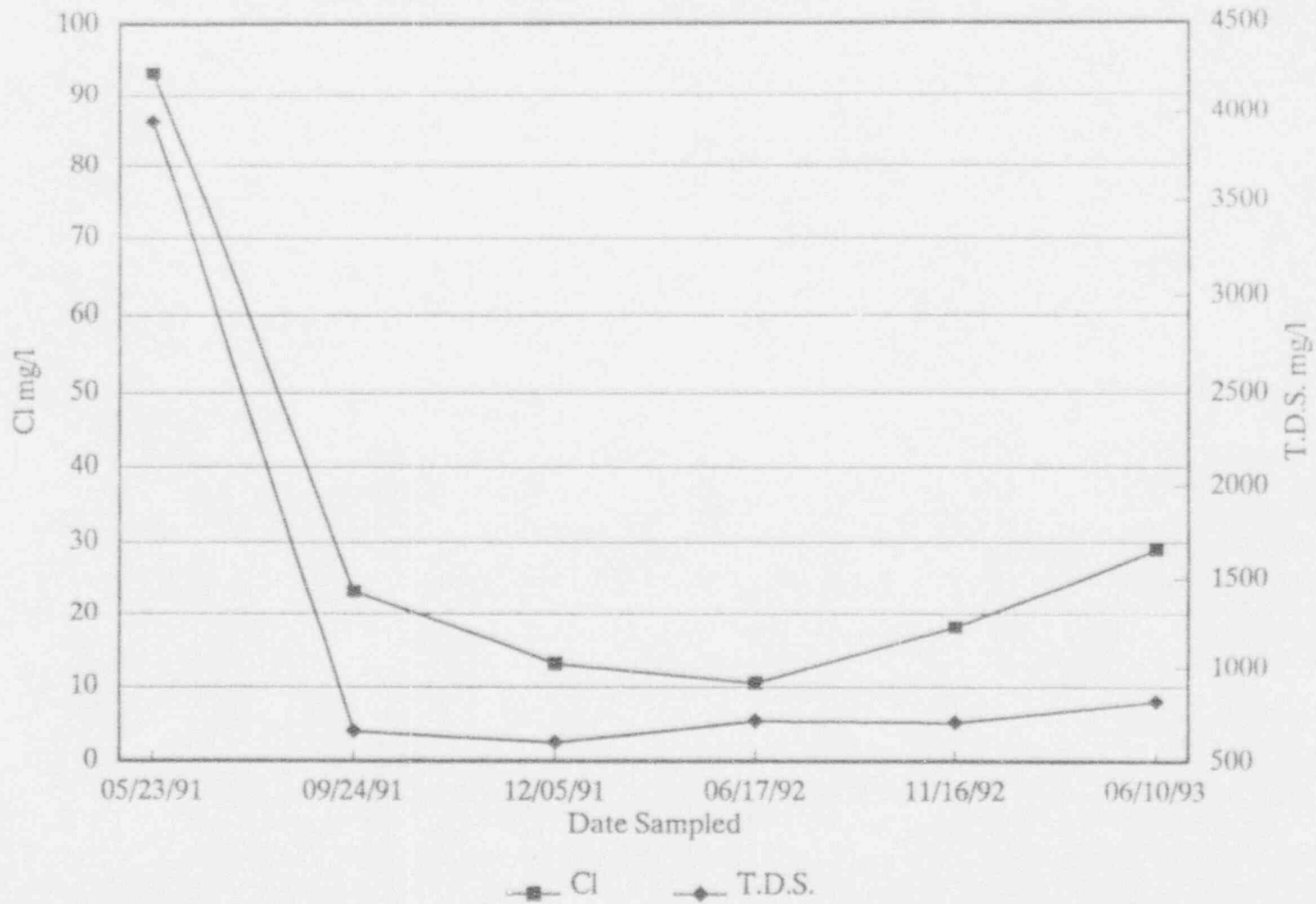


# M.W.C. 47 Chloride & T.D.S.

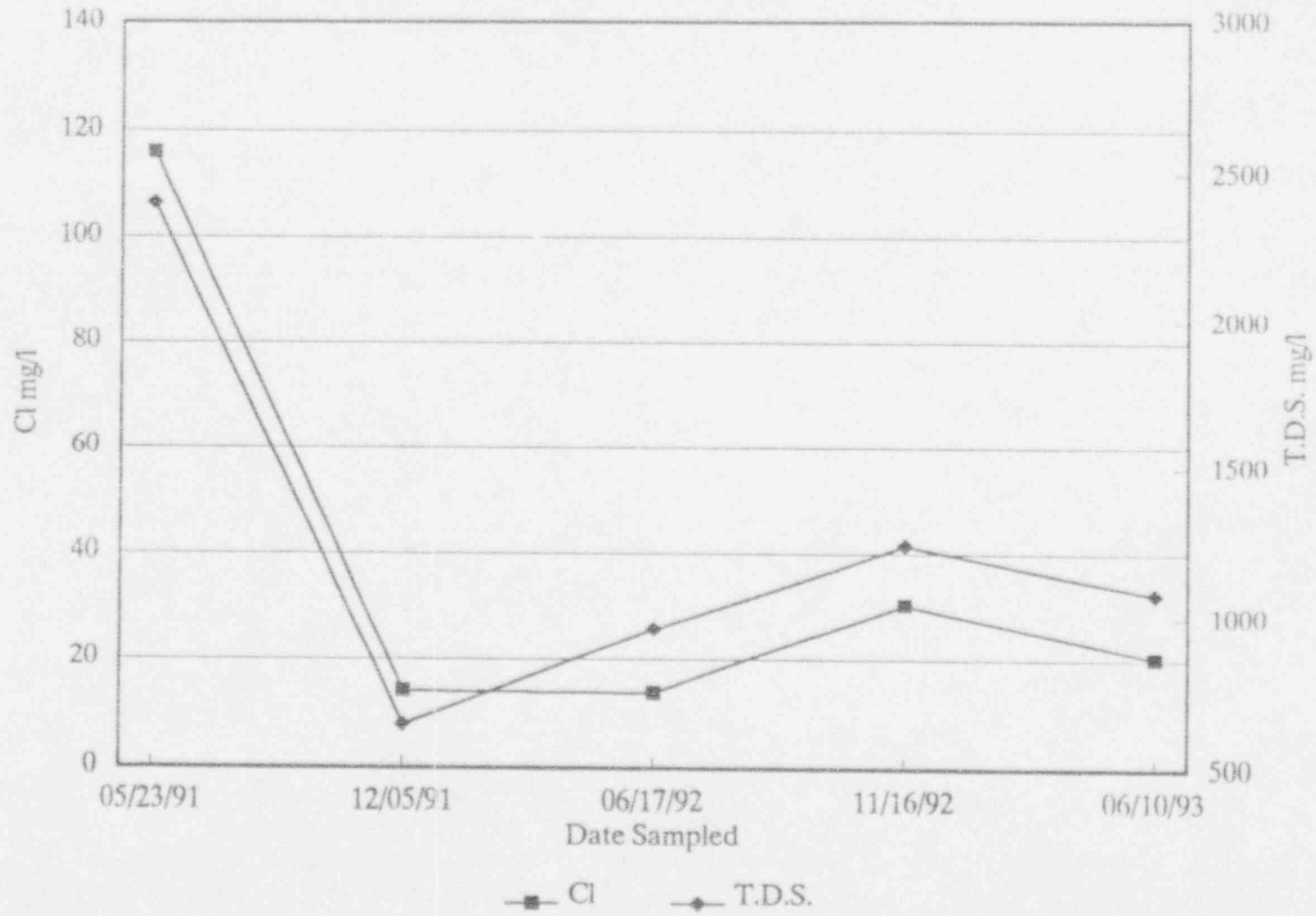




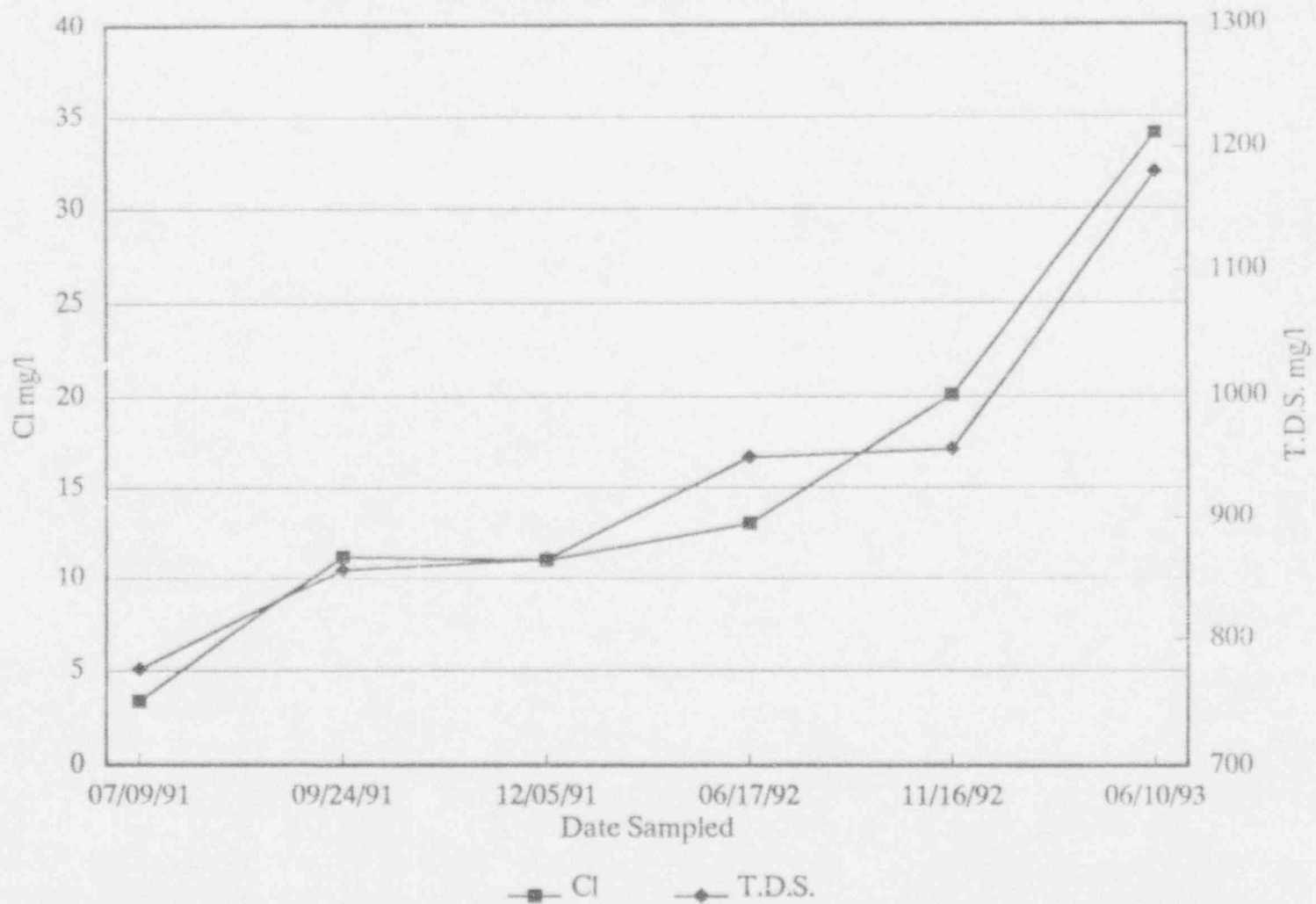
# M.W.C. 48 Chloride & T.D.S.



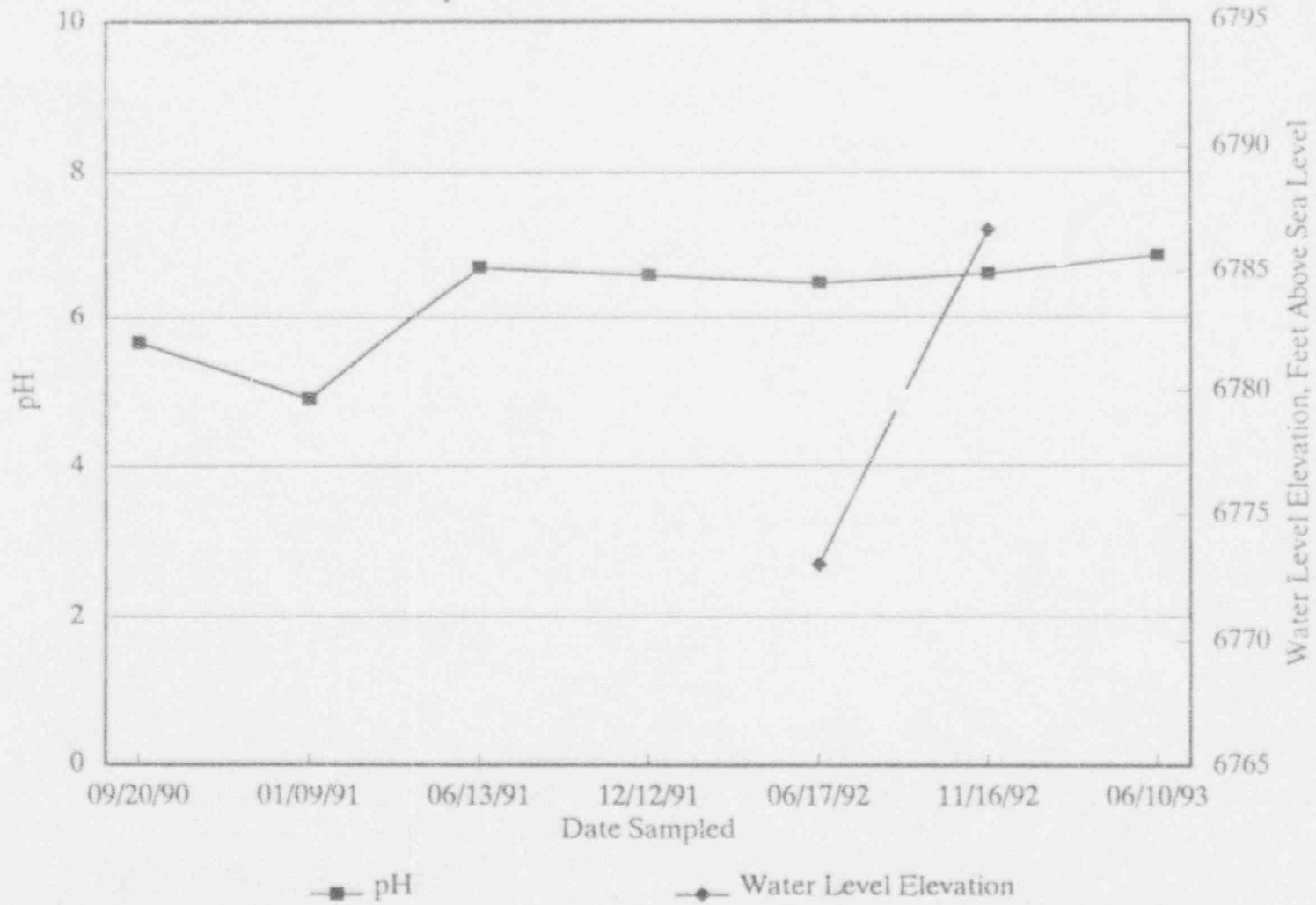
# M.W.C. 49 Chloride & T.D.S.



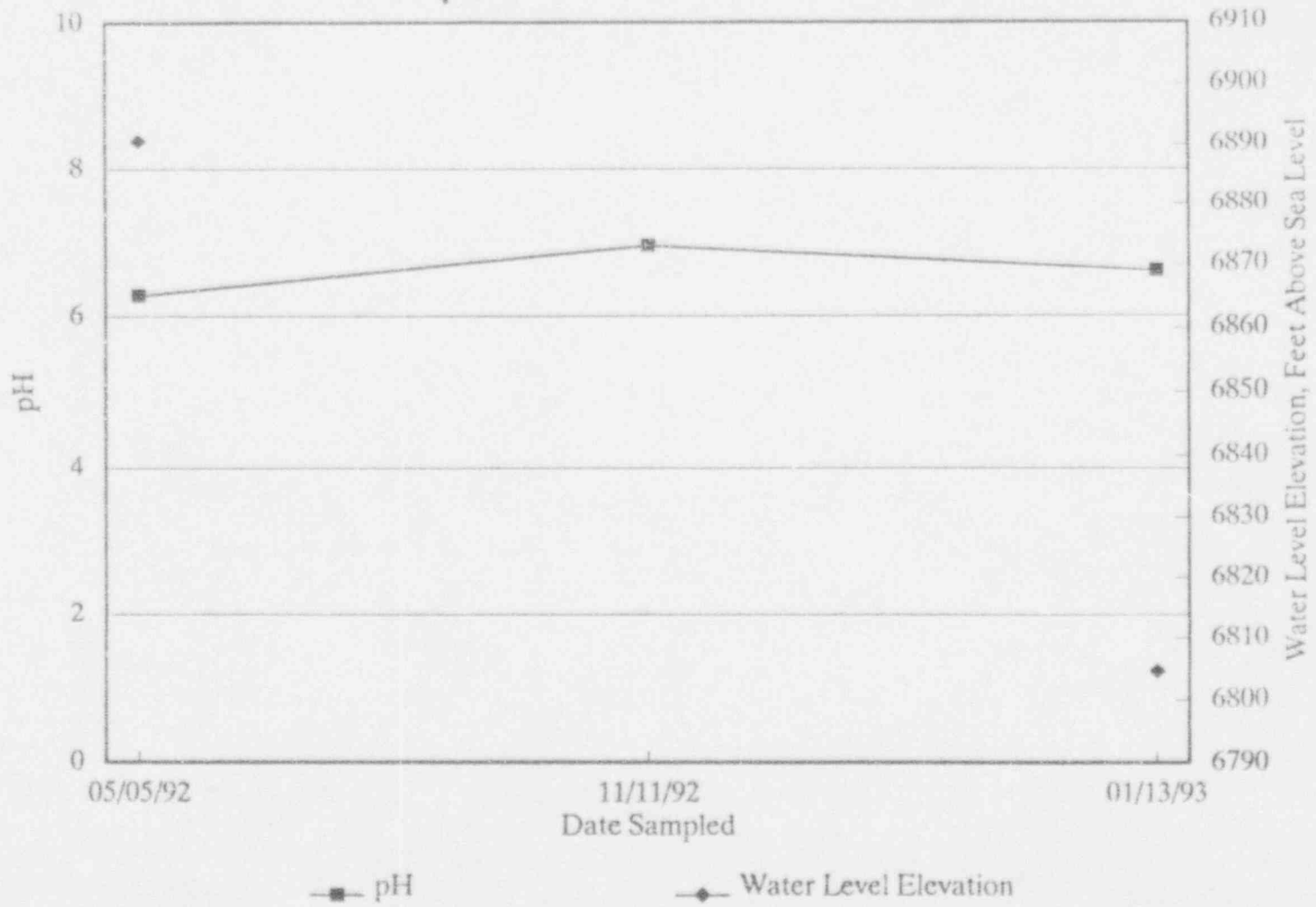
# M.W.C. 52 Chloride & T.D.S.



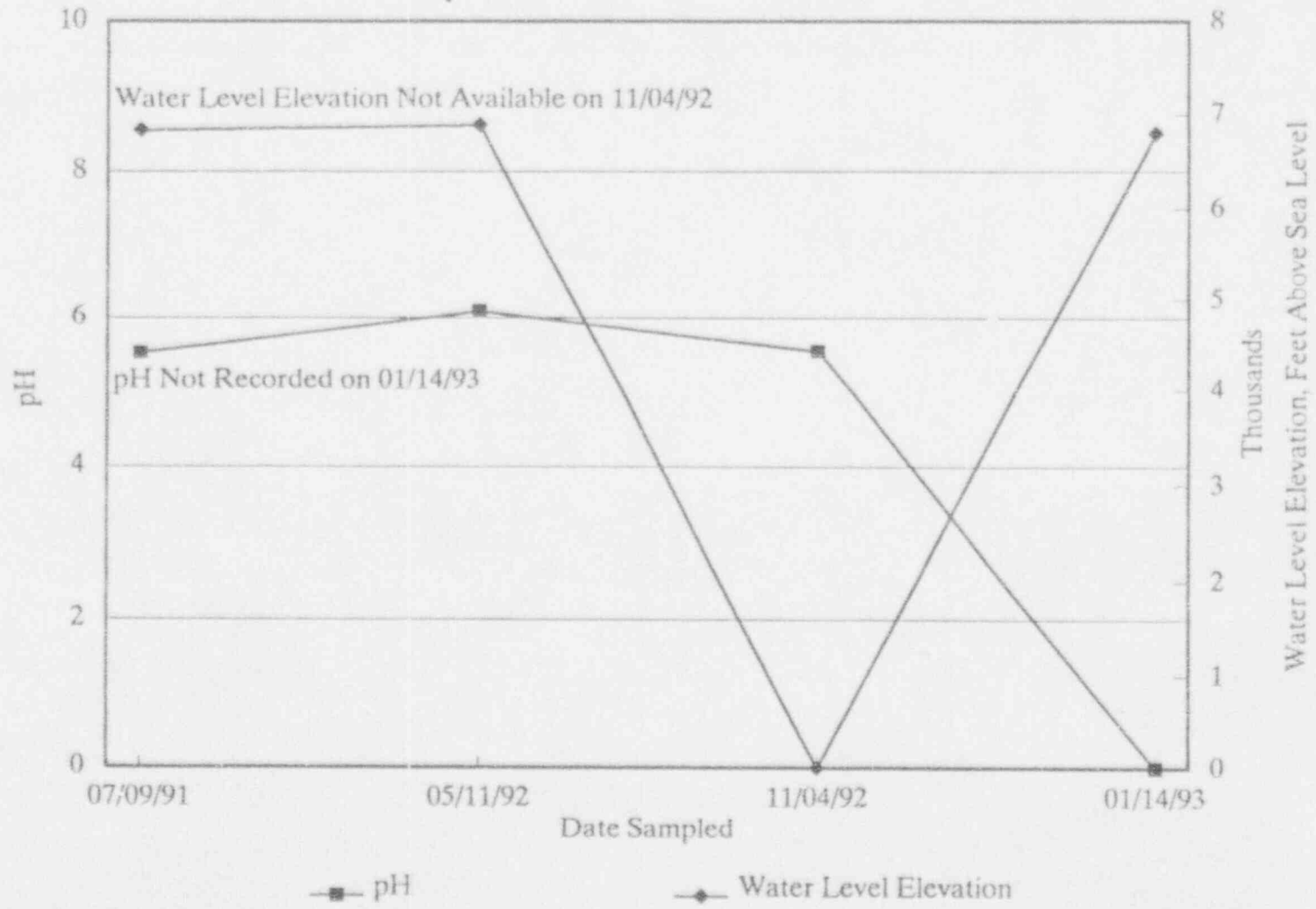
# M.W.C. 42 pH & Water Level Elevation



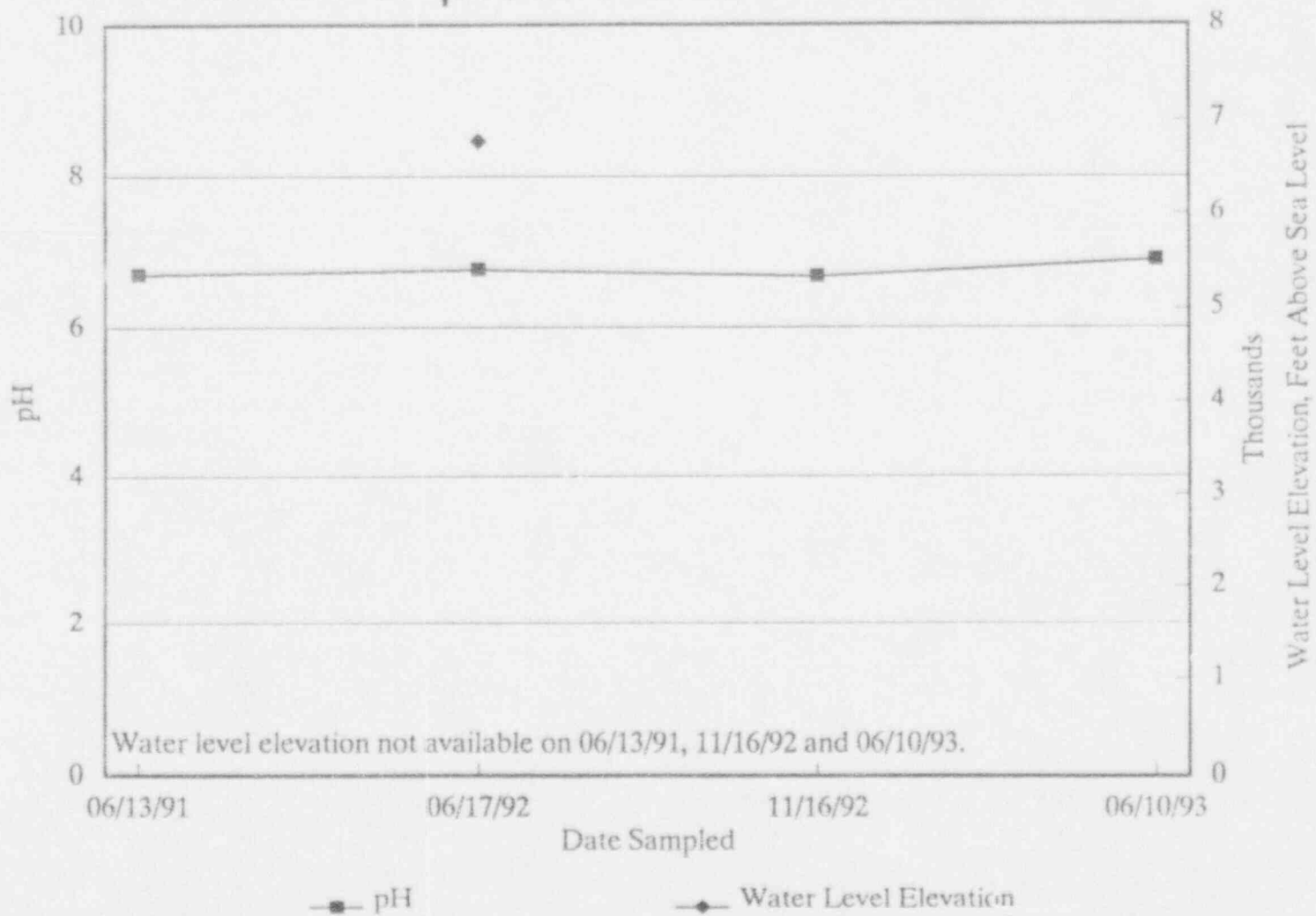
# M.W.C. 45 pH & Water Level Elevation



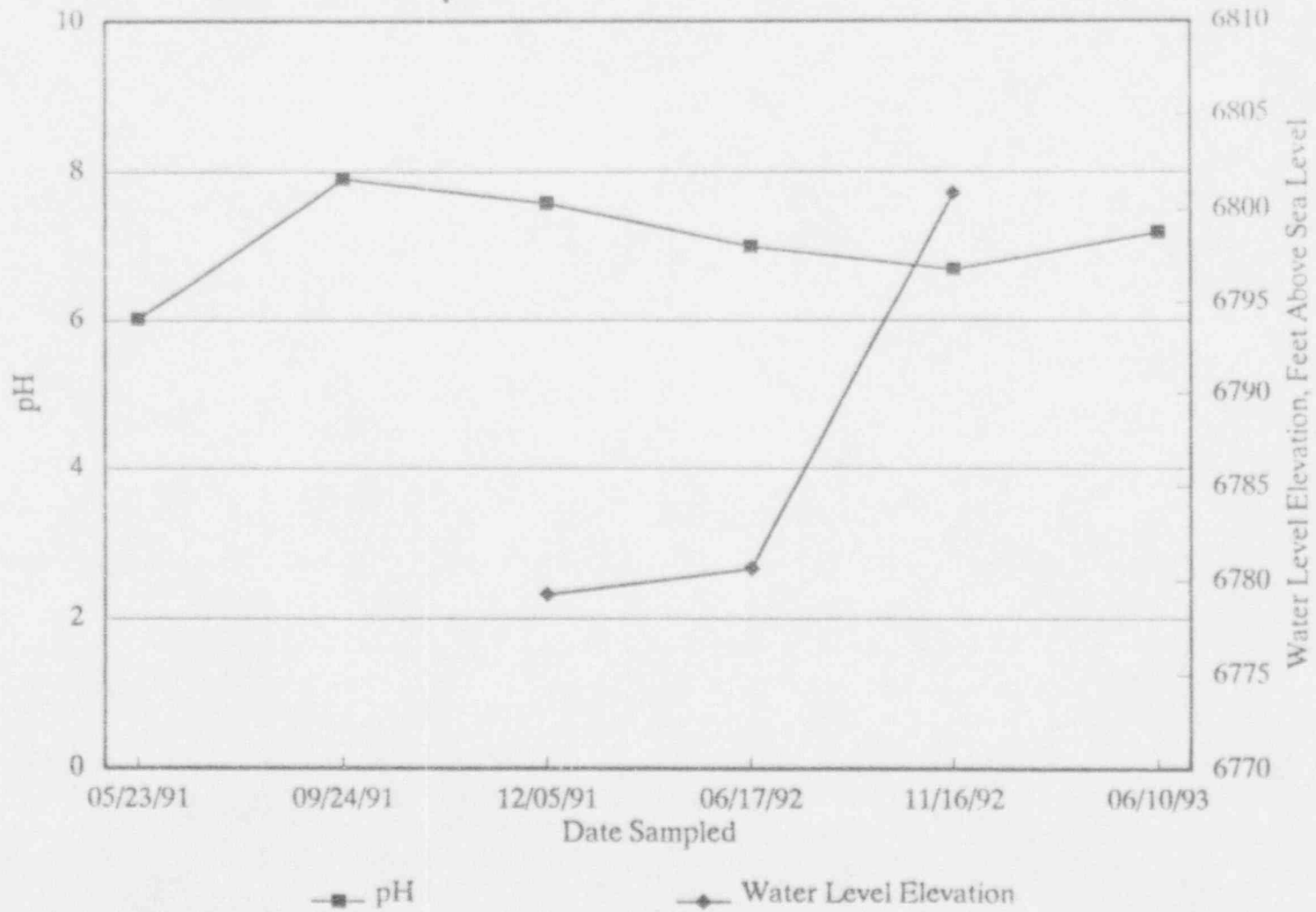
# M.W.C. 46 pH & Water Level Elevation



# M.W.C. 47 pH & Water Level Elevation

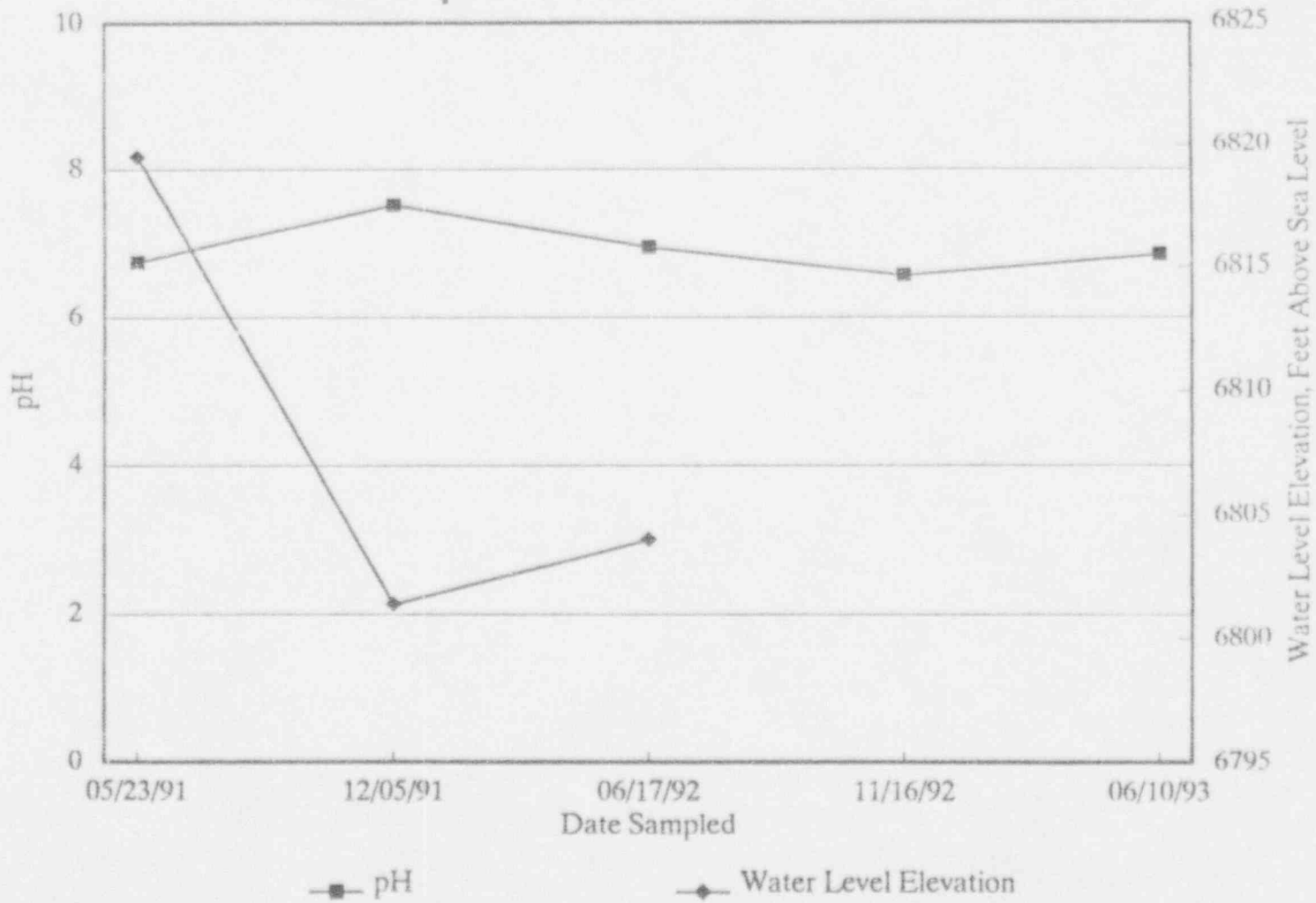


# M.W.C. 48 pH & Water Level Elevation

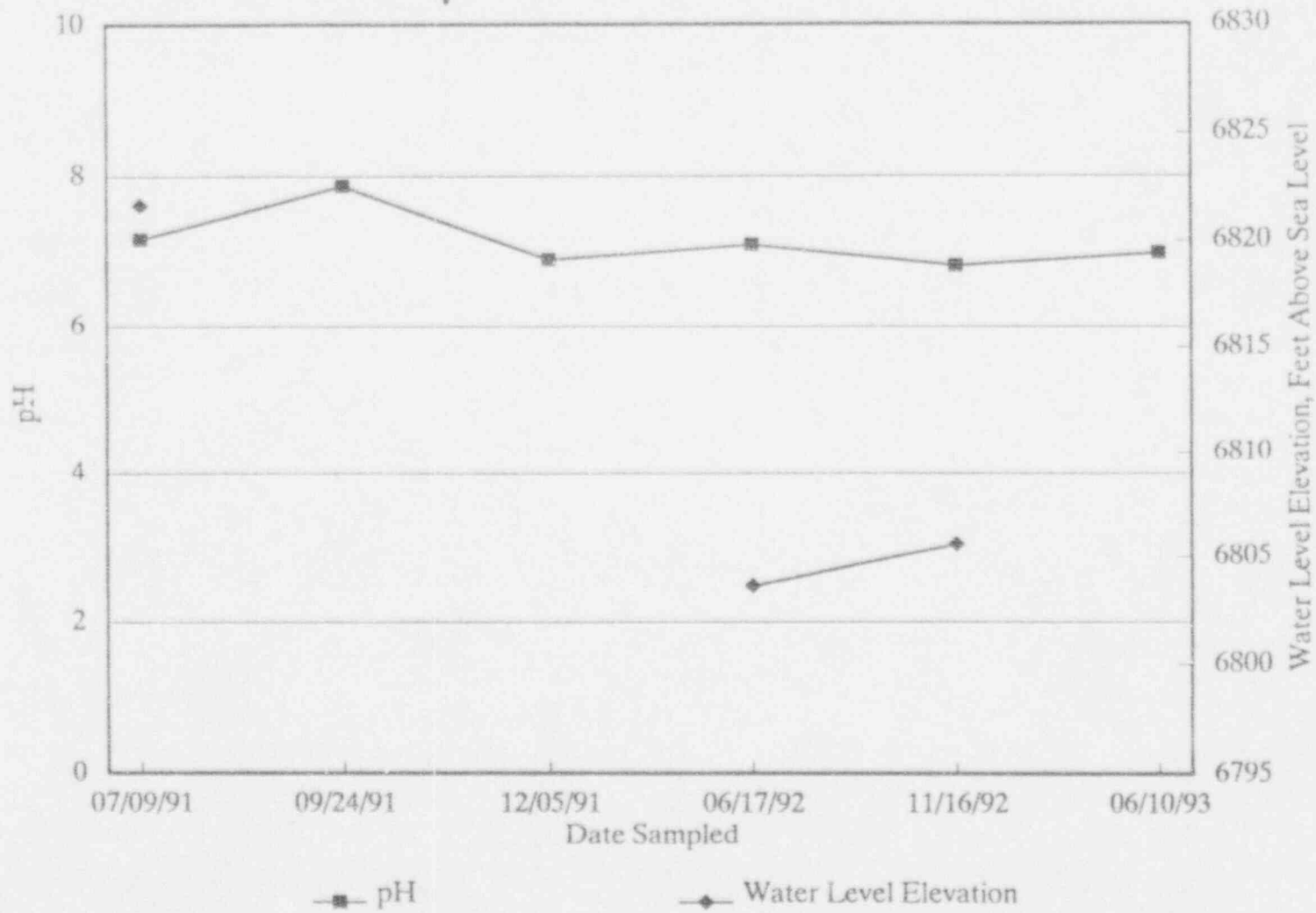




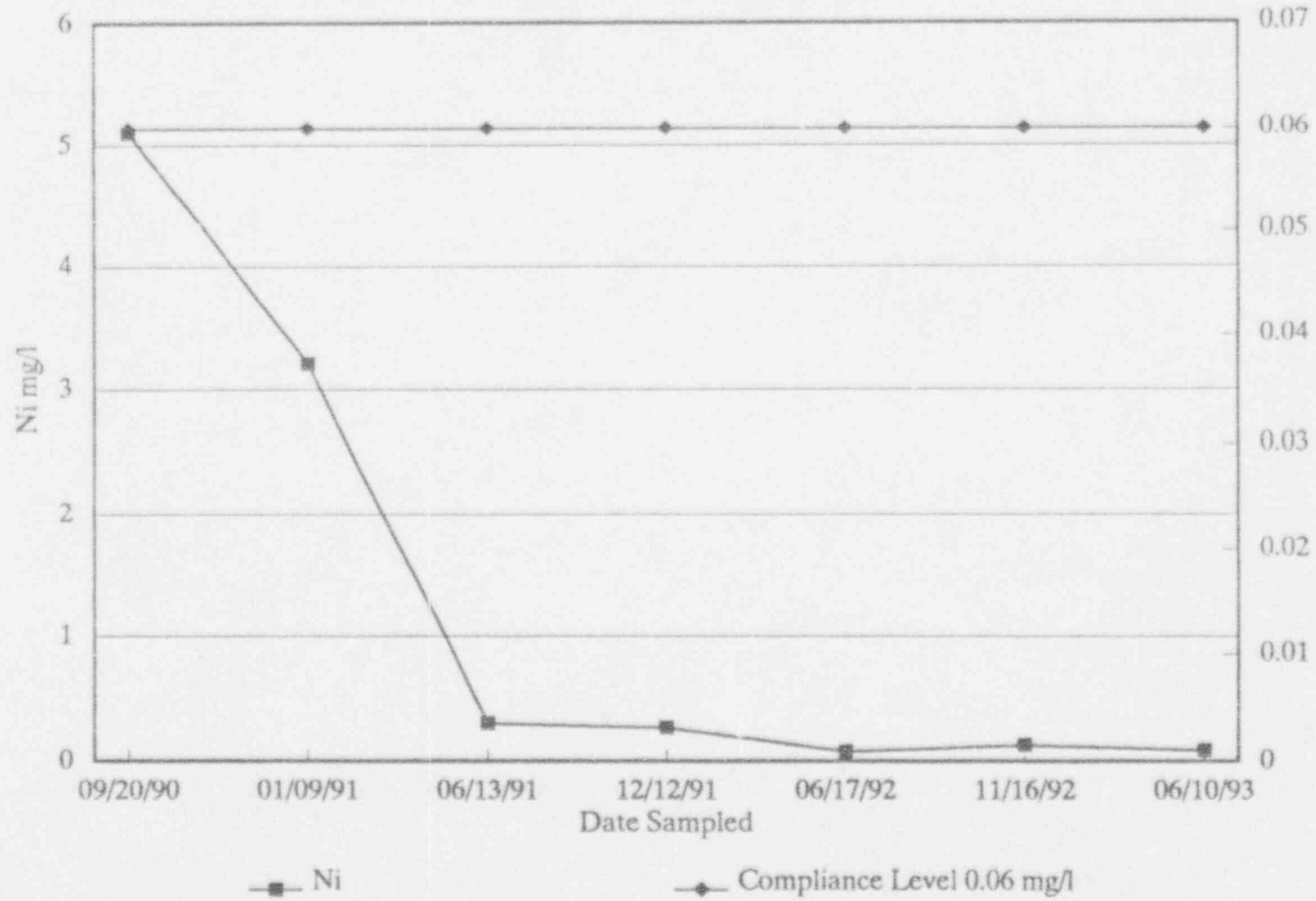
# M.W.C. 49 pH & Water Level Elevation



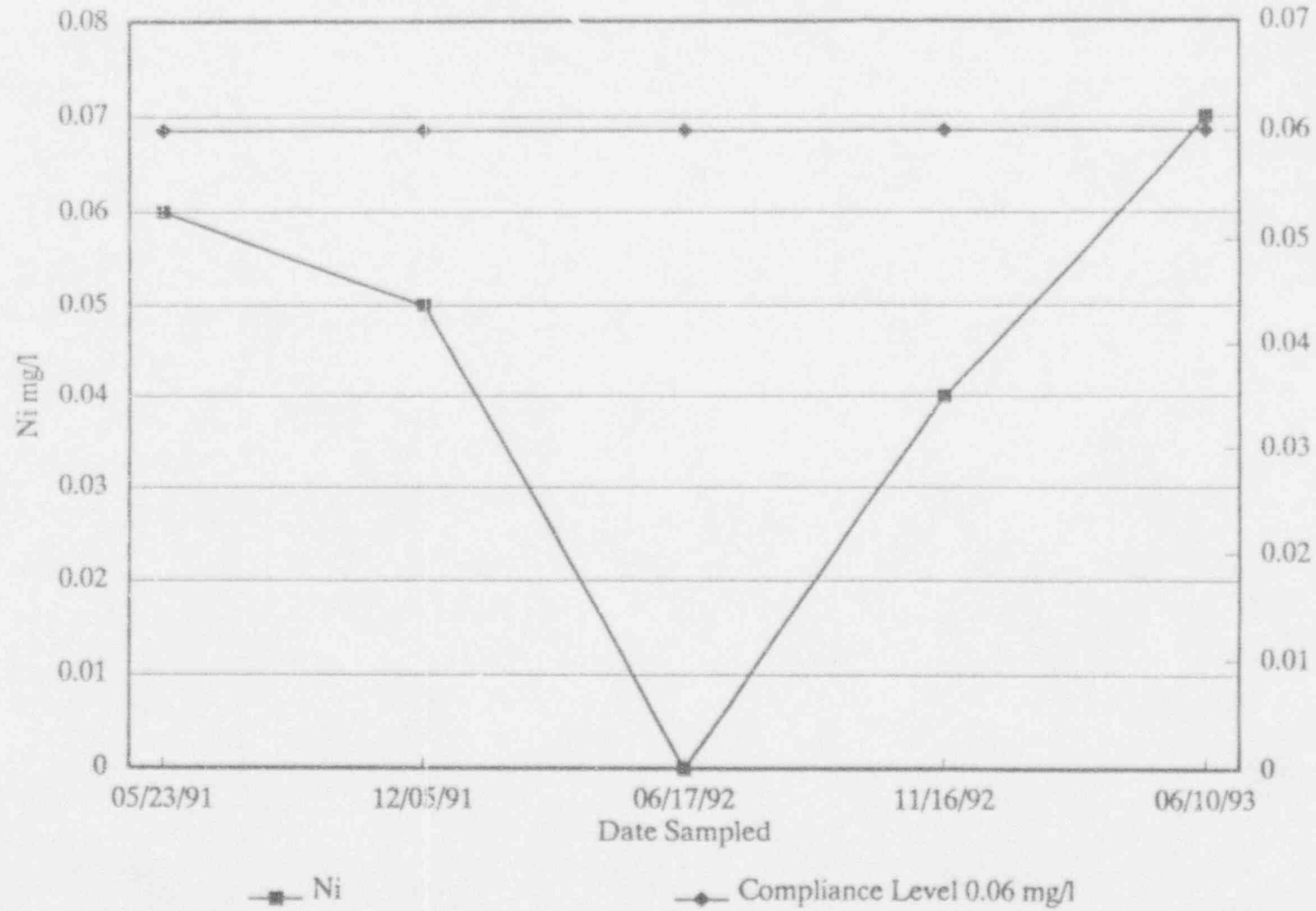
# M.W.C. 52 pH & Water Level Elevation



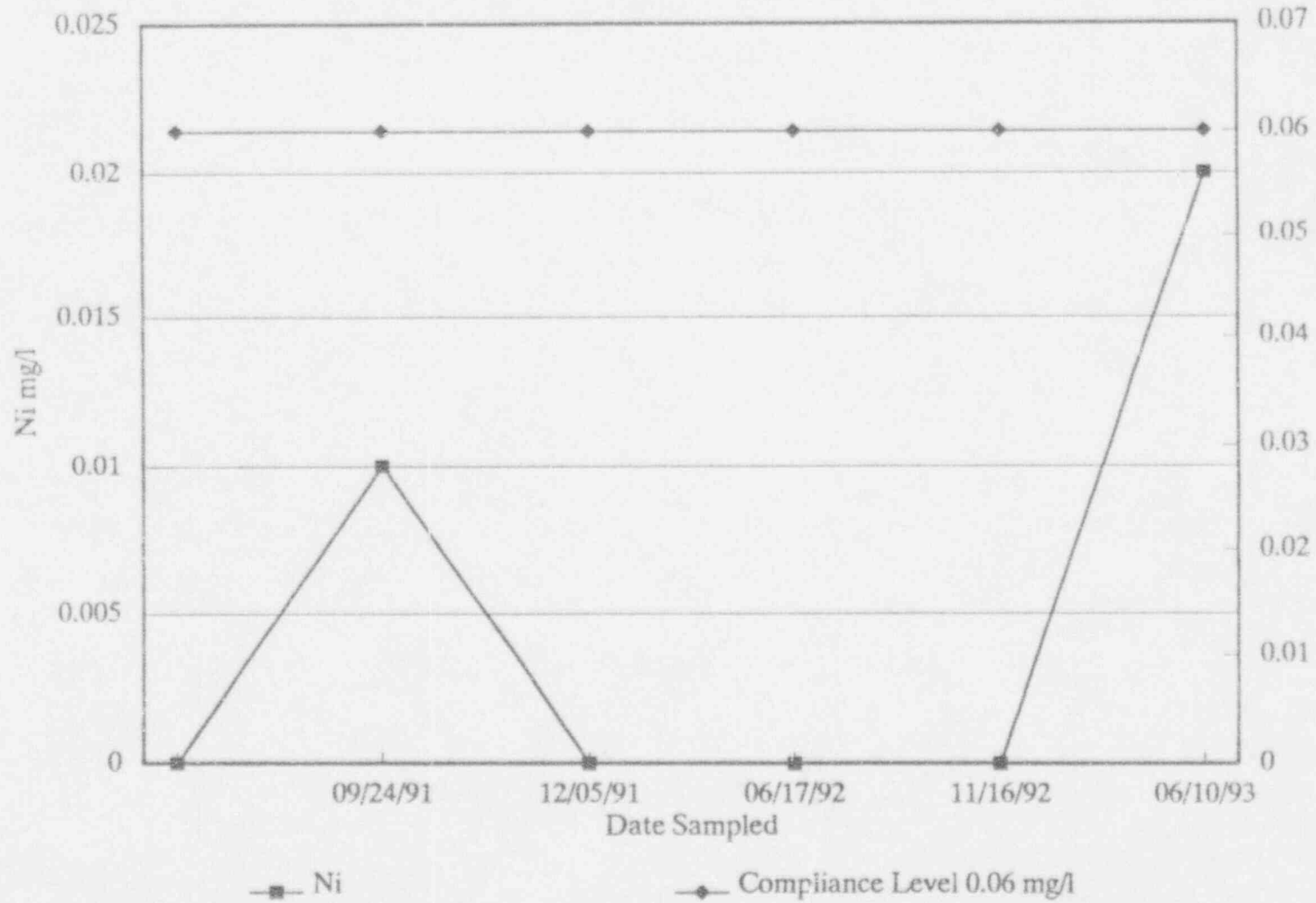
# M.W.C. 42 Nickel



# M.W.C. 49 Nickel



# M.W.C. 52 Nickel



## GROUND WATER ANALYSES FOR M.W.I. 64

Date Sampled	06/07/93
UNat pCi/l	345.00
UNat % M.P.C.	1.15
Ra226 pCi/l	75.20
Ra226 Error +/-	2.70
Ra226 % M.P.C.	250.67
Ra228 pCi/l	3.30
Ra228 Error +/-	0.50
Ra228 % M.P.C.	11.00
Th230 pCi/l	<1.0
Th230 Error +/-	
Th230 % M.P.C.	0.00
Pb210 pCi/l	2.20
Pb210 Error +/-	0.50
Pb210 % M.P.C.	2.20
Gross Alpha - U & Rn pCi/l	76.80
Gross Alpha Error +/-	8.90
As mg/l	0.020
Se mg/l	<0.005
Fe mg/l	204.00
Pb r.r.g/l	
Mo mg/l	
Al mg/l	16.90
Be mg/l	1.26
Ni mg/l	8.72
Ag mg/l	
V mg/l	
Cd mg/l	
Cr mg/l	
Ca mg/l	489.00
Mg mg/l	609.00
Na mg/l	346.00
K mg/l	46.20
SiO2 mg/l	53.00
NH3 mg/l	
NO3 mg/l	<0.10
SO4 mg/l	4655.00
Cl mg/l	225.00
TDS mg/l	7456.00
pH	5.59
Water Elevation	6796.78

## GROUND WATER ANALYSES FOR M.W.I. 65

Date Sampled	06/07/93
UNat pCi/l	13703.00
UNat % M.P.C.	45.68
Ra226 pCi/l	164.00
Ra226 Error +/-	5.10
Ra226 % M.P.C.	546.67
Ra228 pCi/l	12.70
Ra228 Error +/-	0.90
Ra228 % M.P.C.	42.33
Th230 pCi/l	1.00
Th230 Error +/-	0.10
Th230 % M.P.C.	0.05
Pb210 pCi/l	27.90
Pb210 Error +/-	1.20
Pb210 % M.P.C.	27.90
Gross Alpha - U & Rn pCi/l	171.00
Gross Alpha Error +/-	13.10
As mg/l	<0.01
Se mg/l	0.056
Fe mg/l	526.00
Pb mg/l	
Mo mg/l	
Al mg/l	103.00
Be mg/l	0.21
Ni mg/l	4.11
Ag mg/l	
V mg/l	
Cd mg/l	
Cr mg/l	
Ca mg/l	569.00
Mg mg/l	364.00
Na mg/l	366.00
K mg/l	38.00
SiO2 mg/l	50.60
NH3 mg/l	
NO3 mg/l	0.60
SO4 mg/l	4531.00
Cl mg/l	145.00
TDS mg/l	9112.00
pH	4.31
Water Elevation	6889.36

Monitor Well Data and Graphics



## GROUND WATER ANALYSES FOR M.W. 1

Date Sampled	11/19/91	06/15/92	11/18/92	06/22/93
UNat pCi/l	727.00	693.00	555.00	459.00
UNat % M.P.C.	2.42	2.31	1.85	1.53
Ra226 pCi/l	66.40	50.80	10.30	42.50
Ra226 Error +/-	1.70	3.00	0.90	2.00
Ra226 % M.P.C.	221.33	169.33	34.33	141.67
Ra228 pCi/l	33.60	20.50	8.20	16.00
Ra228 Error +/-	1.00	2.50	0.40	2.40
Ra228 % M.P.C.	112.00	68.33	27.33	53.33
Th230 pCi/l	<1.0	18.10	<1.0	0.70
Th230 Error +/-		2.00		0.10
Th230 % M.P.C.		0.91		0.04
Pb210 pCi/l	6.70	1.10	4.10	3.20
Pb210 Error +/-	0.80	0.60	0.50	0.90
Pb210 % M.P.C.	6.70	1.10	4.10	3.20
Gross Alpha -- U & Rn pCi/l	165.00	52.00	10.60	51.20
Gross Alpha Error +/-	8.10	7.20	3.30	7.20
As mg/l	<0.01	<0.01	<0.01	<0.01
Se mg/l	0.088	0.066	0.073	0.072
Fe mg/l	0.64	0.37	0.45	0.41
Pb mg/l	0.01	<0.01	<0.01	
Mo mg/l	<0.01	<0.01	0.01	
Al mg/l	147.00	101.00	121.00	
Be mg/l	0.06	0.05	0.04	0.06
Ni mg/l	0.85	0.89	1.05	1.17
Ag mg/l	<0.01	<0.01	<0.01	
V mg/l	<0.01	<0.01	0.01	
Cd mg/l	<0.005	<0.005	<0.005	
Cr mg/l	0.02	<0.01	0.03	
Ca mg/l	355.00	366.00	397.00	351.00
Mg mg/l	139.00	111.00	113.00	122.00
Na mg/l	194.00	143.00	137.00	184.00
K mg/l	32.20	28.80	25.90	
NH3 mg/l	110.00	137.00	138.00	
NO3 mg/l	68.40	37.00	36.30	47.80
SO4 mg/l	2529.00	2246.00	2431.00	2376.00
Cl mg/l	265.00	248.00	235.00	232.00
TDS mg/l	4412.00	3537.00	3310.00	4090.00
pH	3.97	3.93	4.12	4.15
Water Elevation	6814.96	6814.22	6813.29	6812.66

## GROUND WATER ANALYSES FOR M. W. 2

Date Sampled	11/19/91	05/19/92	11/17/92	06/22/93
UNat pCi/l	85.20	111.60	65.60	92.50
UNat % M.P.C.	0.28	0.37	0.22	0.31
Ra226 pCi/l	14.60	22.00	8.30	21.50
Ra226 Error +/-	0.80	1.80	0.60	1.40
Ra226 % M.P.C.	48.67	73.33	27.67	71.67
Ra228 pCi/l	4.30	9.90	2.80	7.10
Ra228 Error +/-	0.70	1.10	0.40	2.60
Ra228 % M.P.C.	14.33	33.00	9.33	23.67
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	1.00	6.60	7.50	2.40
Pb210 Error +/-	0.70	0.80	0.60	0.90
Pb210 % M.P.C.	1.00	6.60	7.50	2.40
Gross Alpha - U & Rn pCi/l	15.00	22.50	8.60	25.00
Gross Alpha Error +/-	3.90	4.70	2.90	5.10
As mg/l	<0.01	<0.01	<0.01	<0.01
Se mg/l	<0.005	<0.005	0.012	0.005
Fe mg/l	1.65	2.47	5.20	4.58
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	0.02	0.04	<0.01	
Al mg/l	0.12	<0.10	<0.10	
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	0.04	0.10	0.15	0.14
Ag mg/l	<0.01	<0.01	<0.01	
V mg/l	<0.01	<0.01	<0.01	
Cd mg/l	<0.005	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	143.00	208.00	253.00	257.00
Mg mg/l	19.10	43.30	52.00	40.80
Na mg/l	53.10	68.20	76.80	60.00
K mg/l	11.50	12.80	12.40	
NH3 mg/l	<0.05	0.39	0.76	
NO3 mg/l	0.38	3.57	3.98	3.11
SO4 mg/l	398.00	725.00	896.00	780.00
Cl mg/l	17.60	26.80	32.20	26.40
TDS mg/l	764.00	1219.00	1465.00	1068.00
pH	6.63	6.27	6.33	5.98
Water Elevation	6792.88	6792.96	6792.79	6792.00

## GROUND WATER ANALYSES FOR M. W. 4

Date Sampled	11/19/91	06/15/92	11/18/92	06/21/93
UNat pCi/l	315.00	414.00	63.30	296.00
UNat % M.P.C.	1.05	1.38	0.21	0.99
Ra226 pCi/l	18.40	19.50	4.60	22.40
Ra226 Error +/-	0.90	1.90	0.50	1.50
Ra226 % M.P.C.	61.33	65.00	15.33	74.67
Ra228 pCi/l	14.70	6.30	6.70	13.80
Ra228 Error +/-	0.90	0.60	0.40	2.90
Ra228 % M.P.C.	49.00	21.00	22.33	46.00
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	3.20	2.00	2.70	1.00
Pb210 Error +/-	0.70	0.60	0.50	0.50
Pb210 % M.P.C.	3.20	2.00	2.70	1.00
Gross Alpha - U & Rn pCi/l	19.00	21.50	<5.0	25.00
Gross Alpha Error +/-	4.40	4.60		5.00
As mg/l	<0.01	<0.01	<0.01	<0.01
Se mg/l	0.098	0.106	0.151	0.097
Fe mg/l	<0.10	0.12	0.19	0.20
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	<0.01	<0.01	<0.01	
Al mg/l	6.10	5.15	5.40	
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	0.30	0.32	0.28	0.31
Ag mg/l	<0.01	<0.01	<0.01	
V mg/l	<0.01	<0.01	<0.01	
Cd mg/l	<0.005	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	502.00	517.00	604.00	656.00
Mg mg/l	112.00	120.00	129.00	149.00
Na mg/l	69.50	71.90	69.10	77.80
K mg/l	16.30	17.50	18.50	
NH3 mg/l	3.62	3.33	4.05	
NO3 mg/l	11.20	3.69	4.50	5.24
SO4 mg/l	1438.00	1529.00	1935.00	2039.00
Cl mg/l	278.00	239.00	237.00	290.00
TDS mg/l	2895.00	2949.00	3079.00	3493.00
pH	5.24	5.33	5.54	5.12
Water Elevation	6814.87	6814.26	6813.34	6812.74

## GROUND WATER ANALYSES FOR M.W. 17

Date Sampled	11/19/91	05/19/92	11/17/92	06/22/93
UNat pCi/l	16.40	13.50	18.00	17.10
UNat % M.P.C.	0.05	0.05	0.06	0.06
Ra226 pCi/l	38.60	26.50	7.30	30.80
Ra226 Error +/-	1.30	1.90	0.60	2.20
Ra226 % M.P.C.	128.67	88.33	24.33	102.67
Ra228 pCi/l	25.60	20.70	7.00	25.10
Ra228 Error +/-	1.10	1.30	0.50	5.40
Ra228 % M.P.C.	85.33	69.00	23.33	83.67
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	<1.0	<1.0	2.10	<1.0
Pb210 Error +/-			0.50	
Pb210 % M.P.C.			2.10	
Gross Alpha - U & Rn pCi/l	40.00	26.90	7.60	43.30
Gross Alpha Error +/-	6.30	5.20	2.80	6.60
As mg/l	<0.01	<0.01	<0.01	<0.01
Se mg/l	0.227	0.214	0.215	0.113
Fe mg/l	0.19	0.21	0.30	0.69
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	<0.01	<0.01	0.02	
Al mg/l	0.75	0.40	0.42	
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	0.11	0.09	0.04	0.12
Ag mg/l	<0.01	<0.01	<0.01	
V mg/l	<0.01	<0.01	<0.01	
Cd mg/l	<0.005	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	542.00	529.00	532.90	512.00
Mg mg/l	134.00	130.00	134.00	124.00
Na mg/l	136.00	143.00	97.30	92.90
K mg/l	19.20	13.50	18.50	
NH3 mg/l	9.50	5.80	6.18	
NO3 mg/l	32.40	14.40	40.50	3.90
SO4 mg/l	1944.00	1939.00	1602.00	1911.00
Cl mg/l	146.00	103.00	89.90	95.60
TDS mg/l	3221.00	3231.00	3028.00	3039.00
pH	5.64	5.66	5.95	5.50
Water Elevation	6805.86	6805.61	6804.94	6804.35

## GROUND WATER ANALYSES FOR M. W. 18

Date Sampled	11/19/91	05/19/92	11/17/92	06/09/93
UNat pCi/l	16.40	12.10	5.00	9.90
UNat % M.P.C.	0.05	0.04	0.02	0.03
Ra226 pCi/l	5.10	4.30	0.70	4.70
Ra226 Error +/-	0.50	0.80	0.30	0.80
Ra226 % M.P.C.	17.00	14.33	2.33	15.67
Ra228 pCi/l	5.10	8.60	<1.0	54.50
Ra228 Error +/-	0.90	1.20		6.10
Ra228 % M.P.C.	17.00	28.67		181.67
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	2.50	<1.0	1.60	2.60
Pb210 Error +/-	0.70		0.50	0.50
Pb210 % M.P.C.	2.50		1.60	2.60
Gross Alpha - U & Rn pCi/l	15.00	<5.0	<5.0	5.00
Gross Alpha Error +/-	2.20			0.90
As mg/l	<0.01	<0.01	<0.01	<0.01
Se mg/l	0.018	0.015	0.018	0.009
Fe mg/l	0.12	<1.0	<0.10	<0.10
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	<0.01	<0.01	0.02	
Al mg/l	0.33	<0.10	<0.10	
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	0.03	<0.01	<0.01	<0.01
Ag mg/l	<0.01	<0.01	<0.01	
V mg/l	<0.01	<0.01	<0.01	
Cd mg/l	<0.005	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	67.90	67.10	68.70	60.00
Mg mg/l	22.00	18.50	12.70	11.90
Na mg/l	43.00	36.20	37.00	31.10
K mg/l	6.00	6.20	6.80	
NH3 mg/l	<0.05	<0.10	<0.10	
NO3 mg/l	0.45	0.87	3.11	2.90
SO4 mg/l	250.00	237.00	209.00	163.00
Cl mg/l	18.40	13.80	32.20	11.50
TDS mg/l	427.00	443.00	424.00	466.00
pH	6.76	6.80	6.59	6.90
Water Elevation	6816.12	6815.67	6815.09	6814.55

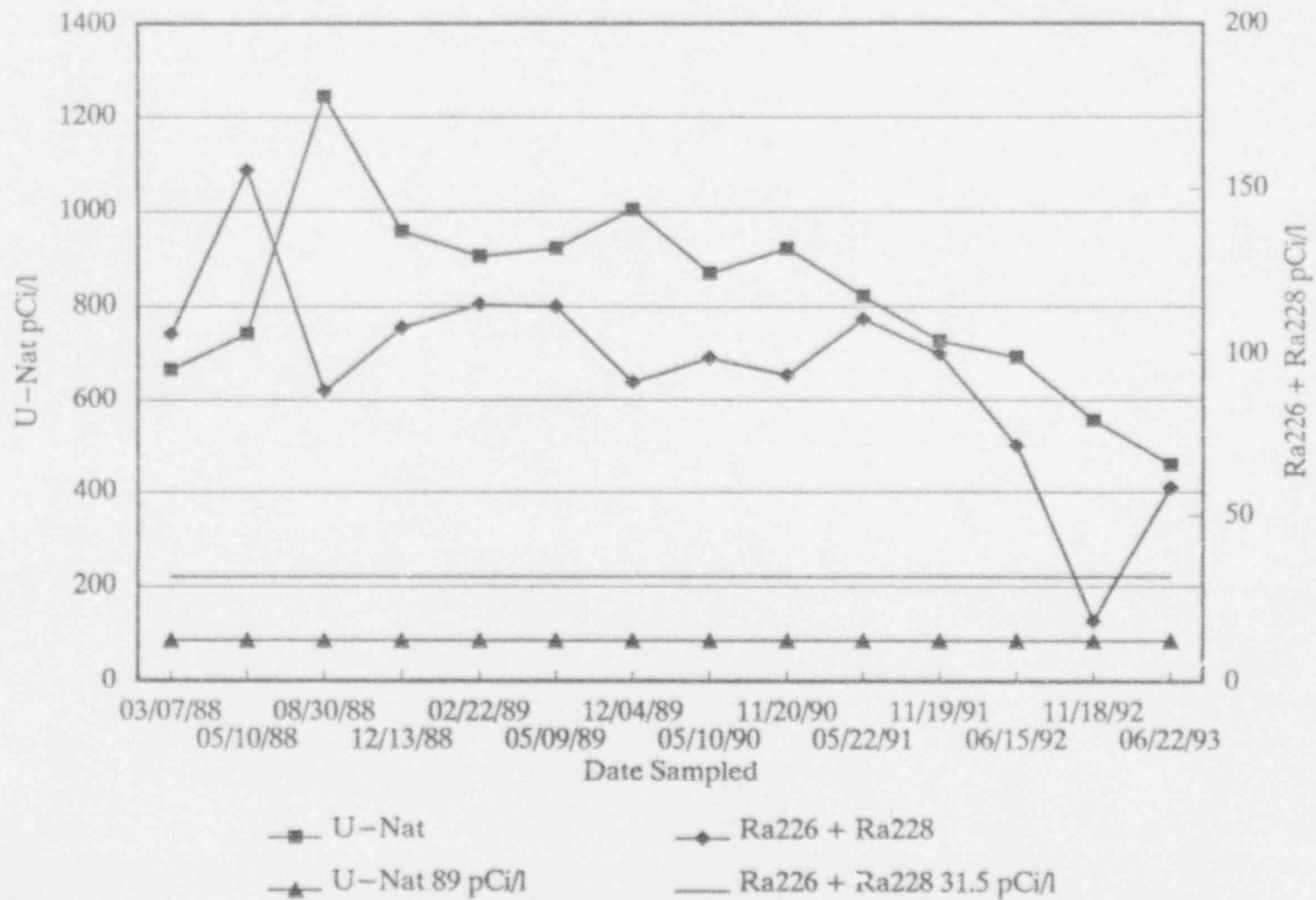
## GROUND WATER ANALYSES FOR M.W. 23

Date Sampled	11/20/91	05/19/92	11/17/92	06/22/93
UNat pCi/l	50.50	57.80	24.00	52.40
UNat % M.P.C.	0.17	0.19	0.08	0.17
Ra226 pCi/l	18.10	14.10	4.00	13.20
Ra226 Error +/-	0.90	0.80	0.50	1.10
Ra226 % M.P.C.	60.33	47.00	13.33	44.00
Ra228 pCi/l	13.40	<1.0	<1.0	5.50
Ra228 Error +/-	1.20			1.60
Ra228 % M.P.C.	44.67			18.33
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	1.90	<1.0	3.20	<1.0
Pb210 Error +/-	0.80		0.50	
Pb210 % M.P.C.	1.90		3.20	
Gross Alpha -- U & Rn pCi/l	20.00	13.50	<5.0	15.70
Gross Alpha Error +/-	4.50	3.70		3.90
As mg/l	<0.01	<0.01	<0.01	<0.01
Se mg/l	0.057	0.058	0.053	0.051
Fe mg/l	0.19	0.06	<0.10	<0.10
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	<0.01	<0.01	<0.01	
Al mg/l	<0.10	<0.10	<0.10	
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	<0.01	0.02	<0.01	0.04
Ag mg/l	<0.01	<0.01	<0.01	
V mg/l	<0.01	<0.01	<0.01	
Cd mg/l	<0.005	<0.01	<0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	358.00	355.00	384.00	386.00
Mg mg/l	77.00	73.90	79.20	86.60
Na mg/l	62.80	65.30	56.50	56.50
K mg/l	14.10	13.00	14.50	
NH3 mg/l	4.45	3.89	3.12	
NO3 mg/l	38.20	14.10	43.20	49.90
SO4 mg/l	1137.00	1129.00	1100.00	1125.00
Cl mg/l	76.40	71.30	64.10	62.70
TDS mg/l	2052.00	2118.00	2011.00	1856.00
pH	6.26	6.30	6.30	6.02
Water Elevation	6811.72	6811.07	6810.48	6809.93

## GROUND WATER ANALYSES FOR M.W. 26

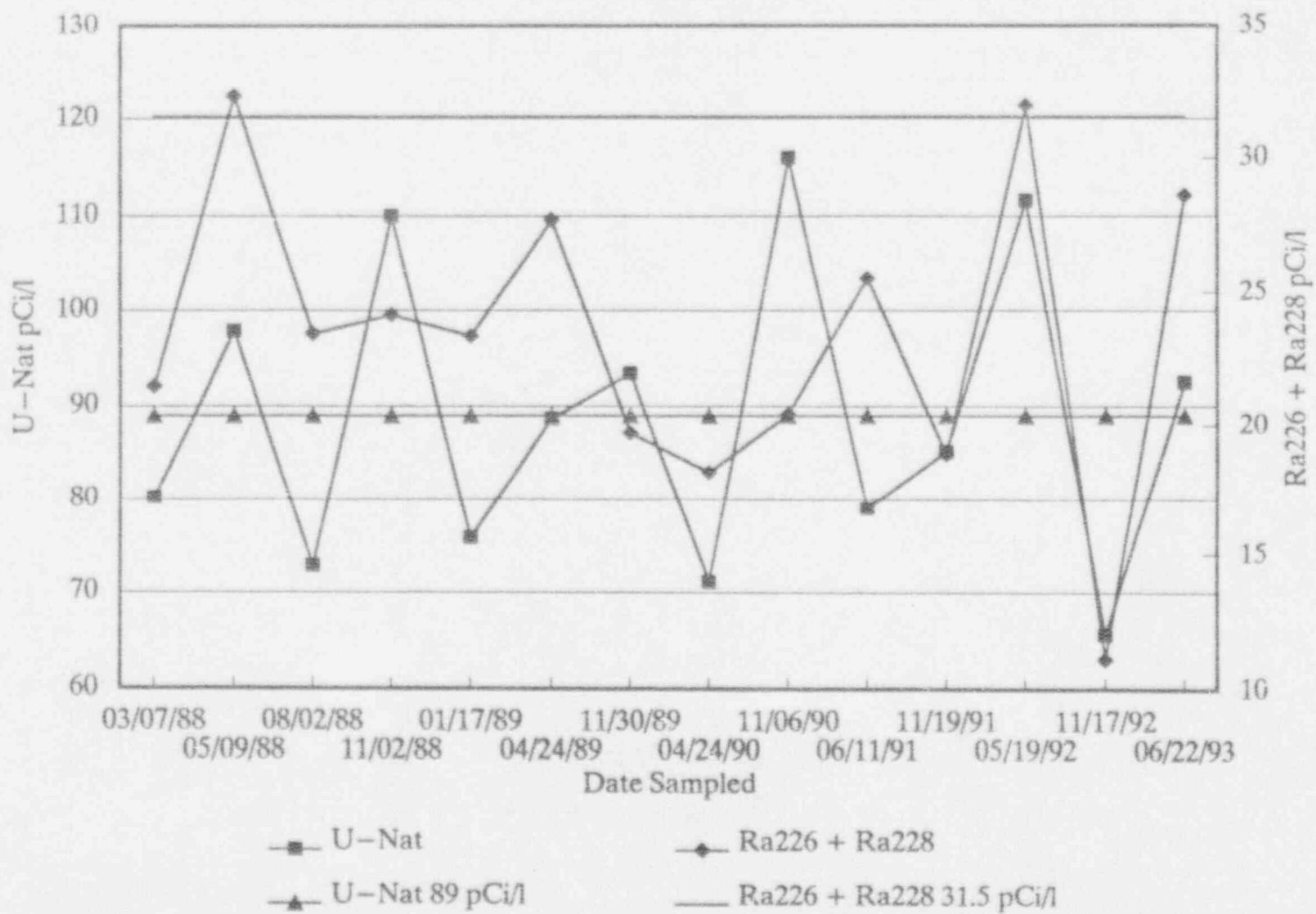
Date Sampled	11/20/91	05/19/92	11/17/92	06/22/93
UNat pCi/l	45.90	65.00	28.10	135.00
UNat % M.P.C.	0.15	0.22	0.09	0.45
Ra226 pCi/l	85.10	62.10	15.80	80.70
Ra226 Error +/-	1.80	2.90	0.80	2.80
Ra226 % M.P.C.	283.67	207.00	52.67	269.00
Ra228 pCi/l	17.10	6.40	5.80	9.00
Ra228 Error +/-	1.30	1.50	0.70	1.90
Ra228 % M.P.C.	57.00	21.33	19.33	30.00
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	<1.0	<1.0	5.00	<1.0
Pb210 Error +/-			0.60	
Pb210 % M.P.C.			5.00	
Gross Alpha - U & Rn pCi/l	90.00	63.40	15.90	84.40
Gross Alpha Error +/-	9.50	7.90	3.90	9.20
As mg/l	0.01	0.02	0.01	<0.01
Se mg/l	0.029	0.025	0.053	0.030
Fe mg/l	1.27	1.42	1.17	1.17
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	<0.01	0.02	0.03	
Al mg/l	<0.10	<0.10	<0.10	
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	<0.01	<0.01	<0.01	0.02
Ag mg/l	<0.01	<0.01	<0.01	
V mg/l	<0.01	<0.01	<0.01	
Cd mg/l	<0.005	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	280.00	252.00	294.00	327.00
Mg mg/l	40.60	47.60	46.80	51.50
Na mg/l	35.70	38.30	37.90	35.50
K mg/l	8.50	10.80	9.00	
NH3 mg/l	<0.05	<0.10	<0.10	
NO3 mg/l	21.90	12.93	17.20	31.00
SO4 mg/l	719.00	791.00	838.00	839.00
Cl mg/l	22.20	19.70	18.00	22.50
TDS mg/l	1238.00	1400.00	1404.00	1302.00
pH	6.95	6.92	6.78	6.32
Water Elevation	6804.50	6804.00	6803.45	6803.03

# M.W. 1 U-Nat & Ra226 + Ra228

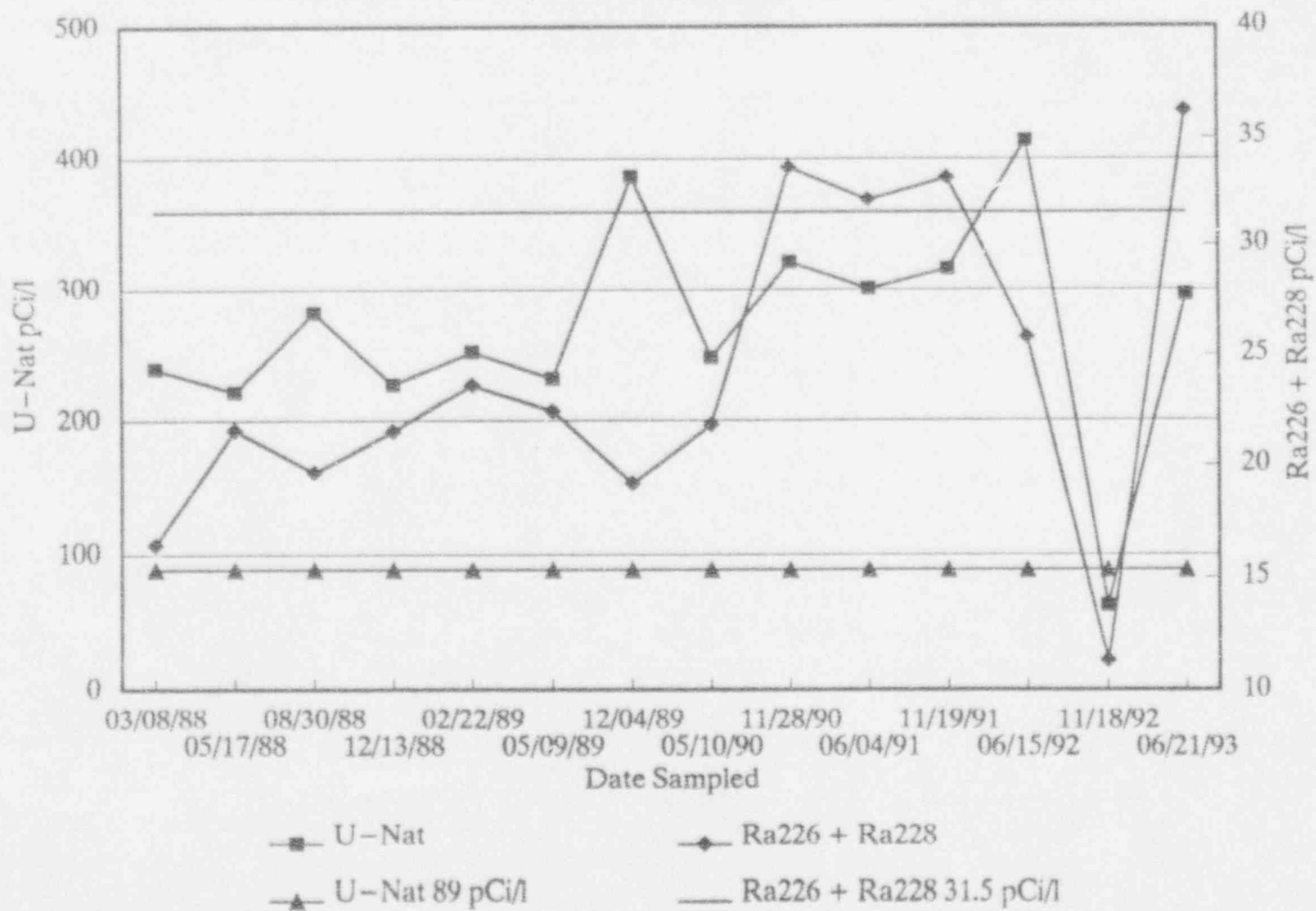




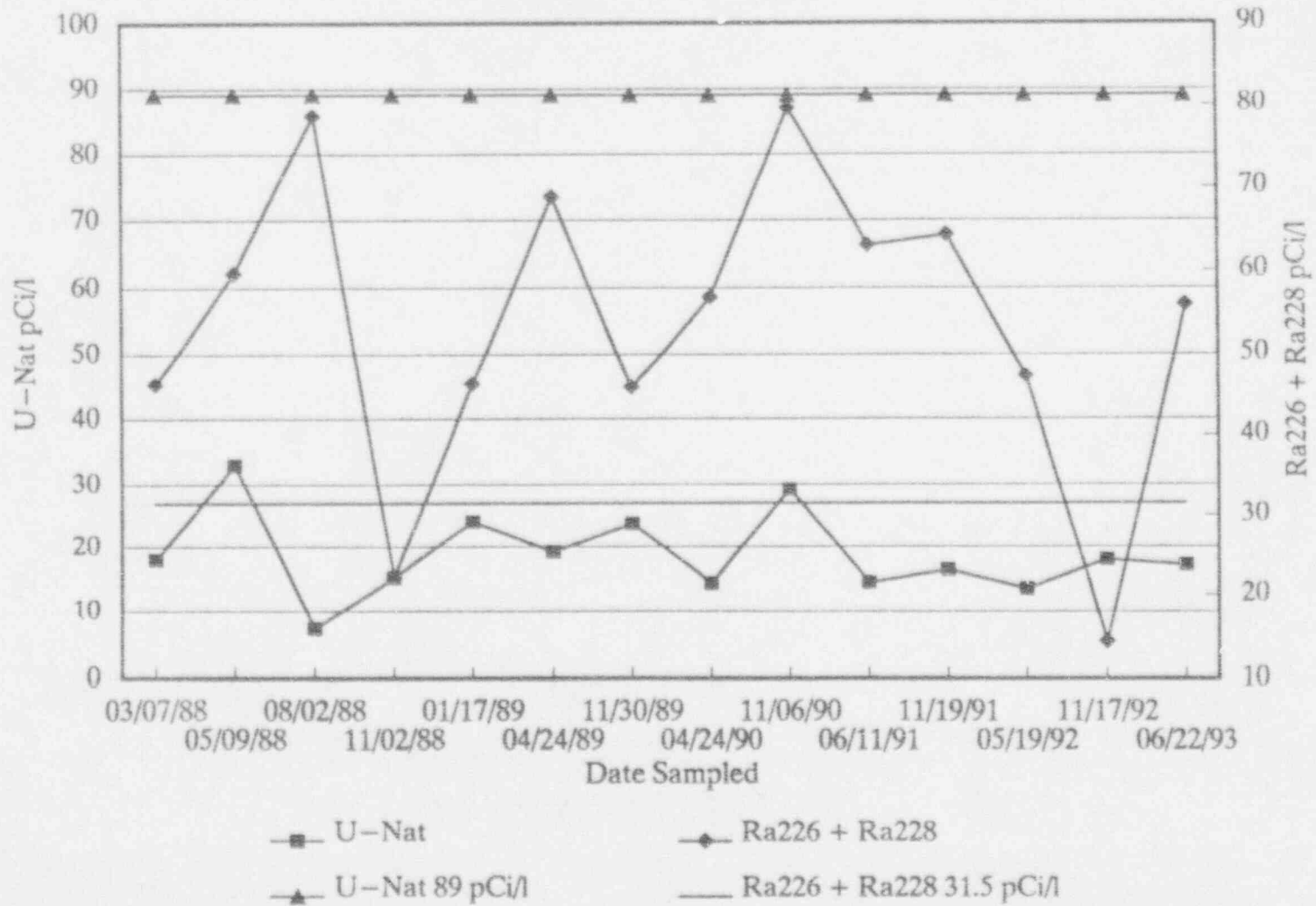
# M.W. 2 U-Nat & Ra226 + Ra228



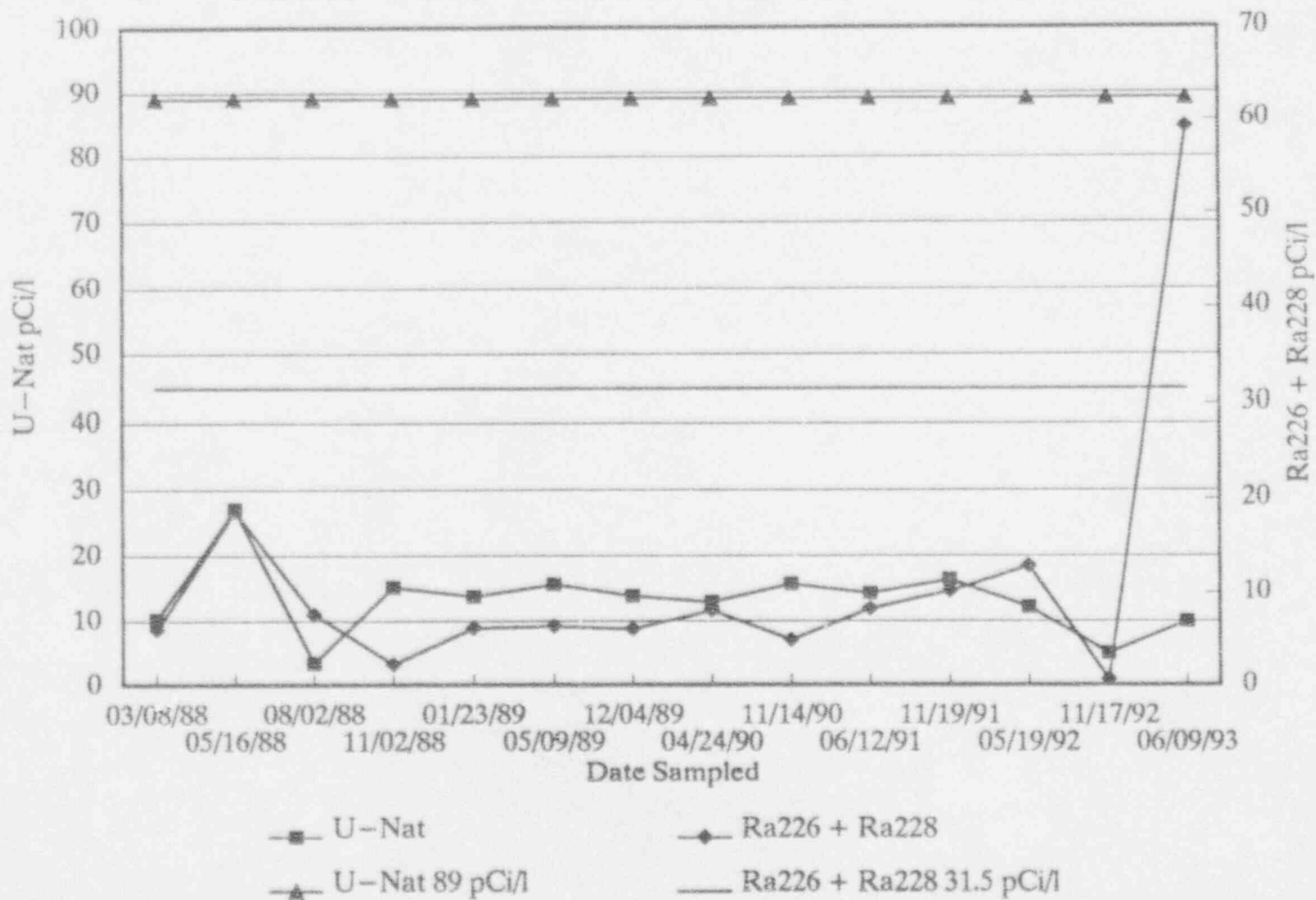
# M.W. 4 U-Nat & Ra226 + Ra228



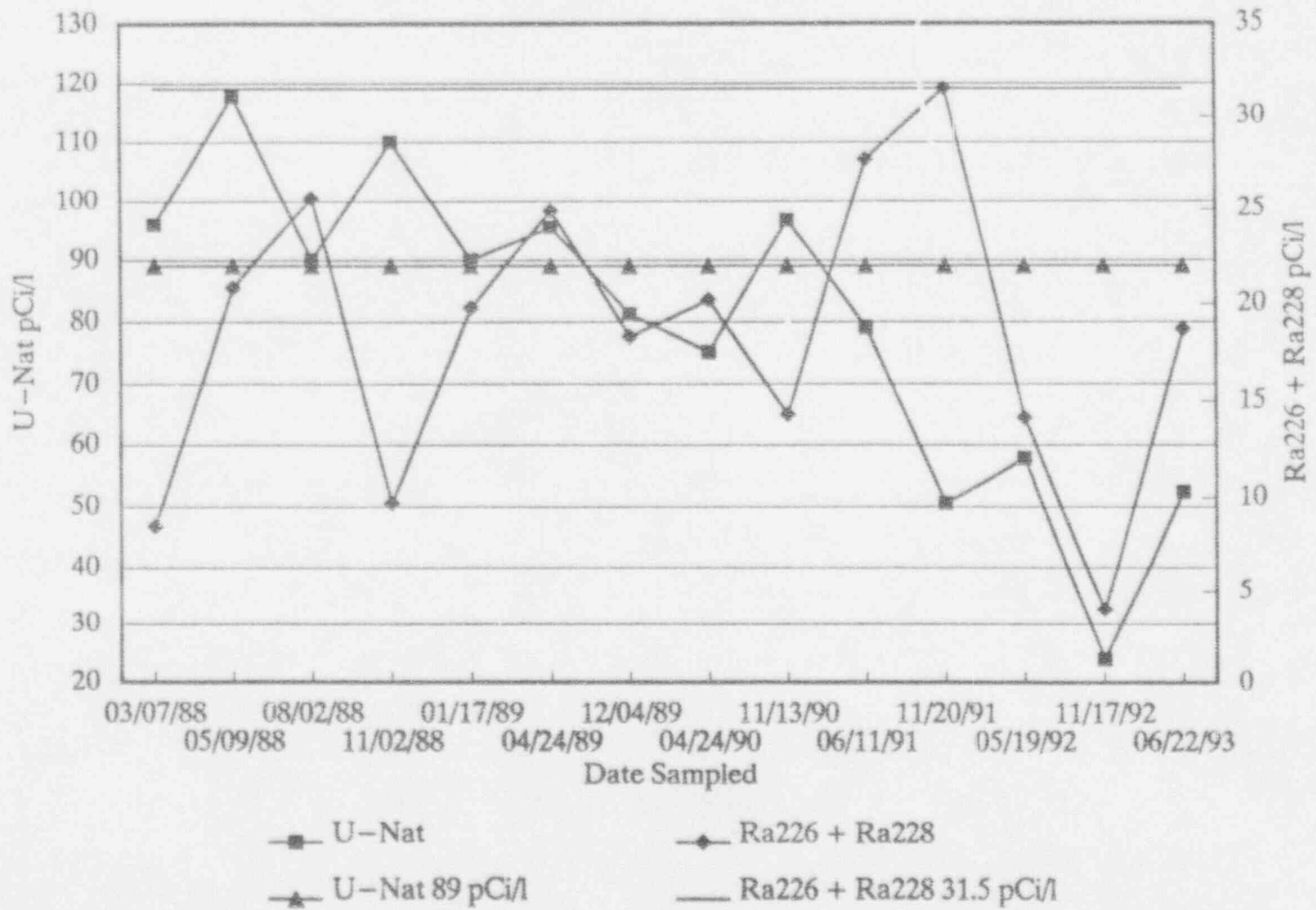
# M.W. 17 U-Nat & Ra226 + Ra228



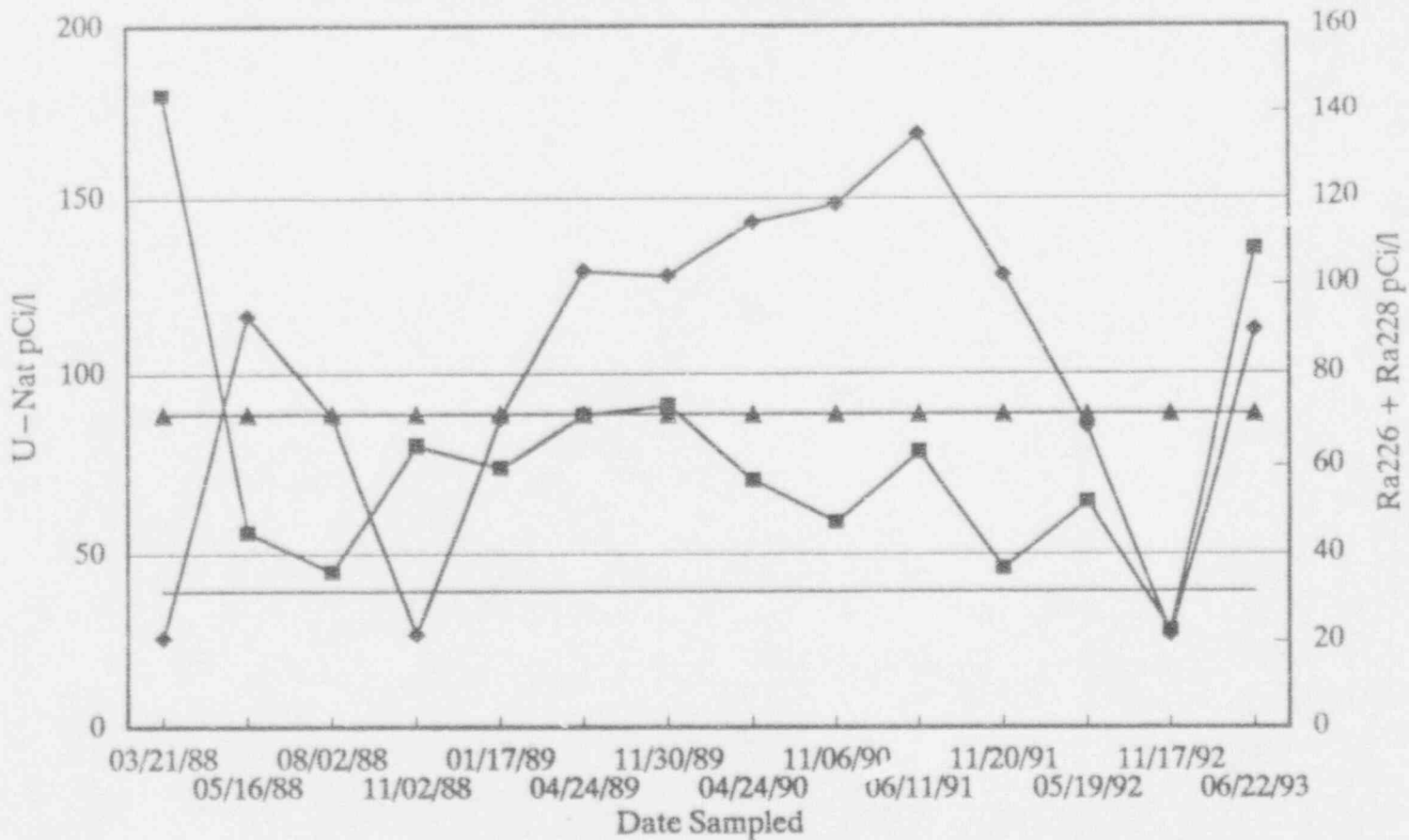
# M.W. 18 U-Nat & Ra226 + Ra228



# M.W. 23 U-Nat & Ra226 + Ra228

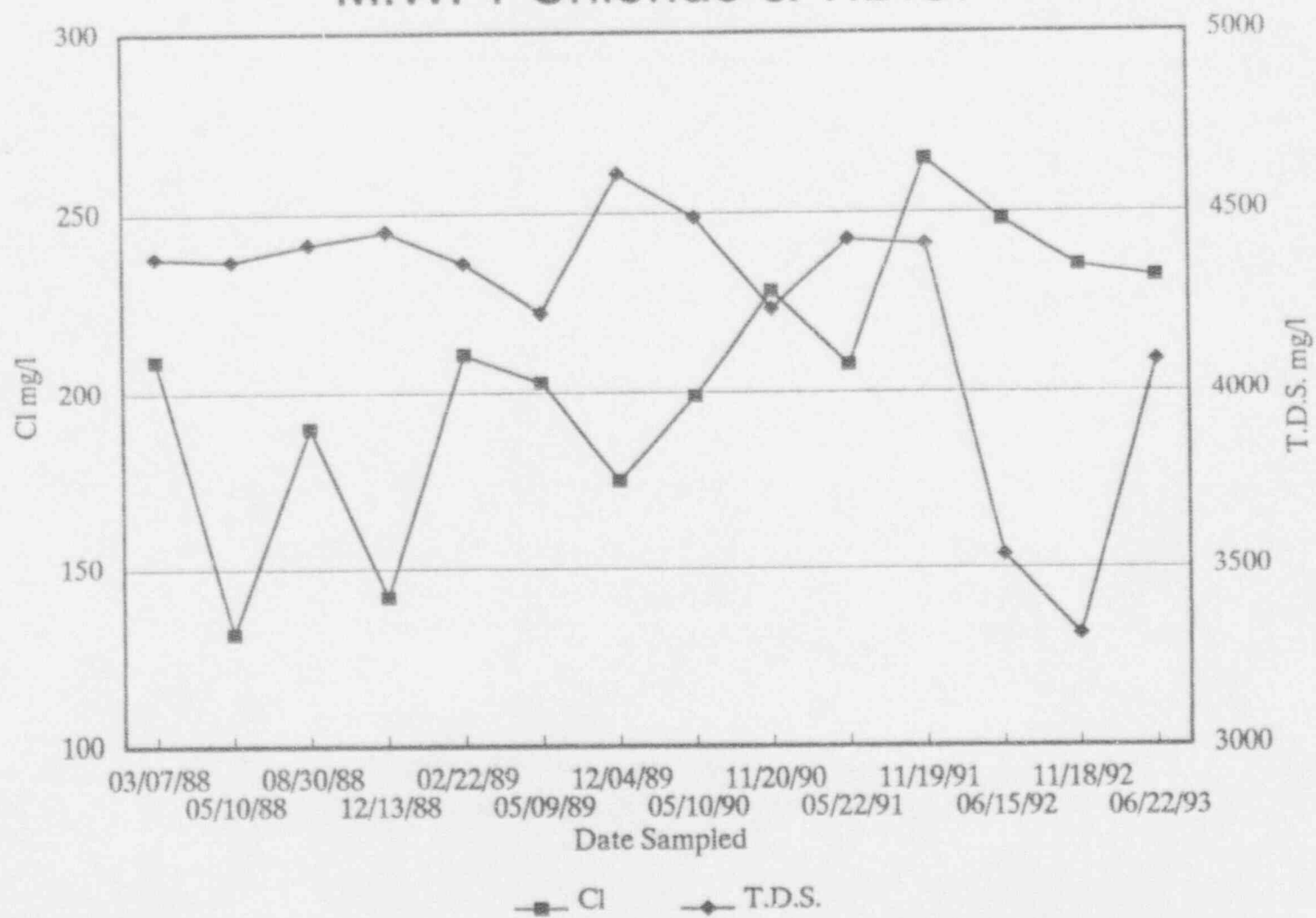


# M.W. 26 U-Nat & Ra226 + Ra228

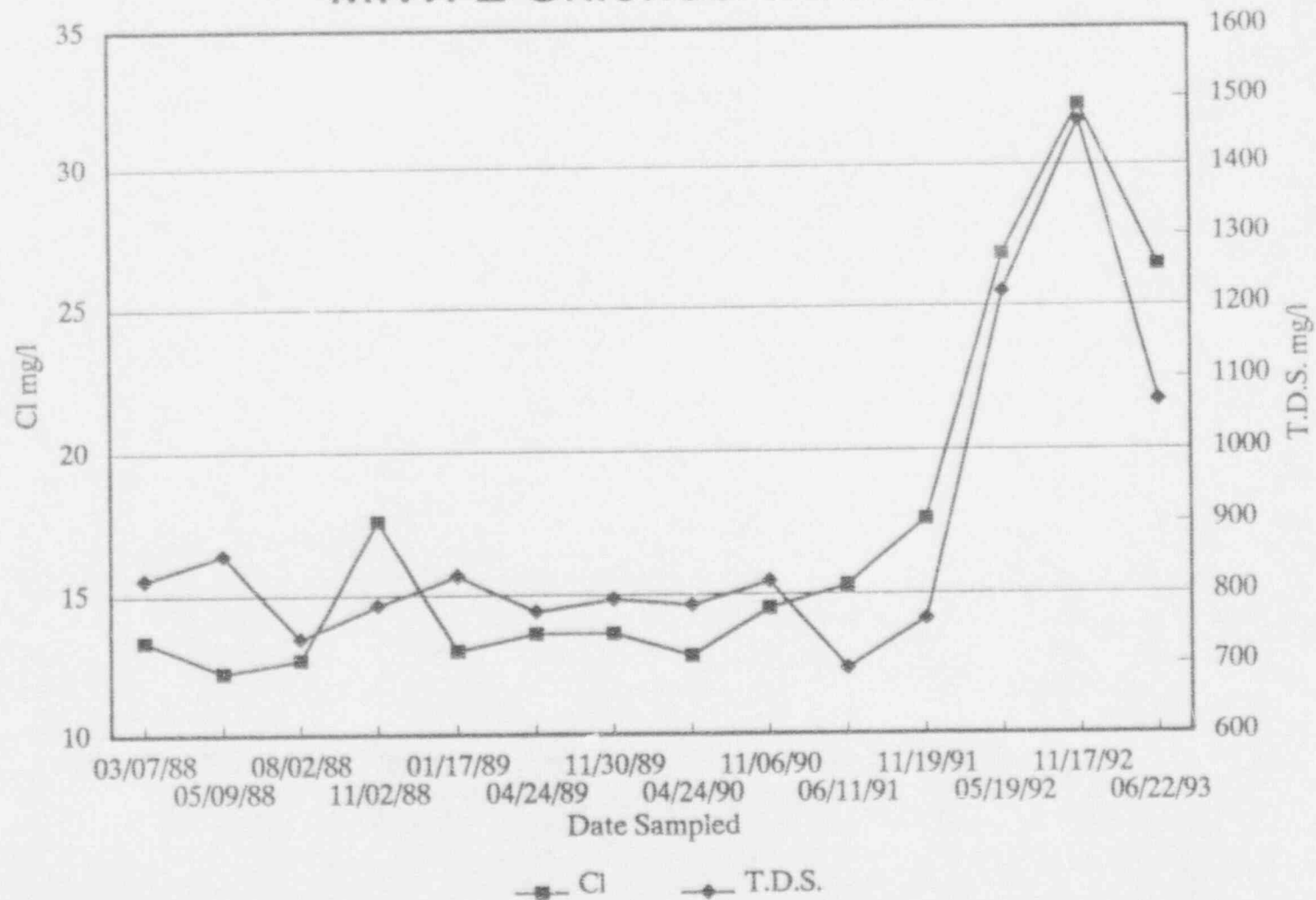


- U-Nat
- ◆ Ra226 + Ra228
- ▲ U-Nat 89 pCi/l
- Ra226 + Ra228 31.5 pCi/l

# M.W. 1 Chloride & T.D.S.

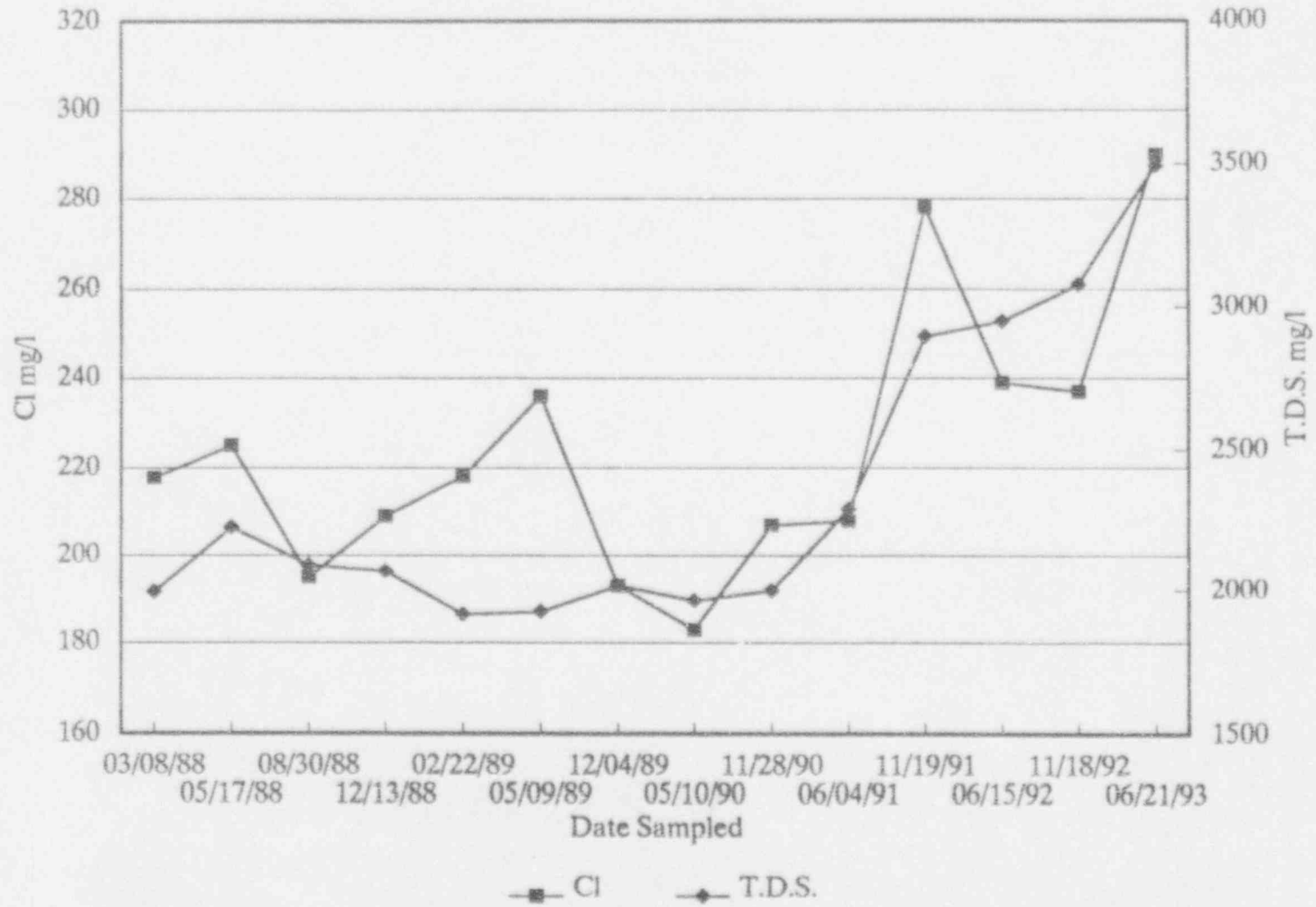


## M.W. 2 Chloride & T.D.S.

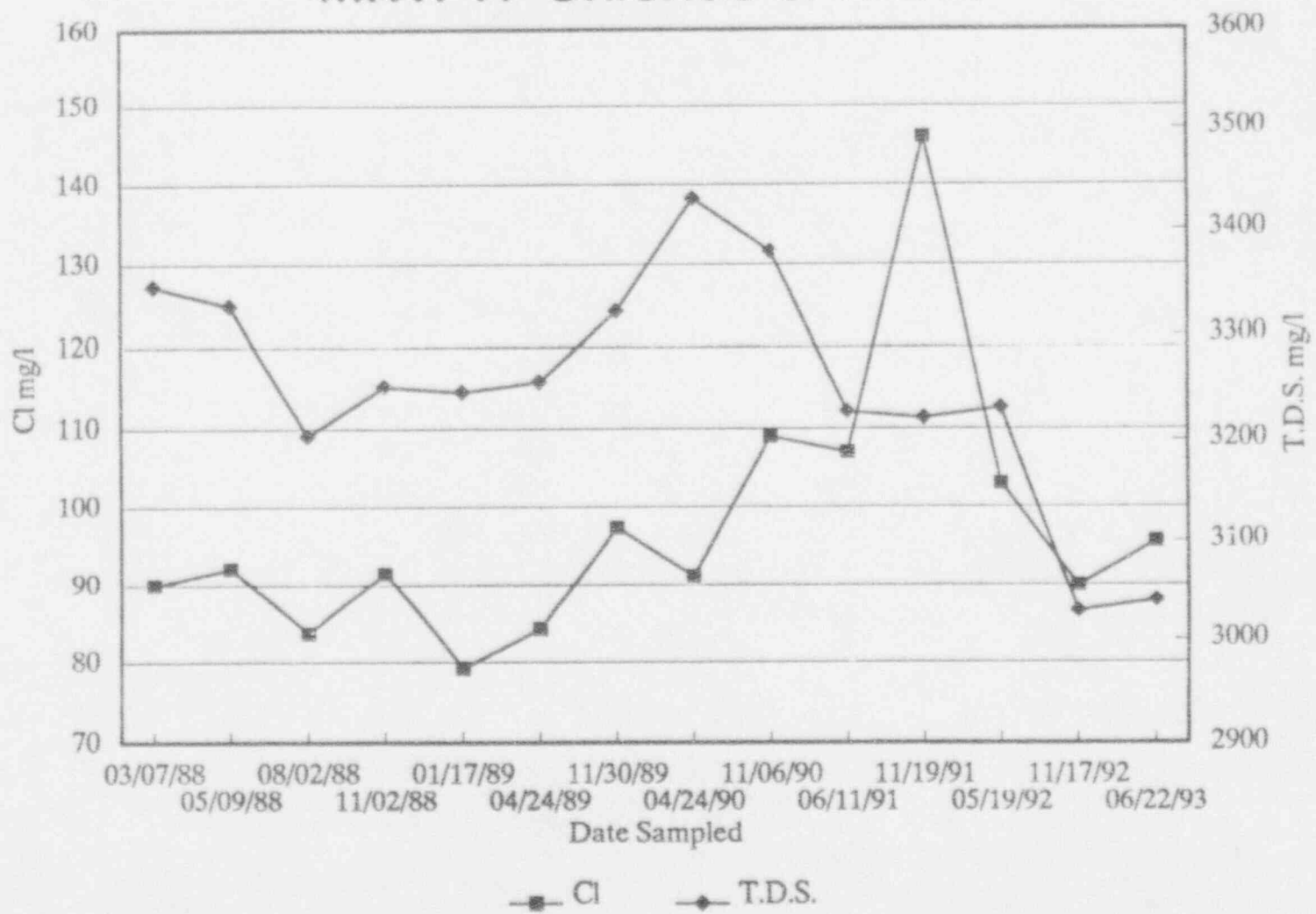




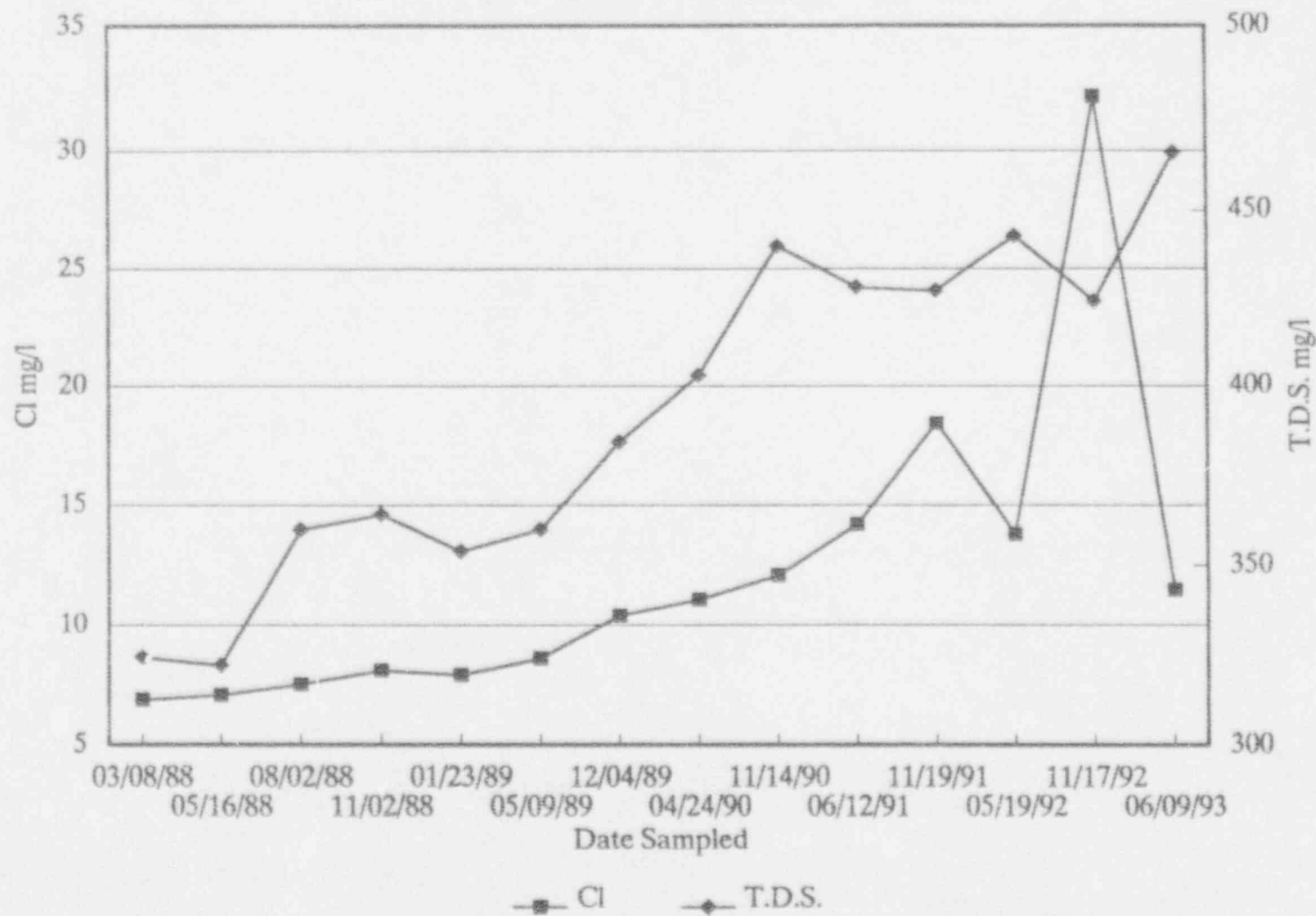
# M.W. 4 Chloride & T.D.S.



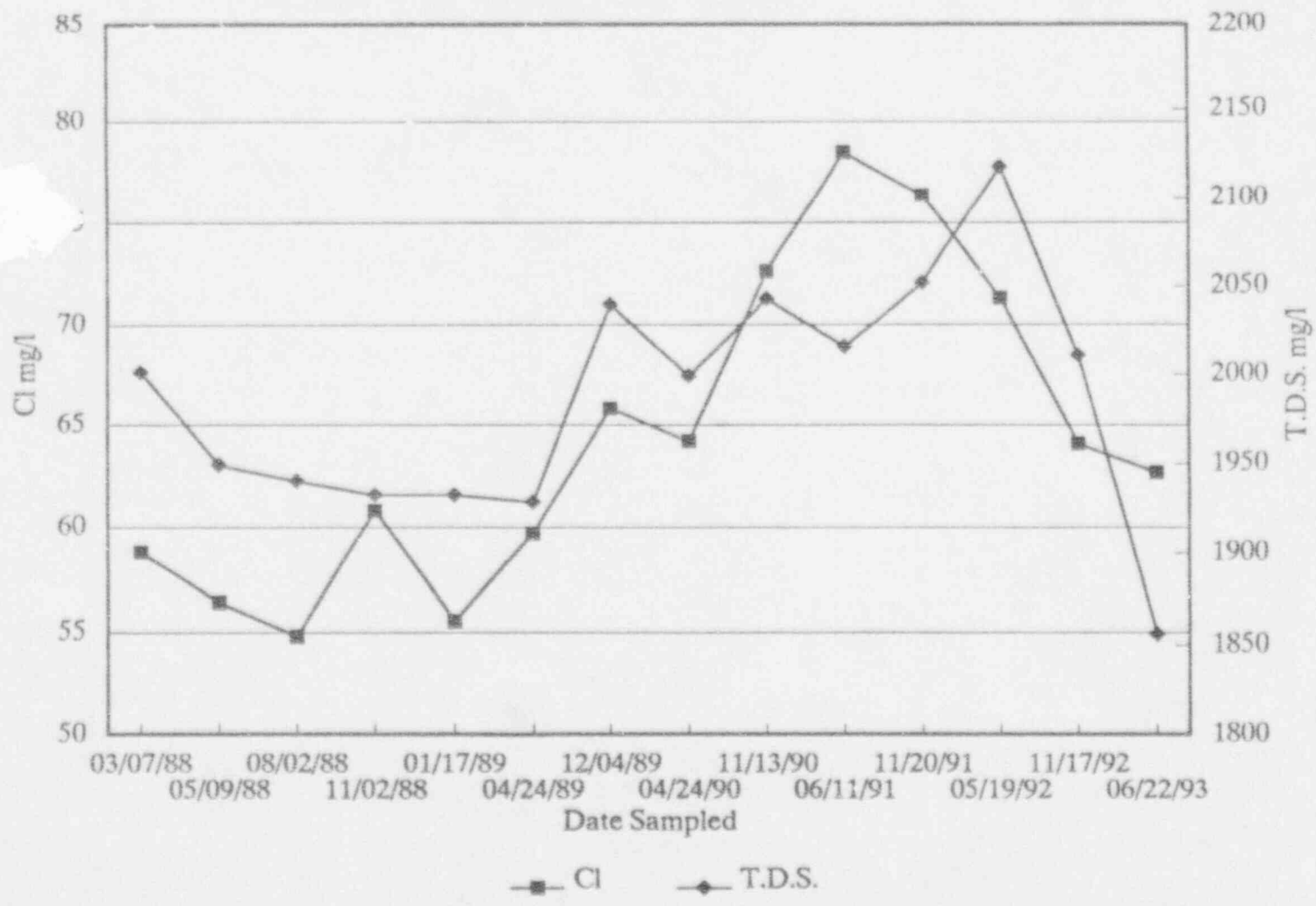
# M.W. 17 Chloride & T.D.S.



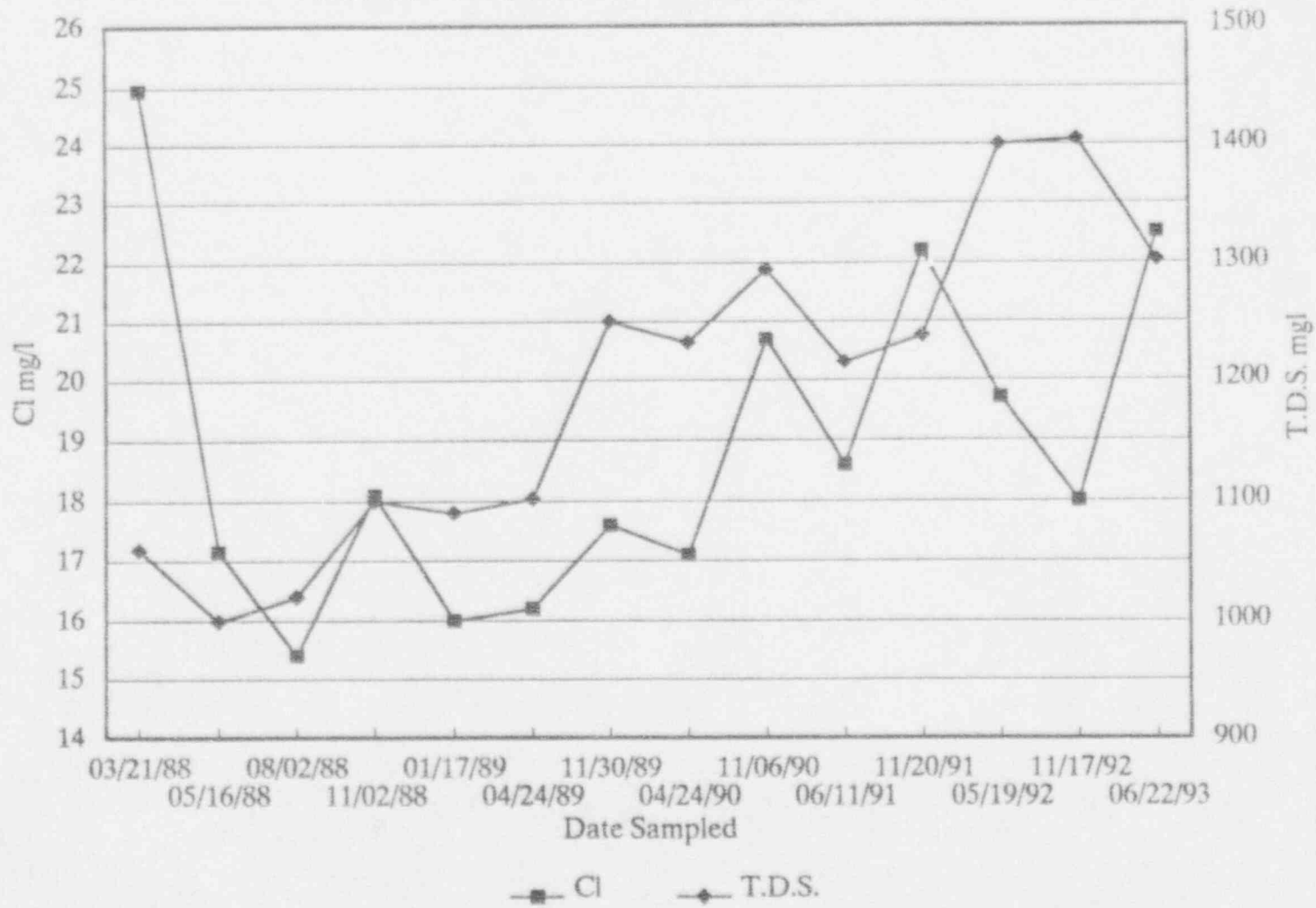
# M.W. 18 Chloride & T.D.S.



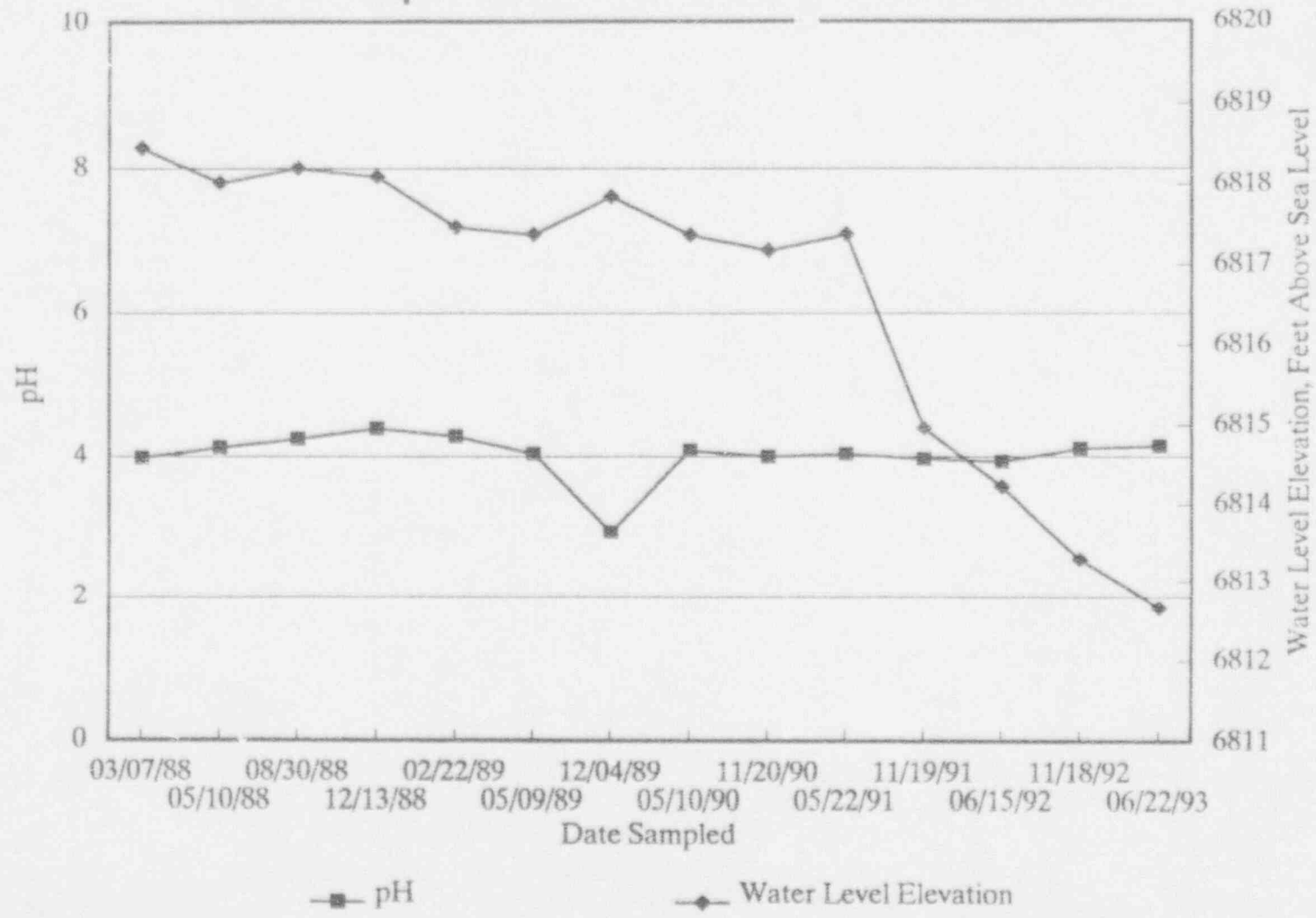
# M.W. 23 Chloride & T.D.S.



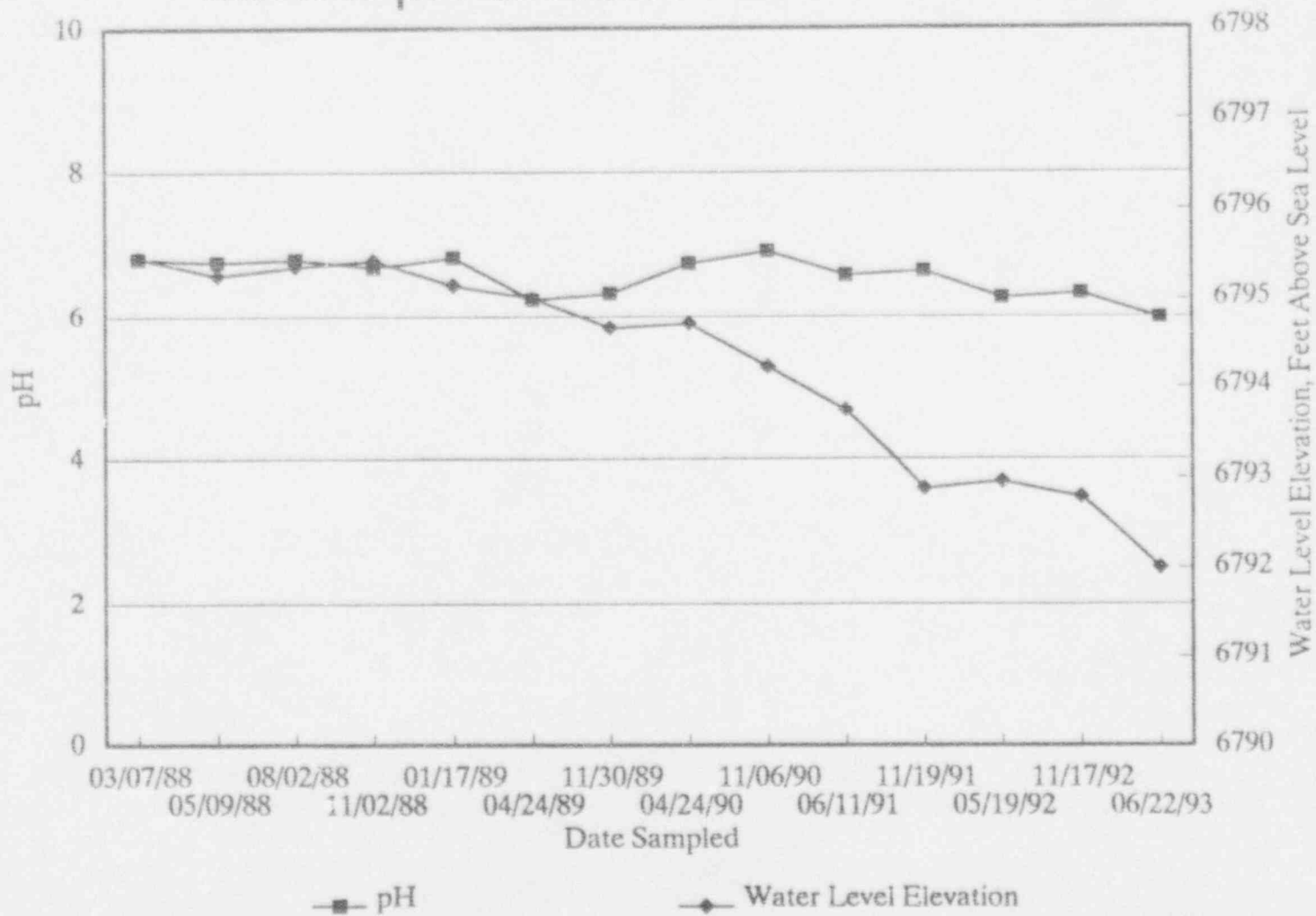
# M.W. 26 Chloride & T.D.S.



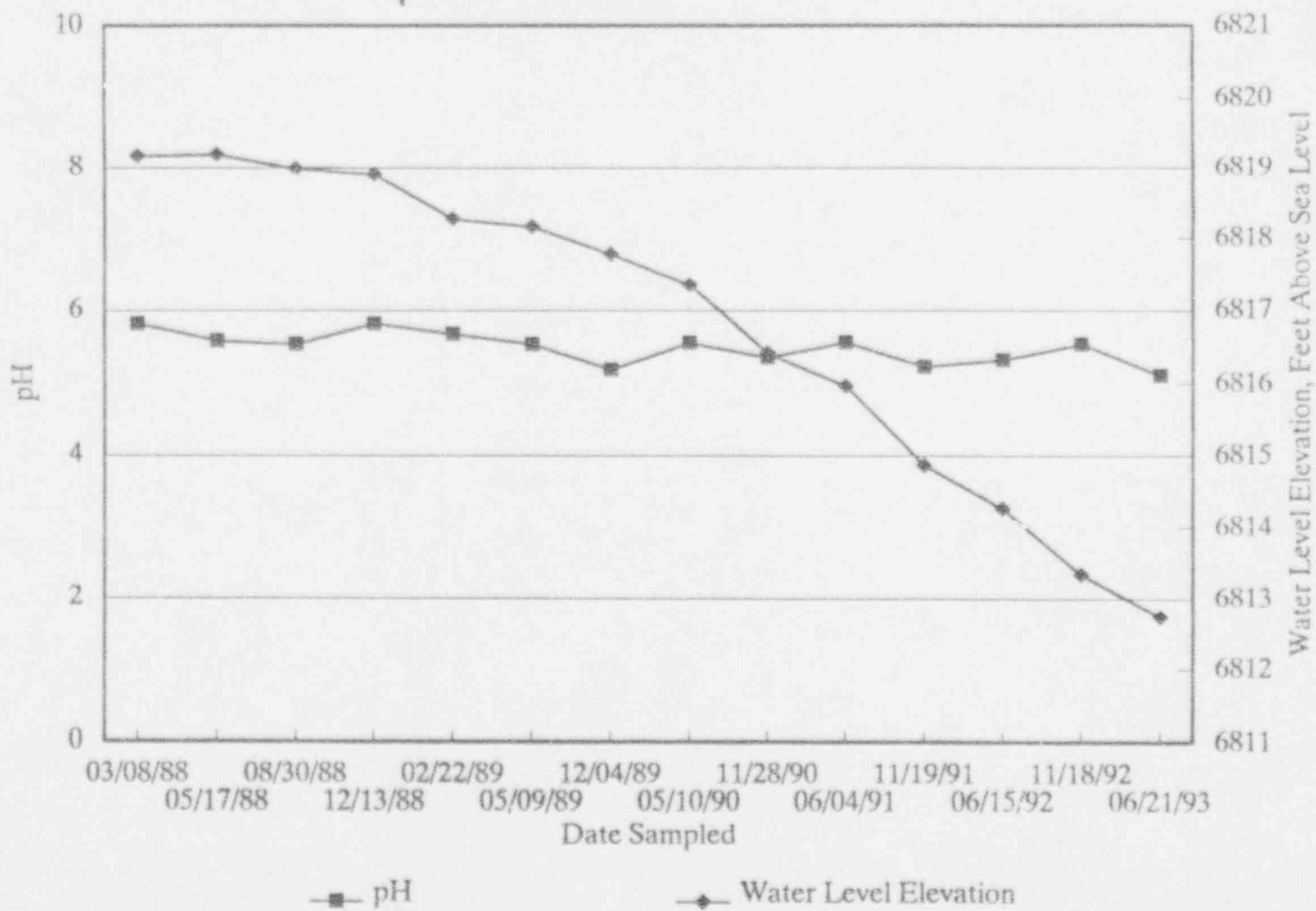
# M.W. 1 pH & Water Level Elevation



# M.W. 2 pH & Water Level Elevation

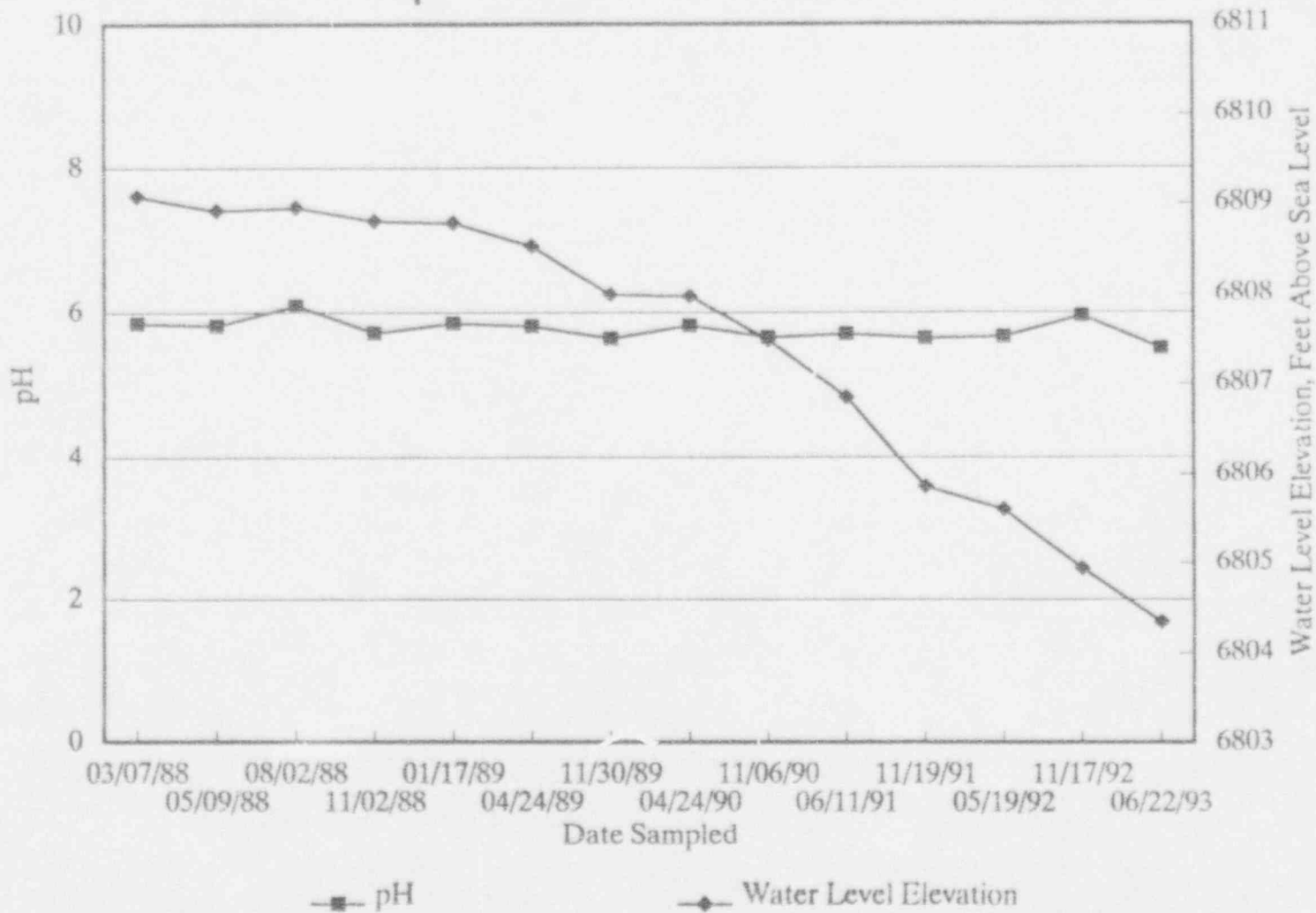


# M.W. 4 pH & Water Level Elevation

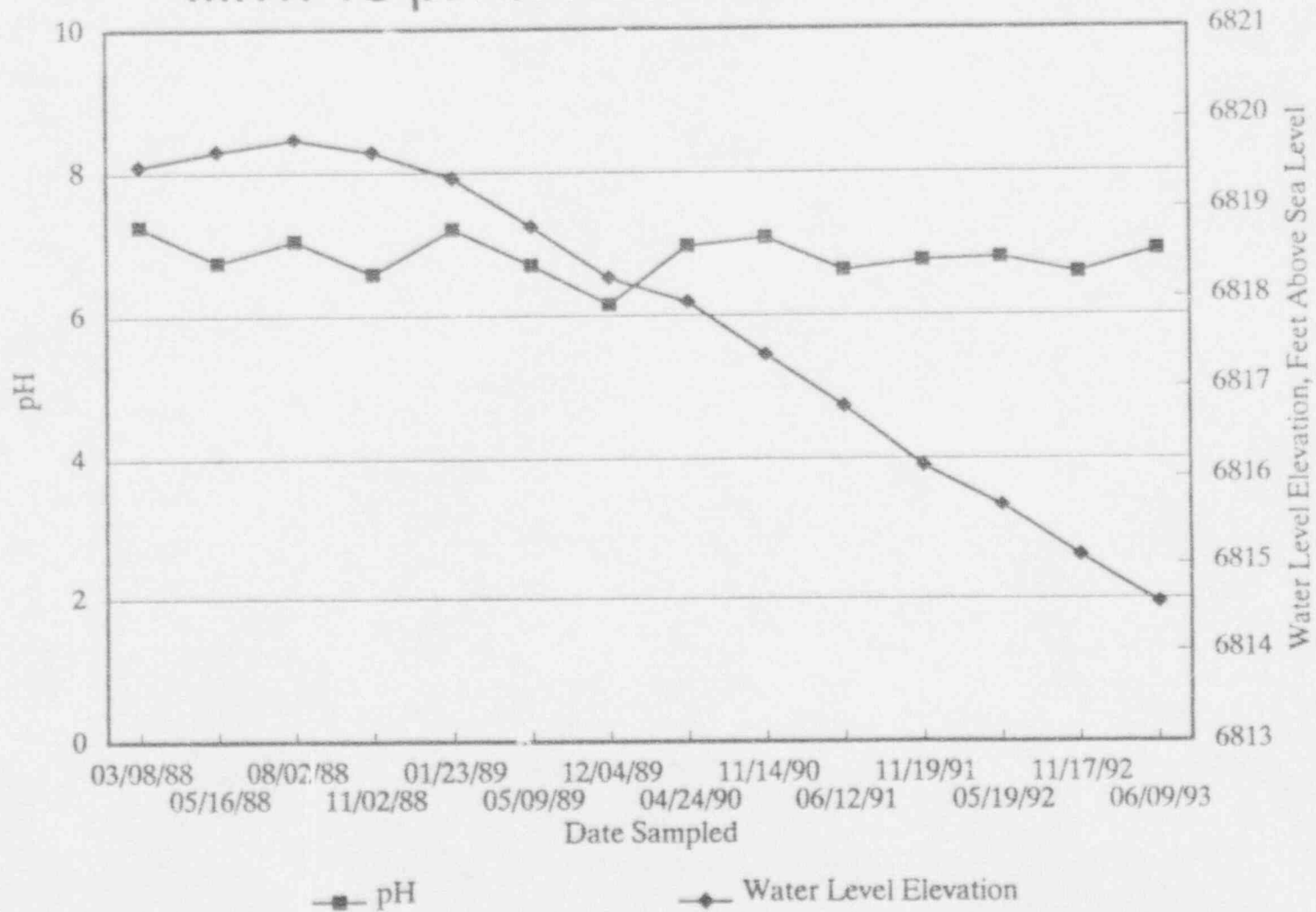




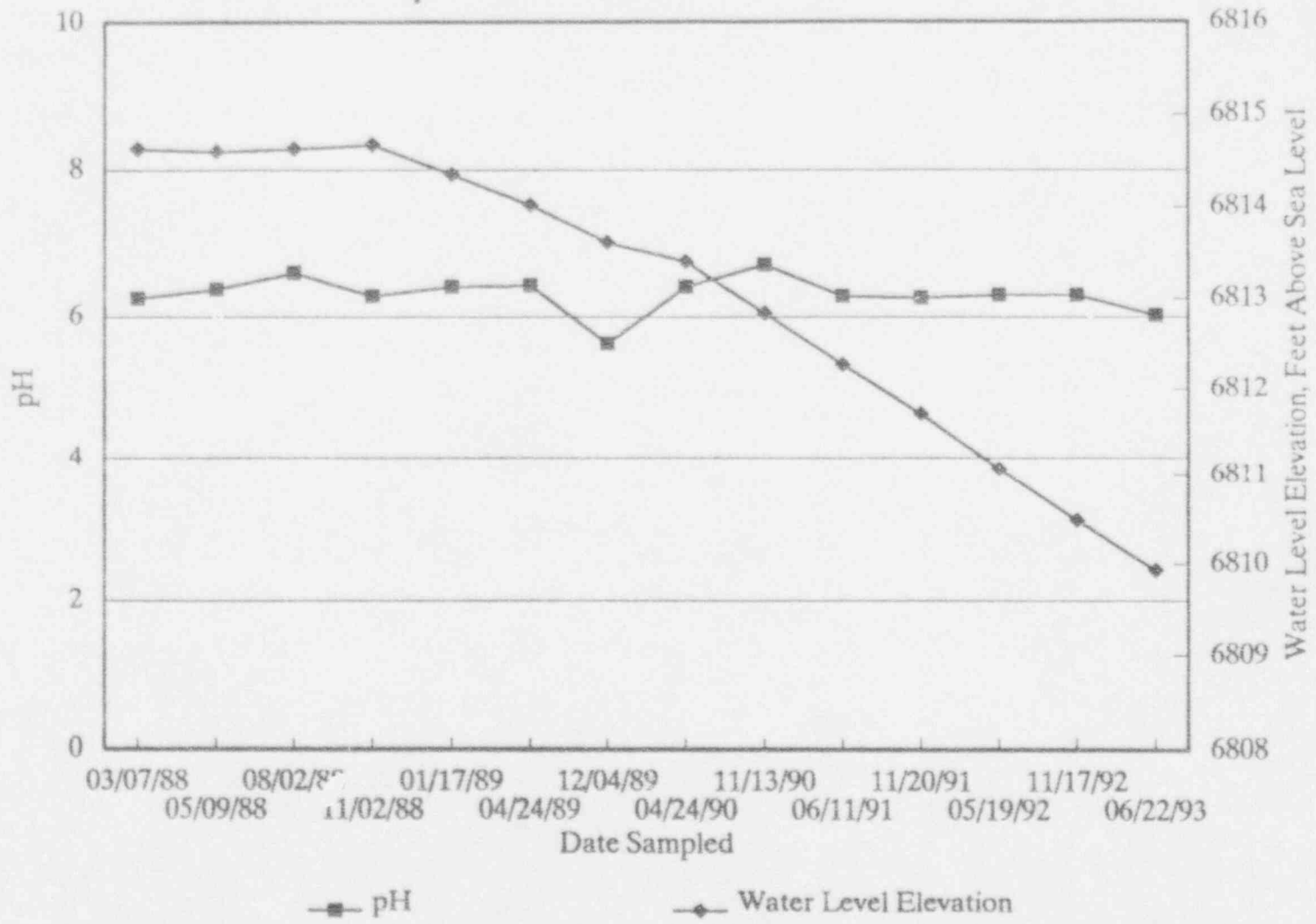
# M.W. 17 pH & Water Level Elevation



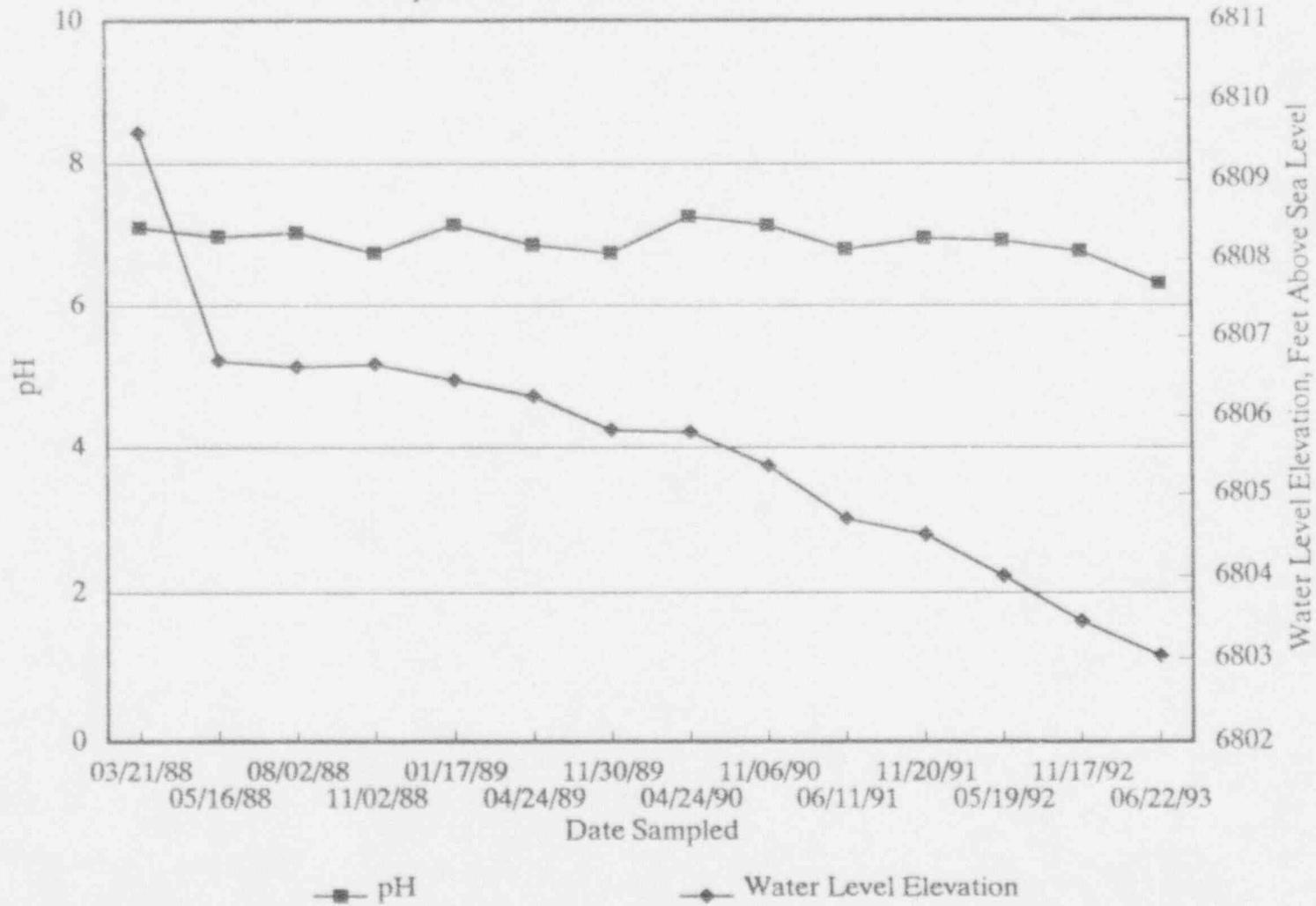
# M.W. 18 pH & Water Level Elevation



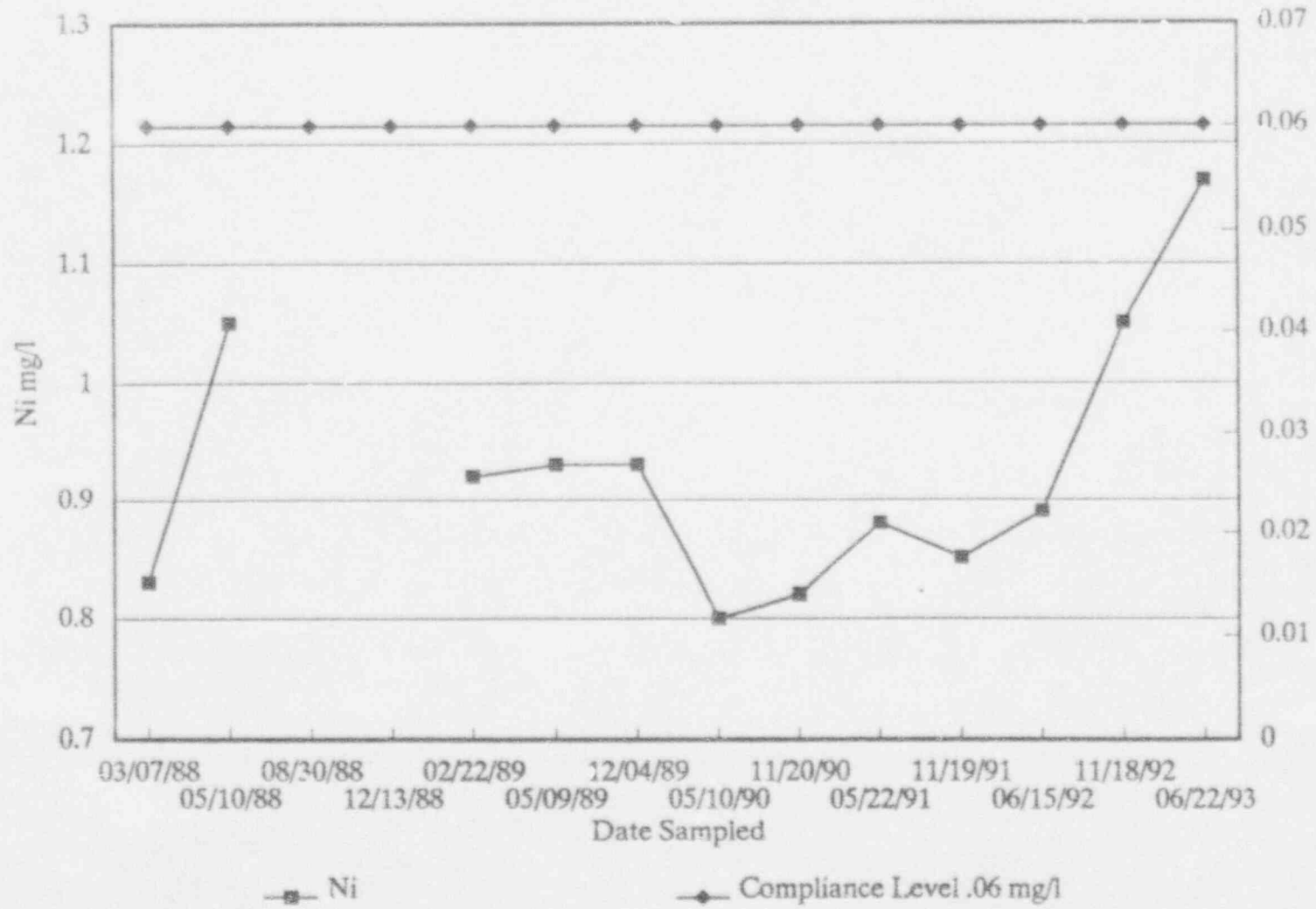
## M.W. 23 pH & Water Level Elevation



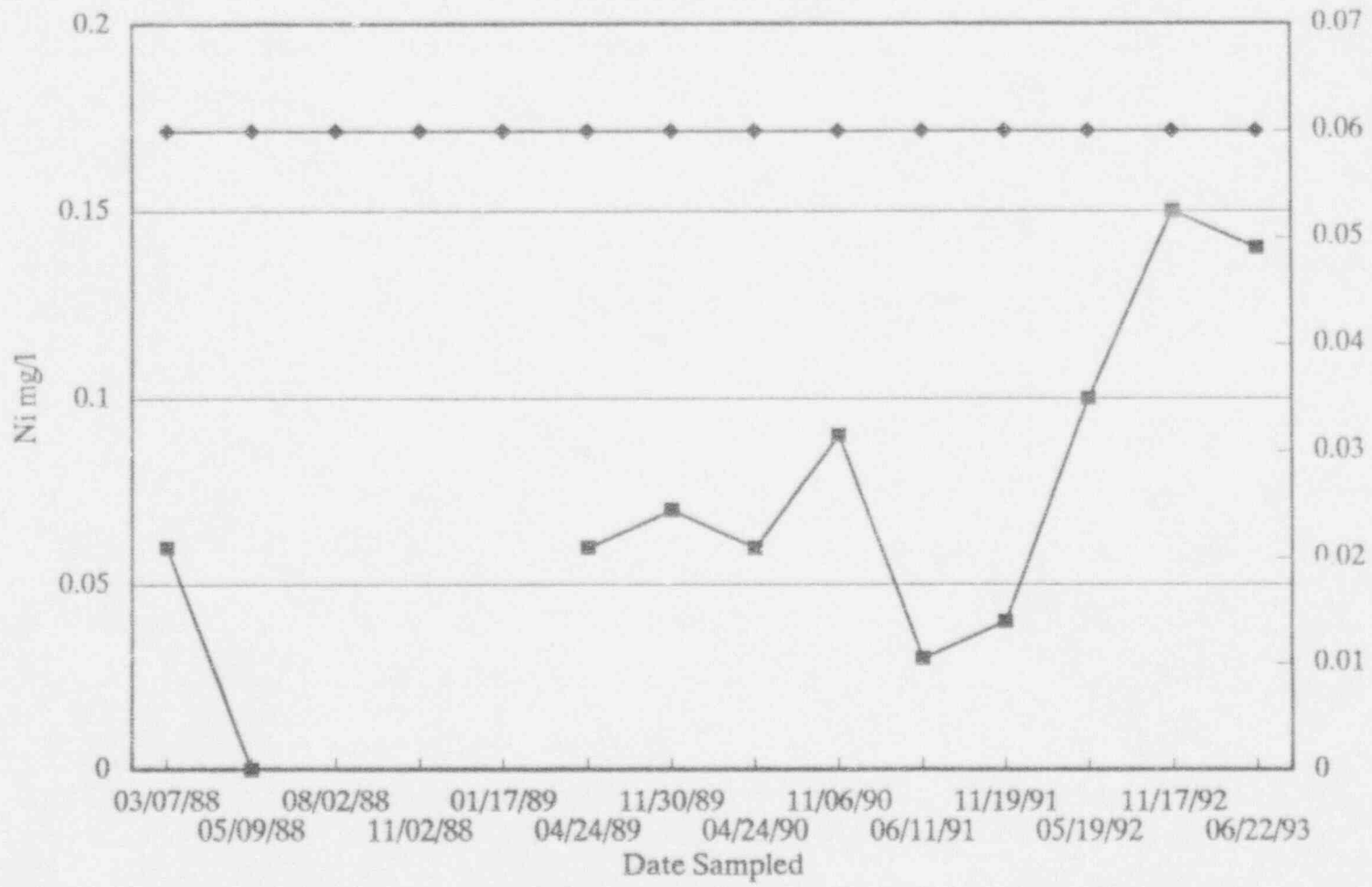
## M.W. 26 pH & Water Level Elevation



# M.W. 1 Nickel

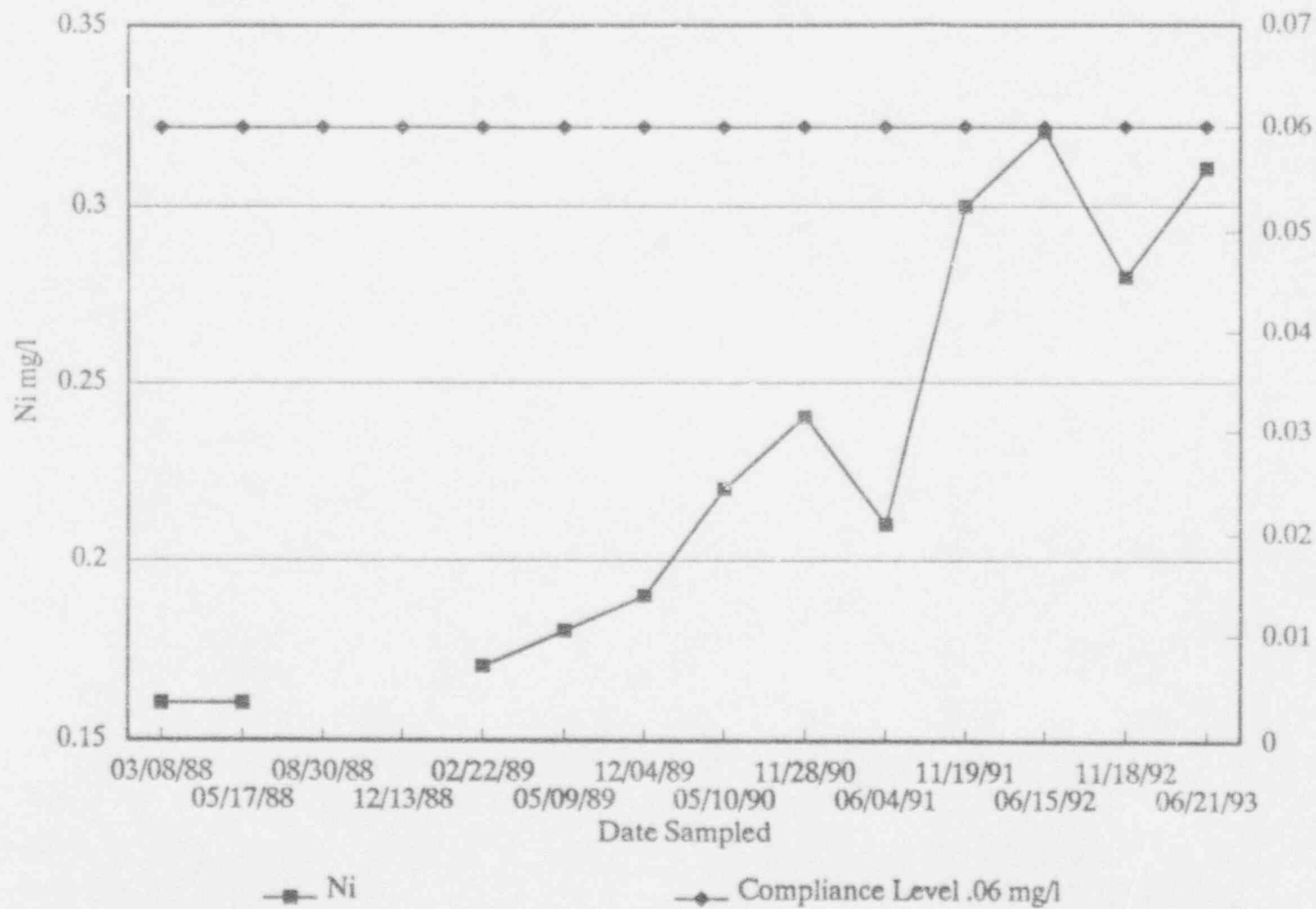


# M.W. 2 Nickel

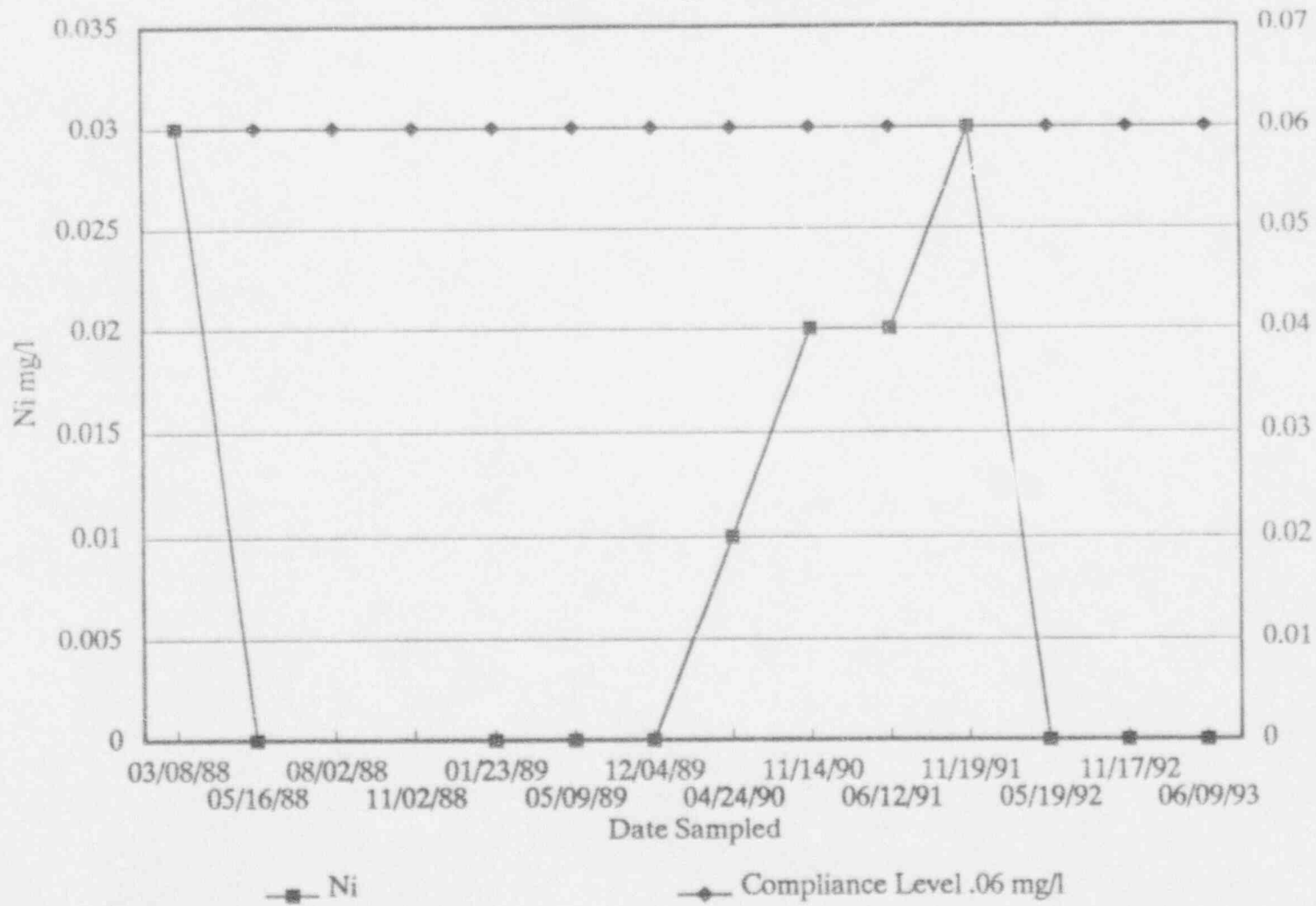


■ Ni      ◆ Compliance Level .06 mg/l

# M.W. 4 Nickel

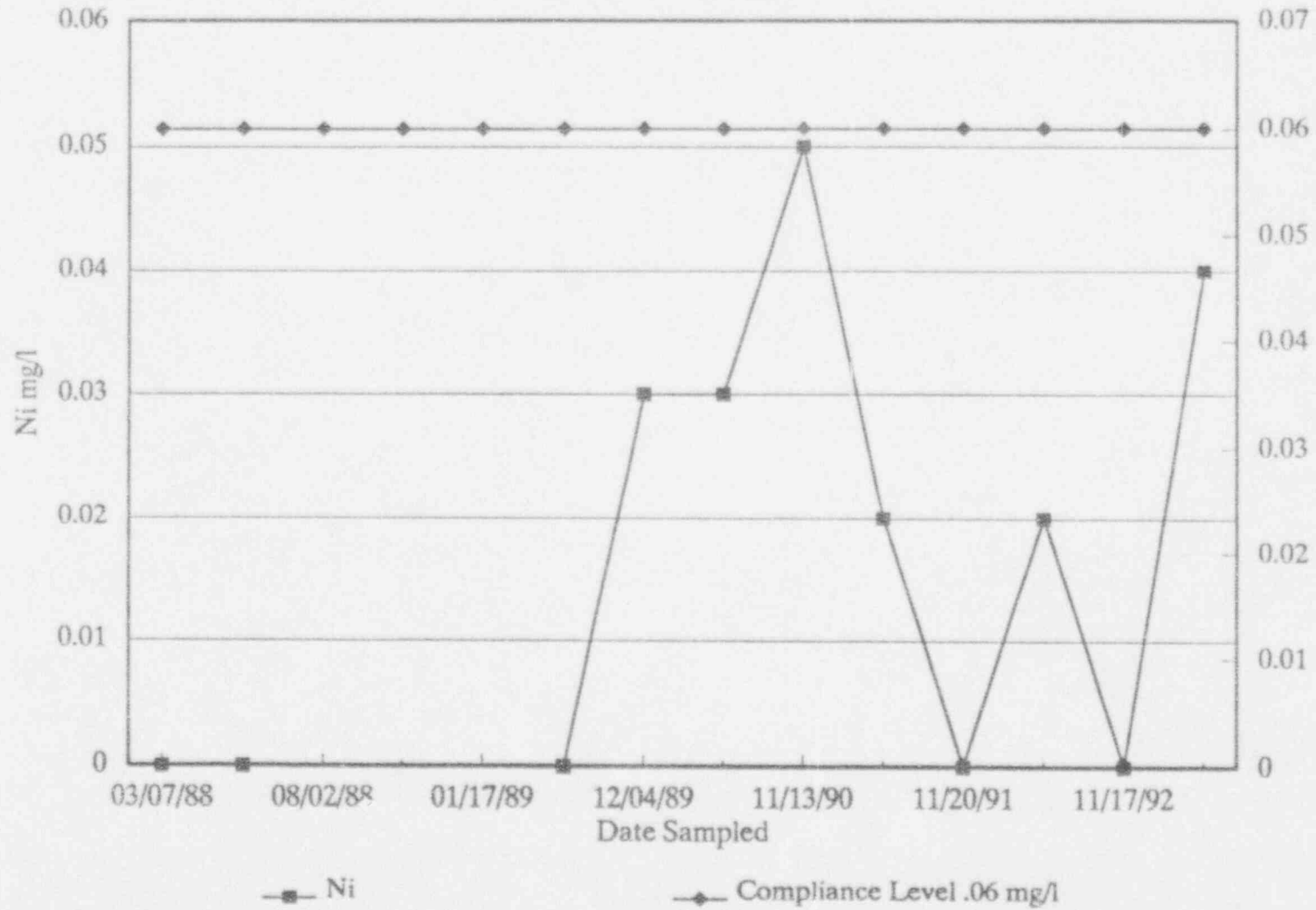


# M.W. 18 Nickel





# M.W. 23 Nickel



## GROUND WATER ANALYSES FOR M. W. 19

Date Sampled	11/19/91	05/19/92	11/17/92	06/22/92
UNat pCi/l	12.50	11.80	4.70	23.30
UNat % M.P.C.	0.04	0.04	0.02	0.08
Ra226 pCi/l	2.50	2.40	<0.2	6.90
Ra226 Error +/-	0.40	0.30		0.80
Ra226 % M.P.C.	8.33	8.00		23.00
Ra228 pCi/l	1.80	5.80	1.20	4.70
Ra228 Error +/-	0.90	1.30	0.50	1.90
Ra228 % M.P.C.	6.00	19.33	4.00	15.67
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	1.00	<1.0	3.70	<1.0
Pb210 Error +/-	0.70		0.50	
Pb210 % M.P.C.	1.00		3.70	
Gross Alpha - U & Rn pCi/l	3.00	<5.0	<5.0	9.50
Gross Alpha Error +/-	1.70			3.10
As mg/l	<0.01	<0.01	<0.01	<0.01
Se mg/l	0.007	0.005	0.008	0.006
Fe mg/l	<0.10	0.16	0.11	0.32
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	<0.01	<0.01	<0.01	
Al mg/l	<0.10	<0.10	<0.10	
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	<0.01	0.04	0.05	0.08
Ag mg/l	<0.01	<0.01	<0.01	
V mg/l	<0.01	<0.01	<0.01	
Cd mg/l	<0.005	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	68.10	73.40	65.80	69.00
Mg mg/l	19.80	22.90	17.00	20.90
Na mg/l	27.00	28.40	26.90	25.70
K mg/l	5.00	5.00	6.00	
NH3 mg/l	<0.05	<0.10	<0.10	
NO3 mg/l	0.37	<0.10	0.52	0.58
SO4 mg/l	229.00	265.00	227.00	238.00
Cl mg/l	13.10	10.00	7.00	9.90
TDS mg/l	414.00	430.00	425.00	384.00
pH	6.35	6.32	6.46	6.08
Water Elevation	6823.69	6823.29	6822.64	6822.11

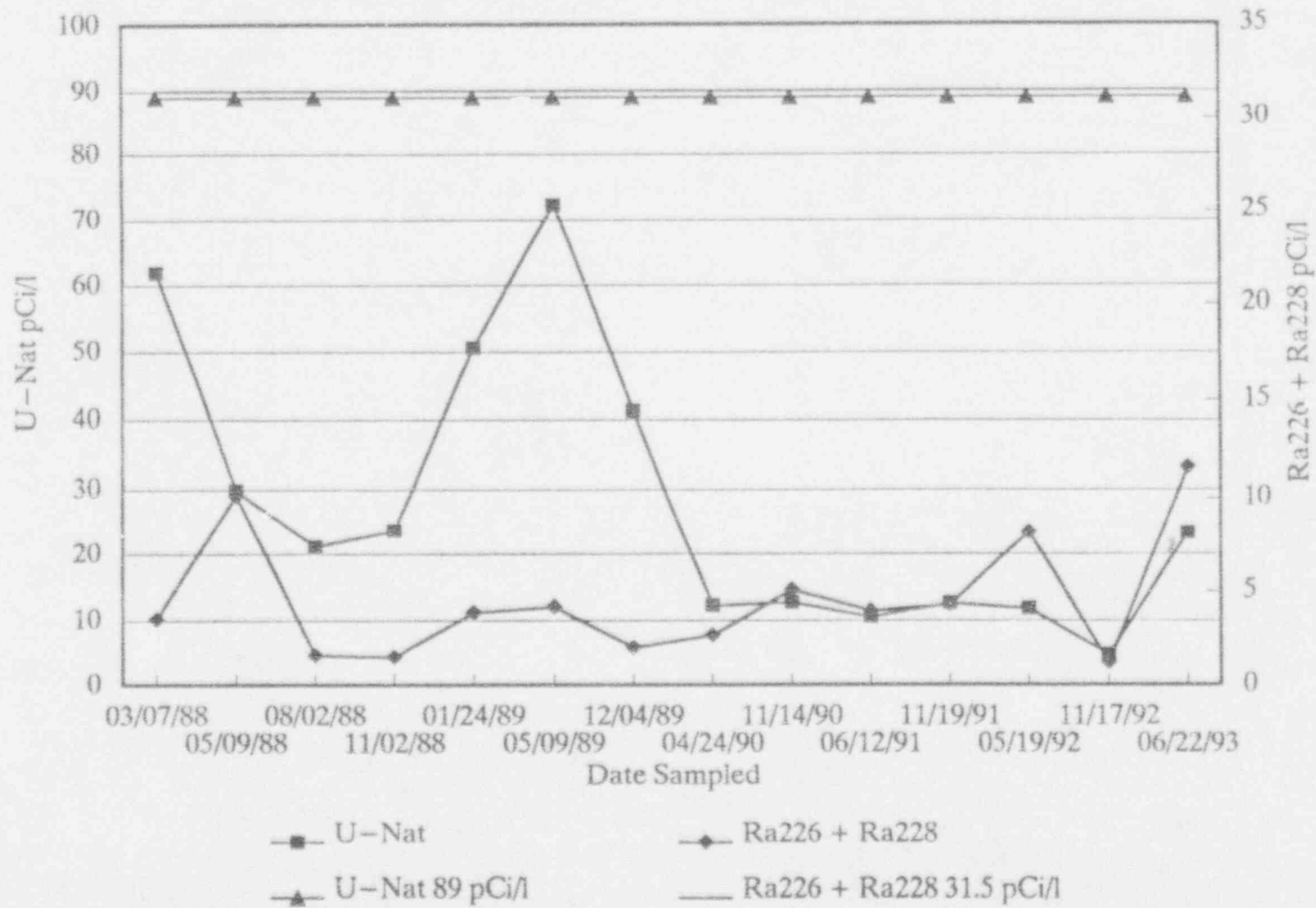
## GROUND WATER ANALYSES FOR M. W. 20

Date Sampled	11/07/91	06/15/92	11/04/92	06/14/93
UNat pCi/l	494.00	513.00	406.00	287.00
UNat % M.P.C.	1.65	1.71	1.35	0.96
Ra226 pCi/l	11.10	9.70	13.00	9.80
Ra226 Error +/-	0.70	0.70	0.70	0.50
Ra226 % M.P.C.	37.00	32.33	43.33	32.67
Ra228 pCi/l	9.10	4.40	1.90	5.80
Ra228 Error +/-	0.70	0.70	0.60	0.40
Ra228 % M.P.C.	30.33	14.67	6.33	19.33
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	<1.0	<1.0	<1.0	1.10
Pb210 Error +/-				0.90
Pb210 % M.P.C.				1.10
Gross Alpha - U & Rn pCi/l	12.00	10.30	14.50	12.60
Gross Alpha Error +/-	3.50	3.20	3.80	3.50
As mg/l	<0.01	<0.01	<0.01	<0.01
Se mg/l	<0.005	<0.005	<0.005	<0.005
Fe mg/l	39.20	8.59	9.80	10.60
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	<0.01	<0.01	0.03	
Al mg/l	1.30	0.12	0.21	
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	1.29	1.20	0.90	0.81
Ag mg/l	0.01	<0.01	<0.01	
V mg/l	<0.01	<0.01	<0.01	
Cd mg/l	0.007	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	490.00	458.00	460.00	532.00
Mg mg/l	282.00	346.00	357.00	275.00
Na mg/l	194.00	244.00	190.00	184.00
K mg/l	25.50	25.50	27.90	
NH3 mg/l	6.40	10.30	10.37	
NO3 mg/l	0.01	<0.01	<0.10	<0.10
SO4 mg/l	2759.00	2481.00	2567.00	2396.00
Cl mg/l	224.00	211.00	201.00	178.00
TDS mg/l	4406.00	4463.00	4409.00	4267.00
pH	6.16	6.50	6.97	5.87
Water Elevation	6826.47	6825.57	6824.78	6825.11

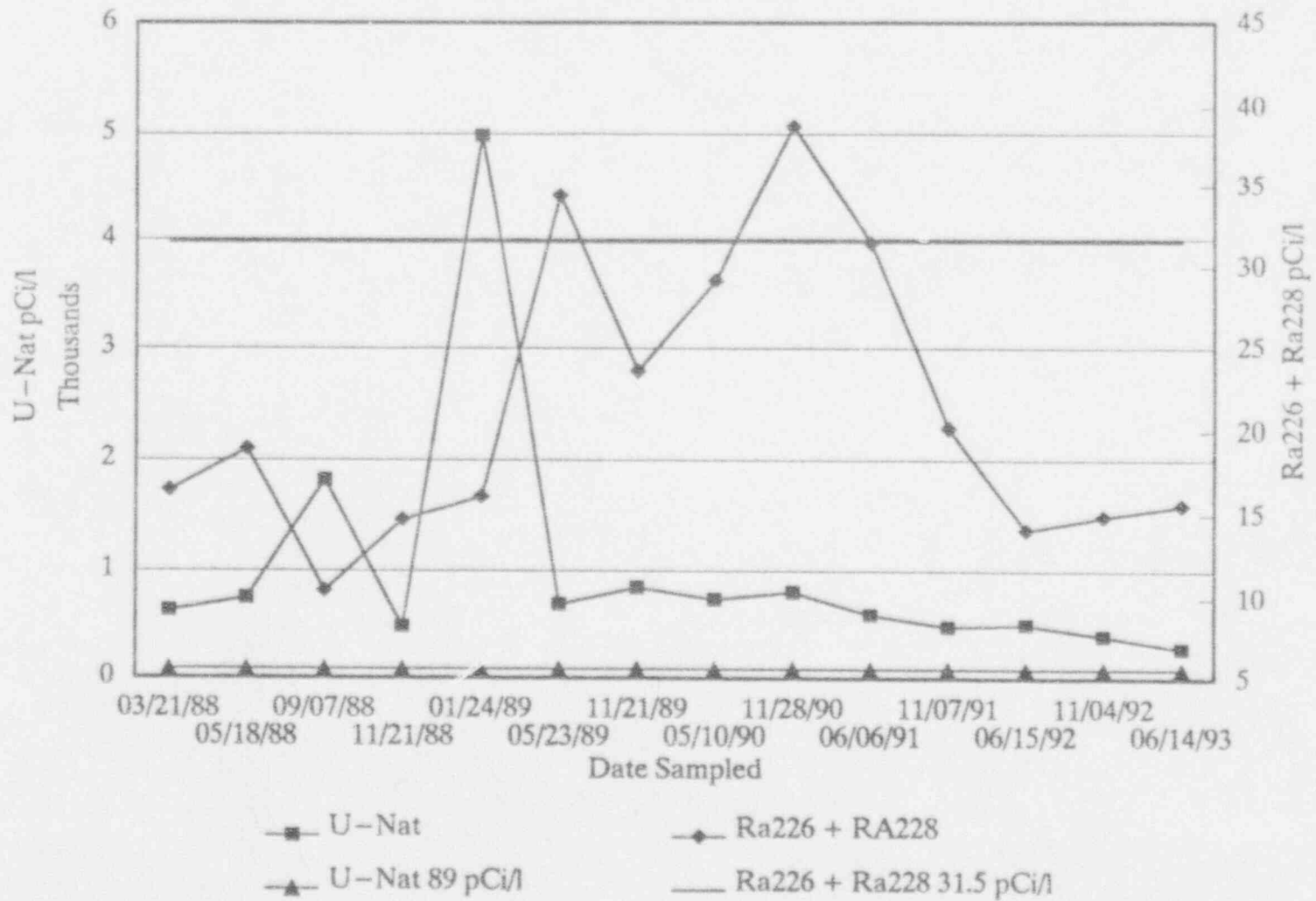
## GROUND WATER ANALYSES FOR M. W. 27

Date Sampled	11/20/91	06/16/92	11/04/92	06/21/93
UNat pCi/l	3.90	4.80	3.40	11.70
UNat % M.P.C.	0.01	0.02	0.01	0.04
Ra226 pCi/l	8.40	5.20	6.20	7.20
Ra226 Error +/-	0.60	0.50	0.50	0.90
Ra226 % M.P.C.	28.00	17.33	20.67	24.00
Ra228 pCi/l	5.20	<1.0	1.50	6.40
Ra228 Error +/-	1.30		0.70	1.40
Ra228 % M.P.C.	17.33		5.00	21.33
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	<1.0	1.20	3.60	<1.0
Pb210 Error +/-		0.60	0.90	
Pb210 % M.P.C.		1.20	3.60	
Gross Alpha - U & Pn pCi/l	9.00	5.30	6.90	7.00
Gross Alpha Error +/-	3.00	2.30	3.00	2.70
As mg/l	<0.01	<0.01	<0.01	<0.01
Se mg/l	<0.005	<0.005	<0.005	<0.005
Fe mg/l	9.90	9.46	10.10	12.30
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	<0.01	<0.01	0.03	
Al mg/l	<0.10	<0.10	<0.10	
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	<0.01	<0.01	0.03	0.05
Ag mg/l	<0.01	<0.01	<0.01	
V mg/l	<0.01	<0.01	<0.01	
Cd mg/l	<0.005	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	139.00	125.00	150.00	159.00
Mg mg/l	13.10	15.10	14.10	15.50
Na mg/l	31.90	31.30	29.70	32.40
K mg/l	7.20	7.15	9.08	
NH3 mg/l	<0.05	0.31	0.07	
NO3 mg/l	<0.01	<0.01	<0.10	<0.01
SO4 mg/l	329.00	305.00	335.00	413.00
Cl mg/l	12.30	6.40	8.20	8.60
TDS mg/l	641.00	660.00	690.00	760.00
pH	7.06	7.10	7.03	5.95
Water Elevation	6827.85	6827.01	6826.41	6827.50

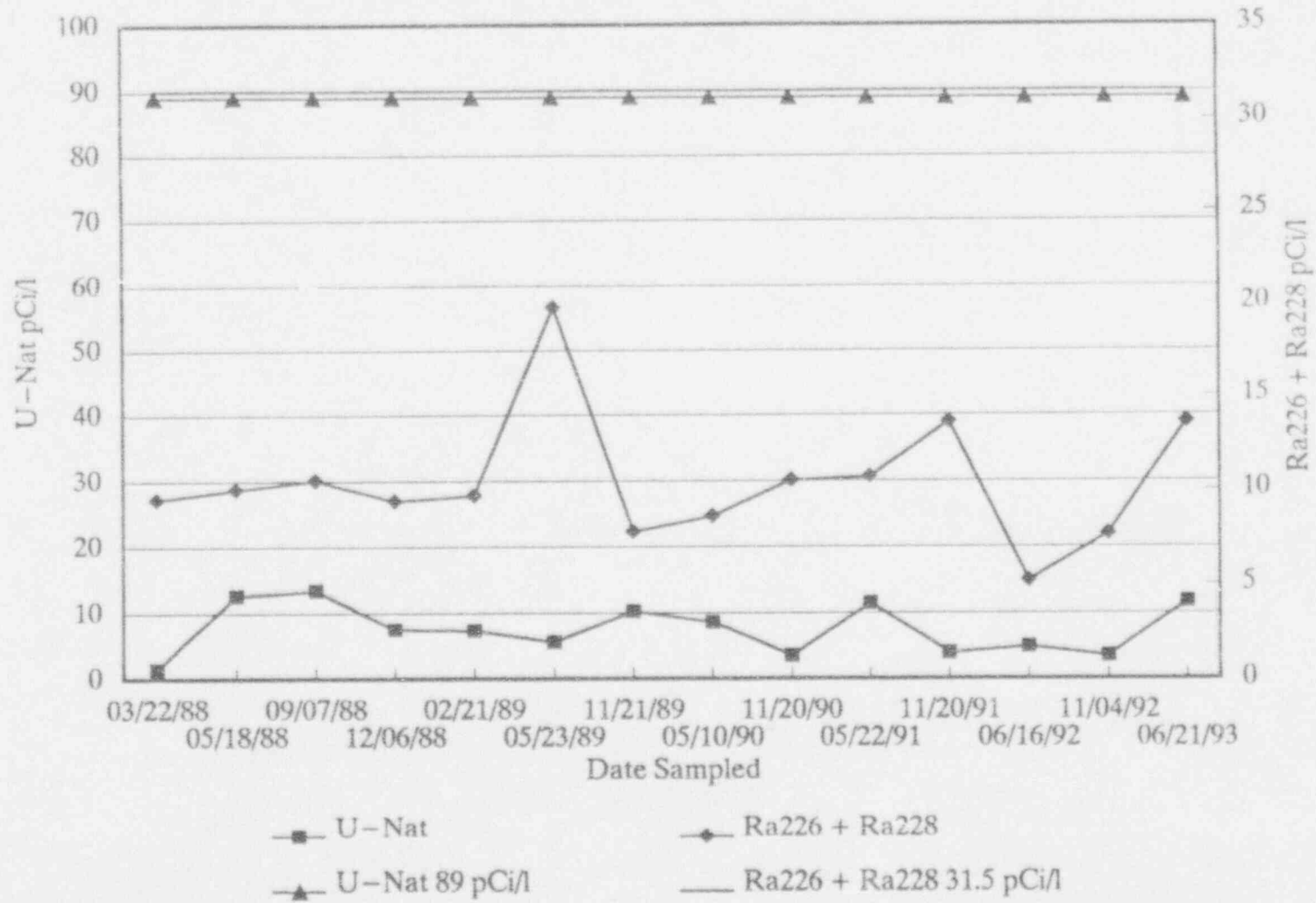
## M.W. 19 U-Nat & Ra226 + Ra228



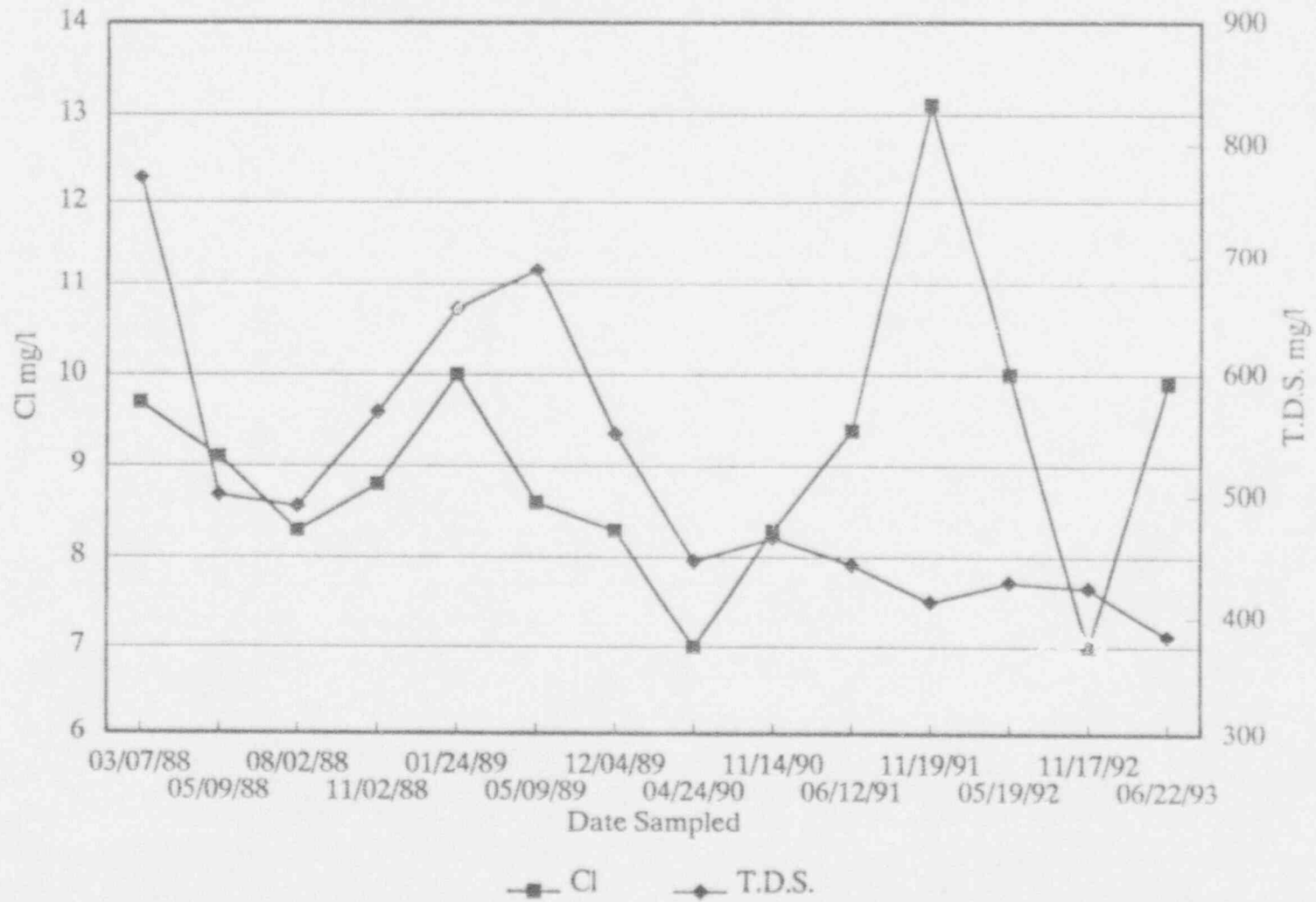
# M.W. 20 U-Nat & Ra226 + Ra228



# M.W. 27 U-Nat & Ra226 + Ra228

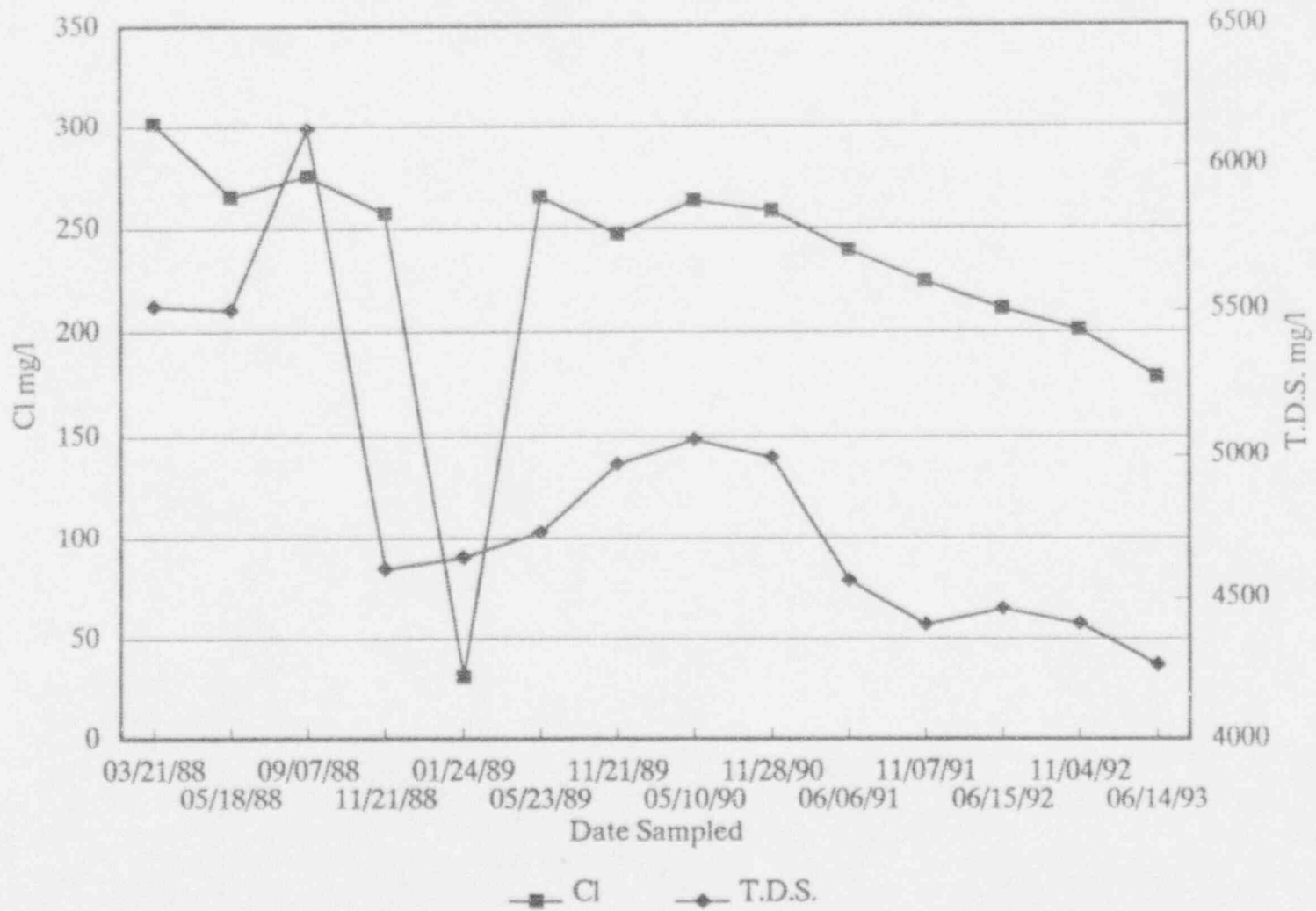


# M.W. 19 Chloride & T.D.S.

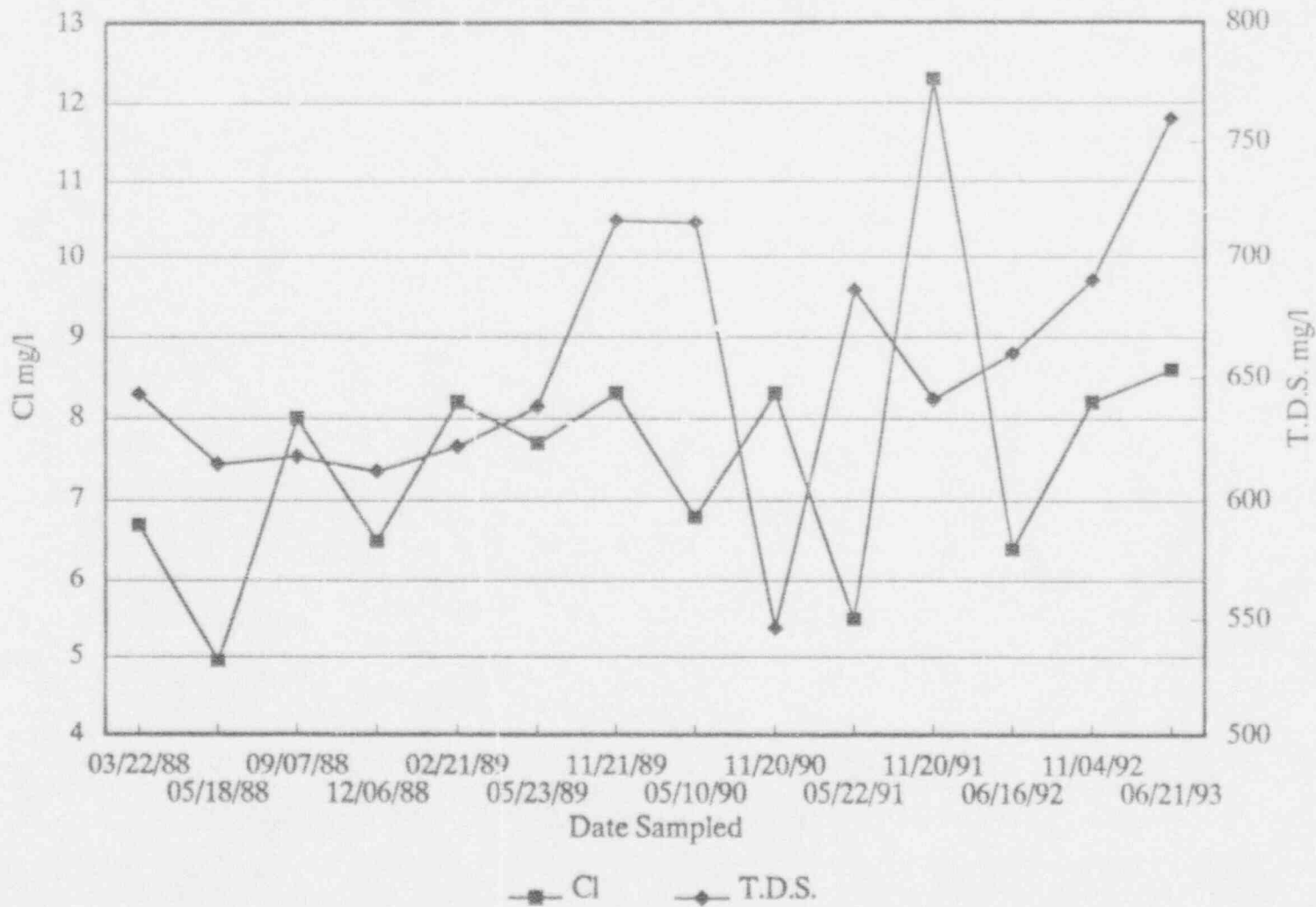




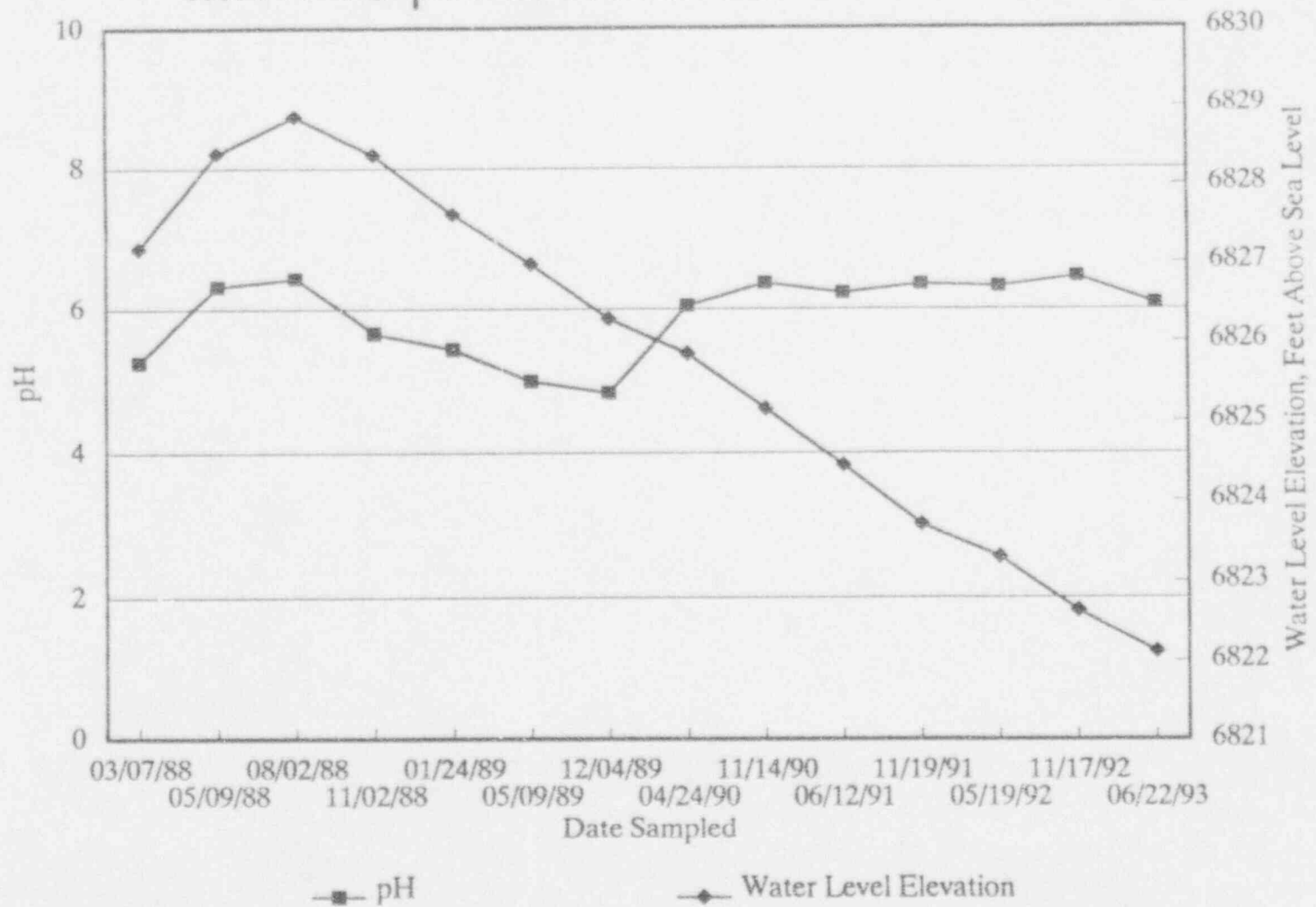
# M.W. 20 Chloride & T.D.S.



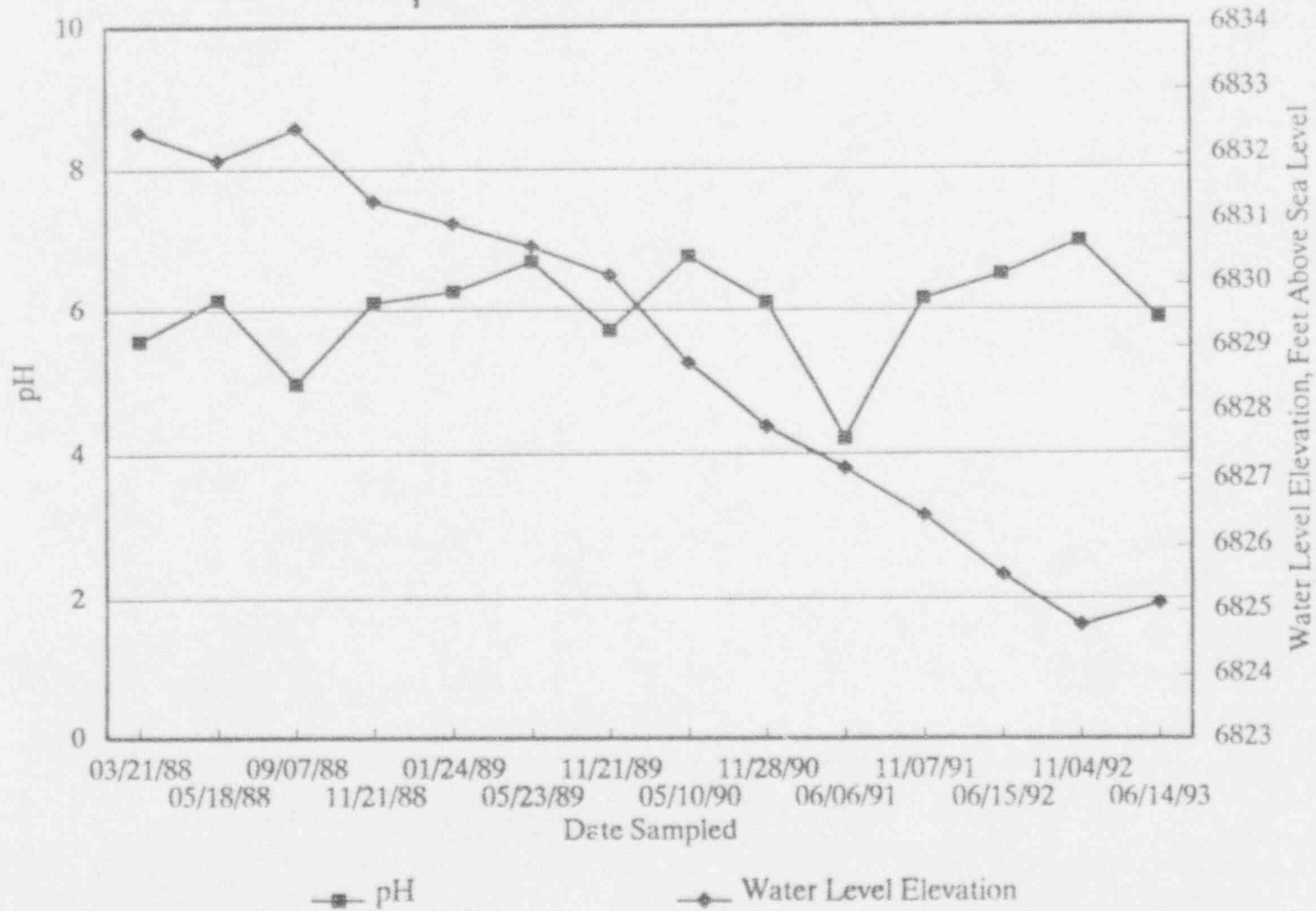
# M.W. 27 Chloride & T.D.S.



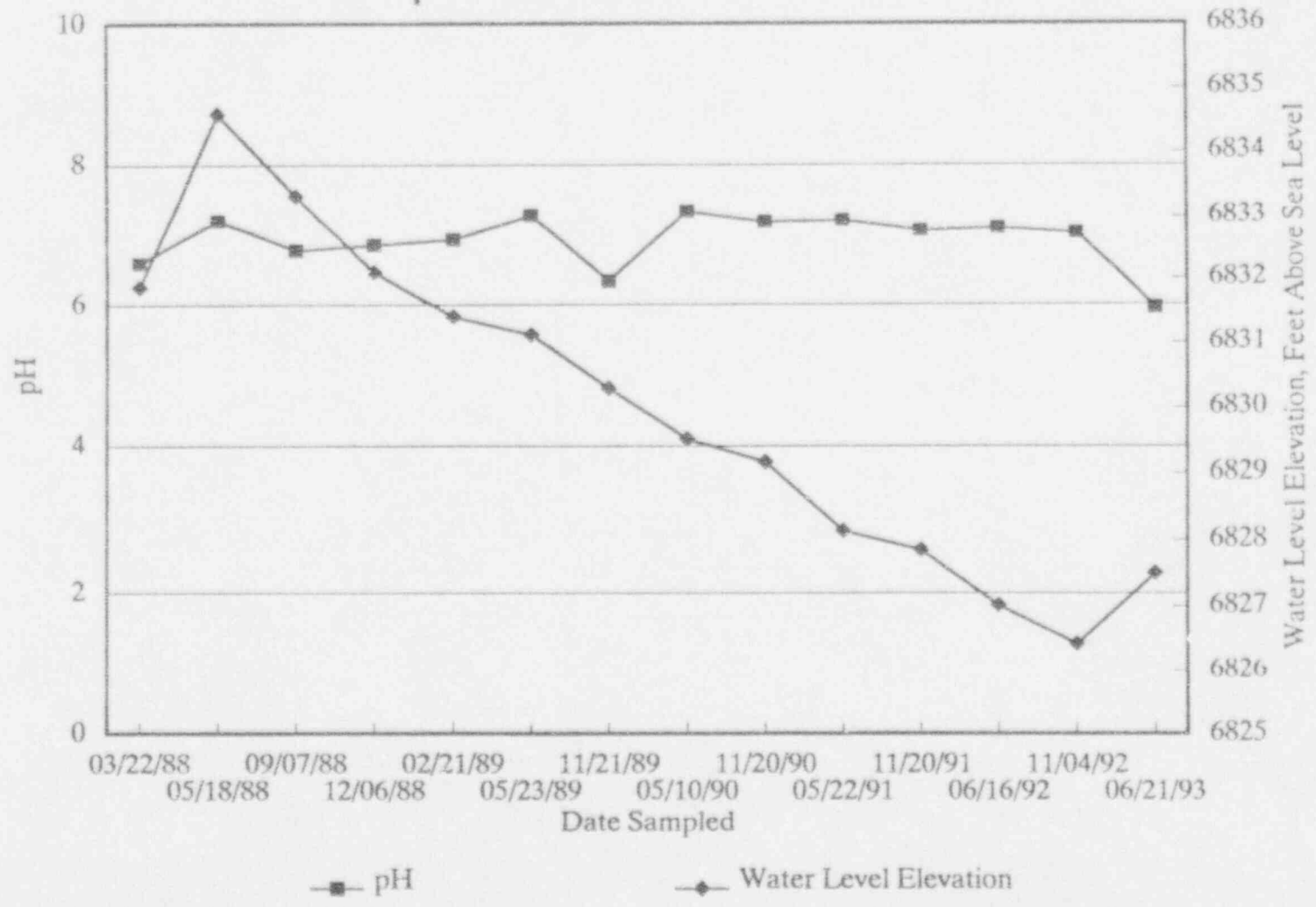
# M.W. 19 pH & Water Level Elevation



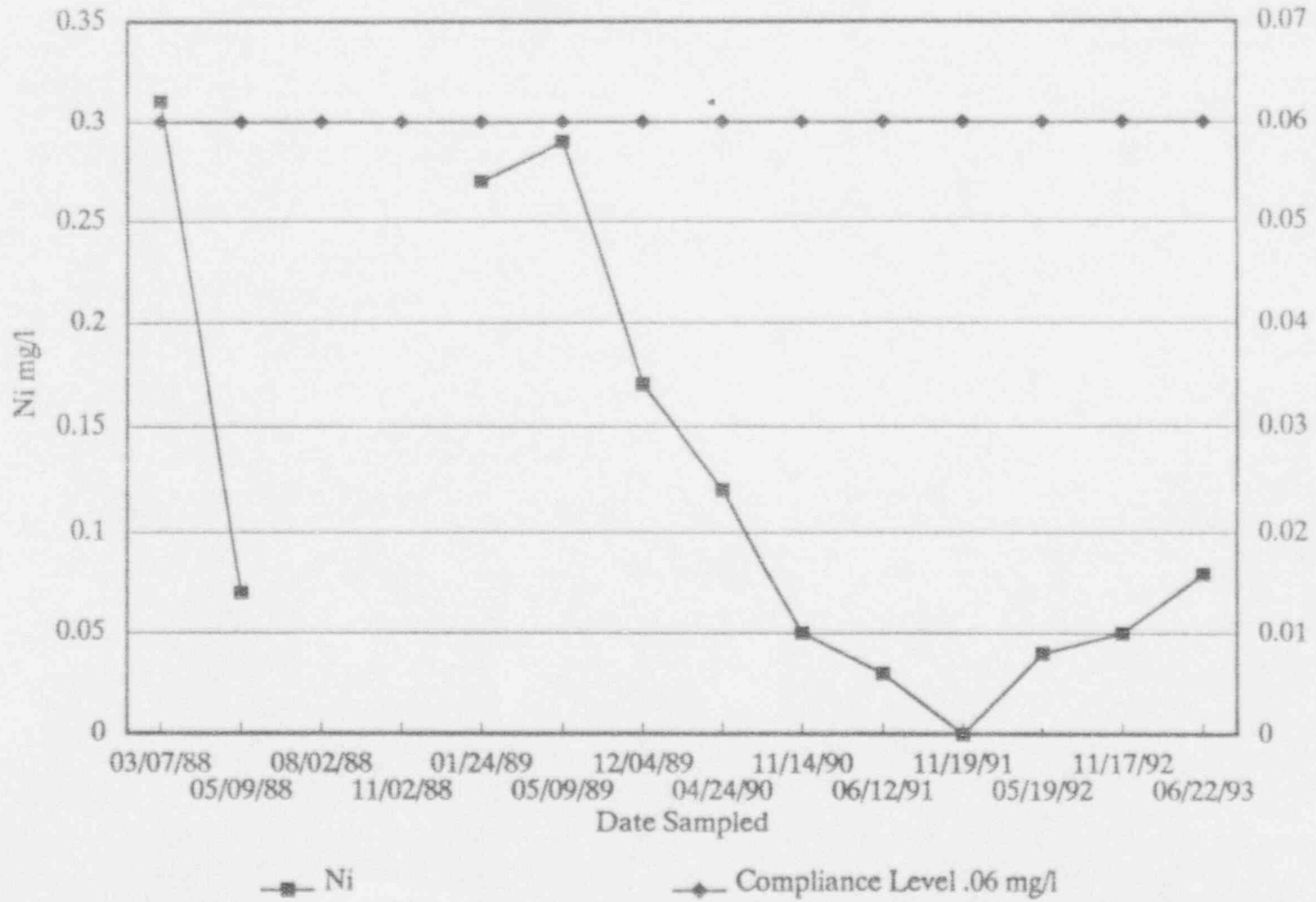
# M.W. 20 pH & Water Level Elevation



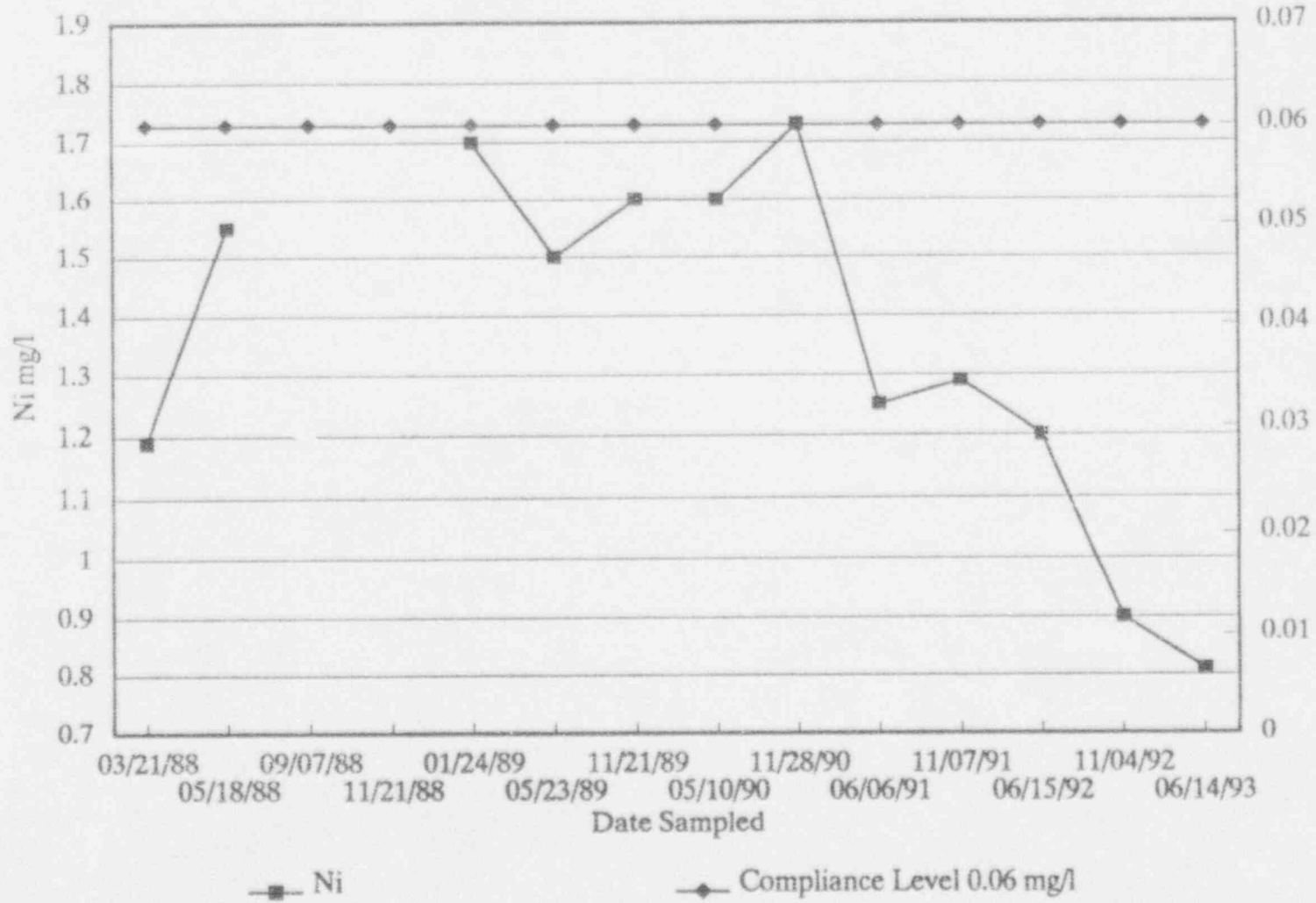
# M.W. 27 pH & Water Level Elevation



# M.W. 19 Nickel



# M.W. 20 Nickel



## GROUND WATER ANALYSES FOR D. W. 3

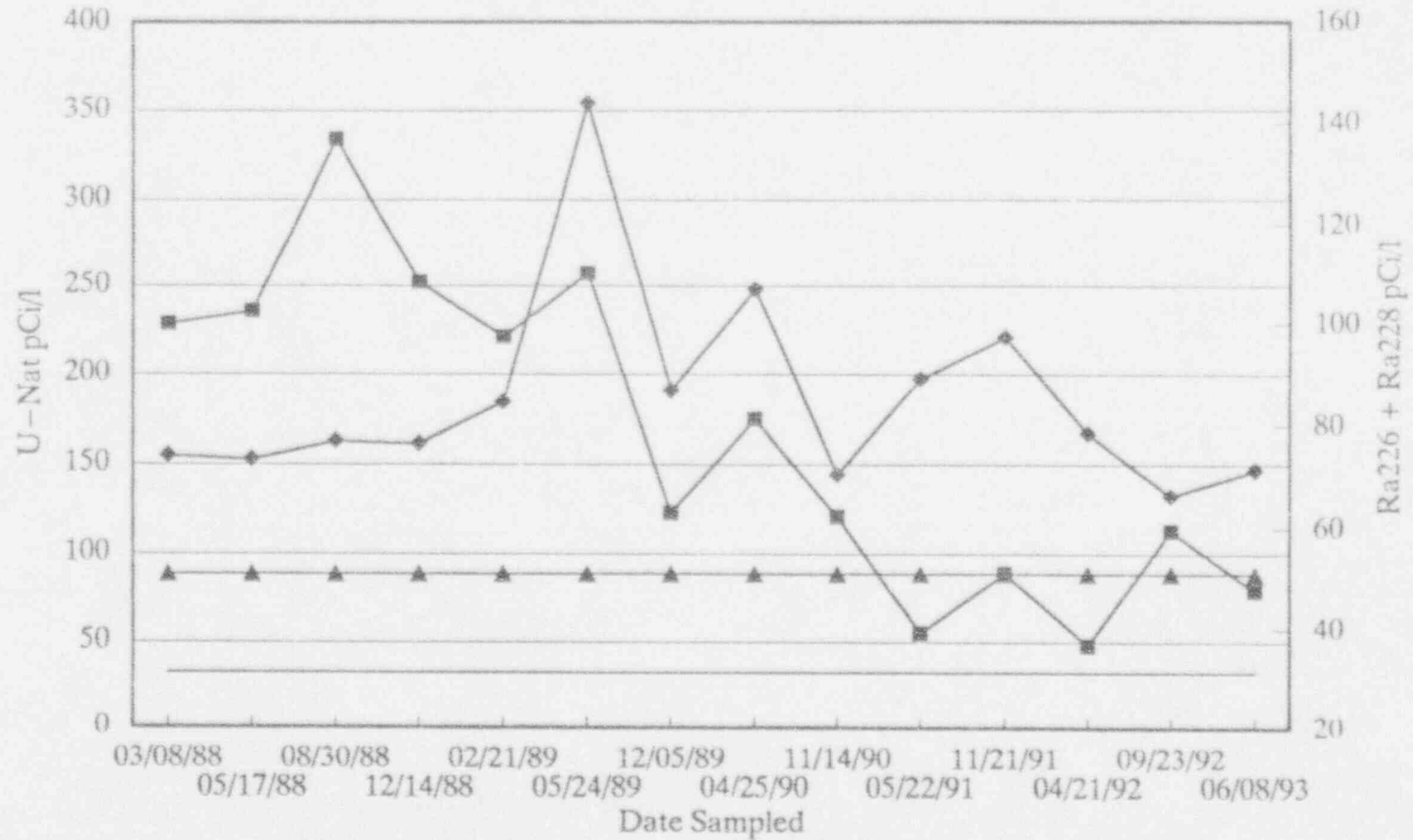
Date Sampled	11/21/91	04/21/92	09/23/92	06/08/93
UNat pCi/l	89.20	48.00	113.00	79.40
UNat % M.P.C.	0.30	0.16	0.38	0.26
Ra226 pCi/l	67.00	62.90	56.00	61.60
Ra226 Error +/-	1.60	2.90	1.20	2.50
Ra226 % M.P.C.	223.33	209.67	186.67	205.33
Ra228 pCi/l	30.30	15.60	10.30	9.80
Ra228 Error +/-	1.40	0.60	0.80	0.90
Ra228 % M.P.C.	101.00	52.00	34.33	32.67
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	<1.0	1.90	3.40	<1.0
Pb210 Error +/-		0.60	0.60	
Pb210 % M.P.C.		1.90	3.40	
Gross Alpha - U & Rn pCi/l	68.00	63.00	57.20	66.10
Gross Alpha Error +/-	8.20	7.90	7.60	8.10
As mg/l	<0.01	<0.01	<0.01	<0.01
Se mg/l	0.005	<0.005	<0.005	<0.005
Fe mg/l	27.20	25.80	25.20	24.90
Pb mg/l	<0.01	<0.01	0.03	
Mo mg/l	0.04	0.02	0.03	
Al mg/l	0.21	<0.10	0.12	
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	0.12	0.07	0.08	0.10
Ag mg/l	<0.01	<0.01	0.02	
V mg/l	0.02	<0.01	0.02	
Cd mg/l	<0.005	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	0.01	
Ca mg/l	636.00	584.00	710.00	666.00
Mg mg/l	104.00	104.00	108.00	106.00
Na mg/l	163.00	174.00	183.00	169.00
K mg/l	15.80	19.00	16.20	
NH3 mg/l	<0.05	0.23	0.23	
NO3 mg/l	0.05	<0.10	<0.10	<0.10
SO4 mg/l	1777.00	1610.00	1812.00	1690.00
Cl mg/l	17.00	103.00	152.00	148.00
TDS mg/l	3527.00	3254.00	3425.00	3393.00
pH	6.68	6.57	7.25	6.32
Water Elevation	6776.34	6776.07	6775.64	6775.15



## GROUND WATER ANALYSES FOR H.W. 4

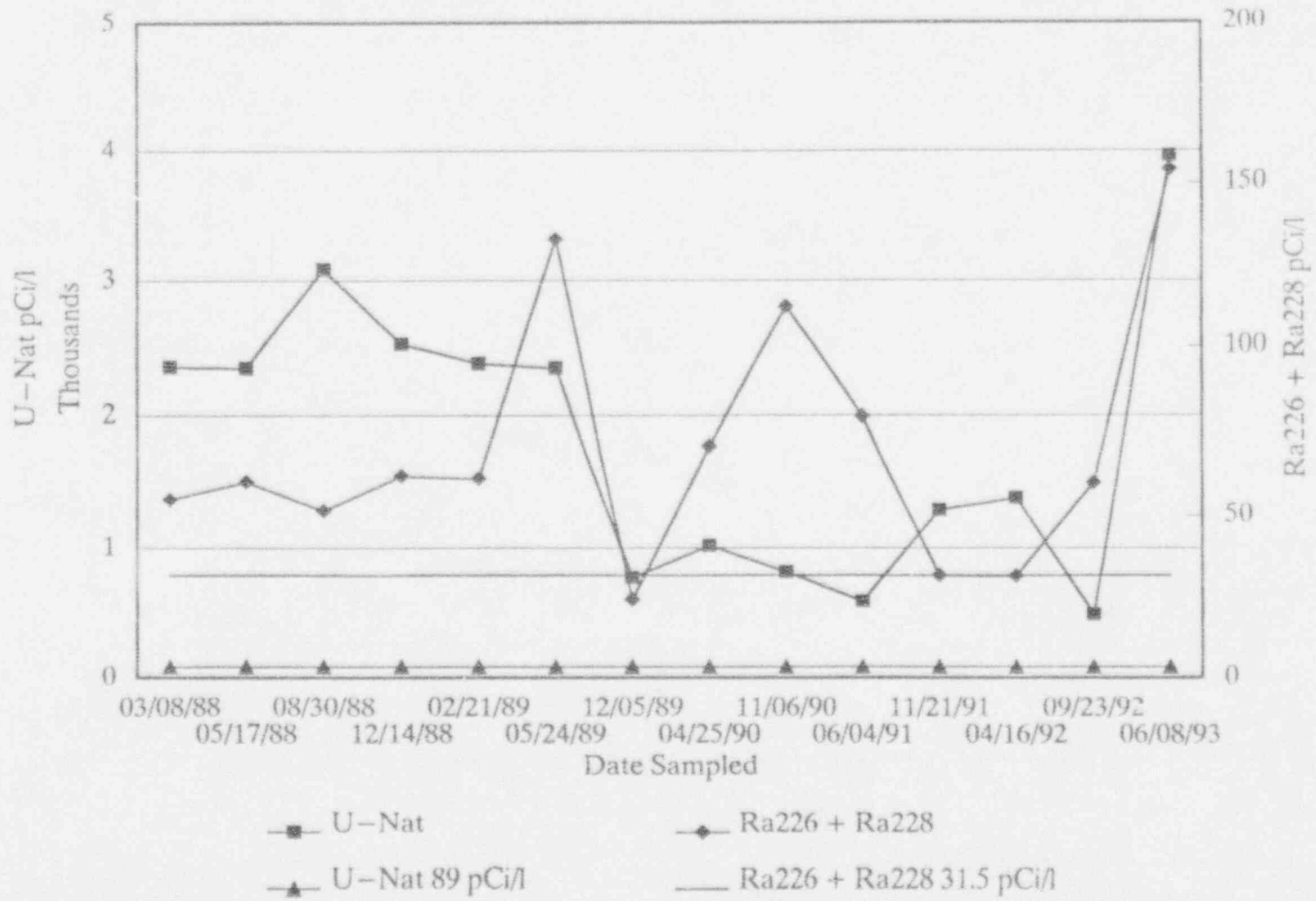
Date Sampled	11/21/91	04/16/92	09/23/92	06/08/93
UNat pCi/l	1293.00	1387.00	488.00	3958.00
UNat % M.P.C.	4.31	4.62	1.63	13.19
Ra226 pCi/l	25.10	25.10	51.10	150.00
Ra226 Error +/-	1.00	1.00	2.10	3.80
Ra226 % M.P.C.	83.67	83.67	170.33	500.00
Ra228 pCi/l	6.50	6.20	9.20	4.00
Ra228 Error +/-	1.20	0.80	0.70	0.80
Ra228 % M.P.C.	21.67	20.67	30.67	13.33
Th230 pCi/l	<1.0	<1.0	<1.0	163.00
Th230 Error +/-				21.10
Th230 % M.P.C.				8.15
Pb210 pCi/l	<1.0	1.80	3.00	31.40
Pb210 Error +/-		1.00	0.60	1.20
Pb210 % M.P.C.		1.80	3.00	31.40
Gross Alpha -- U & Rn pCi/l	25.00	25.10	52.00	315.00
Gross Alpha Error +/-	5.00	3.00	7.20	18.00
As mg/l	0.03	0.02	0.01	0.06
Se mg/l	<0.005	<0.005	<0.005	<0.005
Fe mg/l	122.00	162.00	347.00	907.00
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	0.08	0.11	0.02	
Al mg/l	0.27	<0.10	2.86	
Be mg/l	0.01	<0.01	0.05	1.14
Ni mg/l	1.11	1.29	2.41	5.32
Ag mg/l	<0.01	<0.01	<0.01	
V mg/l	<0.01	<0.01	<0.01	
Cd mg/l	0.01	0.015	0.079	
Cr mg/l	<0.01	<0.01	0.01	
Ca mg/l	577.00	595.00	647.00	608.00
Mg mg/l	119.00	132.00	156.00	182.00
Na mg/l	228.00	204.00	209.00	266.00
K mg/l	22.10	22.30	22.30	
NH3 mg/l	<0.05	0.40	0.71	
NO3 mg/l	0.04	<0.10	<0.10	<0.10
SO4 mg/l	2229.00	2055.00	2944.00	4393.00
Cl mg/l	12.50	110.00	176.00	162.00
TDS mg/l	3950.00	4013.00	4860.00	7487.00
pH	6.27	6.05	7.26	2.87
Water Elevation	6856.99	6856.16	6855.62	6855.11

# D.W. 3 U-Nat & Ra226 + Ra228

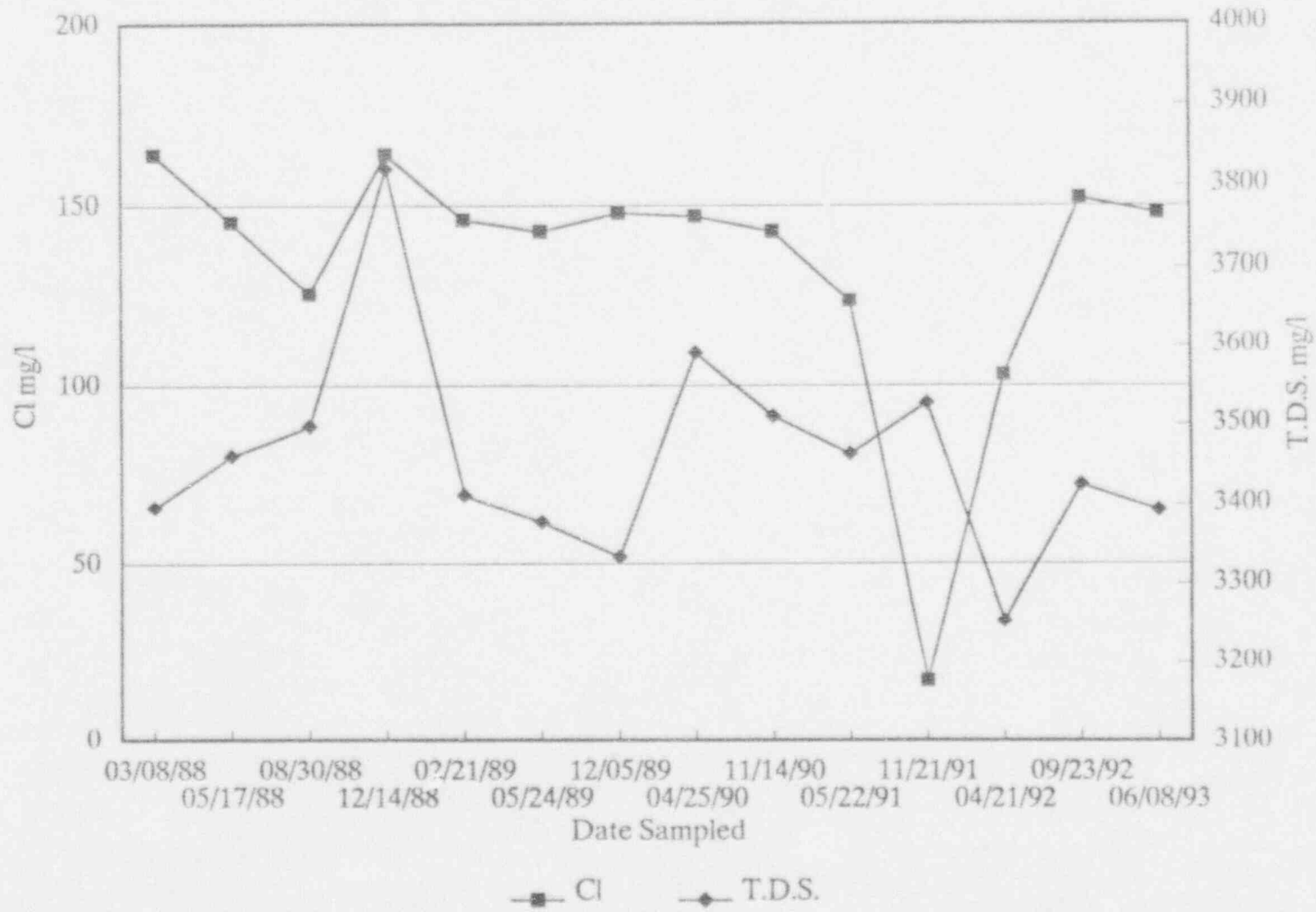


- U-Nat
- ◆ Ra226 + Ra228
- ▲ U-Nat 89 pCi/l
- Ra226 + Ra228 31.5 pCi/l

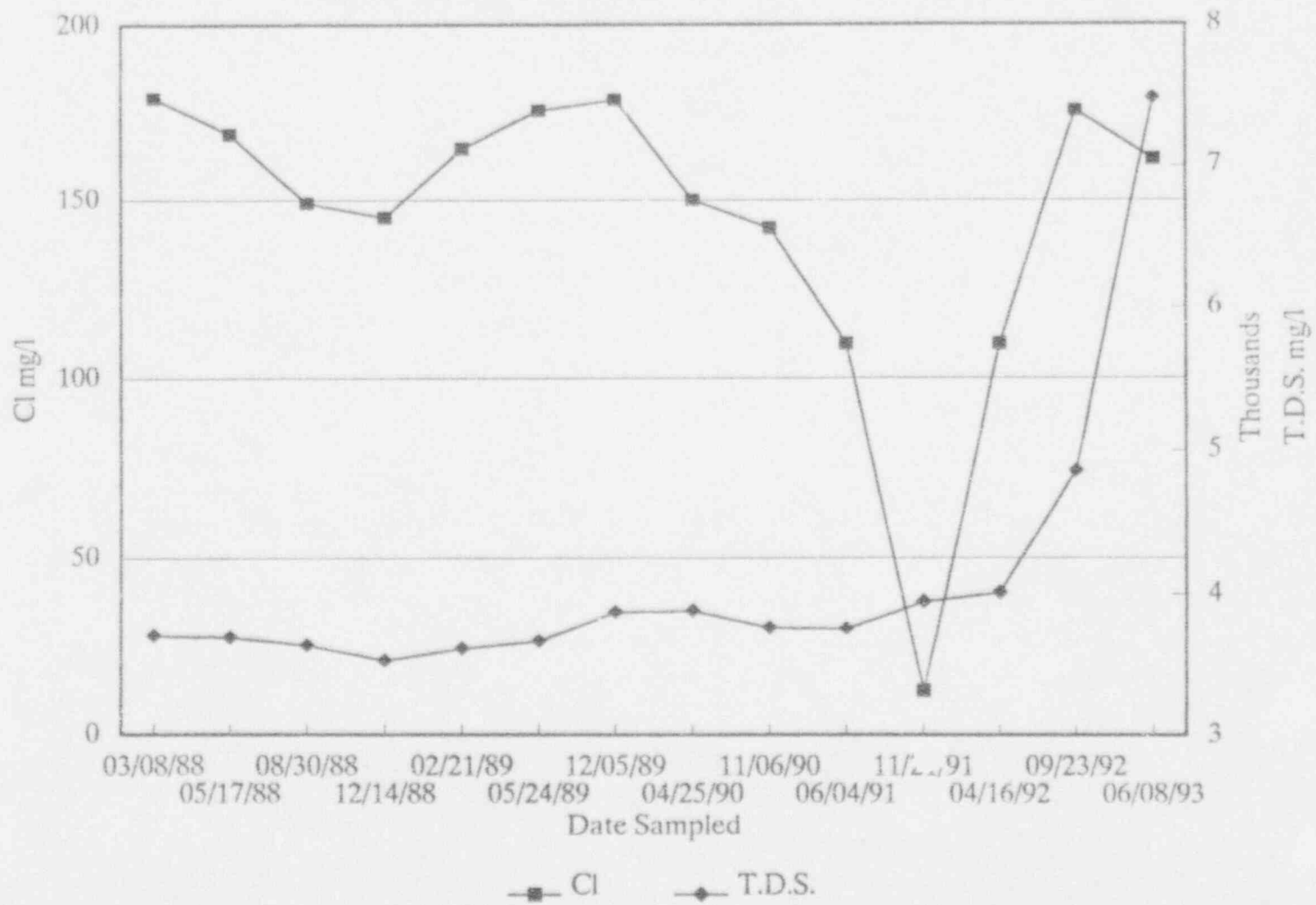
# H.W. 4 U-Nat vs Ra226 + Ra228



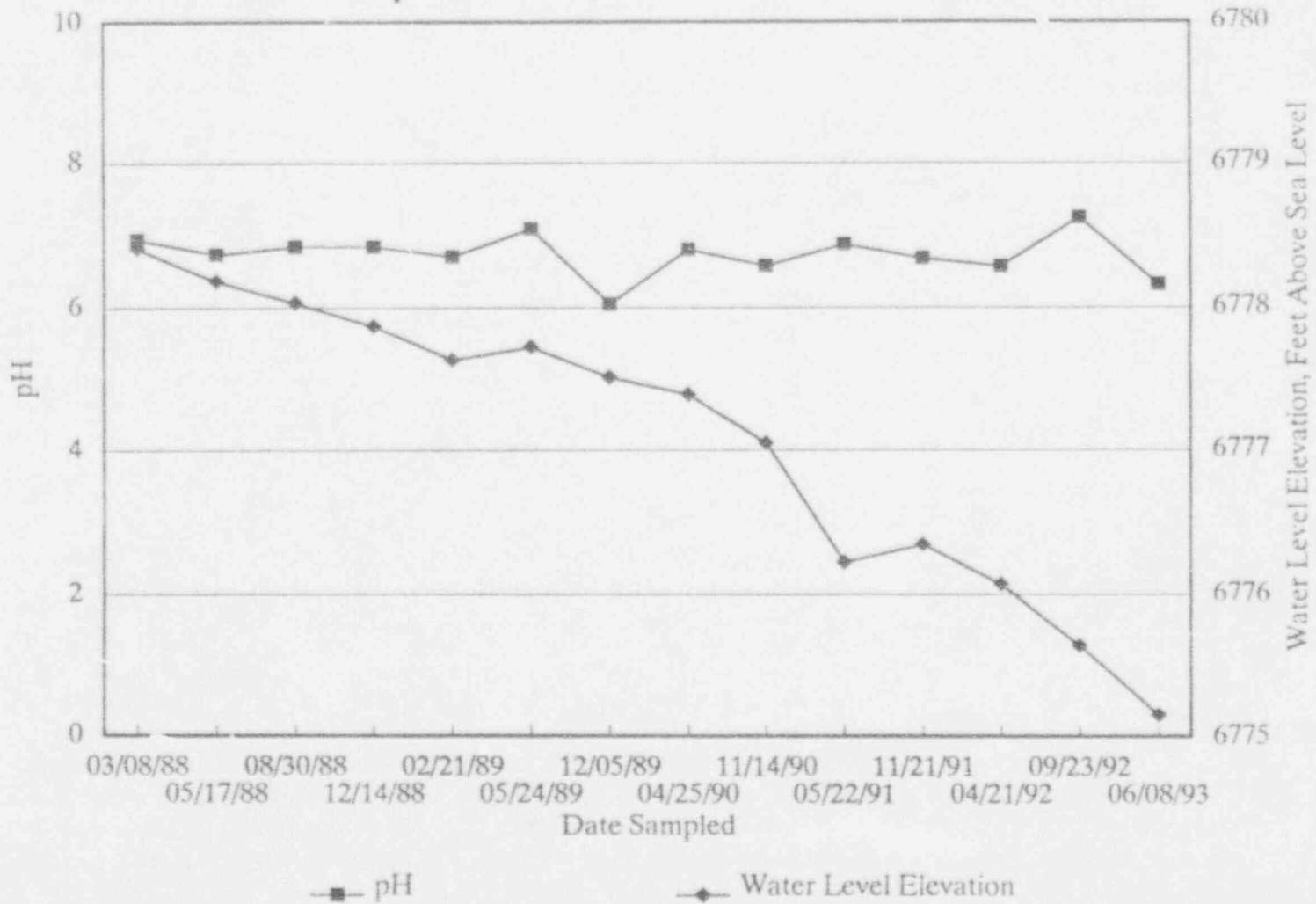
# D.W. 3 Chloride & T.D.S.



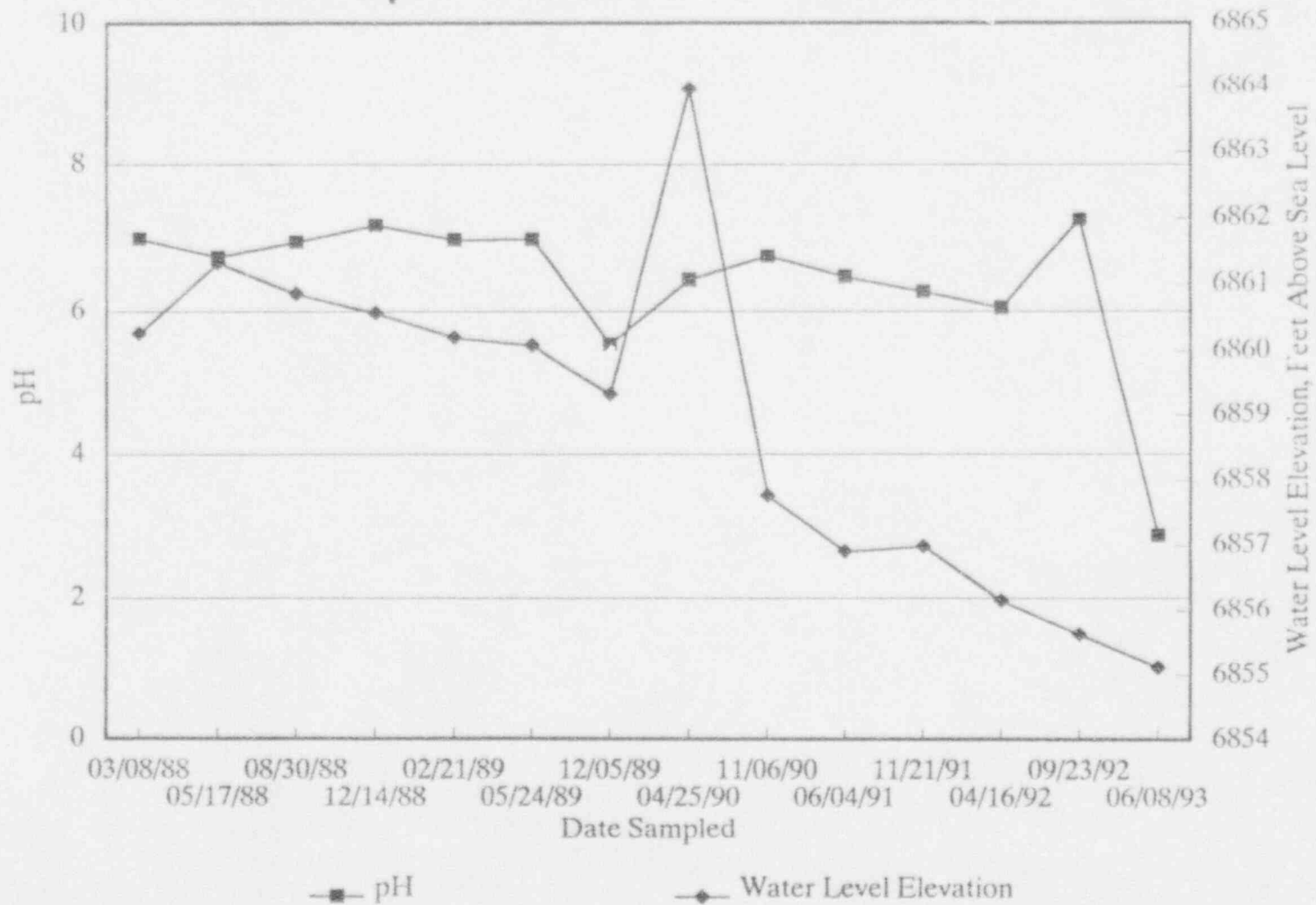
# H.W. 4 Chloride vs T.D.S.



# D.W. 3 pH & Water Level Elevation



# H.W. 4 pH vs Water Level Elevation



## GROUND WATER ANALYSES FOR M. W. 21A

Date Sampled	11/20/91	06/15/92	12/08/92	06/09/93
UNat pCi/l	14.40	7.00	4.20	3.80
UNat % M.P.C.	0.05	0.02	0.01	0.01
Ra226 pCi/l	11.30	2.80	15.10	10.10
Ra226 Error +/-	0.70	0.40	1.80	1.10
Ra226 % M.P.C.	37.67	9.33	50.33	33.67
Ra228 pCi/l	16.80	9.80	5.20	24.50
Ra228 Error +/-	1.20	0.80	0.50	2.50
Ra228 % M.P.C.	56.00	32.67	17.33	81.67
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	<1.0	<1.0	<1.0	<1.0
Pb210 Error +/-				
Pb210 % M.P.C.				
Gross Alpha - U & Rn pCi/l	12.00	2.90	15.60	12.10
Gross Alpha Error +/-	3.50	1.10	3.90	1.30
As mg/l	0.030	0.060	0.040	0.050
Se mg/l	<0.005	<0.005	<0.005	<0.005
Fe mg/l	92.30	94.10	76.40	77.70
Pb mg/l	<0.01	<0.01		
Mo mg/l	<0.01	<0.01		
Al mg/l	<0.10	<0.10		
Be mg/l	0.02	0.02	0.02	<0.01
Ni mg/l	0.28	0.24	0.26	0.28
Ag mg/l	<0.01	<0.01		
V mg/l	0.01	<0.01		
Cd mg/l	<0.005	<0.005		
Cr mg/l	<0.01	<0.01		
Ca mg/l	305.00	265.00	259.00	316.00
Mg mg/l	77.00	75.30	71.20	70.10
Na mg/l	72.40	72.50	68.20	63.80
K mg/l	11.80	13.80		
NH3 mg/l	0.19	0.68		
NO3 mg/l	38.00	<0.01	<0.10	<0.10
SO4 mg/l	1189.00	1187.00	1104.00	1226.00
Cl mg/l	79.90	57.70	50.70	56.10
TDS mg/l	1894.00	1772.00	1627.00	1686.00
pH	6.26	6.27	6.50	6.39
Water Elevation	6794.79	6793.83	6792.76	6791.99



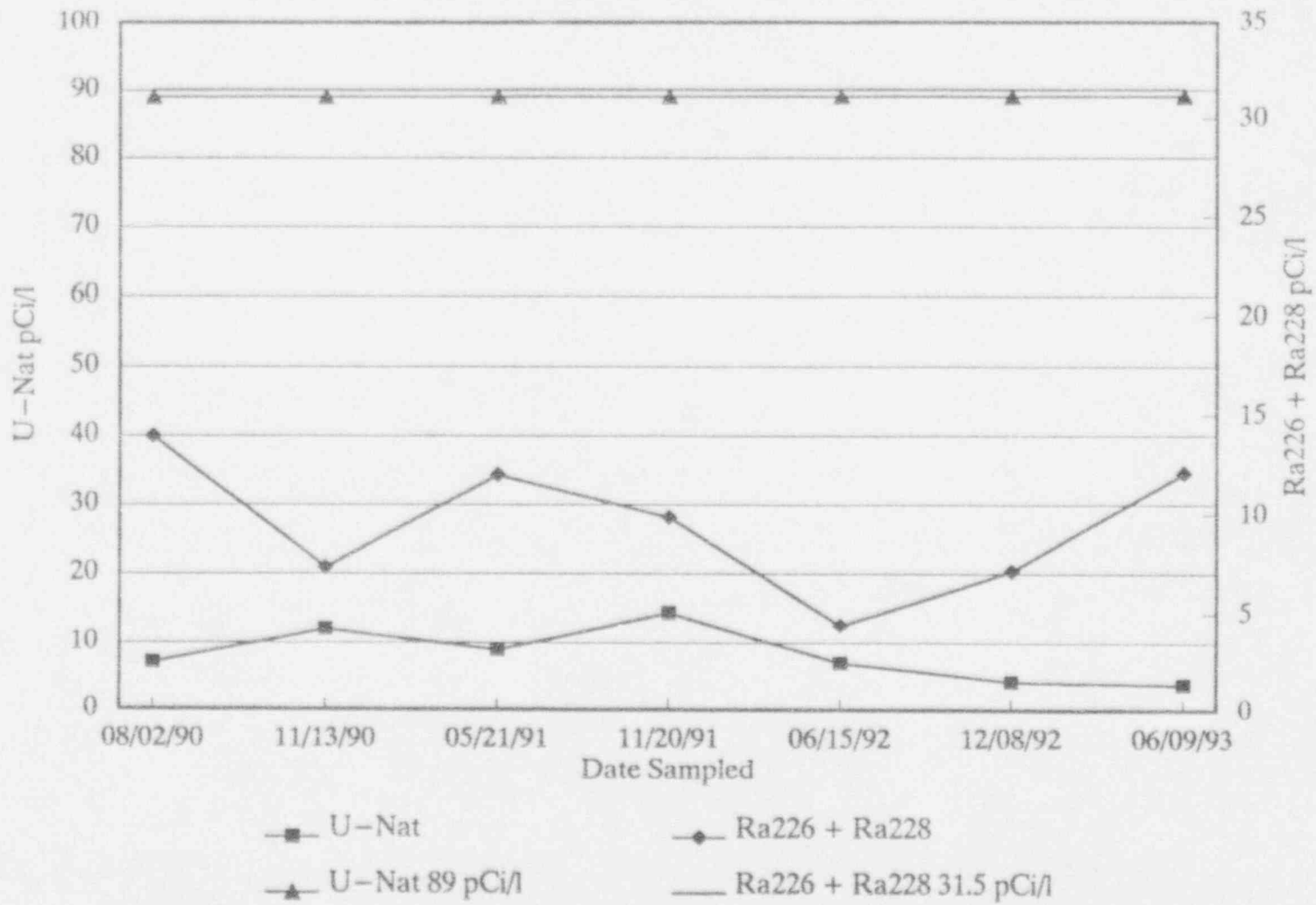
## GROUND WATER ANALYSES FOR M.W. 25

Date Sampled	11/21/91	06/16/92	12/08/92	06/09/93
UNat pCi/l	28.00	13.10	11.00	19.80
UNat % M.P.C.	0.09	0.04	0.04	0.07
Ra226 pCi/l	21.90	25.90	33.30	22.70
Ra226 Error +/-	1.00	1.10	2.30	1.50
Ra226 % M.P.C.	73.00	86.33	111.00	75.67
Ra228 pCi/l	42.30	17.10	20.90	27.30
Ra228 Error +/-	3.70	1.20	0.70	2.90
Ra228 % M.P.C.	141.00	57.00	69.67	91.00
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	<1.0	1.20	<1.0	<1.0
Pb210 Error +/-		0.60		
Pb210 % M.P.C.		1.20		
Gross Alpha -- U & Rn pCi/l	22.00	26.50	33.60	25.30
Gross Alpha Error +/-	4.70	5.20	5.80	3.10
As mg/l	0.07	0.09	0.09	0.10
Se mg/l	<0.005	<0.005	<0.005	<0.005
Fe mg/l	83.20	81.00	89.30	68.10
Pb mg/l	<0.01	<0.01		
Mo mg/l	<0.01	<0.01		
Al mg/l	<0.10	<0.10		
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	0.26	0.23	0.31	0.27
Ag mg/l	0.01	<0.01		
V mg/l	0.02	<0.01		
Cd mg/l	<0.005	<0.005		
Cr mg/l	0.01	<0.01		
Ca mg/l	630.00	625.00	694.00	761.00
Mg mg/l	141.00	134.00	149.00	146.00
Na mg/l	142.00	167.00	162.00	177.00
K mg/l	21.60	21.30		
NH3 mg/l	0.23	0.47		
NO3 mg/l	<0.01	<0.01	<0.10	<0.10
SO4 mg/l	2231.00	1991.00	2220.00	2304.00
Cl mg/l	180.00	134.00	129.00	134.00
TDS mg/l	3930.00	3858.00	3642.00	3810.00
pH	6.22	6.21	6.42	6.16
Water Elevation	6748.51	6748.41	6748.02	6747.42

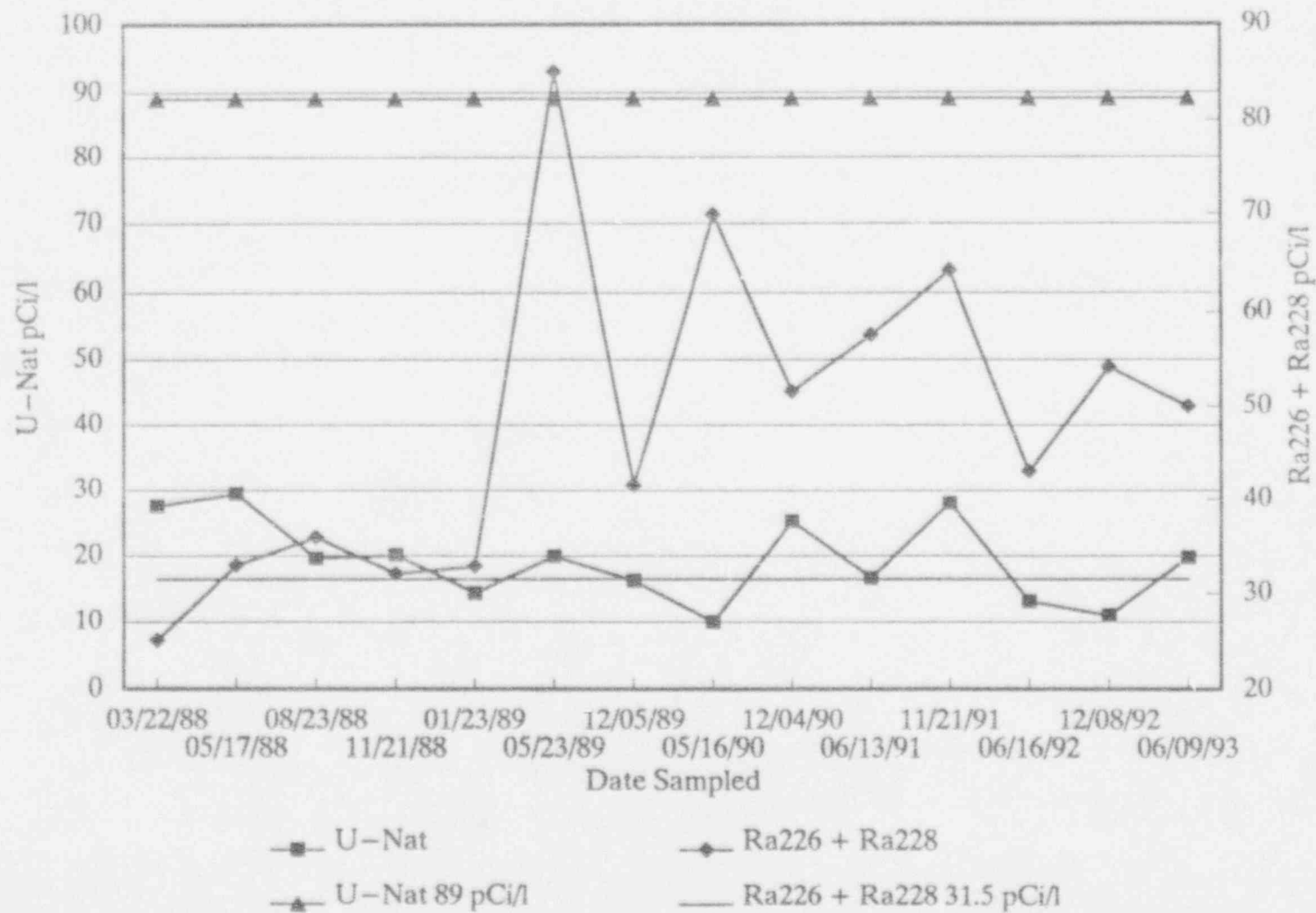
## GROUND WATER ANALYSES FOR M.W. 28

Date Sampled	11/21/91	06/17/92	11/18/92	06/28/93
UNat pCi/l	5.70	2.70	<0.2	<0.2
UNat % M.P.C.	0.02	0.01		
Ra226 pCi/l	5.80	5.20	1.70	6.30
Ra226 Error +/-	0.50	0.40	0.30	0.80
Ra226 % M.P.C.	19.33	17.33	5.67	21.00
Ra228 pCi/l	3.00	11.40	<1.0	9.20
Ra228 Error +/-	0.80	0.50		2.10
Ra228 % M.P.C.	10.00	38.00		30.67
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	<1.0	<1.0	3.60	<1.0
Pb210 Error +/-			0.50	
Pb210 % M.P.C.			3.60	
Gross Alpha - U & Rn pCi/l	6.00	5.60	<5.0	10.90
Gross Alpha Error +/-	2.40	2.30		3.30
As mg/l	<0.01	<0.01	<0.01	<0.01
Se mg/l	<0.005	<0.005	0.009	<0.005
Fe mg/l	6.97	7.19	7.16	6.10
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	<0.01	<0.01	<0.01	
Al mg/l	<0.10	0.12	<0.10	
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	0.03	<0.01	0.03	0.02
Ag mg/l	<0.01	<0.01	<0.01	
V mg/l	<0.01	<0.01	<0.01	
Cd mg/l	<0.005	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	116.00	109.00	112.00	105.00
Mg mg/l	16.30	16.30	18.80	17.30
Na mg/l	62.80	63.70	64.90	65.60
K mg/l	7.30	7.33	5.80	
NH3 mg/l	<0.05	0.47	0.06	
NO3 mg/l	<0.01	<0.01	2.00	<0.10
SO4 mg/l	309.00	325.00	310.00	343.00
Cl mg/l	6.50	5.60	6.00	7.30
TDS mg/l	701.00	659.00	563.00	657.00
pH	7.07	6.93	6.82	6.10
Water Elevation	6736.10	6735.67	6735.60	6735.37

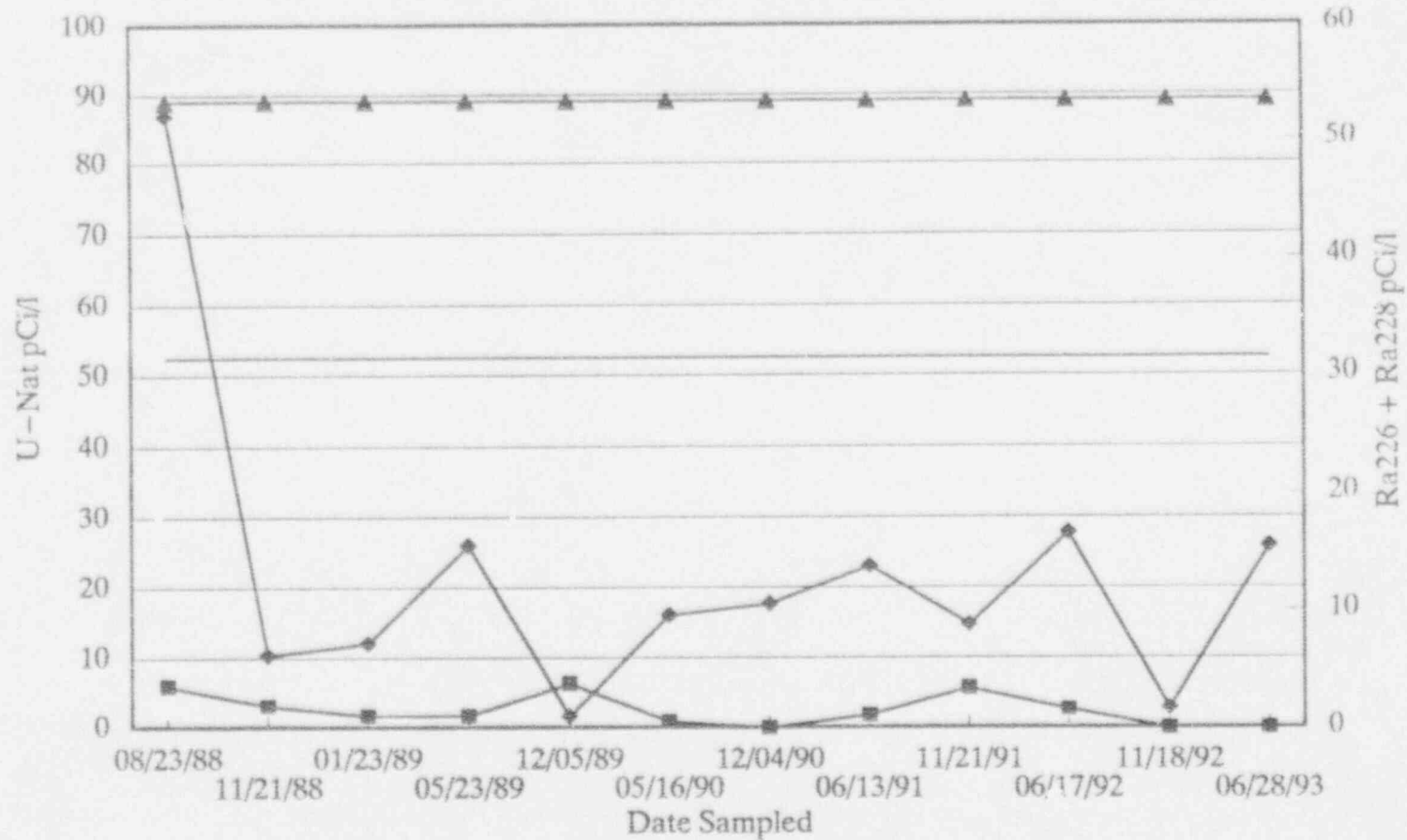
# M.W. 21A U-Nat & Ra226 + Ra228



# M.W. 25 U-Nat & Ra226 + Ra228

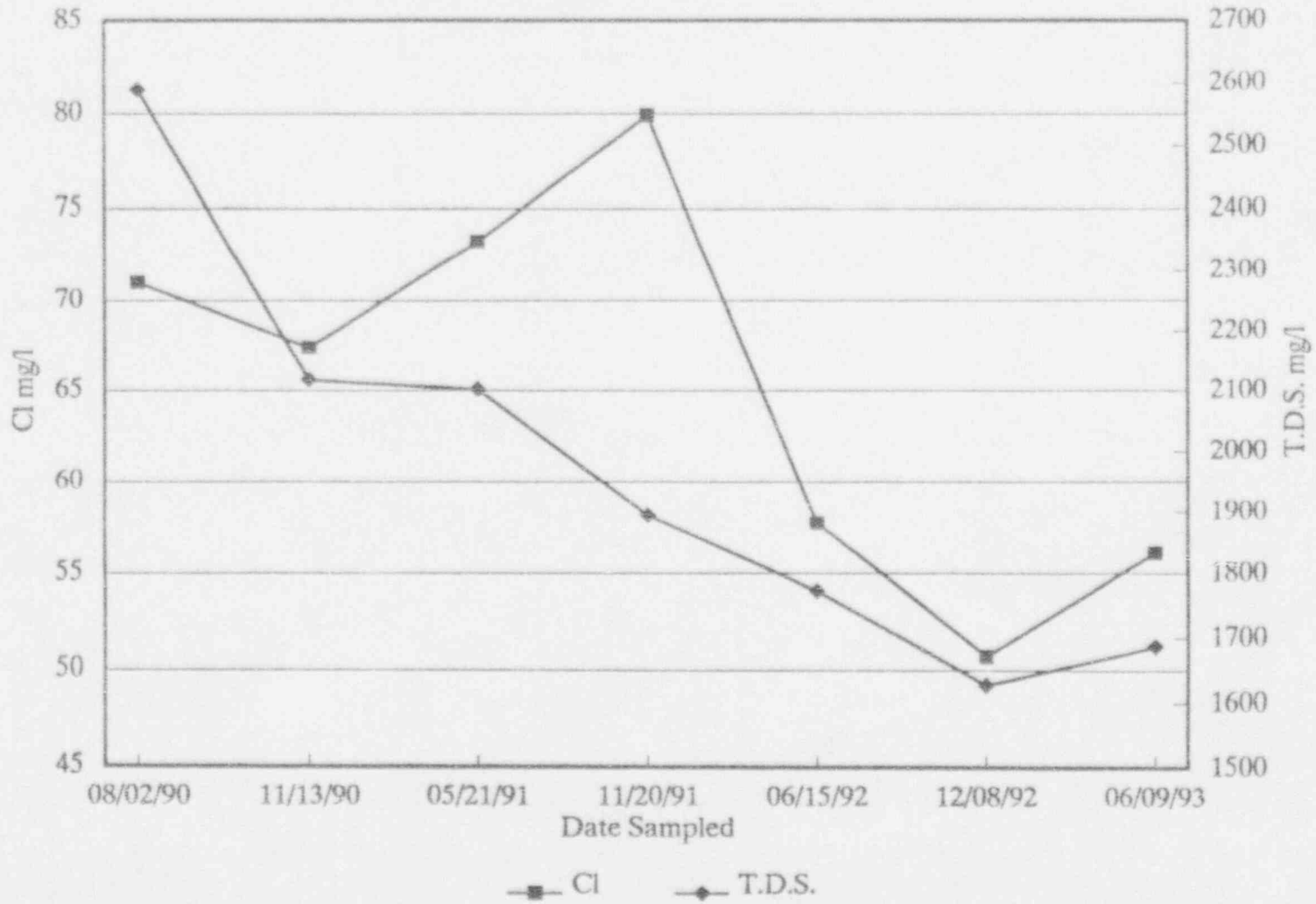


# M.W. 28 U-Nat & Ra226 + Ra228

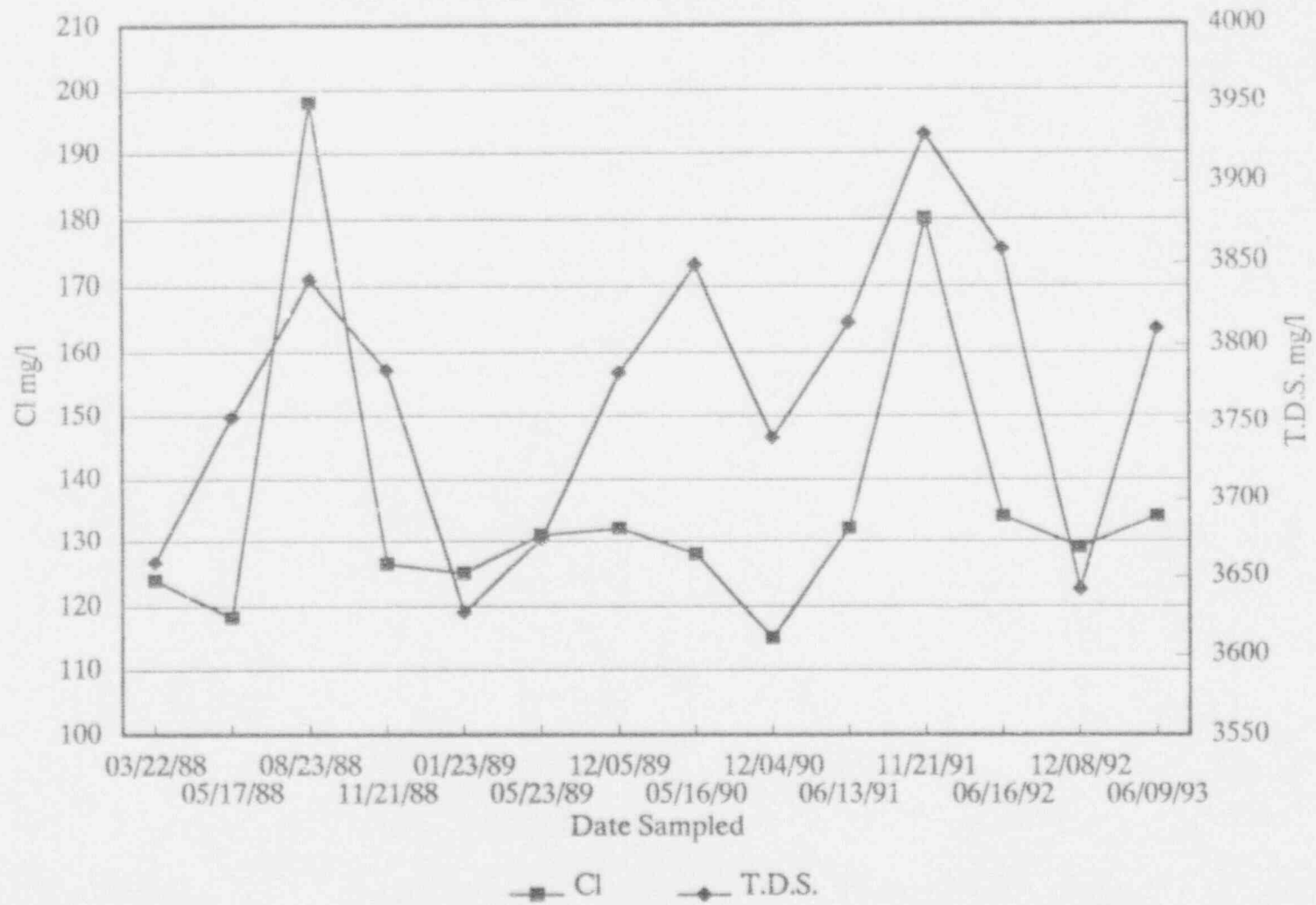


- U-Nat
- ▲ U-Nat 89 pCi/l
- ◆ Ra226 + Ra228
- Ra226 + Ra228 31.5 pCi/l

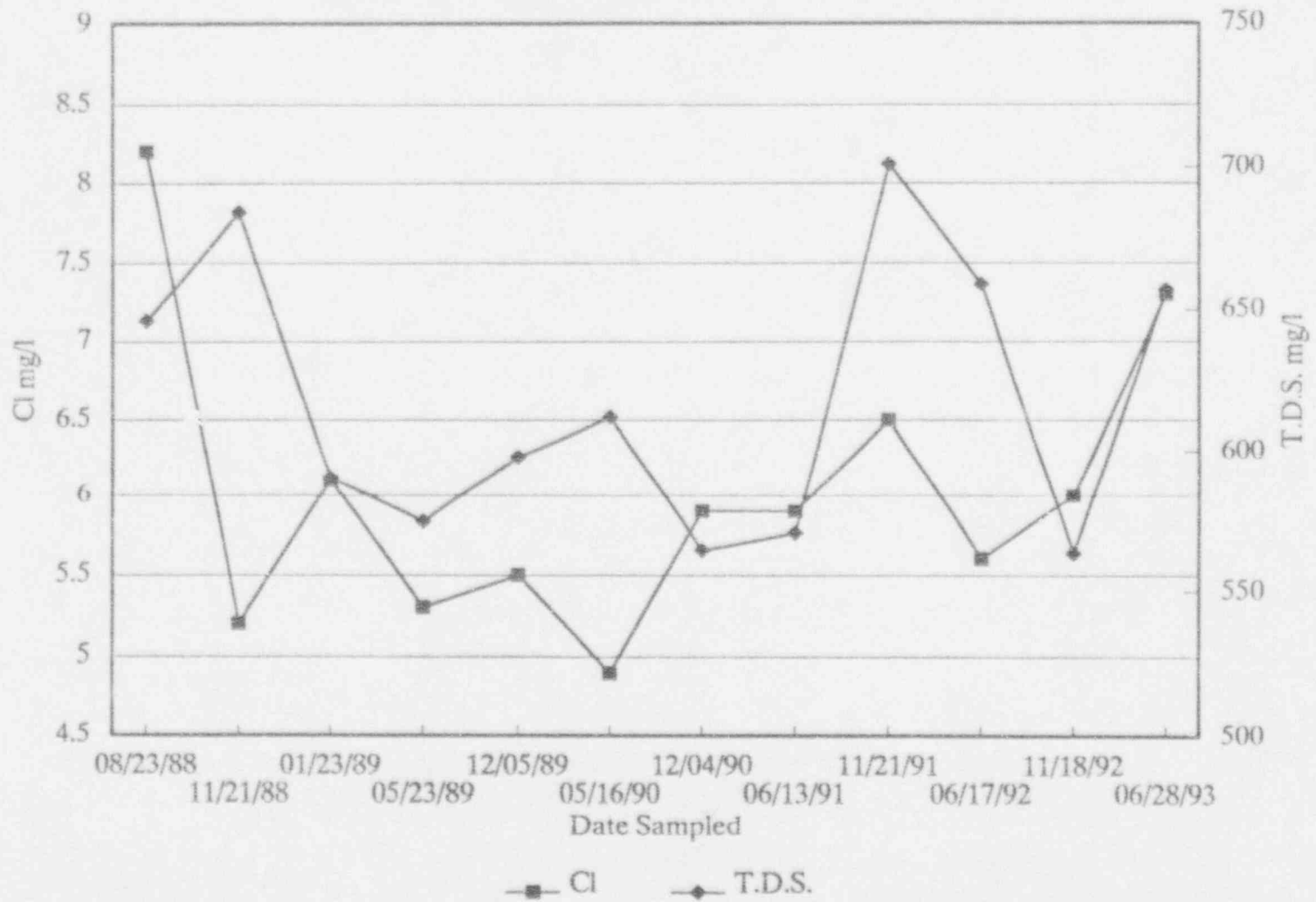
# M.W. 21A Chloride & T.D.S.



# M.W. 25 Chloride & T.D.S.

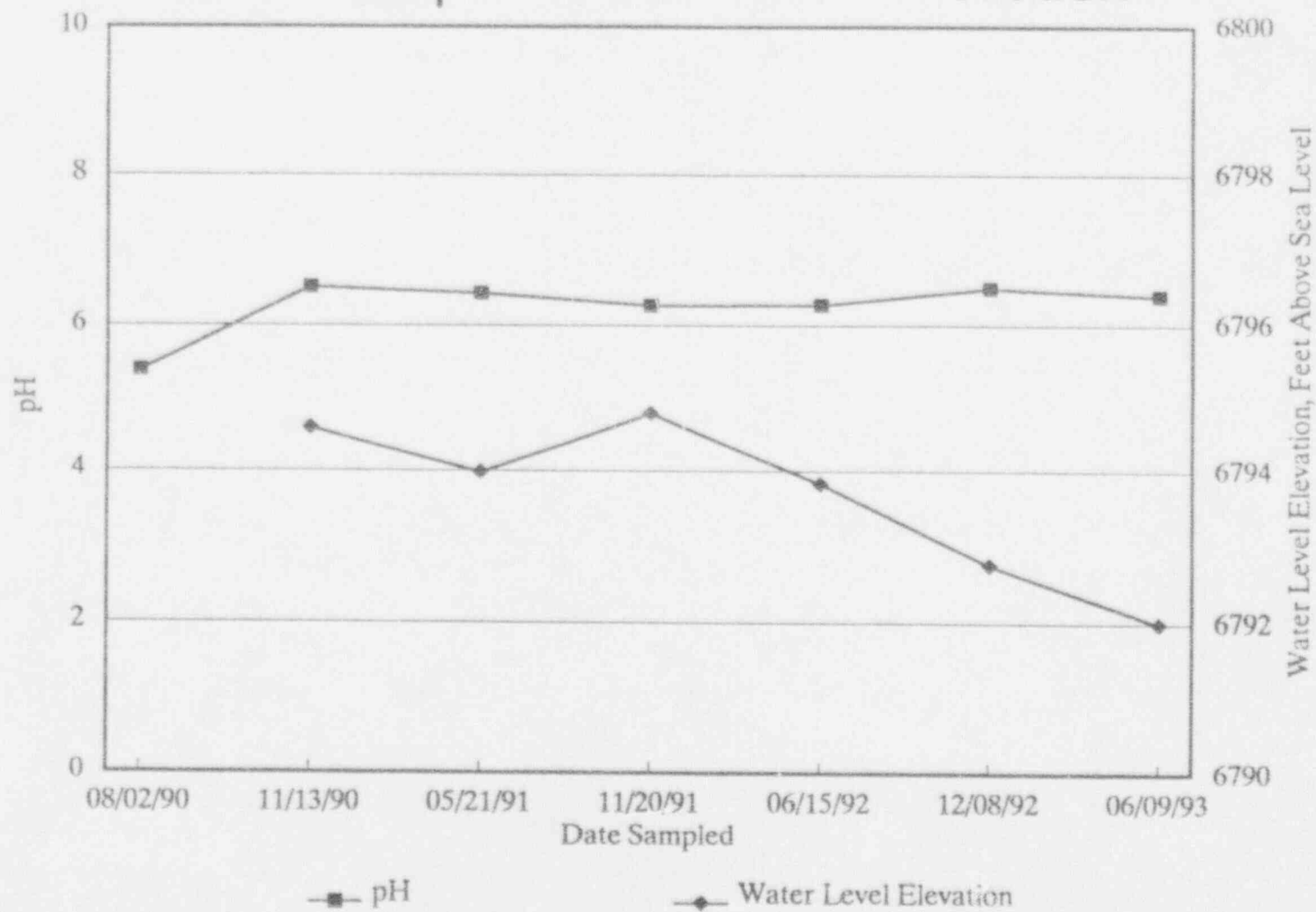


# M.W. 28 Chloride & T.D.S.

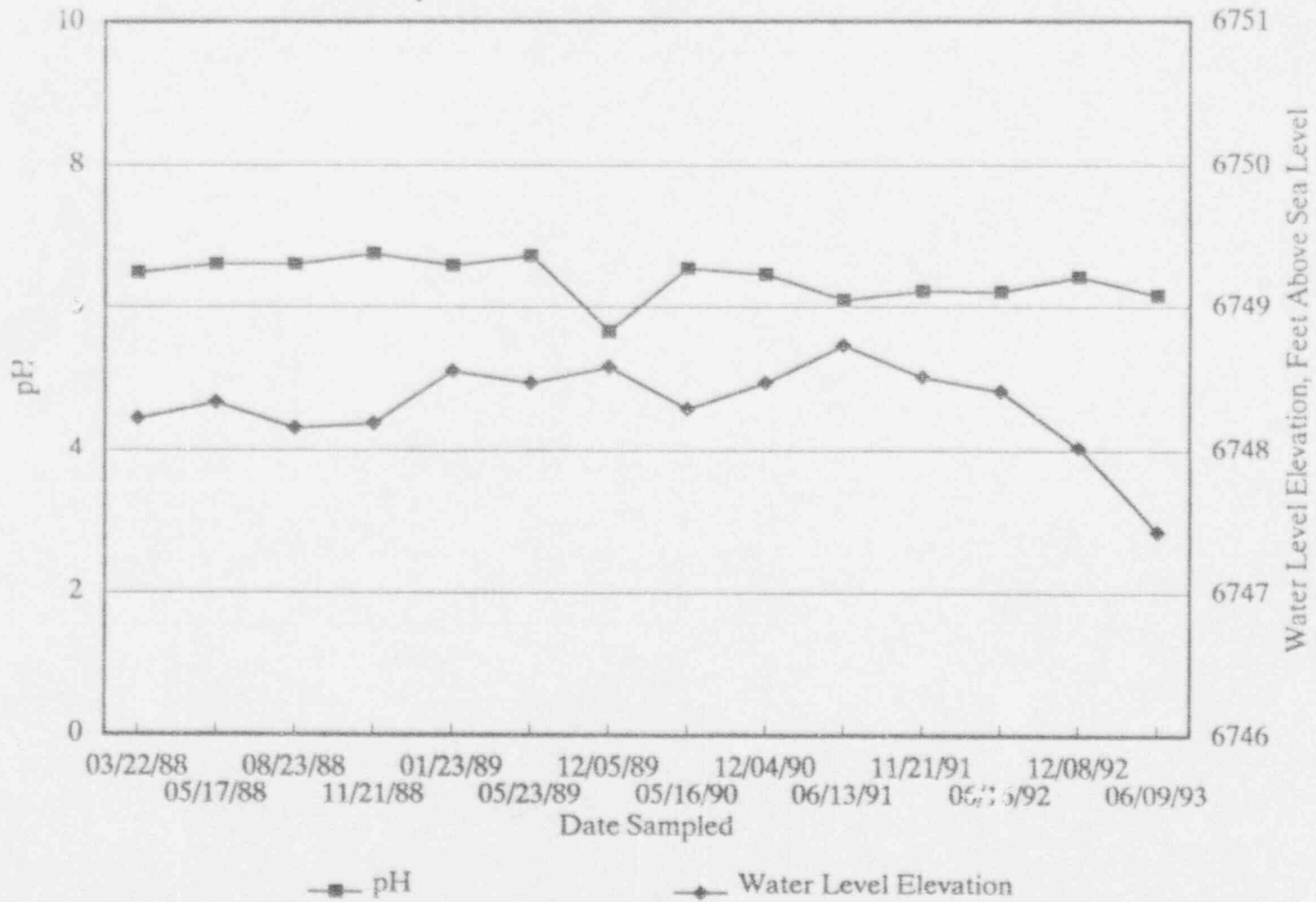




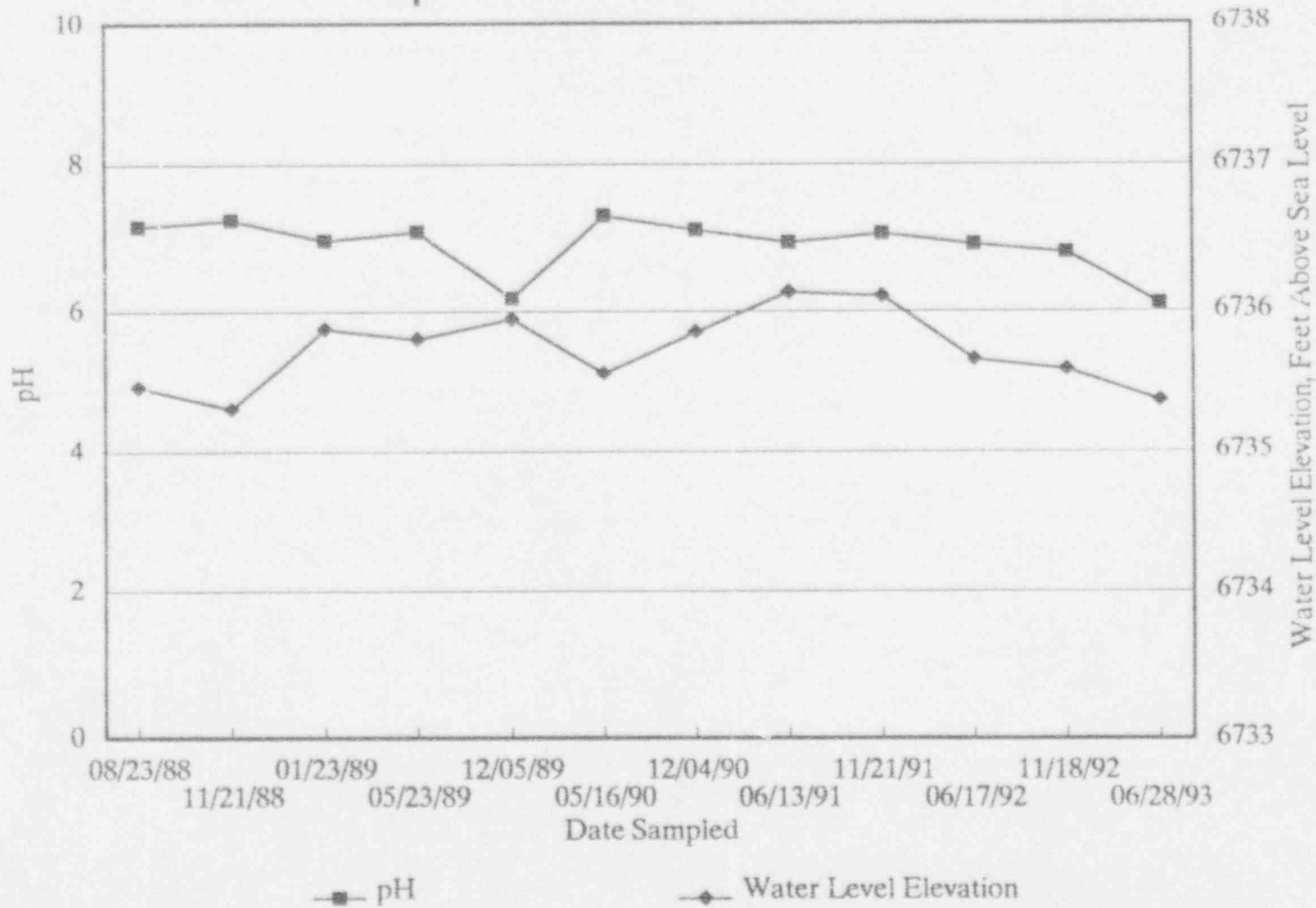
# M.W. 21A pH & Water Level Elevation



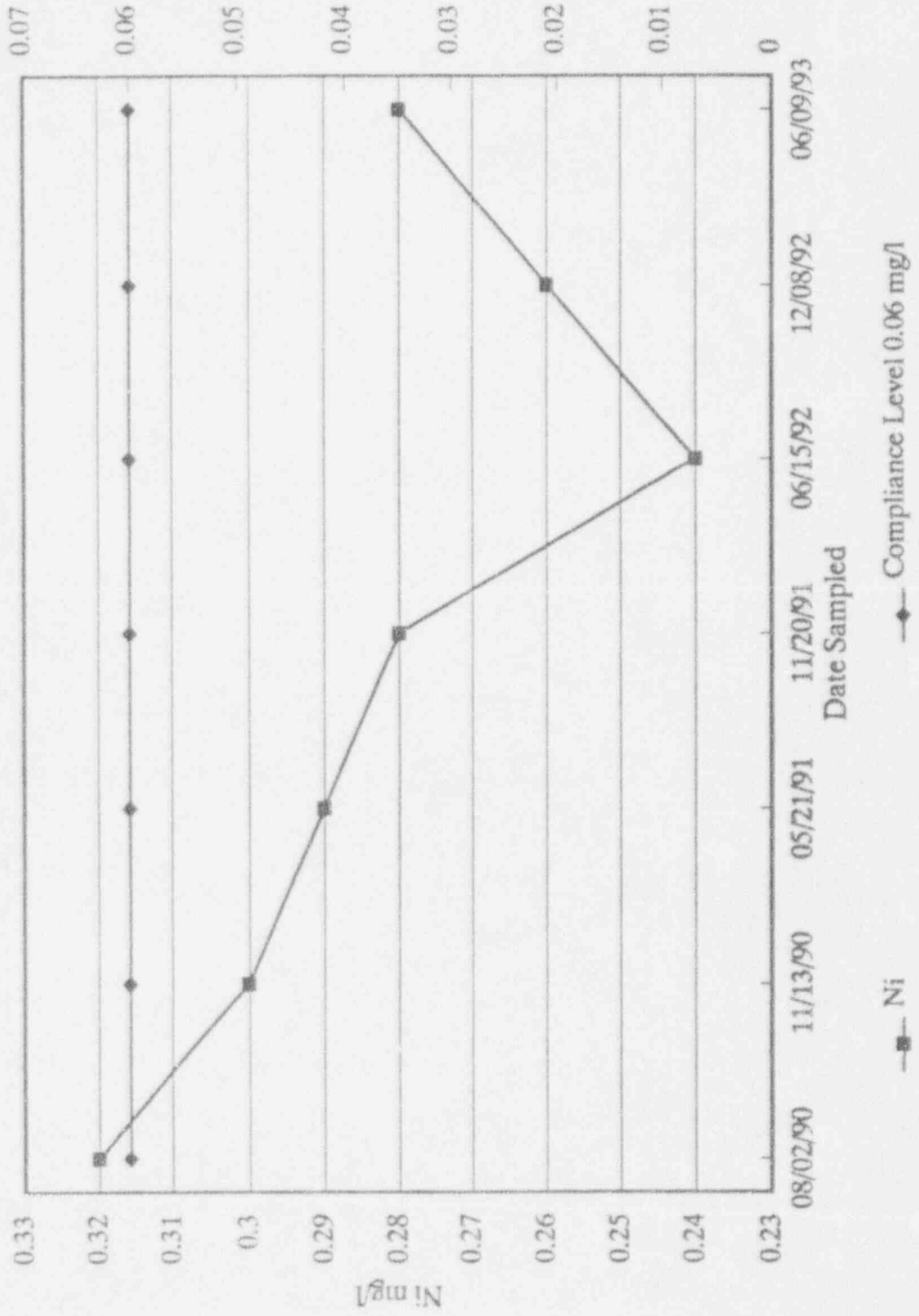
# M.W. 25 pH & Water Level Elevation



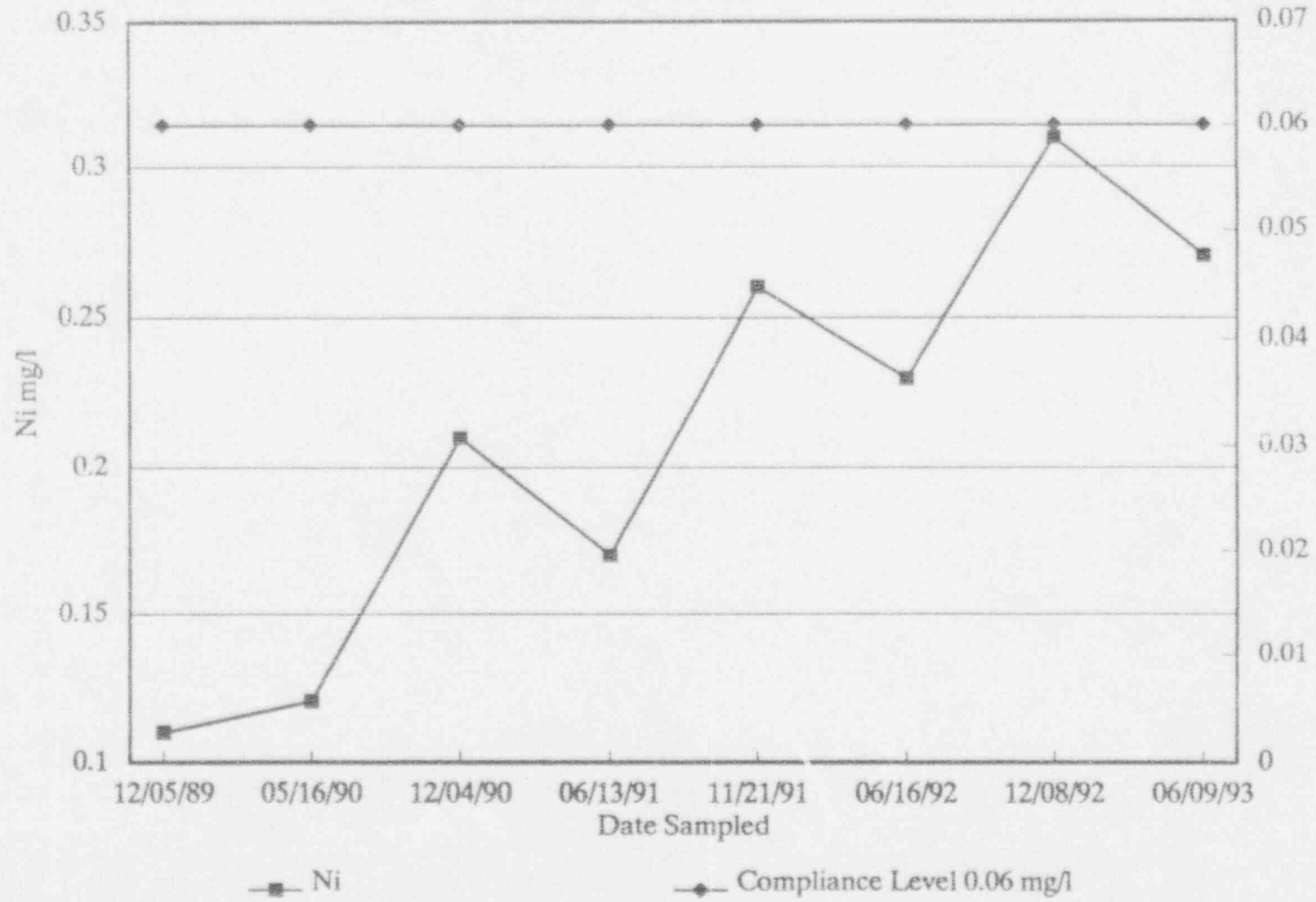
# M.W. 28 pH & Water Level Elevation



# M.W. 21A Nickel



# M.W. 25 Nickel



A-9 Below-Grade Tailings

Groundwater Remediation - UWR Aquifer

3.0

### A-9 Below-Grade Tailings Groundwater Remediation of UWR Aquifer

Groundwater remediation of the Upper Wind River aquifer underlying the A-9 Below-Grade tailings is being done with modification of plans implemented in 1983 and updated in 1987 and License Condition 35. These plans outlined a pumpback system with contaminated groundwater being removed and evaporated to remove contaminants. Modification has been done by pumping the groundwater to the IXRO facility, treating it and re-injecting clean water into injection wells situated up-dip in the aquifer flow pattern. Eight collection wells were pumped during some portions of the past twelve months with six wells active on September 30, 1993. These wells are tabulated in the appendix 5-1 and 5-2. Seven injection wells received clean water for re-injection during some portions of the past twelve months with seven wells active on September 30, 1993. These wells are tabulated in the appendix 5-3. The eight collection wells, seven injection wells and twenty-five monitor wells are shown on map NRC-DEQ-93-10. Data for each well are tabulated and certain data are graphed for each well following this analysis.

Four new wells were drilled in the A-9 tailings pile area in June, 1993. Each well was drilled, cased, packed and completed with system hook-up completed by September, 1993. A tabulation of these wells and their use, along with information about former wells replaced by some of the new wells is on Table 3.0.1.

Monitoring of the analyses of water collected from the wells pumping from the upper Wind River aquifer, MW-24, MW-32, MWC-60, MWC-61, MWC-62, GW-3C and GW-3D show that improvements are noted by lowering amounts in the monitored elements. The values are still fluctuating but the overall trend is downward. Water from DW-4, a lower Wind River aquifer well, is clean and is being used as make-up water for diluting water being pumped from the upper Wind River aquifer. Wells GW-3C and GW-3D have both had casing failure as evidenced by pump sticking and failure caused by sands being pumped with the water. A pump has been stuck in well GW-3C but was recently freed and removed. Wells MWC-60 and MWC-61 were put into service to replace GW-3C and GW-3D respectively. Initial assays are included for both new wells.

Review of the analyses of water collected from the twenty-five monitor wells situated in and around the perimeter of the A-9 below-grade tailings area shows some continuing improvement in the groundwater quality in a portion of the wells and some fluctuations in other wells. Consideration is given to two sectors of monitor wells.

The first sector encompasses wells in the immediate vicinity of the trough originally developed by the A-9 pumpback system and wells located to the east of the tailings impoundment. There are fourteen wells clustered about the pumping wells and one remote well, LA-2. These wells are LA-2 (background well for the A-9 area), PW-1, PW-2, PW-3, PW-4, GW-1, GW-2, GW-3, GW-4, GW-5, GW-6, compliance wells GW-7 and GW-8, RW-2 and PW-7. Of these fourteen wells, six meet compliance standards for most elements except nickel. The other eight wells continue to show fluctuations but generally overall are showing improvements in the dilution of the monitored contaminants.

The second sector covers wells along a margin perimeter south, west and northwest of the A-9 trough. The eight wells being monitored are HW-2, HW-3, EW-1, EW-2, EW-3, MW-30, PW-5 and PW-6. All continue to show improvement with four wells meeting compliance standards for all elements except for nickel. Wells HW-2, EW-2 and EW-3 are fluctuating in the values for radionuclides, remaining above compliance standards.

Monitor wells MW-10 and MW-6 are located north of the A-9 area, south of the Inactive Tailings area and within the Heap Leach area. Both wells lie just south of the drainage divide separating the Inactive - A-9 tailings areas and intercept the upper Wind River aquifer. No sample was obtained for MW-10 in the last half of 1992 because reclamation construction activities blocked access to the well. Well MW-6 is still meeting compliance standards for all elements except Ra. Improvement is noted in diminishing assay results for Ra in MW-6. Well MW-10 is still above compliance standards for Unat and Ni with continuing improvement noted.



Table 3.0.1  
New Wells - A-9 Below-Grade Tailings Pile Area

<u>Well No.</u>	<u>Depth</u>	<u>Type</u>	<u>Slotted Casing</u>	<u>Comments</u>
MWC-60	160	Collection	80-160	Replace GW-3C, casing failure
MWC-61	150	Collection	80-150	Replace GW3-D, casing failure
MWC-62	165	Collection	82-162	
MWI-63	180	Injection	100-180	

Note: Each well was drilled 9 7/8" and cased with 5" Schedule 40 PVC pipe. Factory slotted casing (.04 slot) was installed as indicated. The slotted casing intervals plus 20 feet above were sand packed with 80-3/8" sand and the remainder of the cased hole was packed with 3/8" bentonite pellets.

NRC Standards

Upper Wind River Aquifer

Point of compliance wells GW-7 and GW-8

Background well LA-2

<u>Element</u>	<u>L.C. 35-B</u> <u>mg/l</u>	<u>L.C. 35-B</u> <u>pCi/l</u>	<u>10 CFR Pt 20</u> <u>pCi/l</u> <u>(M.P.C.)</u>
As	0.05		
Be	0.01		
Cd	0.01		
Cr	0.05		
Pb	0.05		
Mo	0.01		
Ni	0.04		
Se	0.01		
Ag	0.05		
Unat		199.0	3,000
Ra226 + Ra228		24.9	60
Th 230		4.8	2,000
Pb 210		4.6	100
Gross Alpha		17.8	-

Collection Well Data and Graphics

## GROUND WATER ANALYSES FOR G. W. 3

Date Sampled	06/05/91	12/04/91	06/01/92	12/08/92
UNat pCi/l	584.00	371.00	204.00	51.70
UNat % M.P.C.	1.95	1.24	0.68	0.17
Ra226 pCi/l	429.00	292.00	258.00	281.00
Ra226 Error +/-	9.30	6.70	6.40	4.80
Ra226 % M.P.C.	1430.00	973.33	860.00	936.67
Ra228 pCi/l	53.40	49.80	72.20	37.10
Ra228 Error +/-	0.90	0.90	3.40	5.10
Ra228 % M.P.C.	178.00	166.00	240.67	123.67
Th230 pCi/l	20.40	<1.0	<1.0	<1.0
Th230 Error +/-	1.50			
Th230 % M.P.C.	1.02			
Pb210 pCi/l	13.00	21.80	<1.0	22.20
Pb210 Error +/-	1.20	1.30		1.90
Pb210 % M.P.C.	13.00	21.80		22.20
Gross Alpha - U & Rn pCi/l	450.00	300.00	267.00	300.00
Gross Alpha Error +/-	21.00	17.30	16.30	17.00
As mg/l	0.07	0.025	0.02	0.02
Se mg/l	<0.005	<0.005	<0.005	0.011
Fe mg/l	1941.00	2028.00	875.00	1785.00
Pb mg/l	<0.01	0.01	<0.01	
Mo mg/l	<0.01	0.10	0.06	
Al mg/l	432.00	78.00	420.00	
Be mg/l	1.05	1.06	1.16	0.92
Ni mg/l	9.64	10.40	10.40	9.62
Ag mg/l	<0.01	<0.01	<0.01	
V mg/l	1.04	<0.01	0.14	
Cd mg/l	<0.005	<0.005	0.091	
Cr mg/l	0.06	<0.01	<0.01	
Ca mg/l	366.00	397.00	377.00	395.00
Mg mg/l	514.00	503.00	542.00	476.00
Na mg/l	226.00	271.00	260.00	270.00
K mg/l	134.00	122.00	127.00	
NH3 mg/l	635.00	517.00	660.00	
NO3 mg/l	<0.01	<0.01	<0.10	<0.10
SO4 mg/l	12396.00	12600.00	10948.00	11597.00
Cl mg/l	479.00	461.00	297.00	227.00
TDS mg/l	17312.00	17751.00	17800.00	17678.00
pH	4.01	4.07	3.58	4.11
Water Elevation	6797.65	6797.92	6797.75	6794.07

## GROUND WATER ANALYSES FOR GW3C

Date Sampled	01/26/93
UNat pCi/l	819.00
UNat % M.P.C.	2.73
Ra226 pCi/l	118.00
Ra226 Error +/-	3.50
Ra226 % M.P.C.	393.33
Ra228 pCi/l	25.00
Ra228 Error +/-	3.50
Ra228 % M.P.C.	83.33
Th230 pCi/l	3.00
Th230 Error +/-	1.00
Th230 % M.P.C.	0.15
Pb210 pCi/l	18.70
Pb210 Error +/-	5.20
Pb210 % M.P.C.	18.70
Gross Alpha - U & Rn pCi/l	120.00
Gross Alpha Error +/-	11.00
As mg/l	0.233
Se mg/l	<0.005
Fe mg/l	268.00
Pb mg/l	
Mn mg/l	14.50
Al mg/l	59.50
Be mg/l	0.31
Ni mg/l	1.84
Ag mg/l	
V mg/l	
Cd mg/l	
Cr mg/l	
Ca mg/l	499.00
Mg mg/l	96.10
Na mg/l	69.20
K mg/l	
NH3 mg/l	
NO3 mg/l	<0.1
SO4 mg/l	2658.00
Cl mg/l	65.50
TDS mg/l	4031.00
pH	2.70
Water Elevation	6753.58

## GROUND WATER ANALYSES FOR GW3D

Date Sampled	01/26/93	06/28/93
UNat pCi/l	130.00	137.60
UNat % M.P.C.	0.43	0.46
Ra226 pCi/l	191.00	139.00
Ra226 Error +/-	4.50	3.40
Ra226 % M.P.C.	636.67	463.33
Ra228 pCi/l	26.70	27.80
Ra228 Error +/-	3.60	3.70
Ra228 % M.P.C.	89.00	92.67
Th230 pCi/l	1.60	4.30
Th230 Error +/-	0.60	1.60
Th230 % M.P.C.	0.08	0.22
Pb210 pCi/l	17.10	12.90
Pb210 Error +/-	5.10	2.40
Pb210 % M.P.C.	17.10	12.90
Gross Alpha - U & Rn pCi/l	190.00	147.00
Gross Alpha Error +/-	14.00	12.10
As mg/l	0.044	0.150
Se mg/l	<0.005	<0.005
Fe mg/l	853.00	855.40
Pb mg/l		
Mn mg/l	34.60	40.30
Al mg/l	94.60	106.10
Be mg/l	1.15	1.08
Ni mg/l	5.39	5.19
Ag mg/l		
V mg/l		
Cd mg/l		
Cr mg/l		
Ca mg/l	471.00	410.00
Mg mg/l	242.00	239.00
Na mg/l	137.00	152.00
K mg/l		
NH3 mg/l		
NO3 mg/l	<0.10	<0.10
SO4 mg/l	5340.00	4796.00
Cl mg/l	145.00	158.00
TDS mg/l	7864.00	7028.00
pH	2.12	2.37
Water Elevation	6760.38	6761.48

## GROUND WATER ANALYSES FOR M.W. 24

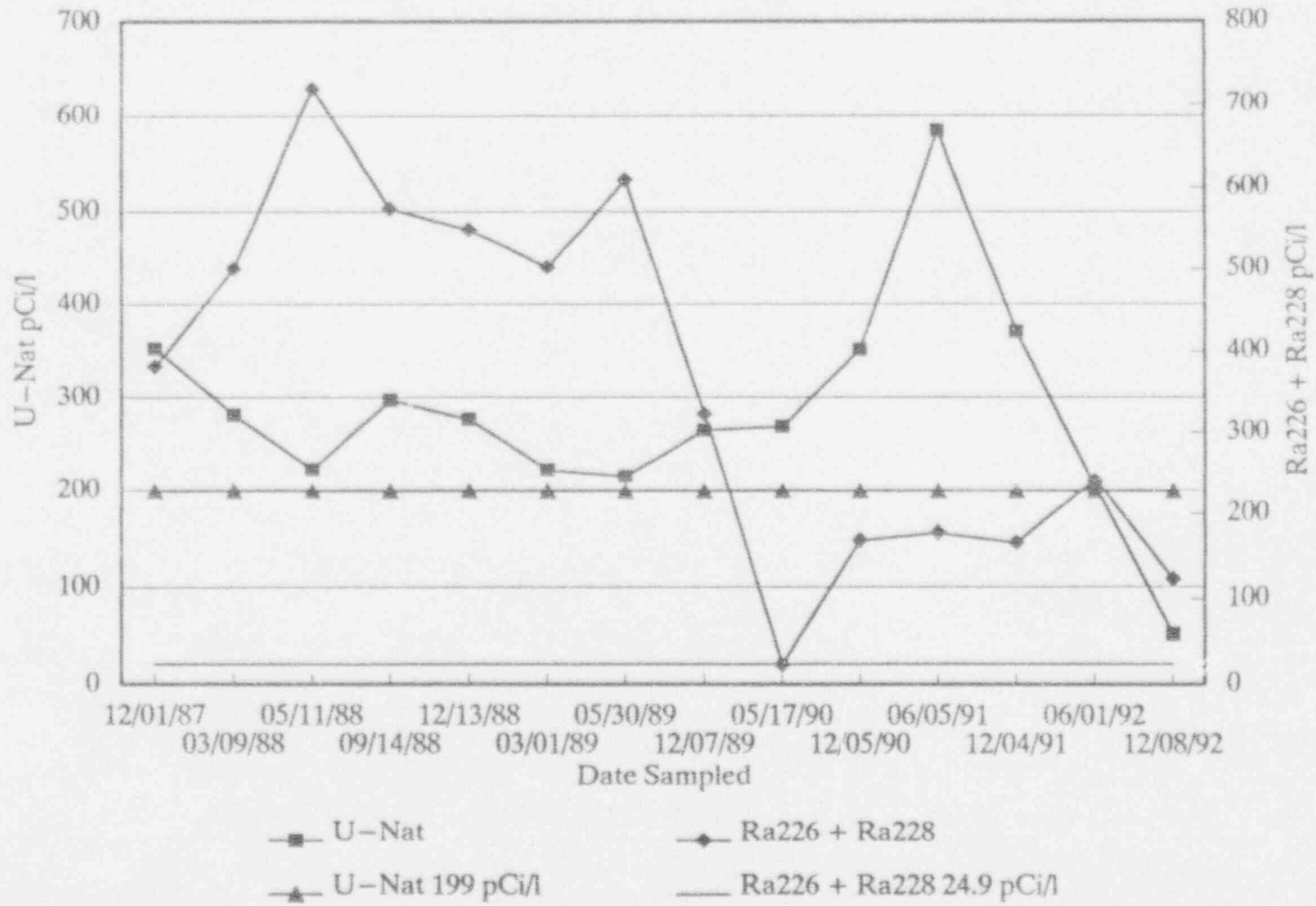
Date Sampled	05/15/91	10/09/91	04/21/92	10/29/92
UNat pCi/l	115.00	223.00	79.20	105.00
UNat % M.P.C.	0.38	0.74	0.26	0.35
Ra226 pCi/l	120.50	91.00	47.80	79.40
Ra226 Error +/-	4.40	4.40	2.50	3.50
Ra226 % M.P.C.	401.67	303.33	159.33	264.67
Ra228 pCi/l	14.00	13.50	14.10	12.20
Ra228 Error +/-	0.50	0.50	0.70	0.90
Ra228 % M.P.C.	46.67	45.00	47.00	40.67
Th230 pCi/l	<1.0	<0.2	<1.0	<0.20
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	<1.0	1.90	<1.0	13.90
Pb210 Error +/-		1.10		5.90
Pb210 % M.P.C.		1.90		13.90
Gross Alpha pCi/l	125.00	90.00	48.00	80.40
Gross Alpha Error +/-	11.20	9.50	6.90	8.90
As mg/l	0.02	0.02	0.01	<0.01
Se mg/l	<0.005	<0.005	<0.005	<0.005
Fe mg/l	155.00	176.00	11.80	175.00
Pb mg/l	<0.01	<0.01	<0.01	<0.01
Mo mg/l	0.02	<0.01	<0.01	0.01
Al mg/l	2.07	30.00	<0.10	<0.10
Be mg/l	0.09	0.08	0.09	0.09
Ni mg/l	1.44	1.32	1.68	1.57
Ag mg/l	<0.01	<0.01	<0.01	<0.01
V mg/l	0.02	0.01	<0.01	<0.01
Cd mg/l	<0.005	0.017	<0.005	<0.005
Cr mg/l	0.02	<0.01	<0.01	<0.01
Ca mg/l	490.00	465.00	661.00	626.00
Mg mg/l	112.00	104.00	188.00	124.00
Na mg/l	74.00	79.50	81.60	74.00
K mg/l	16.50	14.20	22.50	20.40
NH3 mg/l	1.57	<0.05	0.86	1.69
NO3 mg/l	0.01	<0.01	<0.10	<0.10
SO4 mg/l	1887.00	2008.00	1981.00	2076.00
Cl mg/l	142.00	96.90	151.00	152.00
TDS mg/l	3390.00	3217.00	3526.00	3721.00
pH	6.50	6.24	5.99	6.44
Water Elevation	6770.75	6771.97	6770.41	6768.31

## GROUND WATER ANALYSES FOR M.W. 32

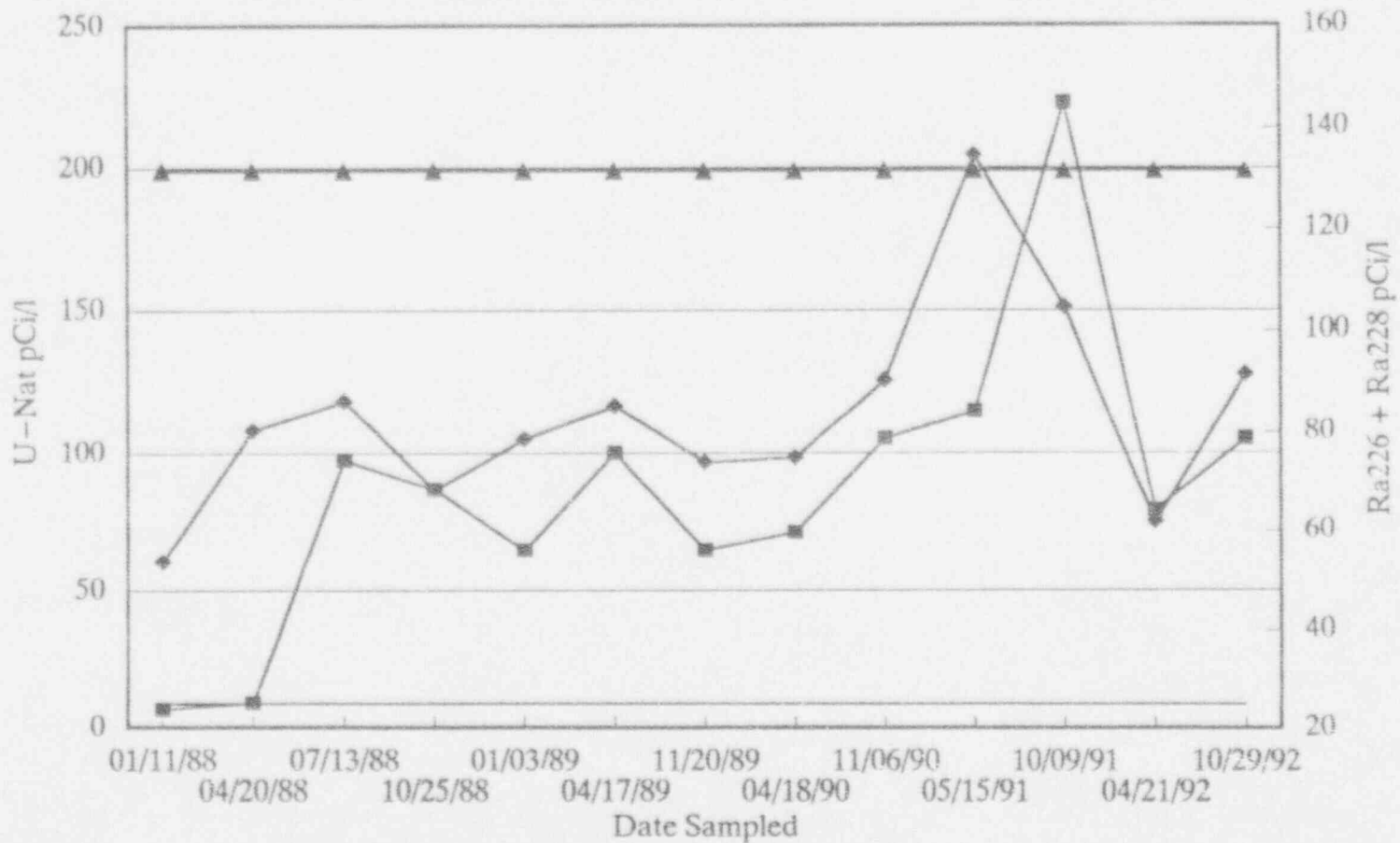
Date Sampled	10/09/91	04/21/92	10/29/92	06/24/93
UNat pCi/l	636.00	5.40	131.00	34.10
UNat % M.P.C.	2.12	0.02	0.44	0.11
Ra226 pCi/l	53.00	30.50	121.00	34.50
Ra226 Error +/-	3.30	2.10	4.40	1.80
Ra226 % M.P.C.	176.67	101.67	403.33	115.00
Ra228 pCi/l	7.50	5.40	17.50	9.30
Ra228 Error +/-	0.40	0.60	1.00	1.50
Ra228 % M.P.C.	25.00	18.00	58.33	31.00
Th230 pCi/l	<0.2	<1.0	<0.20	1.10
Th230 Error +/-				0.10
Th230 % M.P.C.				0.06
Pb210 pCi/l	2.60	<1.0	3.80	<1.0
Pb210 Error +/-	1.00		0.90	
Pb210 % M.P.C.	2.60		3.80	
Gross Alpha - U & Rn pCi/l	50.00	33.00	121.00	40.30
Gross Alpha Error +/-	7.00	5.70	11.00	6.30
As mg/l	0.01	<0.01	<0.01	<0.01
Se mg/l	<0.005	<0.005	<0.005	<0.005
Fe mg/l	29.60	2.48	74.80	28.20
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	<0.01	<0.01	0.03	
Al mg/l	<0.10	<0.10	<0.10	<0.10
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	0.21	0.20	0.10	0.21
Ag mg/l	<0.01	<0.01	<0.01	
V mg/l	0.01	<0.01	<0.01	
Cd mg/l	<0.005	<0.005	<0.005	
Cr mg/l	0.01	<0.01	<0.01	
Ca mg/l	420.00	384.00	593.00	467.00
Mg mg/l	64.00	54.50	86.10	74.40
Na mg/l	32.50	31.00	52.90	37.30
K mg/l	10.10	14.30	21.60	
NH3 mg/l	0.77	0.64	1.75	
NO3 mg/l	0.03	<0.10	20.10	<0.01
SO4 mg/l	989.00	845.00	1375.00	1209.00
Cl mg/l	87.20	58.20	175.00	89.00
TDS mg/l	1765.00	1757.00	3009.00	1990.00
pH	6.80	6.56	6.86	5.97
Water Level Elevation	6785.81	6783.37	6799.39	6792.03



# G.W. 3 U-Nat & Ra226 + Ra228

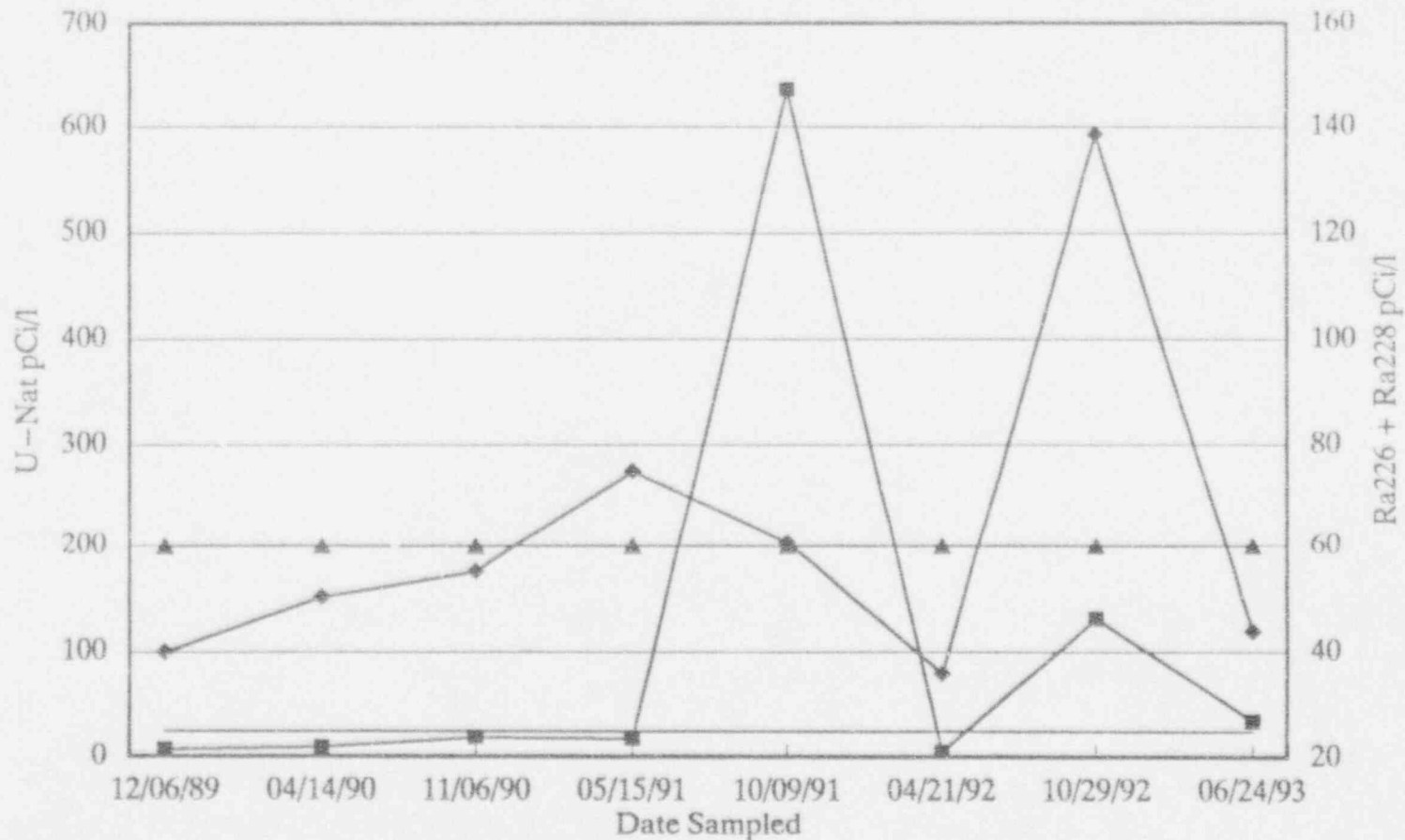


# M.W. 24 U-Nat & Ra226 + Ra228



- U-Nat
- ◆ Ra226 + Ra228
- ▲ U-Nat 199 pCi/l
- Ra226 + Ra228 24.9 pCi/l

# M.W. 32 U-Nat & Ra226 + Ra228



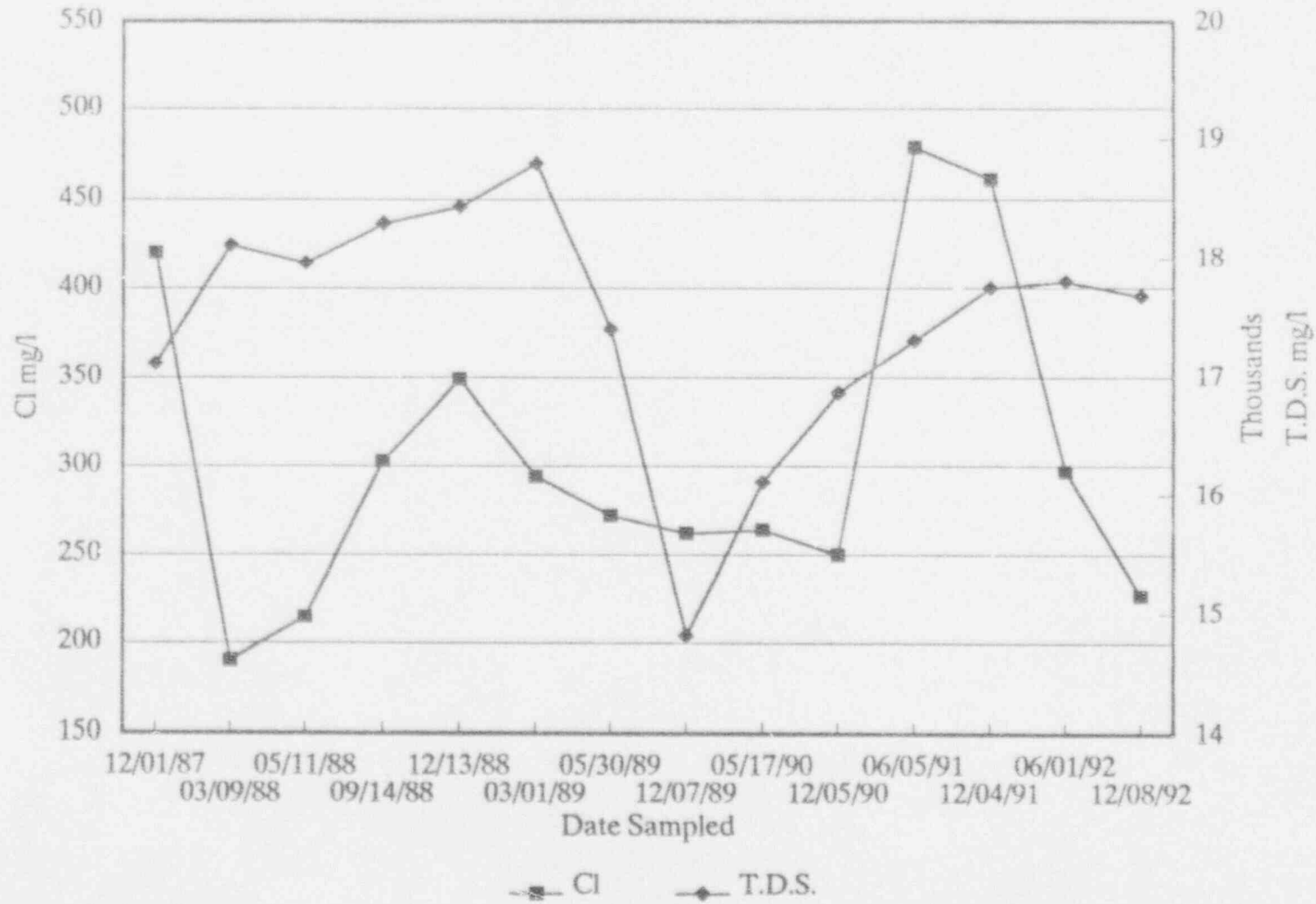
■ U-Nat

◆ Ra226 + Ra228

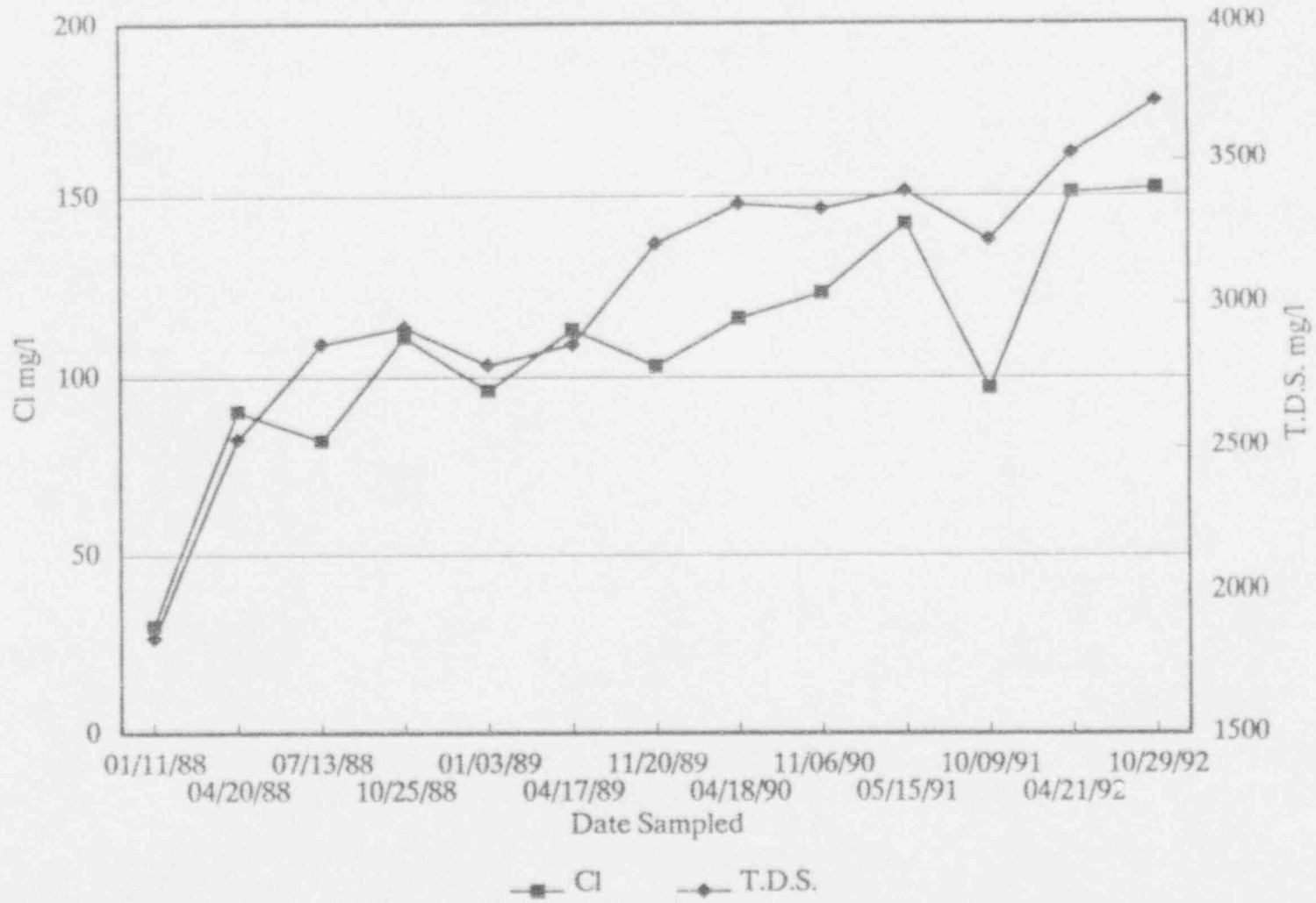
▲ U-Nat 199 pCi/l

— Ra226 + Ra228 24.9 pCi/l

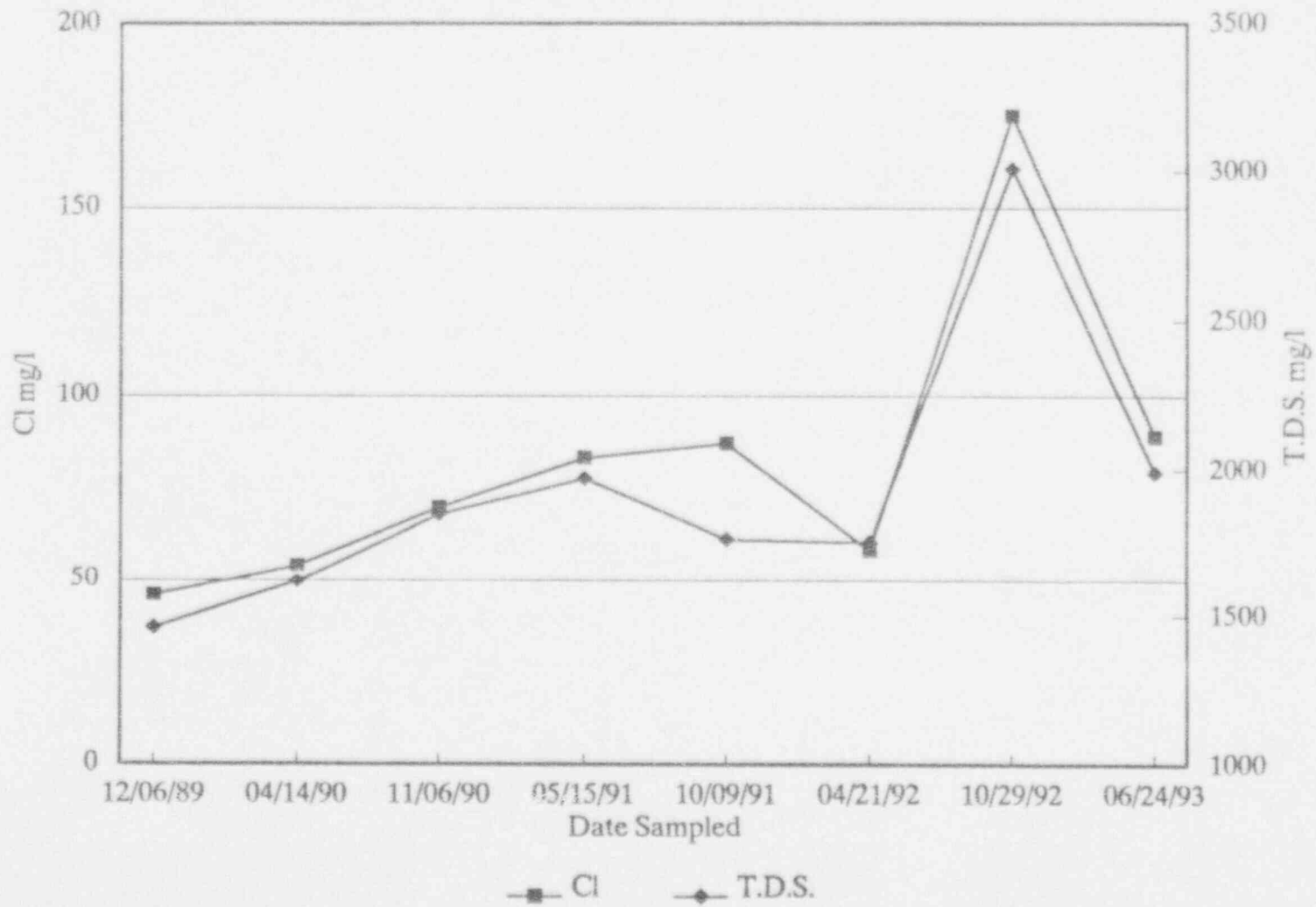
### G.W. 3 Chloride & T.D.S.



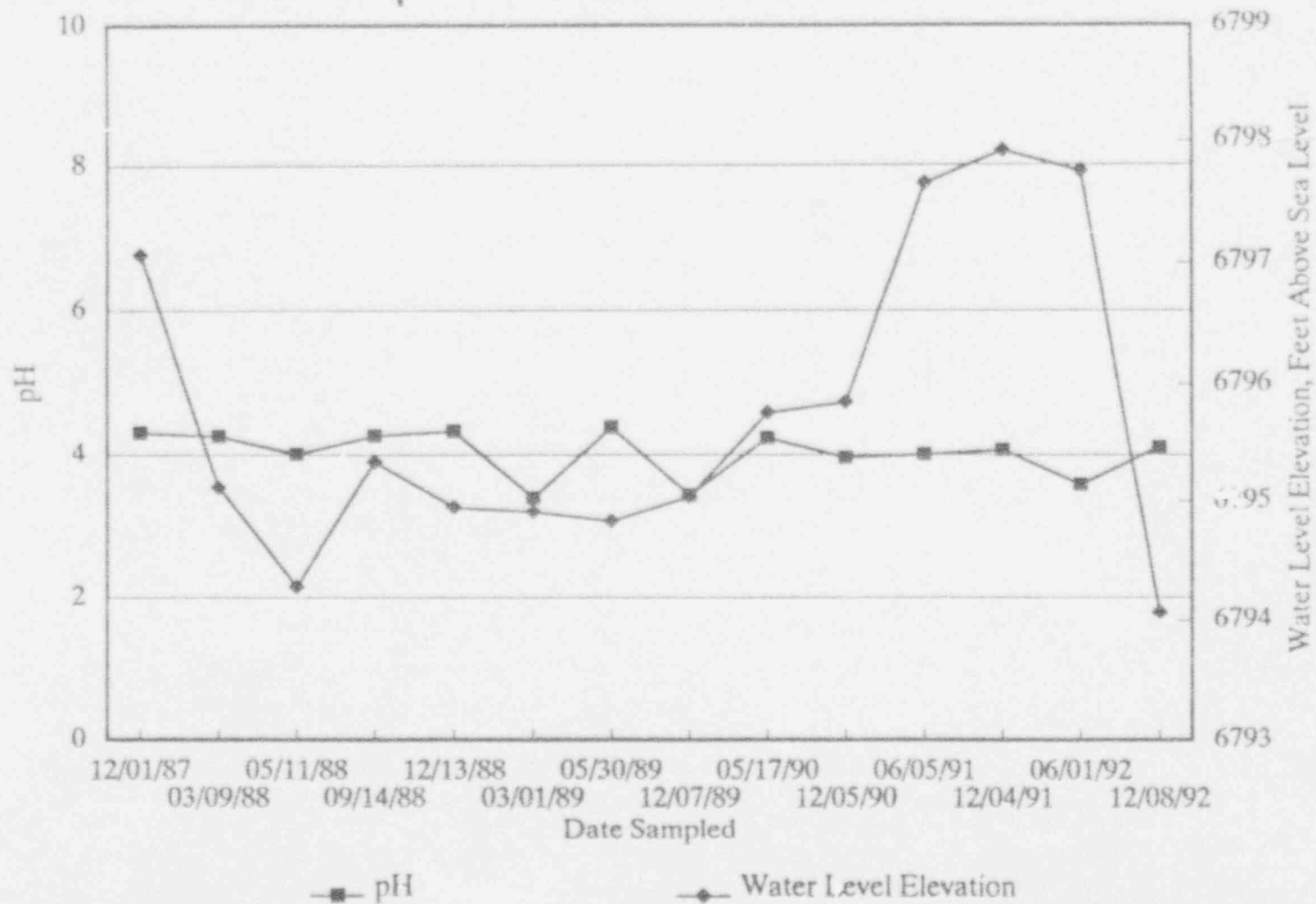
# M.W. 24 Chloride & T.D.S.



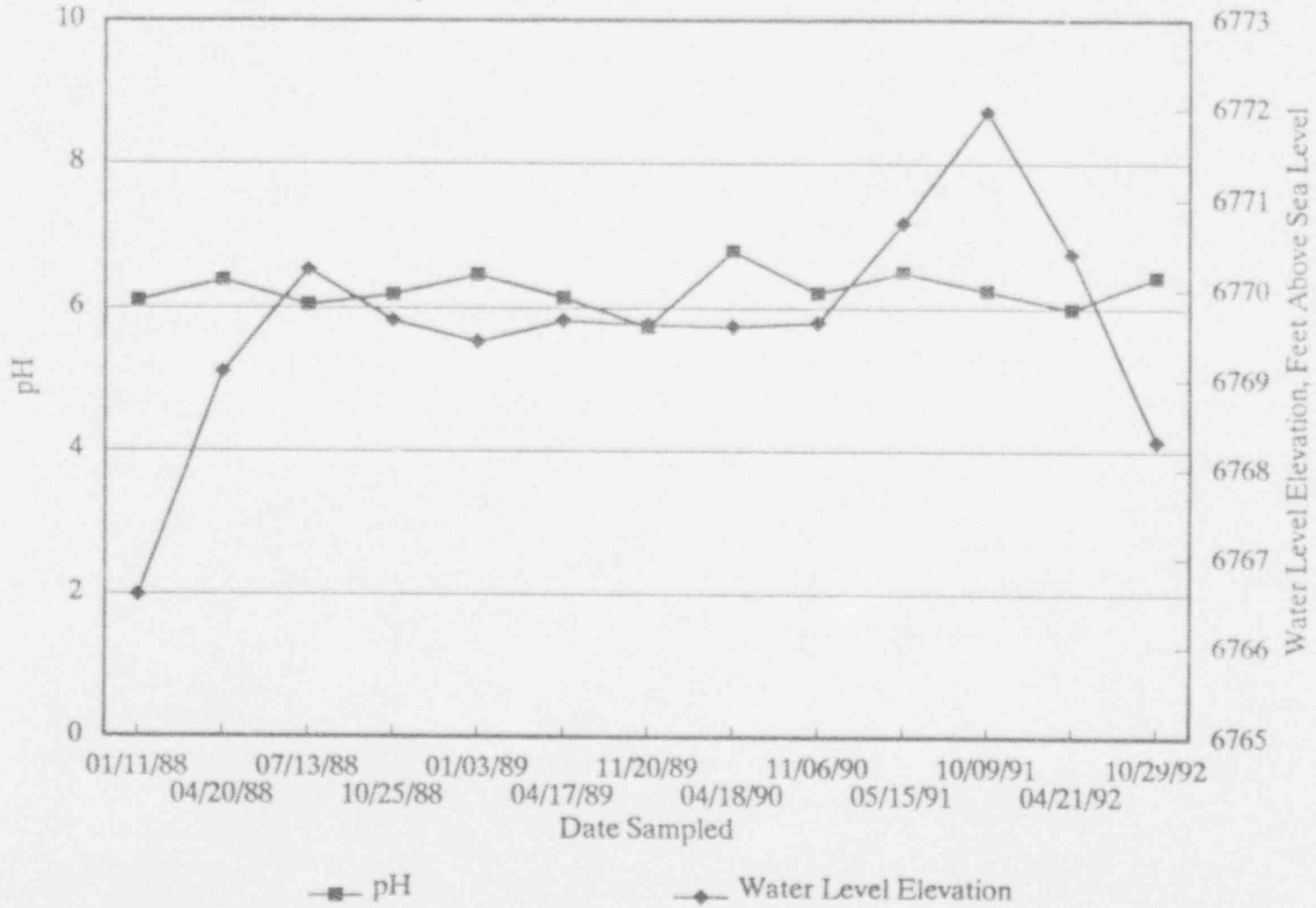
# M.W. 32 Chloride & T.D.S.



# G.W. 3 pH & Water Level Elevation

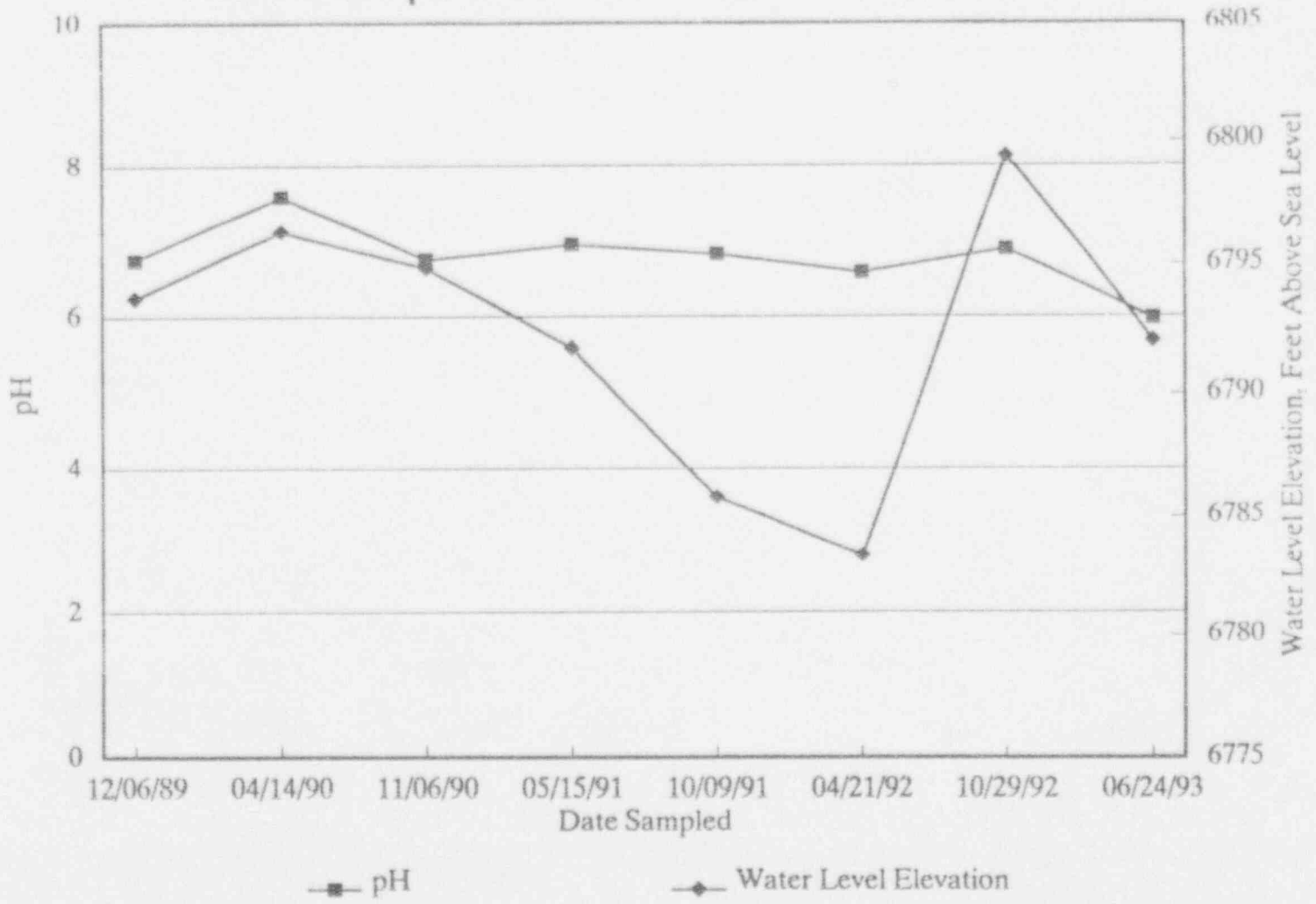


# M.W. 24 pH & Water Level Elevation

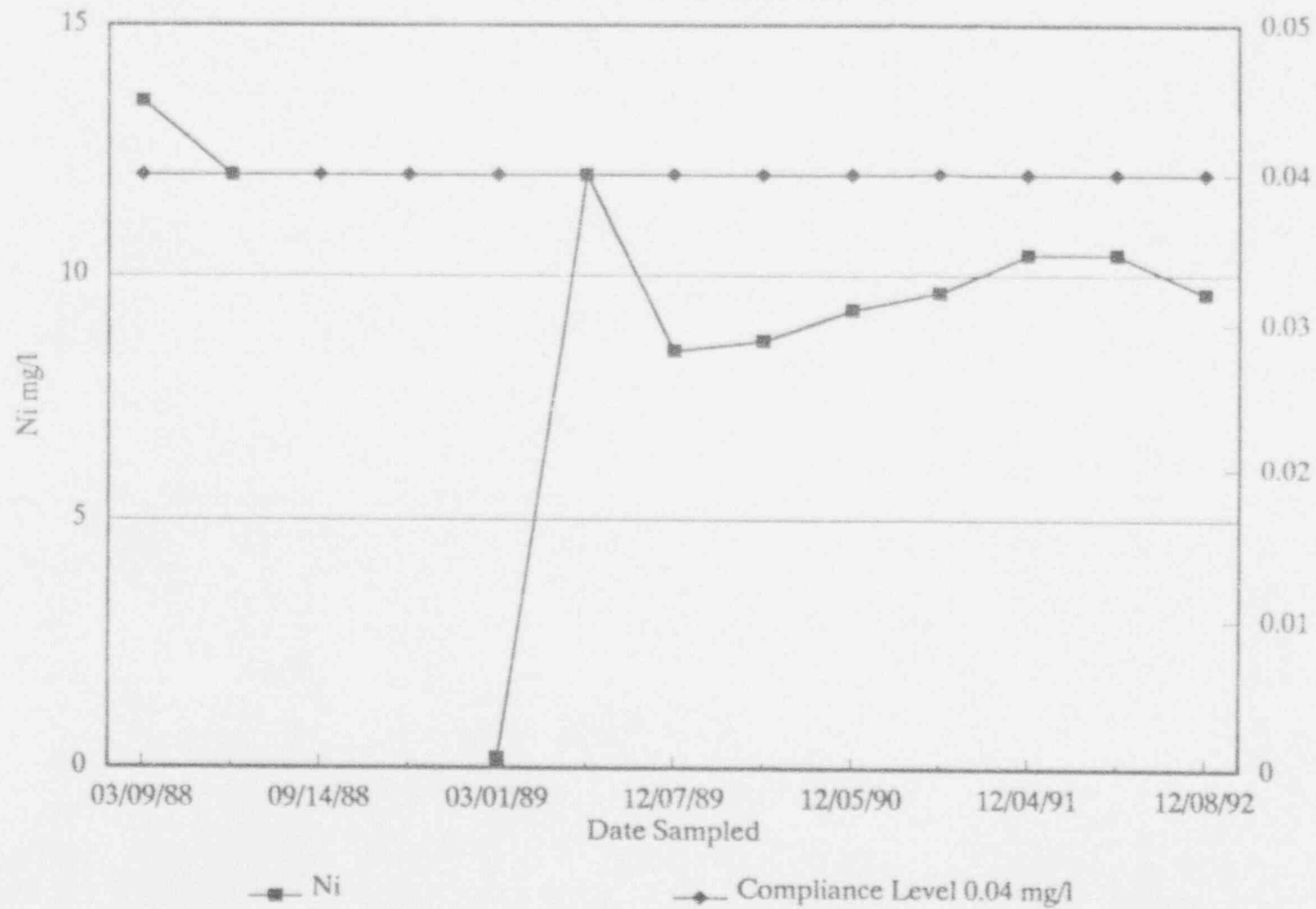




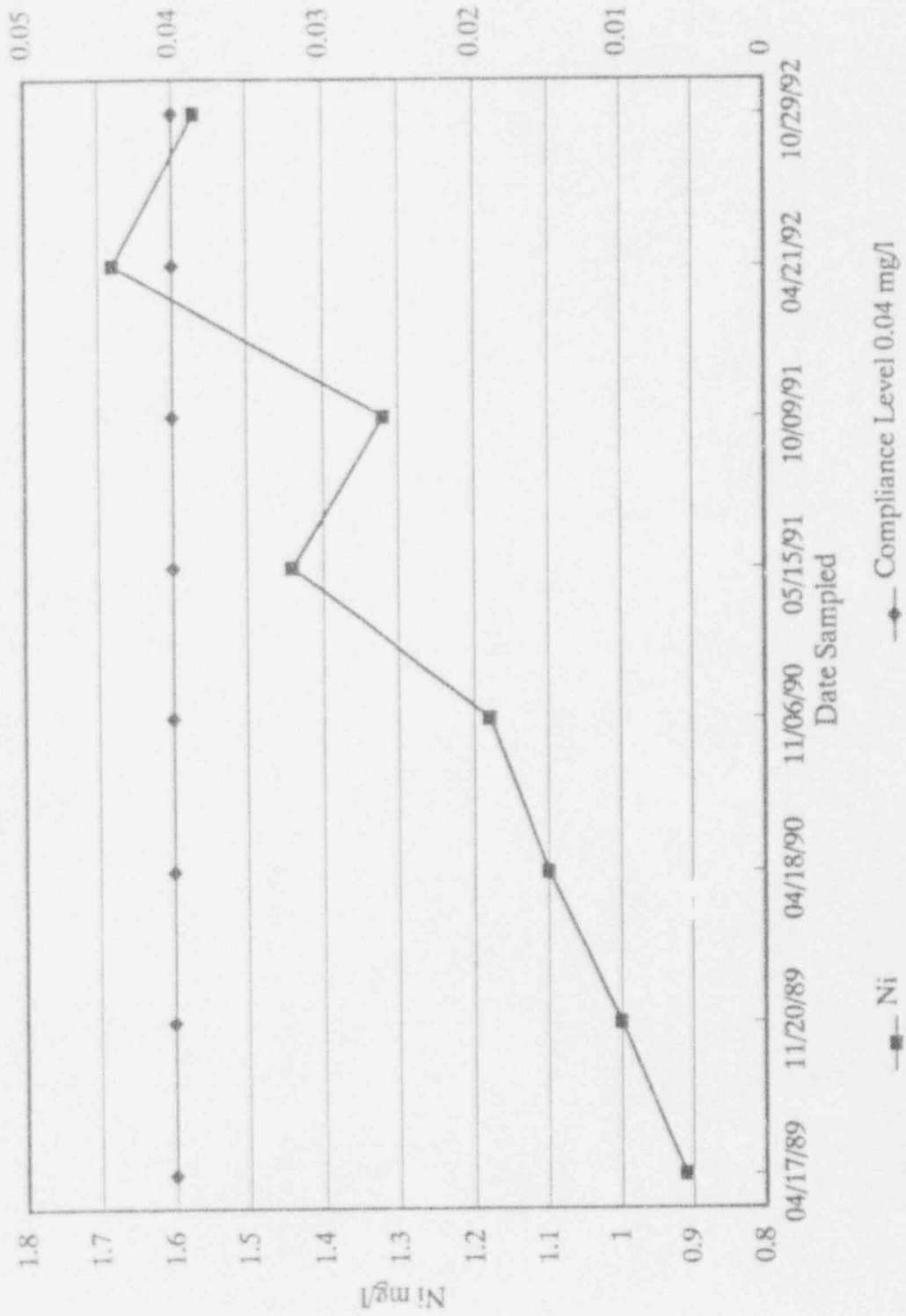
# M.W. 32 pH & Water Level Elevation



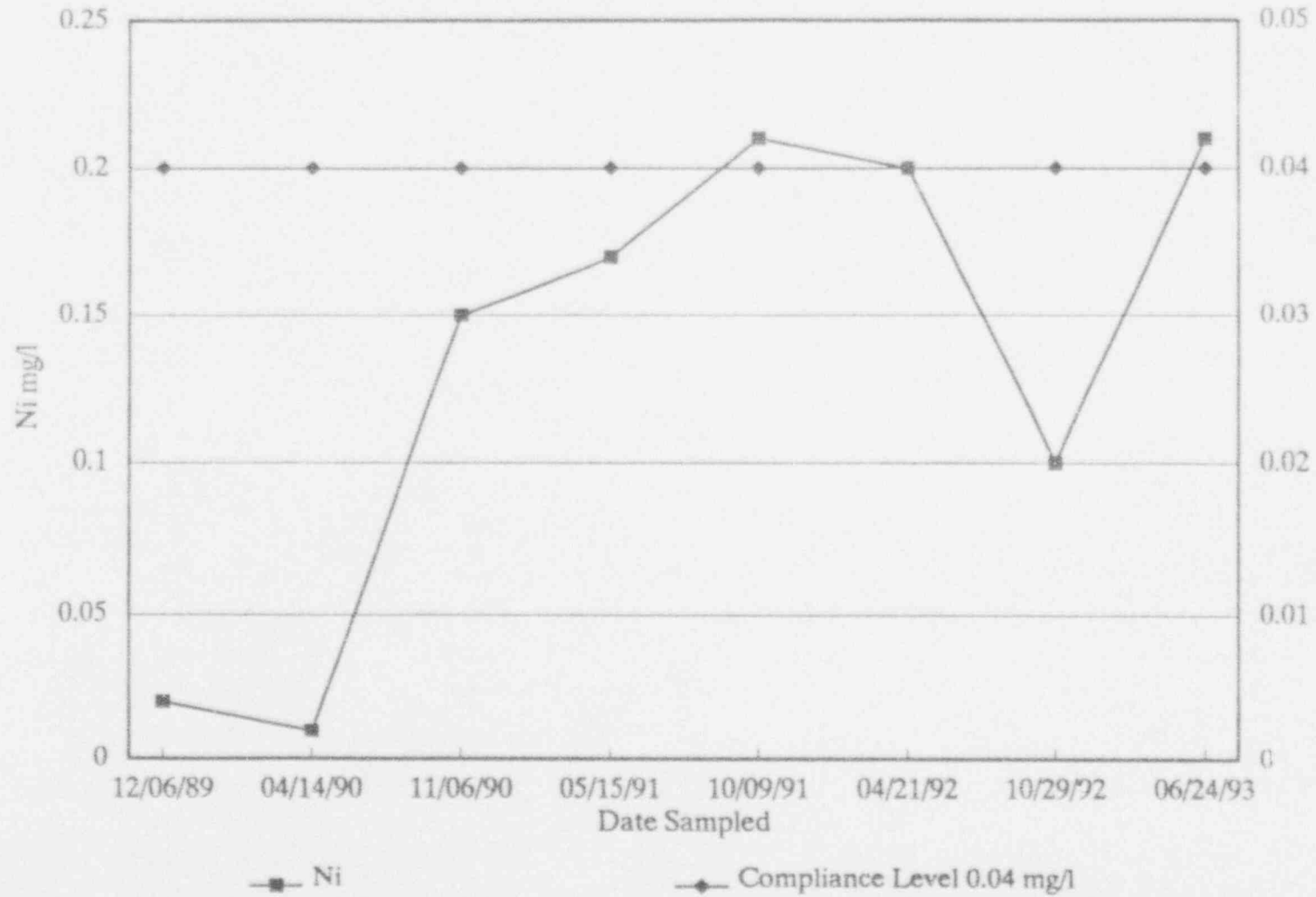
# G.W. 3 Nickel



# M.W. 24 Nickel



# M.W. 32 Nickel



## GROUND WATER ANALYSES FOR M.W.C. 60

Date Sampled	06/07/93
UNat pCi/l	548.00
UNat % M.P.C.	1.83
Ra226 pCi/l	34.30
Ra226 Error +/-	1.90
Ra226 % M.P.C.	114.33
Ra228 pCi/l	20.80
Ra228 Error +/-	1.90
Ra228 % M.P.C.	69.33
Th230 pCi/l	<1.0
Th230 Error +/-	
Th230 % M.P.C.	
Pb210 pCi/l	3.60
Pb210 Error +/-	0.50
Pb210 % M.P.C.	3.60
Gross Alpha -- U & Rn pCi/l	37.90
Gross Alpha Error +/-	6.90
As mg/l	0.080
Se mg/l	<0.005
Fe mg/l	18.80
Pb mg/l	
Mo mg/l	
Al mg/l	0.23
Be mg/l	<0.01
Ni mg/l	0.29
Ag mg/l	
V mg/l	
Cd mg/l	
Cr mg/l	
Ca mg/l	545.00
Mg mg/l	33.70
Na mg/l	36.20
K mg/l	10.70
SiO2 mg/l	34.50
NH3 mg/l	
NO3 mg/l	<0.10
SO4 mg/l	1364.00
Cl mg/l	32.60
TDS mg/l	2200.00
pH	6.94
Water Elevation	6795.31

## GROUND WATER ANALYSES FOR M.W.C. 61

Date Sampled	06/14/93
UNat pCi/l	1243.00
UNat % M.P.C.	4.14
Pa226 pCi/l	243.00
Ra226 Error +/-	4.70
Ra226 % M.P.C.	810.00
Ra228 pCi/l	47.30
Ra228 Error +/-	1.90
Ra228 % M.P.C.	157.67
Th230 pCi/l	3.80
Th230 Error +/-	0.30
Th230 % M.P.C.	0.19
Pb210 pCi/l	6.00
Pb210 Error +/-	1.00
Pb210 % M.P.C.	6.00
Gross Alpha - U & Rn pCi/l	247.00
Gross Alpha Error +/-	15.70
As mg/l	0.010
Se mg/l	<0.005
Fe mg/l	1056.00
Pb mg/l	
Mo mg/l	
Al mg/l	180.00
Be mg/l	0.86
Ni mg/l	6.98
Ag mg/l	
V mg/l	
Cd mg/l	
Cr mg/l	
Ca mg/l	597.00
Mg mg/l	328.00
Na mg/l	226.00
K mg/l	
SiO2 mg/l	35.00
NH3 mg/l	
NO3 mg/l	<0.10
SO4 mg/l	6636.00
Cl mg/l	280.00
TDS mg/l	10270.00
pH	4.28
Water Elevation	6792.42

## GROUND WATER ANALYSES FOR M.W.C. 62

Date Sampled	06/07/93
UNat pCi/l	152.00
UNat % M.P.C.	0.51
Ra226 pCi/l	29.90
Ra226 Error +/-	1.70
Ra226 % M.P.C.	99.67
Ra228 pCi/l	7.90
Ra228 Error +/-	0.50
Ra228 % M.P.C.	26.33
Th230 pCi/l	<1.0
Th230 Error +/-	
Th230 % M.P.C.	0.00
Pb210 pCi/l	1.80
Pb210 Error +/-	0.50
Pb210 % M.P.C.	1.80
Gross Alpha - U & Rn pCi/l	33.90
Gross Alpha Error +/-	5.80
As mg/l	0.100
Se mg/l	<0.005
Fe mg/l	19.20
Pb mg/l	
Mo mg/l	
Al mg/l	0.19
Be mg/l	<0.01
Ni mg/l	0.19
Ag mg/l	
V mg/l	
Cd mg/l	
Cr mg/l	
Ca mg/l	50.70
Mg mg/l	17.60
Na mg/l	11.80
K mg/l	
SiO2 mg/l	30.90
NH3 mg/l	
NO3 mg/l	<0.10
SO4 mg/l	1409.00
Cl mg/l	35.90
TDS mg/l	2111.00
pH	6.97
Water Elevation	n/c

## GROUND WATER ANALYSES FOR M.W.I. 63

Date Sampled	06/14/93
UNat pCi/l	1466.00
UNat % M.P.C.	4.89
Ra226 pCi/l	38.80
Ra226 Error +/-	2.00
Ra226 % M.P.C.	129.33
Ra228 pCi/l	10.70
Ra228 Error +/-	0.60
Ra228 % M.P.C.	35.67
Th230 pCi/l	1.10
Th230 Error +/-	0.10
Th230 % M.P.C.	0.06
Pb210 pCi/l	1.70
Pb210 Error +/-	0.90
Pb210 % M.P.C.	1.70
Gross Alpha -- U & Rn pCi/l	45.20
Gross Alpha Error +/-	6.70
As mg/l	0.030
Se mg/l	0.011
Fe mg/l	26.70
Pb mg/l	
Mo mg/l	
Al mg/l	24.00
Be mg/l	0.05
Ni mg/l	0.55
Ag mg/l	
V mg/l	
Cd mg/l	
Cr mg/l	
Ca mg/l	489.00
Mg mg/l	82.80
Na mg/l	113.00
K mg/l	
SiO2 mg/l	75.50
NH3 mg/l	
NO3 mg/l	<0.10
SO4 mg/l	1793.00
Cl mg/l	82.40
TDS mg/l	2856.00
pH	4.42
Water Elevation	6828.99



Monitor Well Data and Graphics

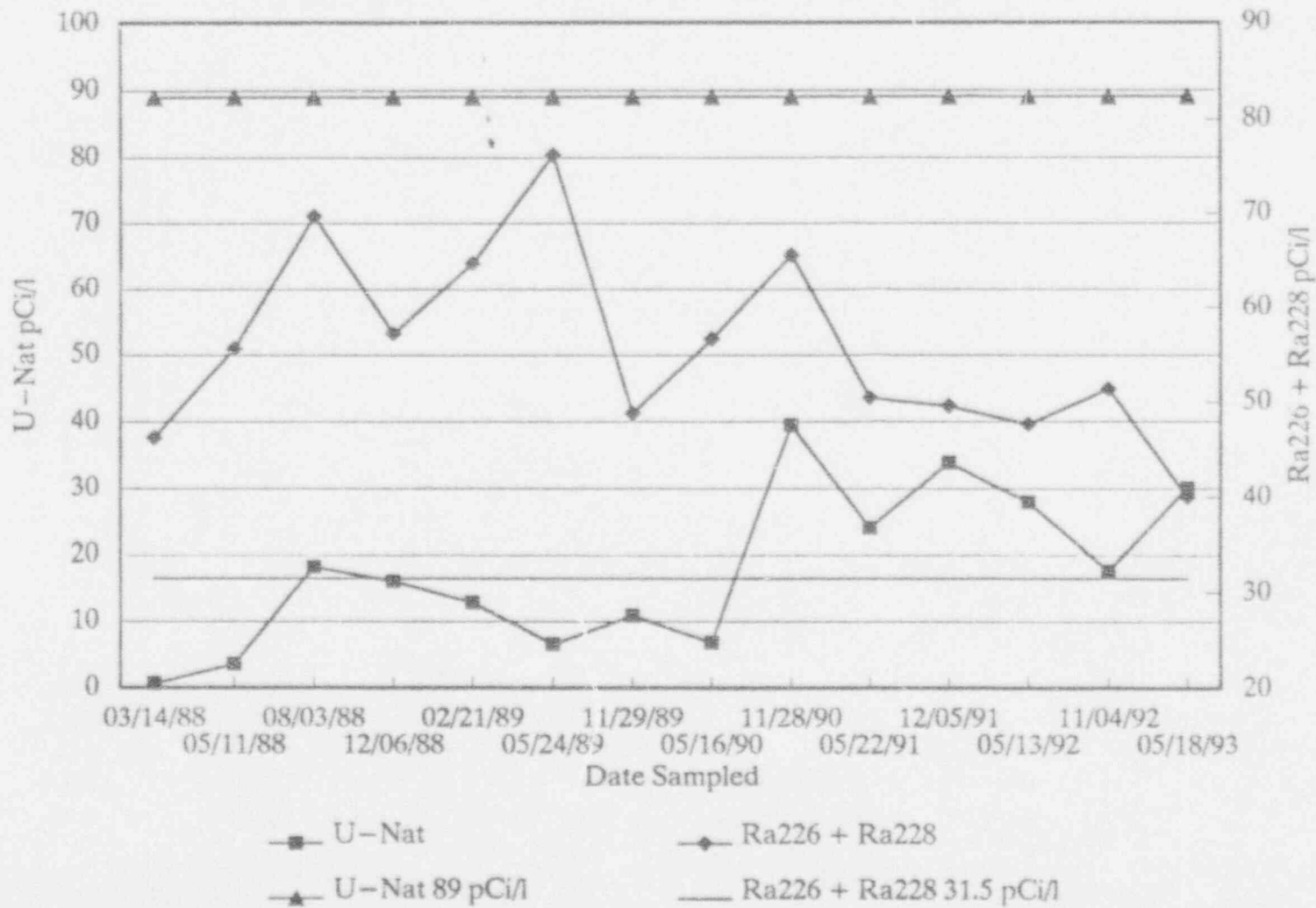
## GROUND WATER ANALYSES FOR M. W. 6

Date Sampled	12/05/91	05/13/92	11/04/92	05/18/93
UNat pCi/l	33.90	27.80	17.60	30.00
UNat % M.P.C.	0.11	0.09	0.06	0.10
Ra226 pCi/l	37.60	36.60	41.80	28.60
Ra226 Error +/-	1.30	1.00	2.40	0.80
Ra226 % M.P.C.	125.33	122.00	139.33	95.33
Ra228 pCi/l	12.00	11.10	9.60	11.40
Ra228 Error +/-	0.70	0.70	0.70	0.60
Ra228 % M.P.C.	40.00	37.00	32.00	38.00
Th230 pCi/l	<1.0	<0.2	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	<1.0	<1.0	2.60	2.90
Pb210 Error +/-			0.90	0.70
Pb210 % M.P.C.			2.60	2.90
Gross Alpha - U & Rn pCi/l	38.00	36.90	43.60	29.70
Gross Alpha Error +/-	6.20	6.10	6.60	3.10
As mg/l	<0.01	0.015	<0.01	<0.01
Se mg/l	<0.005	<0.005	<0.005	<0.005
Fe mg/l	29.30	26.79	27.00	24.60
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	0.25	0.26	0.26	
Al mg/l	0.36	<0.10	<0.10	
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	<0.01	<0.01	0.02	<0.01
Ag mg/l	<0.01	<0.01	0.01	
V mg/l	<0.01	<0.01	<0.01	
Cd mg/l	<0.005	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	0.03	
Ca mg/l	702.00	732.00	721.00	781.00
Mg mg/l	114.00	118.00	115.00	116.00
Na mg/l	72.00	71.10	75.80	78.80
K mg/l	16.90	19.50	20.10	
NH3 mg/l	0.36	0.33	<0.05	<0.05
NO3 mg/l	<0.01	<0.10	<0.10	<0.10
SO4 mg/l	1799.00	1876.00	1867.00	1936.00
Cl mg/l	145.00	167.00	180.00	107.00
TDS mg/l	3447.00	3646.00	3504.00	3657.00
pH	6.98	6.63	7.00	6.46
Water Elevation	6866.21	6865.46	6865.20	6864.61

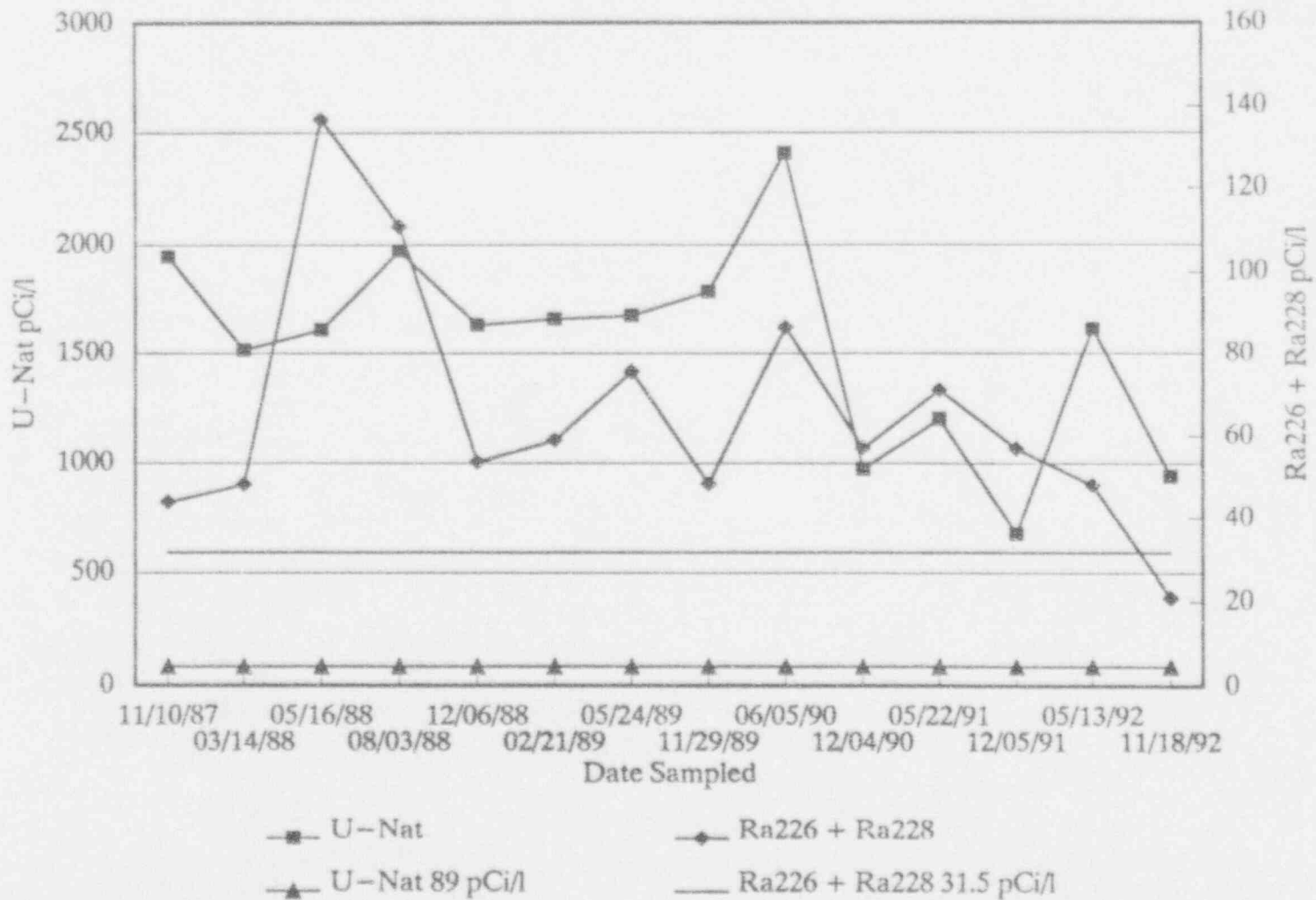
## GROUND WATER ANALYSES FOR M. W. 10

Date Sampled	05/22/91	12/05/91	05/13/92	11/18/92
UNat pCi/l	1202.00	677.00	1615.00	941.00
UNat % M.P.C.	4.01	2.26	5.38	3.14
Ra226 pCi/l	55.80	42.80	34.30	10.90
Ra226 Error +/-	3.40	1.40	1.80	0.70
Ra226 % M.P.C.	186.00	142.67	114.33	36.33
Ra228 pCi/l	15.30	14.10	13.70	10.00
Ra228 Error +/-	0.50	0.80	0.70	0.50
Ra228 % M.P.C.	51.00	47.00	45.67	33.33
Th230 pCi/l	1.20	<1.0	<0.2	<1.0
Th230 Error +/-	1.20			
Th230 % M.P.C.	0.06			
Pb210 pCi/l	3.30	4.10	<1.0	3.70
Pb210 Error +/-	0.70	1.10		0.50
Pb210 % M.P.C.	3.30	4.10		3.70
Gross Alpha - U & Rn pCi/l	56.80	44.00	35.00	11.40
Gross Alpha Error +/-	7.50	6.60	5.90	3.40
As mg/l	0.02	0.01	0.019	0.02
Se mg/l	<0.005	<0.005	<0.005	0.009
Fe mg/l	1.98	2.70	3.24	2.46
Pb mg/l	<0.01	<0.01	<0.01	<0.01
Mo mg/l	<0.01	0.04	<0.01	<0.01
Al mg/l	0.19	0.11	0.10	0.11
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	0.24	0.38	0.21	0.26
Ag mg/l	<0.01	<0.01	<0.01	<0.01
V mg/l	<0.01	<0.01	<0.01	<0.01
Cd mg/l	<0.005	<0.005	<0.005	<0.005
Cr mg/l	<0.01	<0.01	<0.01	<0.01
Ca mg/l	566.00	550.00	594.00	598.00
Mg mg/l	94.50	89.50	90.80	84.10
Na mg/l	267.00	268.00	258.00	339.00
K mg/l	15.60	14.00	14.20	14.40
NH3 mg/l	0.13	0.20	0.23	0.10
NO3 mg/l	0.02	0.01	<0.10	<0.10
SO4 mg/l	1752.00	1734.00	1816.00	1928.00
Cl mg/l	150.00	144.00	128.00	126.00
TDS mg/l	3360.00	3588.00	3381.00	3357.00
pH	6.41	6.45	6.17	6.19
Water Elevation	6889.21	6888.03	6887.13	6886.12

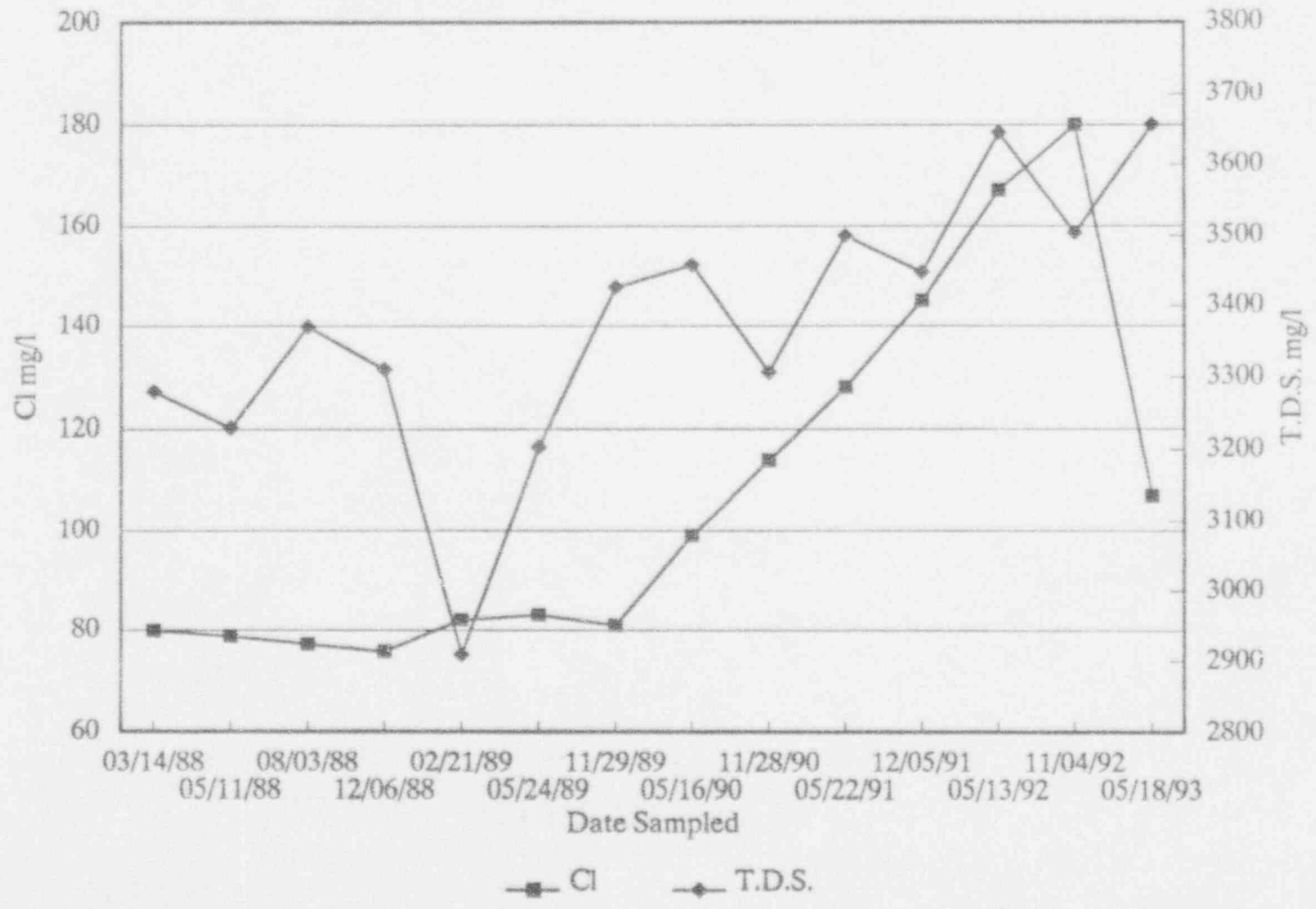
# M.W. 6 U-Nat & Ra226 + Ra228



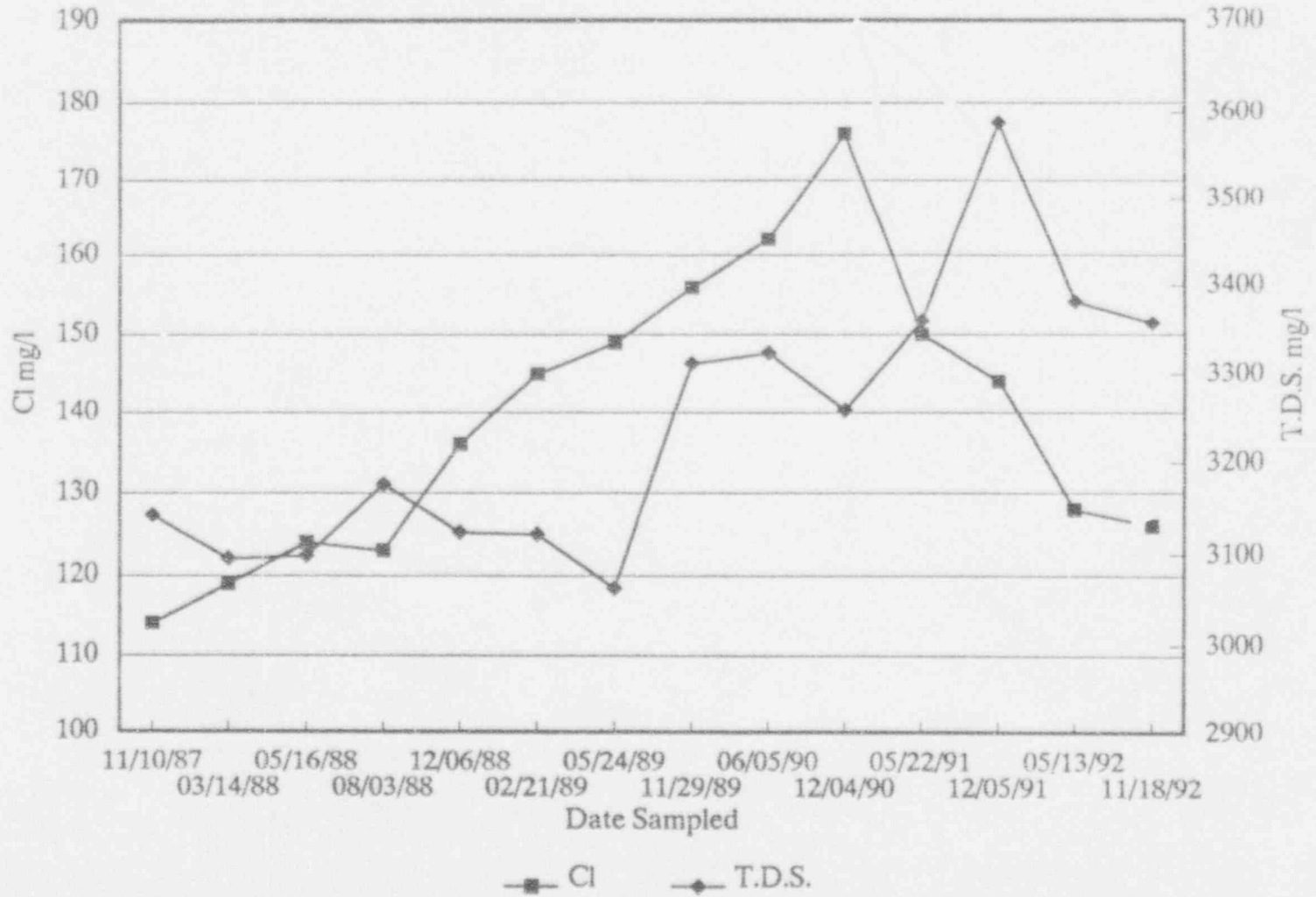
# M.W. 10 U-Nat & Ra226 + Ra228



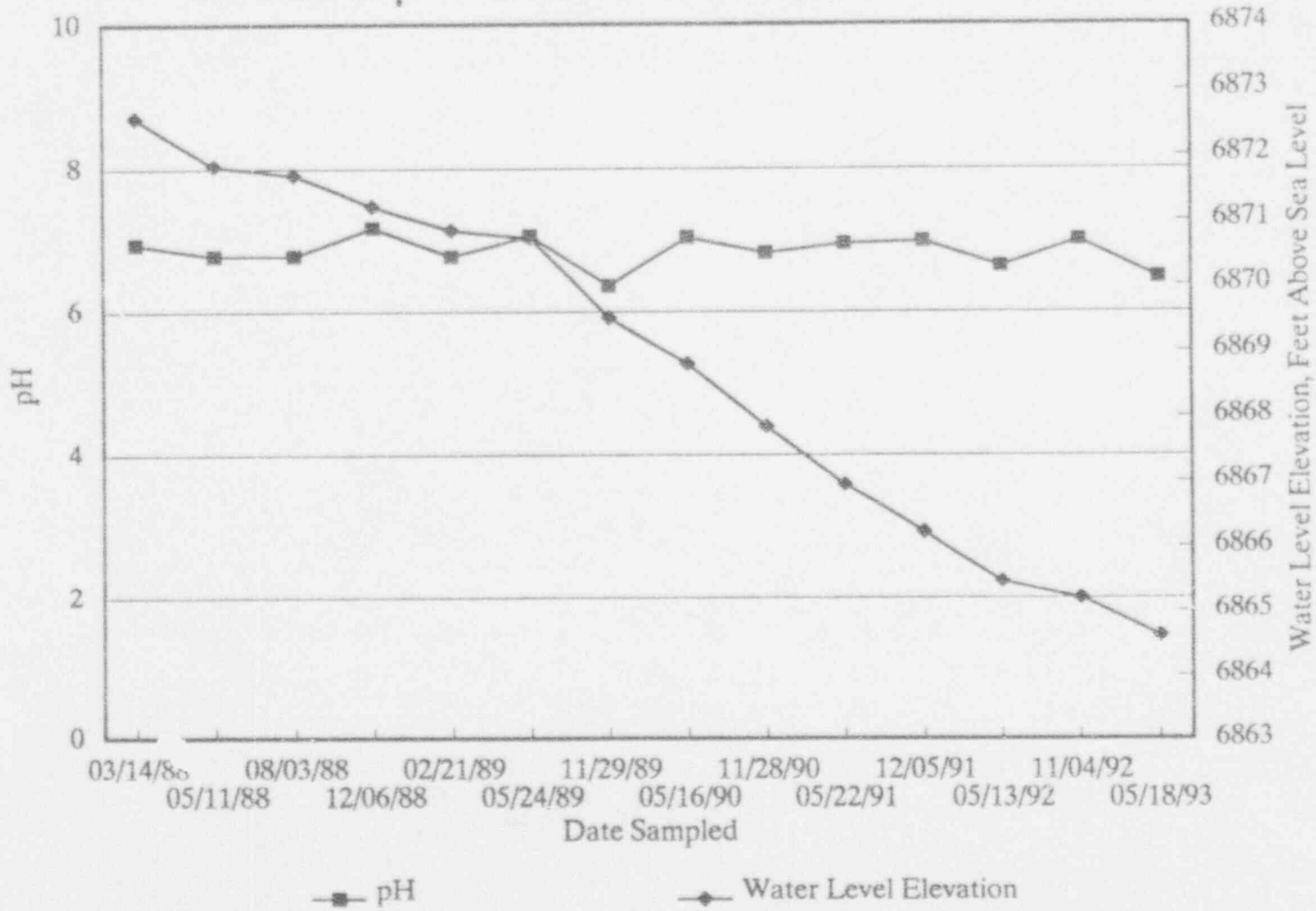
# M.W. 6 Chloride & T.D.S.



# M.W. 10 Chloride & T.D.S.

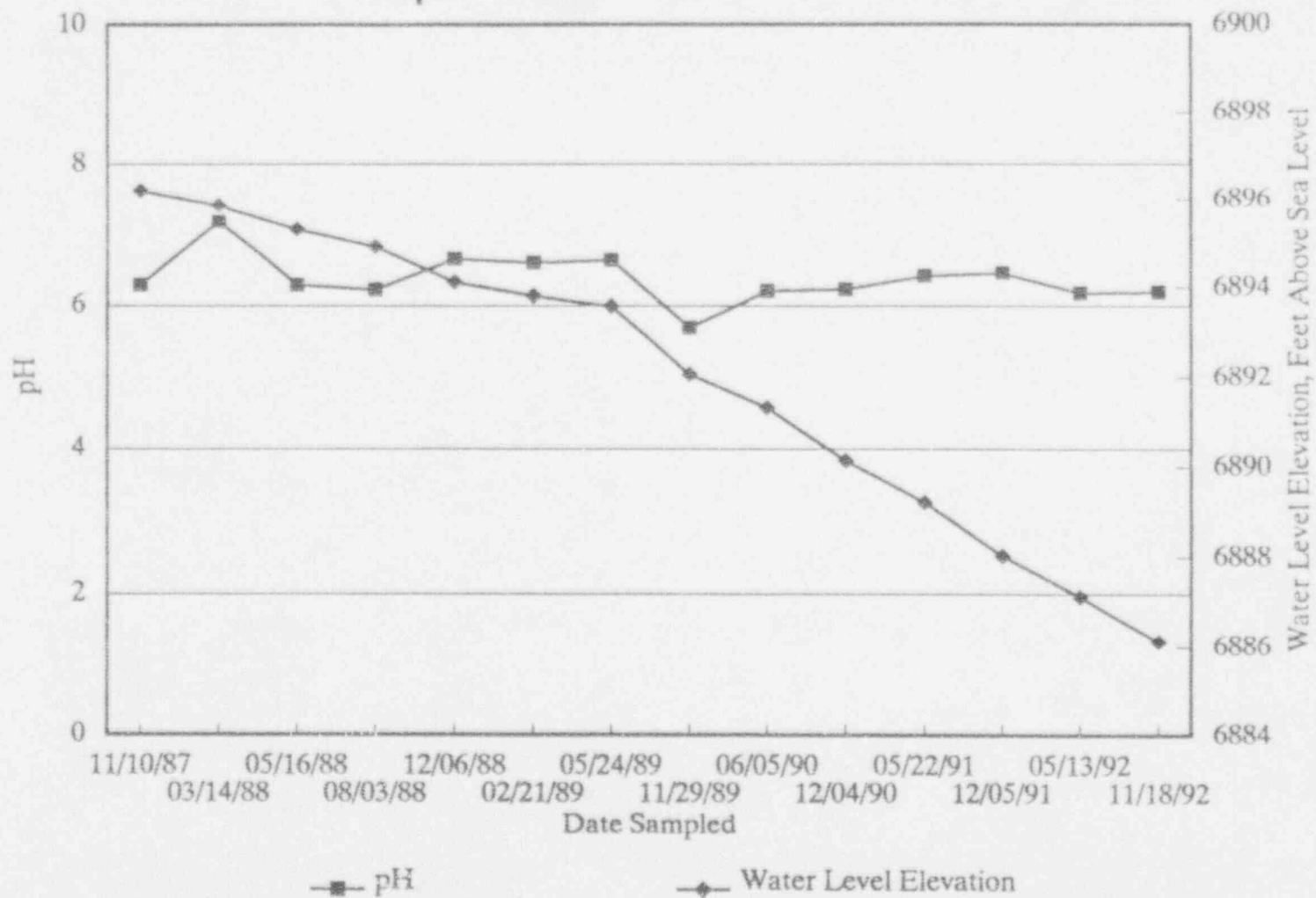


# M.W. 6 pH & Water Level Elevation





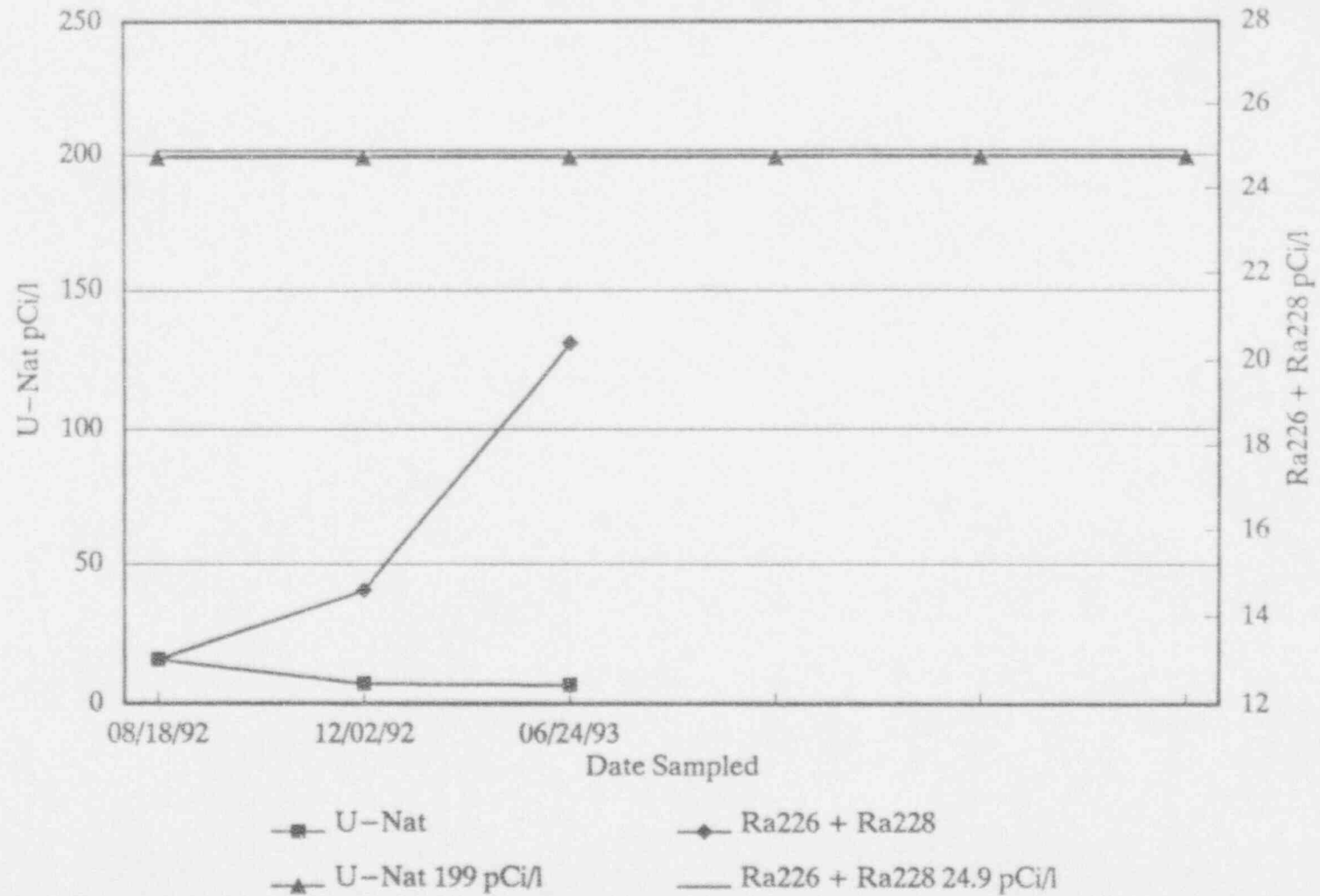
## M.W. 10 pH & Water Level Elevation



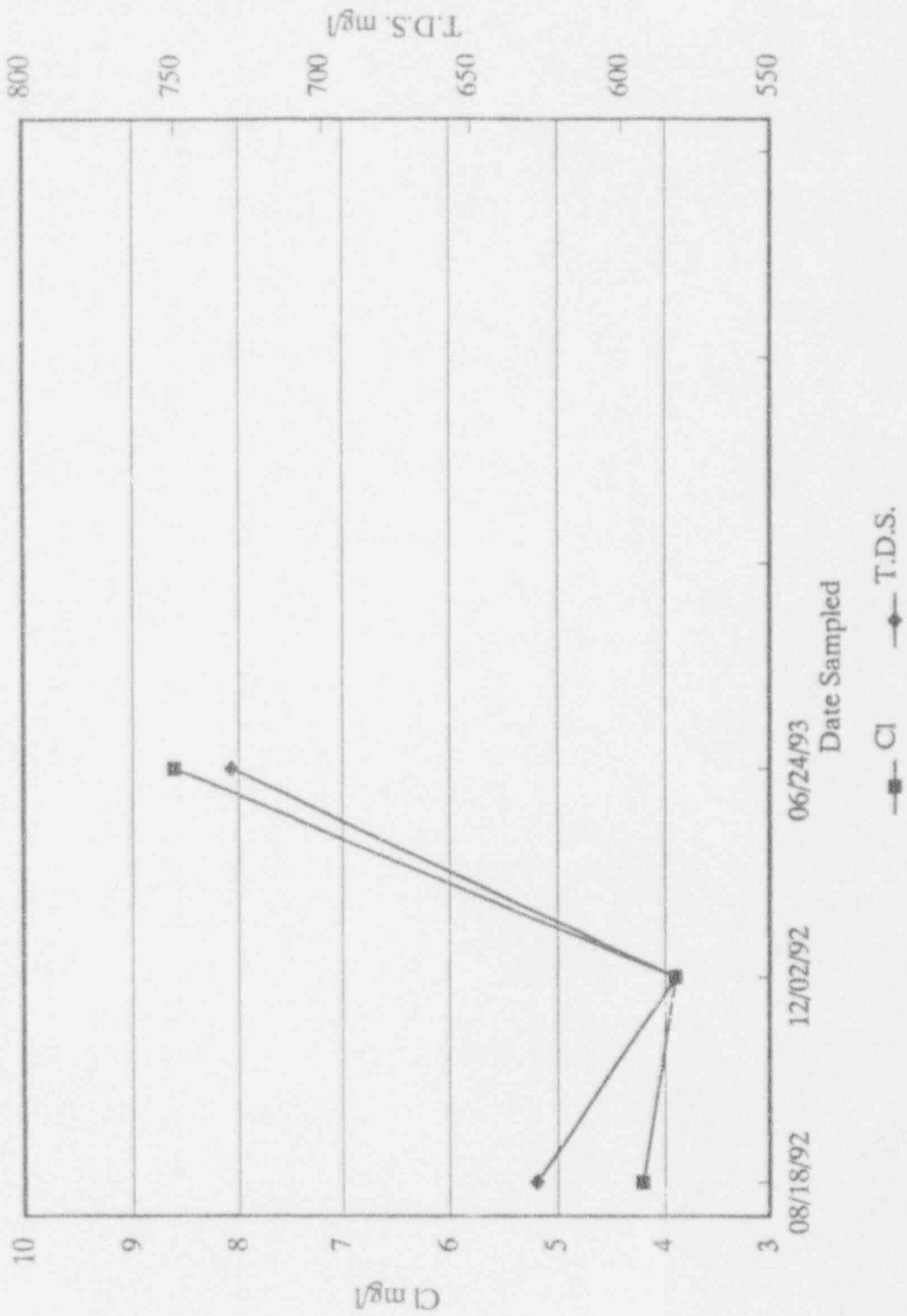
## GROUNDWATER ANALYSES FOR D.W. 4

Date Sampled	08/18/92	12/02/92	06/24/93
UNat pCi/l	15.60	7.30	6.90
UNat % M.P.C.	0.05	0.02	0.02
Ra226 pCi/l	13.00	10.30	12.30
Ra226 Error +/-	0.90	0.60	1.10
Ra226 % M.P.C.	43.33	34.33	41.00
Ra228 pCi/l	<1.0	4.30	8.10
Ra228 Error +/-		0.40	1.50
Ra228 % M.P.C.		14.33	27.00
Th230 pCi/l	<1.0	<1.0	<1.0
Th230 Error +/-			
Th230 % M.P.C.			
Pb210 pCi/l	<1.0	2.60	<1.0
Pb210 Error +/-		0.90	
Pb210 % M.P.C.		2.60	
Gross Alpha - U & Rn pCi/l	13.50	10.50	17.50
Gross Alpha Error +/-	1.90	3.20	4.20
As mg/l	<0.01	0.01	<0.01
Se mg/l	<0.005	0.014	<0.005
Fe mg/l	1.72	4.15	4.70
Pb mg/l	<0.01	<0.01	
Mo mg/l	<0.01	0.01	
Al mg/l	<0.10	<0.10	<0.10
Be mg/l	<0.01	<0.01	<0.01
Ni mg/l	0.02	0.02	<0.01
Ag mg/l	<0.01	<0.01	
V mg/l	<0.01	<0.01	
Cd mg/l	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	
Ca mg/l	132.00	125.00	171.00
Mg mg/l	21.40	21.80	25.00
Na mg/l	24.10	29.80	19.00
K mg/l	11.70	9.10	
NH3 mg/l	<0.05	<0.05	
NO3 mg/l	<0.10	<0.10	<0.01
SO4 mg/l	336.00	363.00	394.00
Cl mg/l	4.20	3.90	8.60
TDS mg/l	628.00	582.00	731.00
pH	6.43	6.40	6.29
Water Elevation	n/a	n/a	n/a

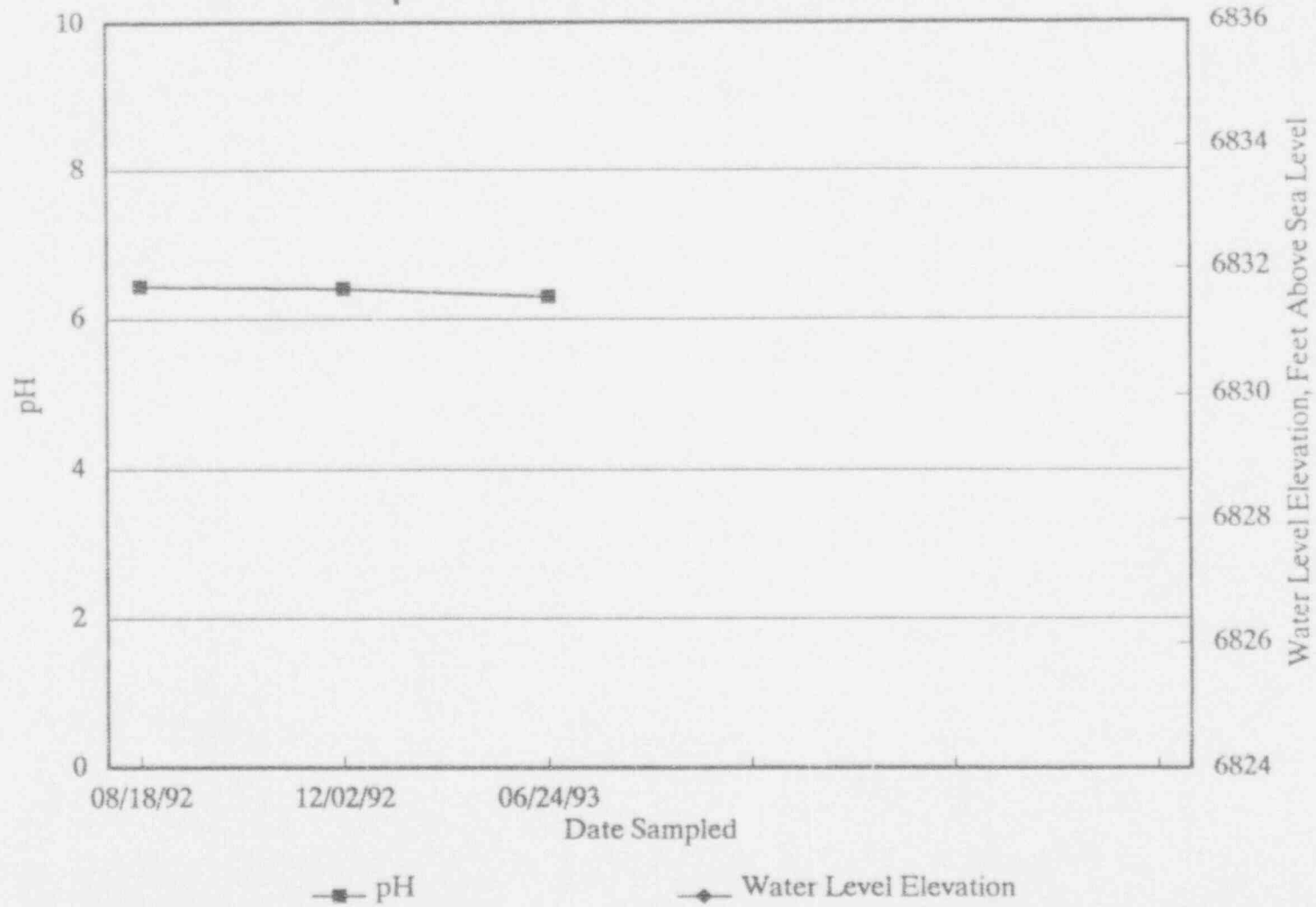
# D.W. 4 U-Nat & Ra226 + Ra228



# D.W. 4 Chloride & T.D.S.



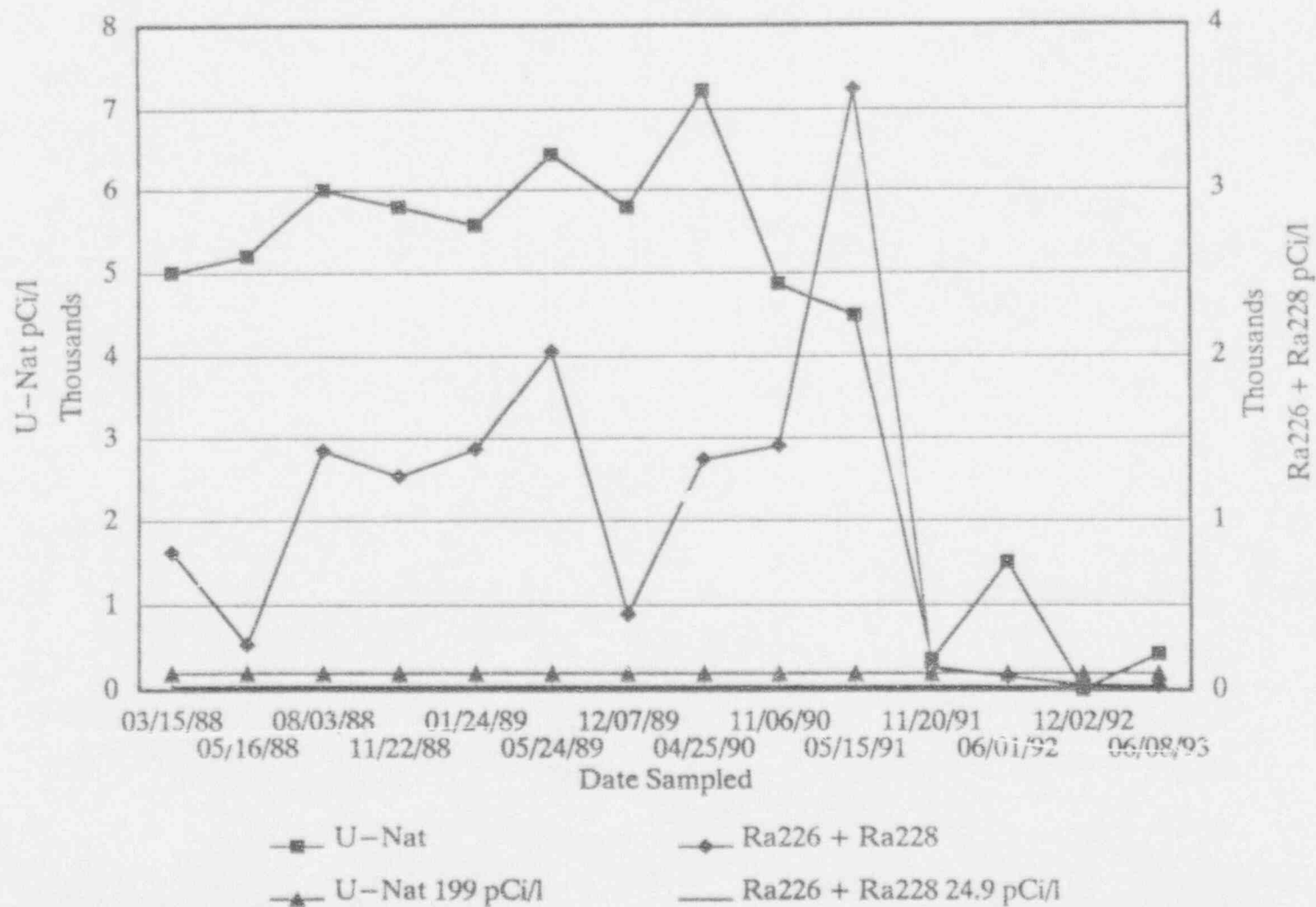
# D.W. 4 pH & Water Level Elevation



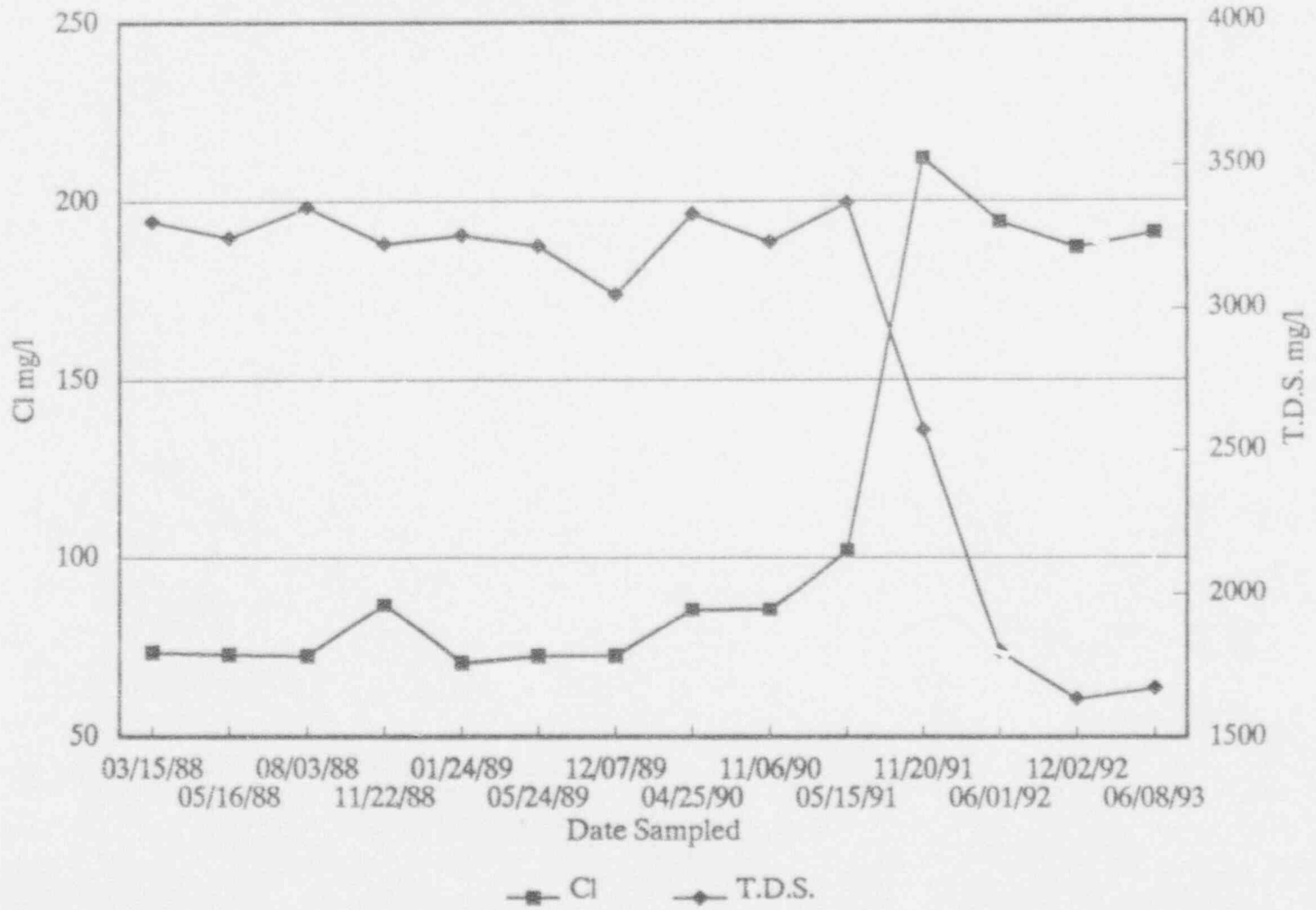
## GROUND WATER ANALYSES FOR M. W. 7

Date Sampled	11/20/91	06/01/92	12/02/92	06/08/93
UNat pCi/l	354.00	1505.00	16.40	427.00
UNat % M.P.C.	1.18	5.02	0.05	1.42
Ra226 pCi/l	112.00	80.30	31.70	21.60
Ra226 Error +/-	2.10	2.60	3.20	1.60
Ra226 % M.P.C.	373.33	267.67	105.67	72.00
Ra228 pCi/l	22.50	2.50	2.40	3.50
Ra228 Error +/-	1.20	0.60	0.60	0.70
Ra228 % M.P.C.	75.00	8.33	8.00	11.67
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	2.20	3.60	<1.0	6.60
Pb210 Error +/-	0.80	0.70		0.50
Pb210 % M.P.C.	2.20	3.60		6.60
Gross Alpha -- U & Rn pCi/l	110.00	82.90	31.50	23.30
Gross Alpha Error +/-	10.50	9.10	5.60	4.80
As mg/l	0.06	<0.01	<0.01	0.03
Se mg/l	0.027	0.012	0.013	<0.005
Fe mg/l	41.70	11.30	0.40	2.10
Pb mg/l	<0.01	<0.01		
Mo mg/l	<0.01	0.03		
Al mg/l	1.42	0.41		
Be mg/l	0.08	0.03	<0.01	<0.01
Ni mg/l	0.75	0.14	0.08	0.04
Ag mg/l	<0.01	<0.01		
V mg/l	0.02	<0.01		
Cd mg/l	<0.005	<0.005		
Cr mg/l	<0.01	<0.01		
Ca mg/l	379.00	160.00	44.00	81.90
Mg mg/l	44.80	20.80	15.00	12.80
Na mg/l	260.00	350.00	473.00	414.00
K mg/l	11.20	7.84		
NH3 mg/l	4.49	2.80		
NO3 mg/l	0.02	<0.10	0.83	0.20
SO4 mg/l	1614.00	948.00	891.00	841.00
Cl mg/l	212.00	194.00	187.00	191.00
TDS mg/l	2572.00	1794.00	1634.00	1672.00
pH	5.44	6.10	6.46	6.10
Water Elevation	6837.83	6840.94	6897.59	6874.28

# M.W. 7 U-Nat & Ra226 + Ra228

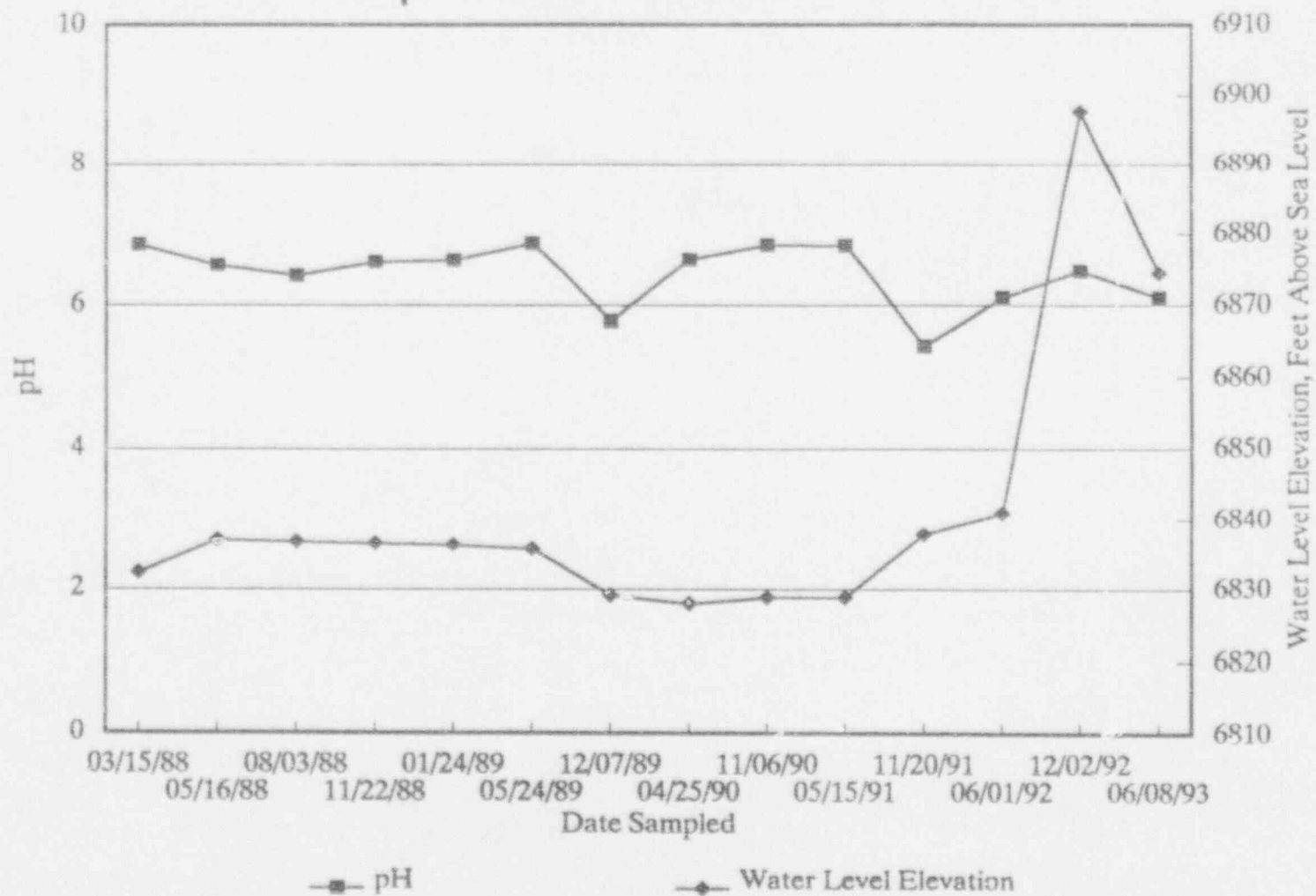


# M.W. 7 Chloride & T.D.S.





# M.W. 7 pH & Water Level Elevation



## GROUND WATER ANALYSES FOR LA 2

Date Sampled	11/07/91	06/15/92	11/04/92	05/18/93
UNat pCi/l	118.00	105.00	244.00	80.70
UNat % M.P.C.	0.39	0.35	0.81	0.27
Ra226 pCi/l	13.70	10.40	14.20	10.60
Ra226 Error +/-	0.80	0.70	0.80	0.50
Ra226 % M.P.C.	45.67	34.67	47.33	35.33
Ra228 pCi/l	12.60	3.30	6.60	10.20
Ra228 Error +/-	1.80	0.80	0.60	0.50
Ra228 % M.P.C.	42.00	11.00	22.00	34.00
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	<1.0	<1.0	<1.0	1.50
Pb210 Error +/-				0.70
Pb210 % M.P.C.				1.50
Gross Alpha pCi/l	14.00	10.80	14.90	12.30
Gross Alpha Error +/-	3.70	3.30	3.90	2.30
As mg/l	<0.01	<0.01	<0.01	<0.01
Se mg/l	<0.005	<0.005	<0.005	<0.005
Fe mg/l	5.70	5.34	3.85	3.28
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	<0.01	<0.01	0.01	
Al mg/l	<0.10	<0.10	0.13	
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	0.06	<0.01	0.02	0.01
Ag mg/l	<0.01	<0.01	<0.01	
V mg/l	<0.01	<0.01	<0.01	
Cd mg/l	<0.005	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	317.00	318.00	313.00	330.00
Mg mg/l	70.90	67.80	74.20	64.20
Na mg/l	54.20	60.40	55.40	59.10
K mg/l	18.60	18.00	18.10	
NH3 mg/l	<0.05	0.31	0.17	<0.05
NO3 mg/l	<0.01	<0.01	<0.10	<0.10
SO4 mg/l	891.00	869.00	896.00	839.00
Cl mg/l	28.80	25.40	27.80	22.80
TDS mg/l	1707.00	1618.00	1685.00	1667.00
pH	6.83	6.83	6.94	6.74
Water Elevation	6892.93	6895.39	6895.97	6897.58

## GROUND WATER ANALYSES FOR P. W. 1

Date Sampled	11/18/91	04/21/92	12/09/92	06/09/93
UNat pCi/l	20.00	10.00	39.90	62.20
UNat % M.P.C.	0.07	0.33	0.13	0.21
Ra226 pCi/l	2.00	20.90	26.10	24.10
Ra226 Error +/-	0.90	1.70	2.10	1.60
Ra226 % M.P.C.	6.67	69.67	87.00	80.33
Ra228 pCi/l	13.20	6.00	16.30	1.60
Ra228 Error +/-	0.70	0.50	0.80	0.90
Ra228 % M.P.C.	44.00	20.00	54.33	5.33
Th230 pCi/l	<1.0	<1.0	<1.0	1.90
Th230 Error +/-				0.20
Th230 % M.P.C.				0.10
Po210 pCi/l	1.20	<1.0	1.80	1.70
Pb210 Error +/-	0.70		0.70	0.50
Pb210 % M.P.C.	1.20		1.80	1.70
Gross Alpha - U & Rn pCi/l	25.00	22.00	26.40	28.00
Gross Alpha Error +/-	5.00	4.70	5.10	2.00
As mg/l	<0.01	<0.01	<0.01	<0.01
Se mg/l	<0.005	<0.005	0.01	<0.005
Fe mg/l	71.90	77.00	77.60	102.00
Pb mg/l	<0.01	<0.01		
Mo mg/l	<0.01	<0.01		
Al mg/l	0.14	<0.10		
Be mg/l	0.02	0.02	0.02	0.03
Ni mg/l	1.15	1.21	1.35	1.77
Ag mg/l	<0.01	<0.01		
V mg/l	<0.01	<0.01		
Cd mg/l	<0.005	<0.005		
Cr mg/l	<0.01	<0.01		
Ca mg/l	578.00	539.00	551.00	501.00
Mg mg/l	72.80	80.00	81.00	82.00
Na mg/l	64.70	67.30	63.90	58.00
K mg/l	12.10	14.20		
NH3 mg/l	0.13	0.47		
NO3 mg/l	<0.01	<0.10	0.19	<0.10
SO4 mg/l	1815.00	1551.00	1836.00	1731.00
Cl mg/l	65.40	55.50	55.40	62.70
TDS mg/l	2915.00	2941.00	2903.00	2950.00
pH	5.91	5.64	6.05	5.65
Water Elevation	6821.29	6820.89	6820.96	6820.75

## GROUND WATER ANALYSES FOR P.W. 2

Date Sampled	11/21/91	06/02/92	12/08/92	06/09/93
UNat pCi/l	497.00	933.00	531.00	840.00
UNat % M.P.C.	1.66	3.11	1.77	2.80
Ra226 pCi/l	41.80	23.80	42.70	36.20
Ra226 Error +/-	1.30	0.80	2.70	2.50
Ra226 % M.P.C.	139.33	79.33	142.33	120.67
Ra228 pCi/l	13.40	3.80	10.70	9.30
Ra228 Error +/-	1.20	0.80	0.50	0.80
Ra228 % M.P.C.	44.67	12.67	35.67	31.00
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	<1.0	4.90	<1.0	<1.0
Pb210 Error +/-		0.70		
Pb210 % M.P.C.		4.90		
Gross Alpha -- U & Rn pCi/l	42.00	25.10	44.10	37.00
Gross Alpha Error +/-	6.50	5.00	6.60	2.60
As mg/l	0.02	0.02	0.02	0.02
Se mg/l	<0.005	<0.005	0.009	<0.005
Fe mg/l	28.60	28.51	26.00	32.10
Pb mg/l	<0.01	<0.01		
Mo mg/l	<0.01	<0.01		
Al mg/l	0.12	0.12		
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	0.41	0.44	0.54	0.50
Ag mg/l	<0.01	<0.01		
V mg/l	<0.01	<0.01		
Cd mg/l	<0.005	<0.005		
Cr mg/l	<0.01	<0.01		
Ca mg/l	566.00	653.00	638.00	661.00
Mg mg/l	46.20	54.20	48.70	48.00
Na mg/l	24.10	29.00	27.50	35.70
K mg/l	15.10	18.60		
NH3 mg/l	0.28	0.20		
NO3 mg/l	0.05	<0.10	<0.10	<0.10
SO4 mg/l	1341.00	1369.00	1383.00	1401.00
Cl mg/l	13.90	103.00	99.70	109.00
TDS mg/l	2639.00	2654.00	2560.00	2805.00
pH	6.67	6.53	6.72	6.11
Water Elevation	6805.88	6805.64	6805.23	6804.15

## GROUND WATER ANALYSES FOR P.W. 3

Date Sampled	10/09/91	05/12/92	10/20/92	06/15/93
UNat pCi/l	309.00	287.00	243.00	235.00
UNat % M.P.C.	1.03	0.96	0.81	0.78
Ra226 pCi/l	31.40	16.10	7.70	15.50
Ra226 Error +/-	1.40	1.00	0.50	1.20
Ra226 % M.P.C.	104.67	53.67	25.67	51.67
Ra228 pCi/l	18.40	4.10	8.40	9.60
Ra228 Error +/-	0.40	1.10	2.80	2.30
Ra228 % M.P.C.	61.33	13.67	28.00	32.00
Th230 pCi/l	<0.2	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	<1.0	<1.0	<1.0	<1.0
Pb210 Error +/-				
Pb210 % M.P.C.				
Gross Alpha - U & Rn pCi/l	30.00	16.50	8.00	20.00
Gross Alpha Error +/-	6.50	4.10	2.80	4.50
As mg/l	0.05	0.07	0.01	0.05
Se mg/l	<0.005	<0.005	<0.005	<0.005
Fe mg/l	49.00	48.30	52.30	40.50
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	0.02	<0.01	0.01	
Al mg/l	67.00	0.13	0.49	
Be mg/l	<0.01	<0.01	0.01	<0.01
Ni mg/l	0.43	0.43	0.48	0.49
Ag mg/l	<0.01	<0.01	0.01	
V mg/l	<0.01	<0.01	<0.01	
Cd mg/l	<0.005	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	232.00	355.00	366.00	373.00
Mg mg/l	32.90	44.30	39.00	39.20
Na mg/l	17.90	14.60	13.90	15.50
K mg/l	8.70	9.74	10.30	
NH3 mg/l	1.04	0.59	0.19	
NO3 mg/l	<0.01	<0.10	<0.10	<0.01
SO4 mg/l	992.00	978.00	956.00	1047.00
Cl mg/l	24.90	18.40	22.70	22.50
TDS mg/l	1523.00	1630.00	1484.00	1622.00
pH	6.60	6.46	6.68	5.88
WATER ELEVATION	6797.79	6798.19	6797.94	6796.10

## GROUND WATER ANALYSES FOR P.W. 4

Date Sampled	10/09/91	05/20/92	10/20/92	06/15/93
UNat pCi/l	650.00	289.00	291.00	227.00
UNat % M.P.C.	2.17	0.96	0.97	0.76
Ra226 pCi/l	135.00	43.40	33.60	82.80
Ra226 Error +/-	5.50	2.60	1.10	3.60
Ra226 % M.P.C.	450.00	144.67	112.00	276.00
Ra228 pCi/l	7.00	13.80	2.00	13.30
Ra228 Error +/-	0.40	0.80	0.60	4.40
Ra228 % M.P.C.	23.33	46.00	6.67	44.33
Th230 pCi/l	<0.2	<1.0	35.60	<1.0
Th230 Error +/-			5.90	
Th230 % M.P.C.			1.78	
Pb210 pCi/l	3.80	1.20	<1.0	6.20
Pb210 Error +/-	1.10	0.60		1.00
Pb210 % M.P.C.	3.80	1.20		6.20
Gross Alpha - U & Rn pCi/l	140.00	42.80	70.00	89.30
Gross Alpha Error +/-	12.00	6.50	8.40	9.50
As mg/l	0.10	0.06	0.02	0.10
Se mg/l	<0.005	<0.005	<0.005	<0.005
Fe mg/l	57.70	46.80	58.10	66.00
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	<0.01	<0.01	<0.01	
Al mg/l	37.10	2.30	2.83	
Be mg/l	0.02	0.02	0.02	0.02
Ni mg/l	0.67	0.50	0.59	0.75
Ag mg/l	<0.01	<0.01	<0.01	
V mg/l	<0.01	<0.01	<0.01	
Cd mg/l	<0.005	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	207.00	239.00	282.00	279.00
Mg mg/l	34.90	44.30	43.50	39.80
Na mg/l	32.50	39.50	30.20	35.10
K mg/l	10.70	16.80	13.20	
NH3 mg/l	4.60	0.23	0.08	
NO3 mg/l	<0.01	0.15	<0.10	<0.01
SO4 mg/l	1034.00	821.00	972.00	1043.00
Cl mg/l	41.90	44.30	50.80	54.50
TDS mg/l	1414.00	1446.00	1387.00	1559.00
pH	5.29	5.23	5.40	5.02
Water Elevation	6795.36	6797.03	6795.21	6792.93

## GROUND WATER ANALYSES FOR G.W. 1

Date Sampled	12/03/91	06/01/92	12/08/92	06/28/93
UNat pCi/l	86.00	107.00	77.90	63.90
UNat % M.P.C.	0.29	0.36	0.26	0.21
Ra226 pCi/l	32.80	30.90	27.50	22.60
Ra226 Error +/-	1.30	2.20	0.80	1.40
Ra226 % M.P.C.	109.33	103.00	91.67	75.33
Ra228 pCi/l	12.10	10.60	3.50	6.00
Ra228 Error +/-	0.70	0.50	0.40	2.30
Ra228 % M.P.C.	40.33	35.33	11.67	20.00
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	6.80	1.30	4.20	<1.0
Pb210 Error +/-	1.10	0.70	0.90	
Pb210 % M.P.C.	6.80	1.30	4.20	
Gross Alpha -- U & rn pCi/l	34.00	31.50	28.50	25.60
Gross Alpha Error +/-	5.80	5.60	5.30	5.10
As mg/l	0.111	0.25	0.24	0.22
Se mg/l	<0.005	<0.005	0.029	<0.005
Fe mg/l	23.90	20.80	23.50	22.10
Pb mg/l	<0.01	<0.01		
Mo mg/l	0.15	0.18		
Al mg/l	0.30	<0.10		
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	0.75	1.23	0.29	0.41
Ag mg/l	<0.01	<0.01		
V mg/l	<0.01	<0.01		
Cd mg/l	<0.005	0.008		
Cr mg/l	<0.01	<0.01		
Ca mg/l	536.00	551.00	552.00	601.00
Mg mg/l	67.10	75.40	67.80	79.70
Na mg/l	28.00	22.30	24.10	28.90
K mg/l	12.10	13.30		
NH3 mg/l	0.21	0.35		
NO3 mg/l	<0.01	<0.10	<0.10	<0.10
SO4 mg/l	1325.00	1504.00	1579.00	1513.00
Cl mg/l	25.40	29.00	26.90	26.10
TDS mg/l	2461.00	2611.00	2532.00	2623.00
pH	7.07	6.63	6.67	6.16
Water Elevation	6810.78	6810.27	6810.25	6810.03

## GROUND WATER ANALYSES FOR G.W. 2

Date Sampled	12/03/91	06/01/92	12/08/92	06/28/93
UNat pCi/l	42.00	344.00	37.70	78.70
UNat % M.P.C.	0.14	1.15	0.13	0.26
Ra226 pCi/l	37.70	26.20	34.60	29.40
Ra226 Error +/-	1.40	2.10	1.80	1.60
Ra226 % M.P.C.	125.67	87.33	115.33	98.00
Ra228 pCi/l	12.90	3.50	2.70	7.10
Ra228 Error +/-	0.80	0.40	0.50	2.60
Ra228 % M.P.C.	43.00	11.67	9.00	23.67
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	5.30	1.30	<1.0	<1.0
Pb210 Error +/-	1.10	0.70		
Pb210 % M.P.C.	5.30	1.30		
Gross Alpha- U & Rn pCi/l	39.00	26.50	35.20	36.50
Gross Alpha Error +/-	6.20	5.10	5.90	6.10
As mg/l	0.329	0.21	0.33	0.22
Se mg/l	<0.005	<0.005	0.028	<0.005
Fe mg/l	16.80	4.81	18.90	11.40
Pb mg/l	<0.01	<0.01		
Mo mg/l	0.06	0.10		
Al mg/l	<0.10	<0.10		
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	1.00	3.22	1.04	1.92
Ag mg/l	<0.01	<0.01		
V mg/l	<0.01	<0.01		
Cd mg/l	<0.005	<0.005		
Cr mg/l	<0.01	<0.01		
Ca mg/l	462.00	461.00	471.00	541.00
Mg mg/l	41.40	48.90	45.00	48.40
Na mg/l	16.10	13.30	12.50	16.00
K mg/l	11.40	17.10		
NH3 mg/l	0.15	0.25		
NO3 mg/l	<0.01	<0.10	<0.10	<0.10
SO4 mg/l	1075.00	1162.00	1204.00	1265.00
Cl mg/l	18.40	17.10	17.00	19.10
TDS mg/l	1928.00	2043.00	2118.00	2272.00
pH	6.97	6.68	6.79	6.36
Water Elevation	6799.49	6799.66	6799.04	6797.55



## GROUND WATER ANALYSES FOR G.W. 4

Date Sampled	11/20/91	05/13/92	10/29/92	06/15/93
UNat pCi/l	36.30	93.40	110.00	97.70
UNat % M.P.C.	0.12	0.31	0.37	0.33
Ra226 pCi/l	35.90	3.60	29.20	37.20
Ra226 Error +/-	1.20	1.90	1.20	1.80
Ra226 % M.P.C.	119.67	12.00	97.33	124.00
Ra228 pCi/l	10.10	7.10	4.50	7.70
Ra228 Error +/-	1.40	0.70	0.80	1.80
Ra228 % M.P.C.	33.67	23.67	15.00	25.67
Th230 pCi/l	<1.0	<0.2	<0.2	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	<1.0	<1.0	1.10	2.00
Pb210 Error +/-			0.90	0.90
Pb210 % M.P.C.			1.10	2.00
Gross Alpha - U & Rn pCi/l	36.00	33.10	4.90	41.00
Gross Alpha Error +/-	6.00	5.80	2.20	6.40
As mg/l	<0.01	<0.10	<0.01	<0.01
Se mg/l	<0.005	<0.005	0.005	<0.005
Fe mg/l	19.50	14.40	8.54	10.30
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	<0.01	0.02	<0.01	
Al mg/l	<0.10	<0.10	<0.10	
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	0.02	0.03	0.01	0.01
Ag mg/l	0.02	<0.01	<0.01	
V mg/l	<0.01	<0.01	0.01	
Cd mg/l	<0.005	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	385.00	389.00	379.00	395.00
Mg mg/l	60.20	62.70	51.90	51.70
Na mg/l	30.90	27.90	27.20	30.90
K mg/l	12.50	11.70	14.20	
NH3 mg/l	0.14	0.52	0.38	
NO3 mg/l	<0.01	<0.10	<0.10	<0.01
SO4 mg/l	959.00	924.00	849.00	921.00
Cl mg/l	67.70	57.20	55.40	51.90
TDS mg/l	1831.00	1832.00	1216.00	1716.00
pH	6.65	6.50	7.16	6.02
Water Elevation	6797.76	6797.67	6796.24	6794.32

## GROUND WATER ANALYSES FOR G.W. 5

Date Sampled	12/03/91	06/01/92	12/08/92	06/28/93
UNat pCi/l	1228.00	1866.00	1022.00	886.00
UNat % M.P.C.	4.09	6.22	3.41	2.95
Ra226 pCi/l	8.20	7.50	5.30	4.50
Ra226 Error +/-	0.70	0.60	0.40	0.70
Ra226 % M.P.C.	27.33	25.00	17.67	15.00
Ra228 pCi/l	6.70	2.80	7.20	1.50
Ra228 Error +/-	0.70	0.50	0.40	0.80
Ra228 % M.P.C.	22.33	9.33	24.00	5.00
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	3.30	16.00	<1.0	2.10
Pb210 Error +/-	1.10	0.90		0.70
Pb210 % M.P.C.	3.30	16.00		2.10
Gross Alpha - U & Rn pCi/l	9.00	7.90	5.70	<5.0
Gross Alpha Error +/-	3.00	2.80	2.40	
As mg/l	<0.01	<0.01	<0.01	<0.01
Se mg/l	0.064	0.02	0.057	0.013
Fe mg/l	0.48	0.28	1.64	0.25
Pb mg/l	<0.01	<0.01		
Mo mg/l	<0.01	<0.01		
Al mg/l	<0.10	<0.10		
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	0.06	0.02	0.07	0.02
Ag mg/l	<0.01	<0.01		
V mg/l	<0.01	<0.01		
Cd mg/l	<0.005	<0.005		
Cr mg/l	<0.01	<0.01		
Ca mg/l	517.00	548.00	596.00	573.00
Mg mg/l	112.00	105.00	91.40	75.90
Na mg/l	213.00	182.00	205.00	186.00
K mg/l	27.40	26.90		
NH3 mg/l	0.15	0.28		
NO3 mg/l	0.11	<0.10	<0.10	<0.10
SO4 mg/l	1285.00	1358.00	1381.00	1253.00
Cl mg/l	360.00	467.00	478.00	379.00
TDS mg/l	3118.00	3292.00	3168.00	2975.00
pH	6.93	6.85	6.88	6.14
Water Elevation	6807.74	6807.51	6807.38	6804.95

## GROUND WATER ANALYSES FOR G.W. 6

Date Sampled	12/04/91	06/01/92	12/09/92	06/23/93
UNat pCi/l	15.70	17.90	32.80	22.50
UNat % M.P.C.	0.05	0.06	0.11	0.08
Ra226 pCi/l	14.90	16.00	24.80	17.10
Ra226 Error +/-	0.80	0.90	2.60	1.20
Ra226 % M.P.C.	49.67	53.33	82.67	57.00
Ra228 pCi/l	4.10	6.90	10.60	<1.0
Ra228 Error +/-	0.50	0.60	0.60	
Ra228 % M.P.C.	13.67	23.00	35.33	
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	<1.0	3.20	3.60	<1.0
Pb210 Error +/-		0.70	0.70	
Pb210 % M.P.C.		3.20	3.60	
Gross Alpha - U & Rn pCi/l	15.00	15.80	25.50	18.10
Gross Alpha Error +/-	3.90	3.90	5.10	4.30
As mg/l	0.001	<0.01	<0.01	<0.01
Se mg/l	<0.005	<0.005	0.02	<0.005
Fe mg/l	1.13	0.94	0.37	0.59
Pb mg/l	<0.01	<0.01		
Mo mg/l	<0.01	0.03		
Al mg/l	<0.10	<0.10		
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	<0.01	<0.01	0.02	0.02
Ag mg/l	<0.01	<0.01		
V mg/l	<0.01	<0.01		
Cd mg/l	<0.005	<0.005		
Cr mg/l	<0.01	<0.01		
Ca mg/l	231.00	255.00	246.00	269.00
Mg mg/l	44.10	51.60	49.80	58.80
Na mg/l	72.00	63.70	70.30	67.10
K mg/l	16.70	16.70		
NH3 mg/l	0.23	0.25		
NO3 mg/l	0.02	<0.10	<0.10	<0.01
SO4 mg/l	576.00	653.00	664.00	781.00
Cl mg/l	52.80	39.10	43.00	49.50
TDS mg/l	1340.00	1306.00	1319.00	1469.00
pH	7.16	6.83	6.88	6.13
Water Elevation	6809.56	6808.97	6808.75	6806.92

## GROUND WATER ANALYSES FOR G.W. 7

Date Sampled	10/10/91	05/12/92	10/20/92	06/15/93
UNat pCi/l	2005.00	2003.00	1051.00	2373.00
UNat % M.P.C.	6.68	6.68	3.50	7.91
Ra226 pCi/l	188.00	105.00	69.20	117.00
Ra226 Error +/-	6.20	3.60	2.90	3.30
Ra226 % M.P.C.	626.67	350.00	230.67	390.00
Ra228 pCi/l	<1.0	7.10	2.00	6.00
Ra228 Error +/-		0.90	0.50	1.90
Ra228 % M.P.C.		23.67	6.67	20.00
Th230 pCi/l	3.80	<1.0	<1.0	<1.0
Th230 Error +/-	0.30			
Th230 % M.P.C.	0.19			
Pb210 pCi/l	10.20	7.00	5.80	7.90
Pb210 Error +/-	1.10	0.70	0.80	1.00
Pb210 % M.P.C.	10.20	7.00	5.80	7.90
Gross Alpha - U & Rn pCi/l	200.00	109.00	70.00	126.00
Gross Alpha Error +/-	14.00	10.50	8.40	11.20
As mg/l	0.01	0.02	<0.01	0.02
Se mg/l	<0.005	<0.005	<0.005	<0.005
Fe mg/l	19.90	21.50	19.90	20.70
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	<0.01	0.01	0.02	
Al mg/l	23.00	0.20	0.84	
Be mg/l	0.02	0.02	0.03	0.03
Ni mg/l	0.44	0.41	0.44	0.55
Ag mg/l	<0.01	<0.01	0.01	
V mg/l	0.01	<0.01	<0.01	
Cd mg/l	0.006	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	249.00	271.00	288.00	289.00
Mg mg/l	38.10	50.20	49.10	46.70
Na mg/l	32.50	20.80	52.00	27.40
K mg/l	10.70	11.40	13.20	
NH3 mg/l	<0.05	<0.05	0.25	
NO3 mg/l	<0.01	<0.10	<0.10	<0.01
SO4 mg/l	864.00	852.00	877.00	950.00
Cl mg/l	82.70	91.50	114.00	66.80
TDS mg/l	1457.00	1380.00	1476.00	1099.00
pH	5.82	5.86	5.71	5.35
Water Elevation	6795.14	6797.23	6795.48	6793.05

## GROUND WATER ANALYSES FOR G.W. 8

Date Sampled	10/09/91	05/12/92	10/20/92	06/15/93
UNat pCi/l	936.00	1486.00	2812.00	1901.00
UNat % M.P.C.	3.12	4.95	9.37	6.34
Ra226 pCi/l	119.00	77.10	46.80	84.60
Ra226 Error +/-	6.60	3.10	2.50	2.80
Ra226 % M.P.C.	396.67	257.00	156.00	282.60
Ra228 pCi/l	<1.0	2.20	<1.0	4.10
Ra228 Error +/-		0.90		2.00
Ra228 % M.P.C.		7.33		13.67
Th230 pCi/l	<0.2	24.90	46.90	6.00
Th230 Error +/-		2.00	0.90	0.50
Th230 % M.P.C.		1.25	2.35	0.30
Pb210 pCi/l	11.40	<1.0	14.80	12.50
Pb210 Error +/-	1.20		0.90	1.10
Pb210 % M.P.C.	11.40		14.80	12.50
Gross Alpha - U & Rn pCi/l	120.00	78.40	94.00	87.00
Gross Alpha Error +/-	11.00	8.90	9.70	9.30
As mg/l	0.01	0.02	<0.01	0.01
Se mg/l	<0.005	<0.005	<0.005	<0.005
Fe mg/l	33.90	47.30	57.90	46.70
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	<0.01	<0.01	<0.01	
Al mg/l	44.70	4.18	7.82	
Be mg/l	0.02	0.03	0.04	0.04
Ni mg/l	0.55	0.69	0.85	0.76
Ag mg/l	<0.01	<0.01	<0.01	
V mg/l	0.01	<0.01	<0.01	
Cd mg/l	<0.005	0.007	<0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	131.00	231.00	257.00	251.00
Mg mg/l	32.10	44.20	46.00	39.40
Na mg/l	22.40	17.20	18.80	19.20
K mg/l	10.20	11.70	13.00	
NH3 mg/l	<0.05	<0.05	0.08	
NO3 mg/l	<0.01	<0.10	1.37	<0.01
SO4 mg/l	865.00	846.00	1010.00	954.00
Cl mg/l	0.97	3.10	26.70	31.30
TDS mg/l	1257.00	1402.00	1354.00	1412.00
pH	5.05	5.03	4.95	4.79
Water Elevation	6795.09	6796.51	6795.18	6792.74

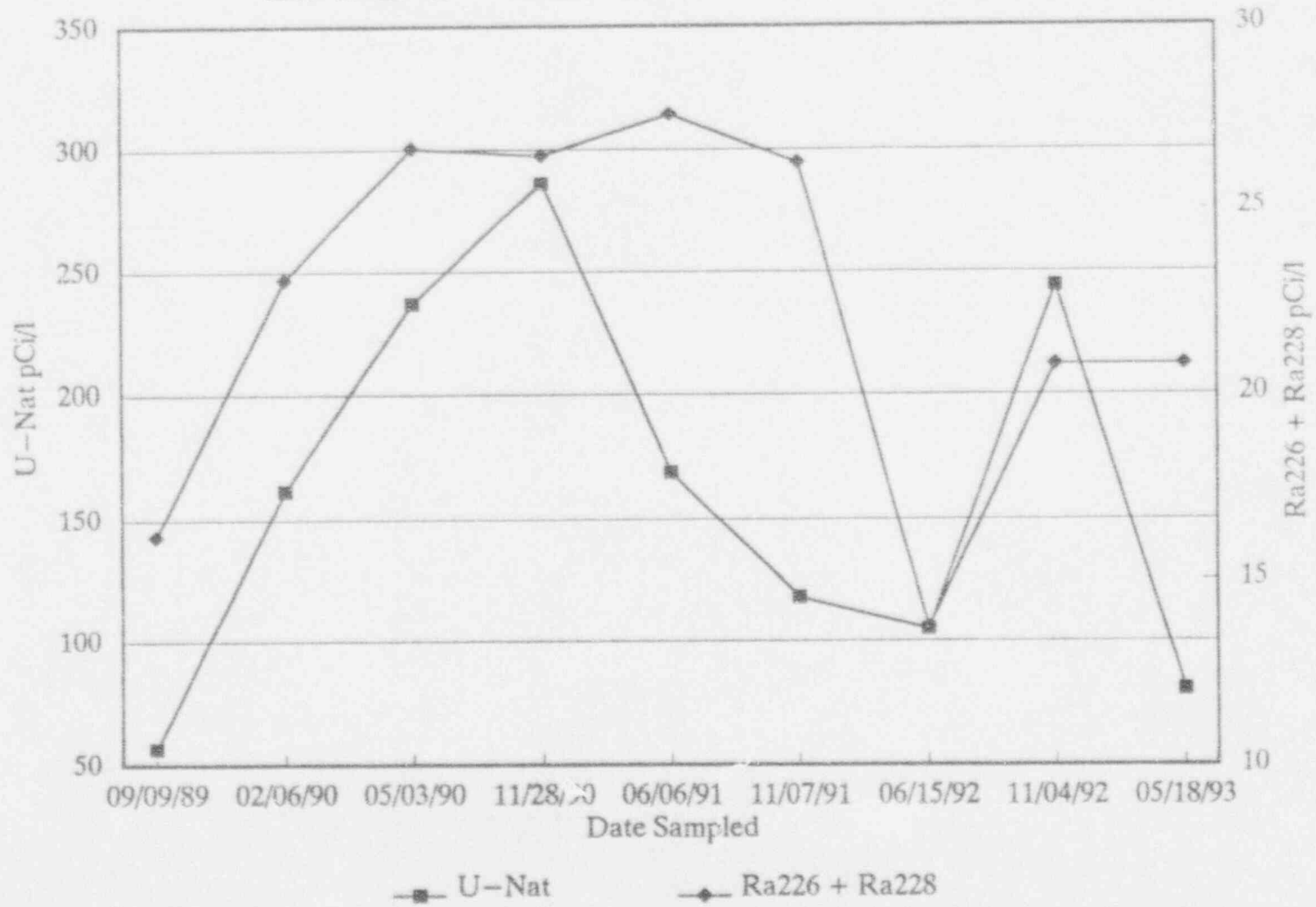
## GROUND WATER ANALYSES FOR R. W. 2

Date Sampled	11/06/91	06/16/92	10/29/92	05/18/93
UNat pCi/l	132.00	172.00	131.00	670.00
UNat % M.P.C.	0.44	0.57	0.44	2.23
Ra226 pCi/l	15.90	21.60	22.40	16.00
Ra226 Error +/-	0.80	1.10	1.10	0.70
Ra226 % M.P.C.	53.00	72.00	74.67	53.33
Ra228 pCi/l	13.60	4.10	7.20	9.10
Ra228 Error +/-	0.80	1.00	0.80	0.50
Ra228 % M.P.C.	45.33	13.67	24.00	30.33
Th230 pCi/l	<1.0	<1.0	<0.2	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	<1.0	<1.0	1.30	<1.0
Pb210 Error +/-			0.90	
Pb210 % M.P.C.			1.30	
Gross Alpha - U & Rn pCi/l	16.00	23.40	22.50	17.80
Gross Alpha Error +/-	4.00	4.80	4.70	2.60
As mg/l	<0.01	<0.01	<0.01	<0.01
Se mg/l	0.181	0.12	0.10	0.097
Fe mg/l	6.90	6.20	1.89	0.84
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	0.01	<0.01	0.03	
Al mg/l	1.05	0.78	0.63	
Be mg/l	0.02	<0.01	0.01	<0.01
Ni mg/l	0.19	0.16	0.17	0.28
Ag mg/l	<0.01	<0.01	<0.01	
V mg/l	<0.01	<0.01	<0.01	
Cd mg/l	<0.005	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	272.00	276.00	306.00	235.00
Mg mg/l	41.30	49.10	46.70	30.70
Na mg/l	32.10	33.60	27.30	63.00
K mg/l	24.40	25.90	24.50	
NH3 mg/l	<0.05	0.33	0.07	<0.05
NO3 mg/l	0.66	<0.01	<0.10	4.70
SO4 mg/l	892.00	813.00	952.00	854.00
Cl mg/l	25.00	23.40	40.20	22.40
TDS mg/l	1528.00	1542.00	1788.00	1390.00
pH	6.24	6.00	6.33	4.72
Water Elevation	6799.06	6799.43	6799.02	6797.15

## GROUNDWATER ANALYSES FOR P. W. 7

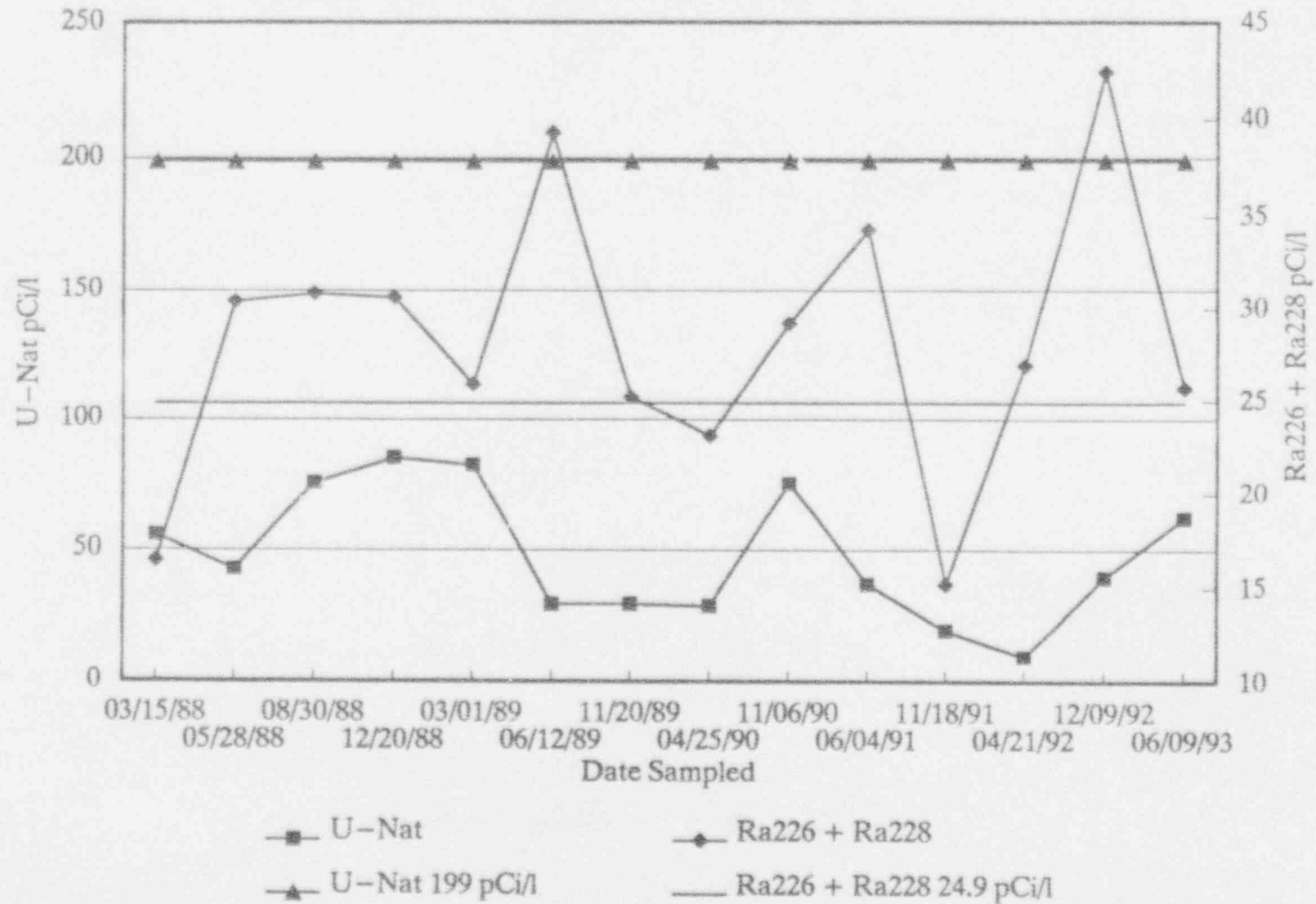
Date Sampled	11/07/91	05/13/92	11/04/92	05/18/93
UNat pCi/l	111.00	154.00	291.00	304.00
UNat % M.P.C.	0.37	0.51	0.97	1.01
Ra226 pCi/l	7.70	10.10	10.00	5.50
Ra226 Error +/-	0.60	0.50	0.60	0.40
Ra226 % M.P.C.	25.67	33.67	33.33	18.33
Ra228 pCi/l	4.20	9.60	<1.0	3.00
Ra228 Error +/-	0.50	0.60		0.50
Ra228 % M.P.C.	14.00	32.00		10.00
Th230 pCi/l	<1.0	<0.2	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.	0.00			
Pb210 pCi/l	<1.0	<1.0	4.70	1.50
Pb210 Error +/-			1.00	0.70
Pb210 % M.P.C.	0.00		4.70	1.50
Gross Alpha - U & Rn pCi/l	8.00	10.60	11.40	6.40
Gross Alpha Error +/-	2.80	3.30	3.40	1.90
As mg/l	0.12	0.356	0.070	0.180
Se mg/l	0.011	<0.005	<0.005	<0.005
Fe mg/l	22.30	19.82	20.30	45.20
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	<0.01	0.01	<0.01	
Al mg/l	0.20	<0.10	<0.10	
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	0.11	0.07	0.07	0.06
Ag mg/l	<0.01	<0.01	<0.01	
V mg/l	<0.01	<0.01	<0.01	
Cd mg/l	<0.005	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	228.00	242.00	215.00	242.00
Mg mg/l	31.80	34.00	30.20	37.10
Na mg/l	22.50	23.30	20.90	25.50
K mg/l	10.30	11.00	13.20	
NH3 mg/l	7.03	0.29	7.12	0.10
NO3 mg/l	0.09	<0.10	<0.10	<0.10
SO4 mg/l	639.00	730.00	621.00	859.00
Cl mg/l	10.50	4.50	5.60	3.30
TDS mg/l	1093.00	1138.00	1011.00	1240.00
pH	6.81	6.68	6.97	6.26
Water Elevation	6829.69	6828.57	6827.91	6830.79

# L.A. 2 U-Nat & Ra226 + Ra228

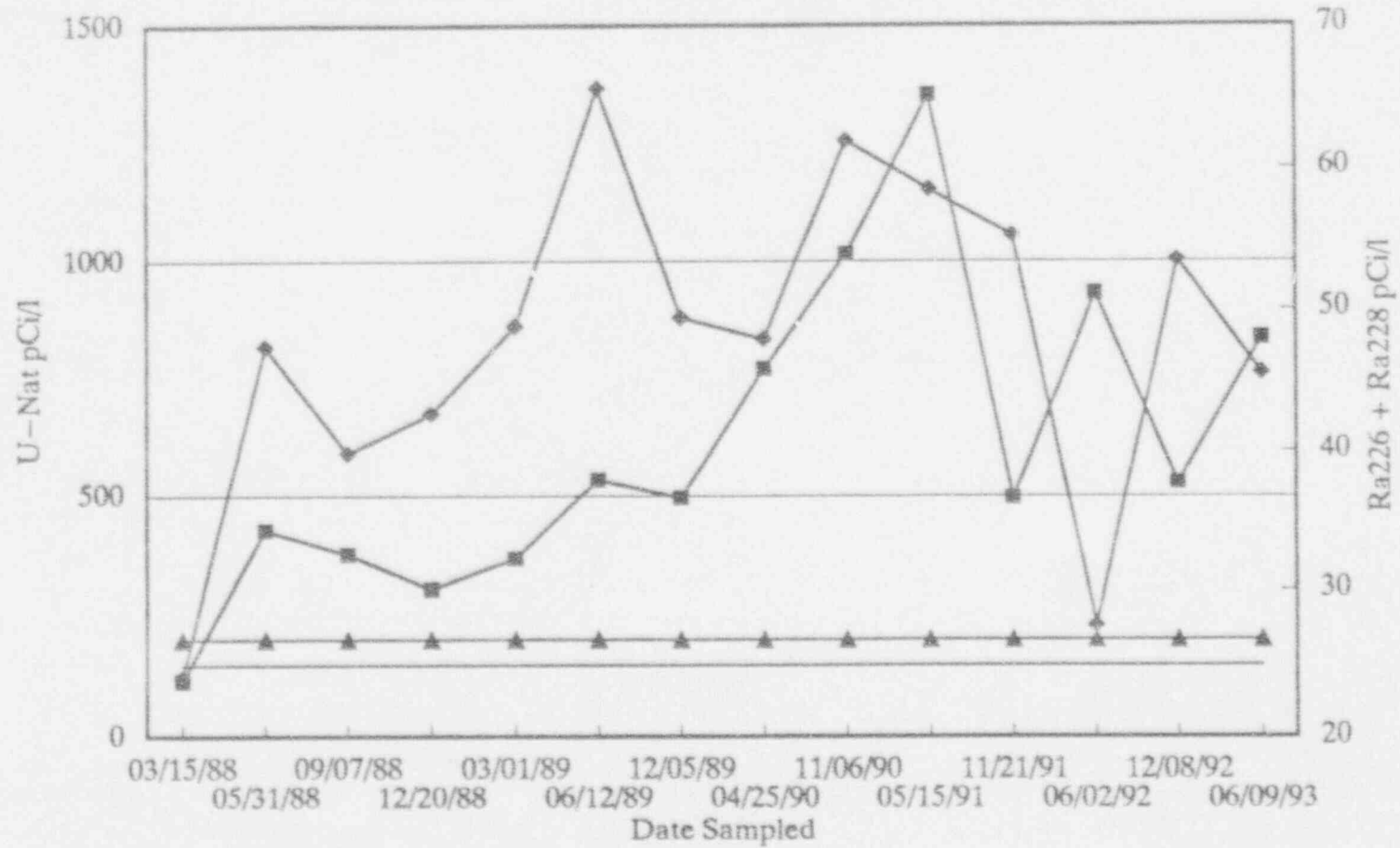




# P.W. 1 U-Nat & Ra226 + Ra228



# P.W. 2 U-Nat & Ra226 + Ra228



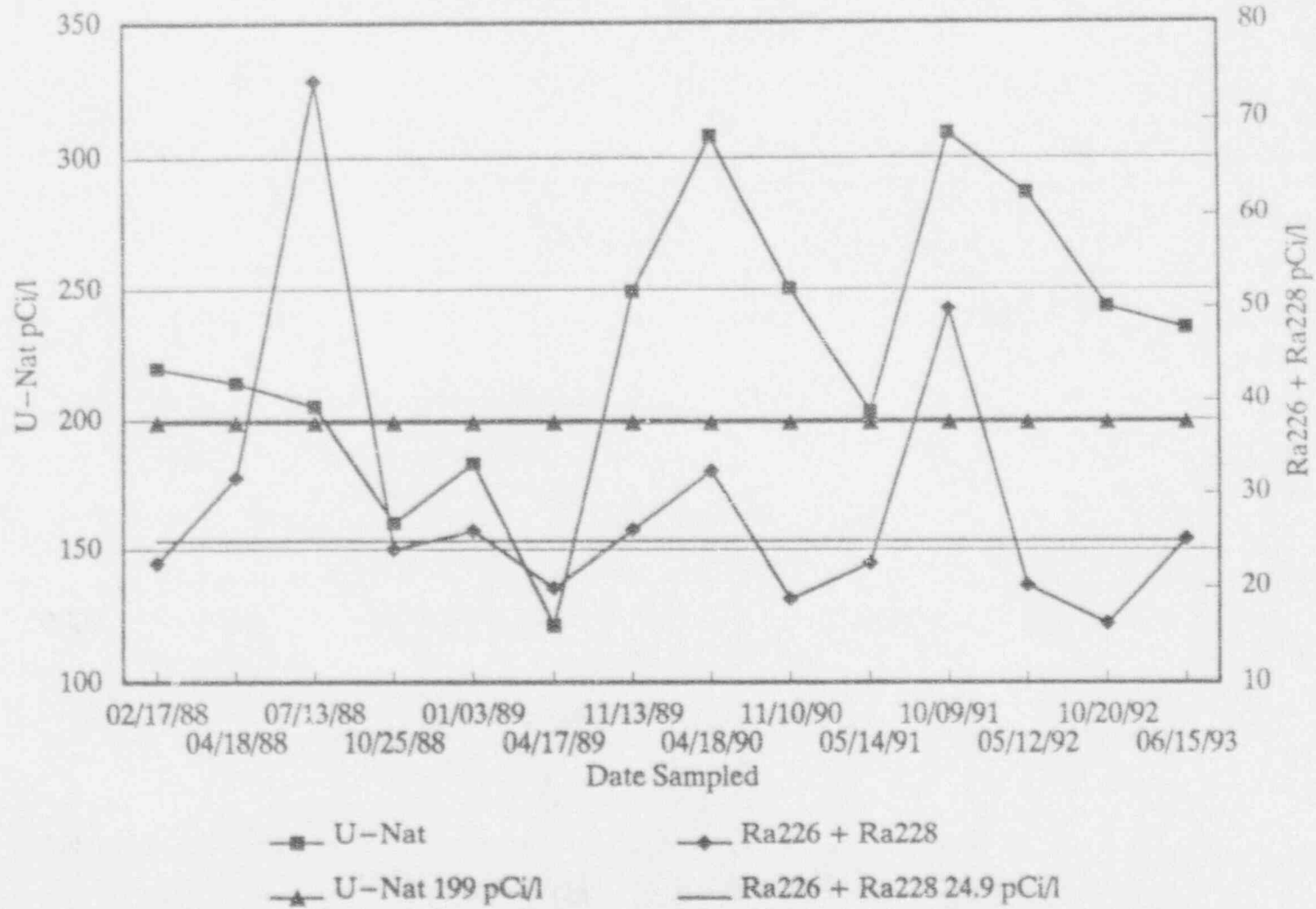
■ U-Nat

◆ Ra226 + Ra228

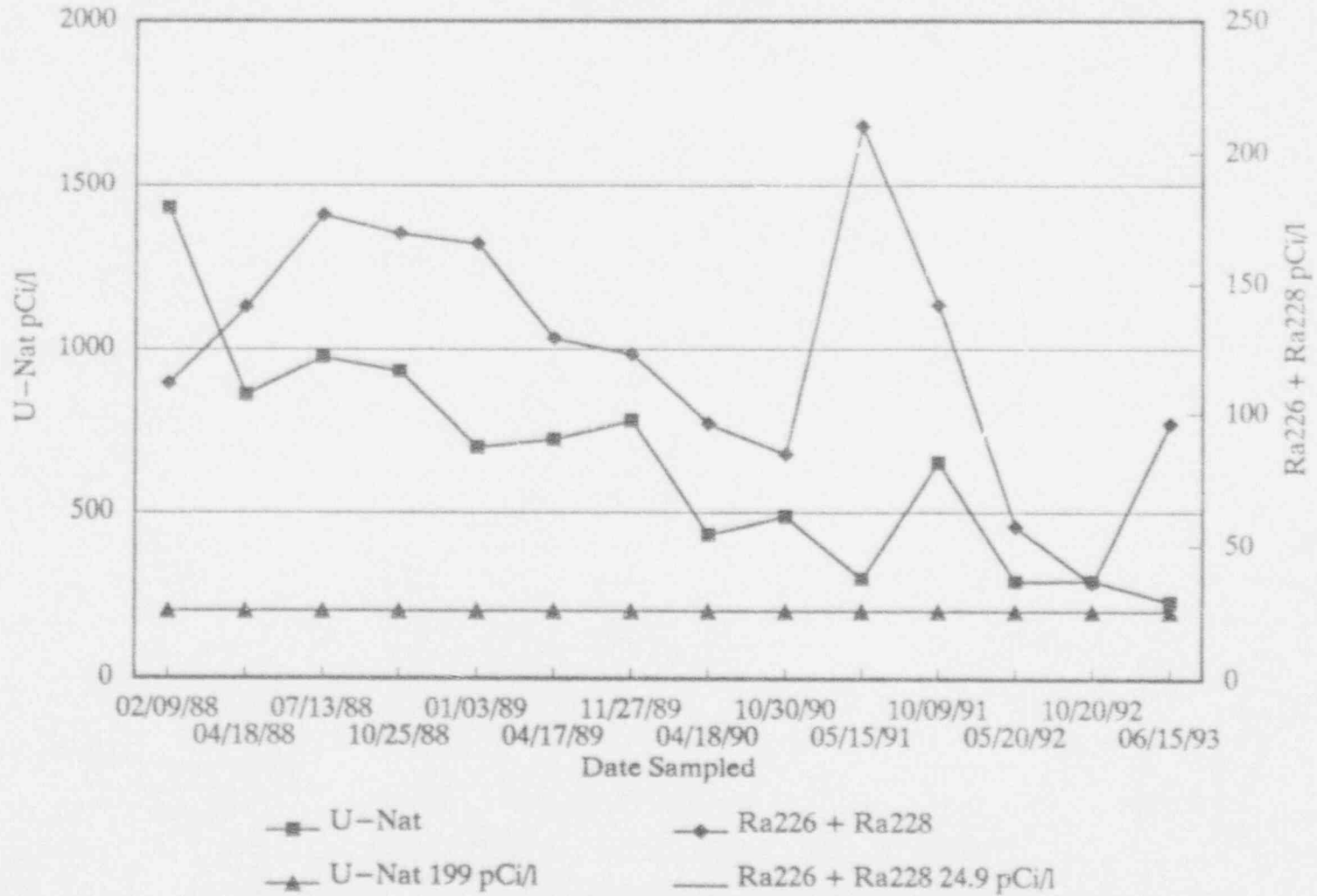
▲ U-Nat 199 pCi/l

— Ra226 + Ra228 24.9 pCi/l

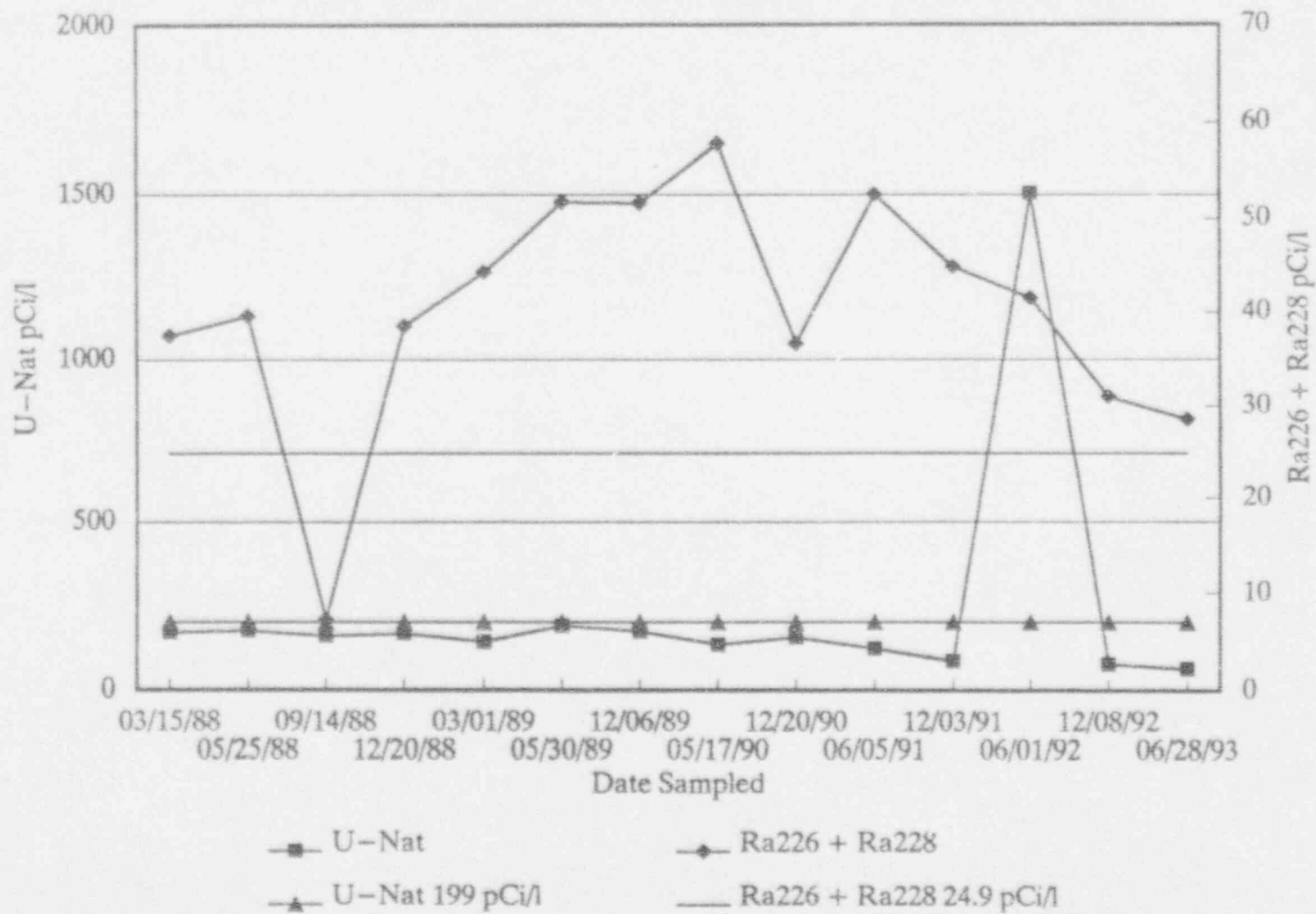
# P.W. 3 U-Nat & Ra226 + Ra228



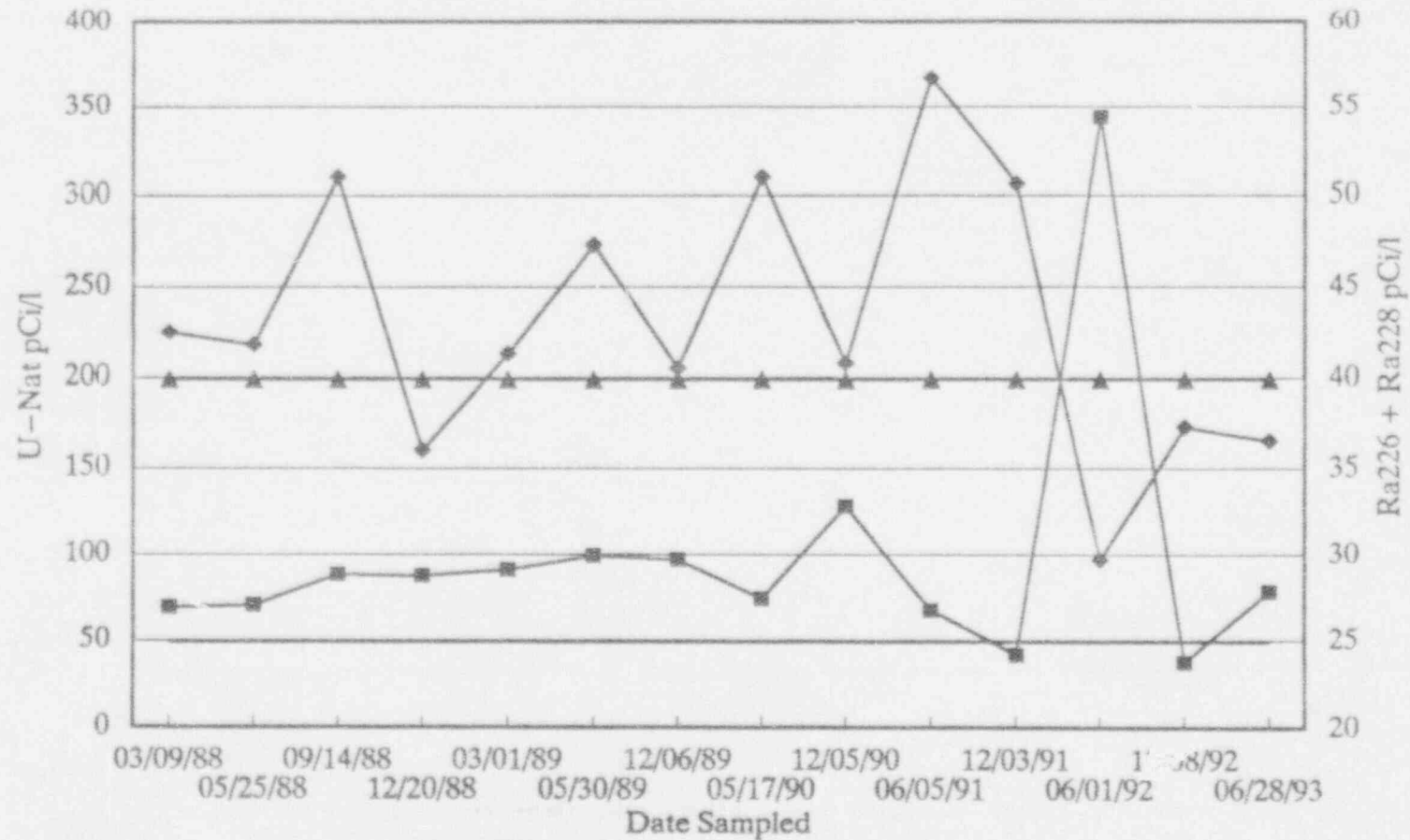
# P.W. 4 U-Nat & Ra226 + Ra228



# G.W. 1 U-Nat & Ra226 + Ra228

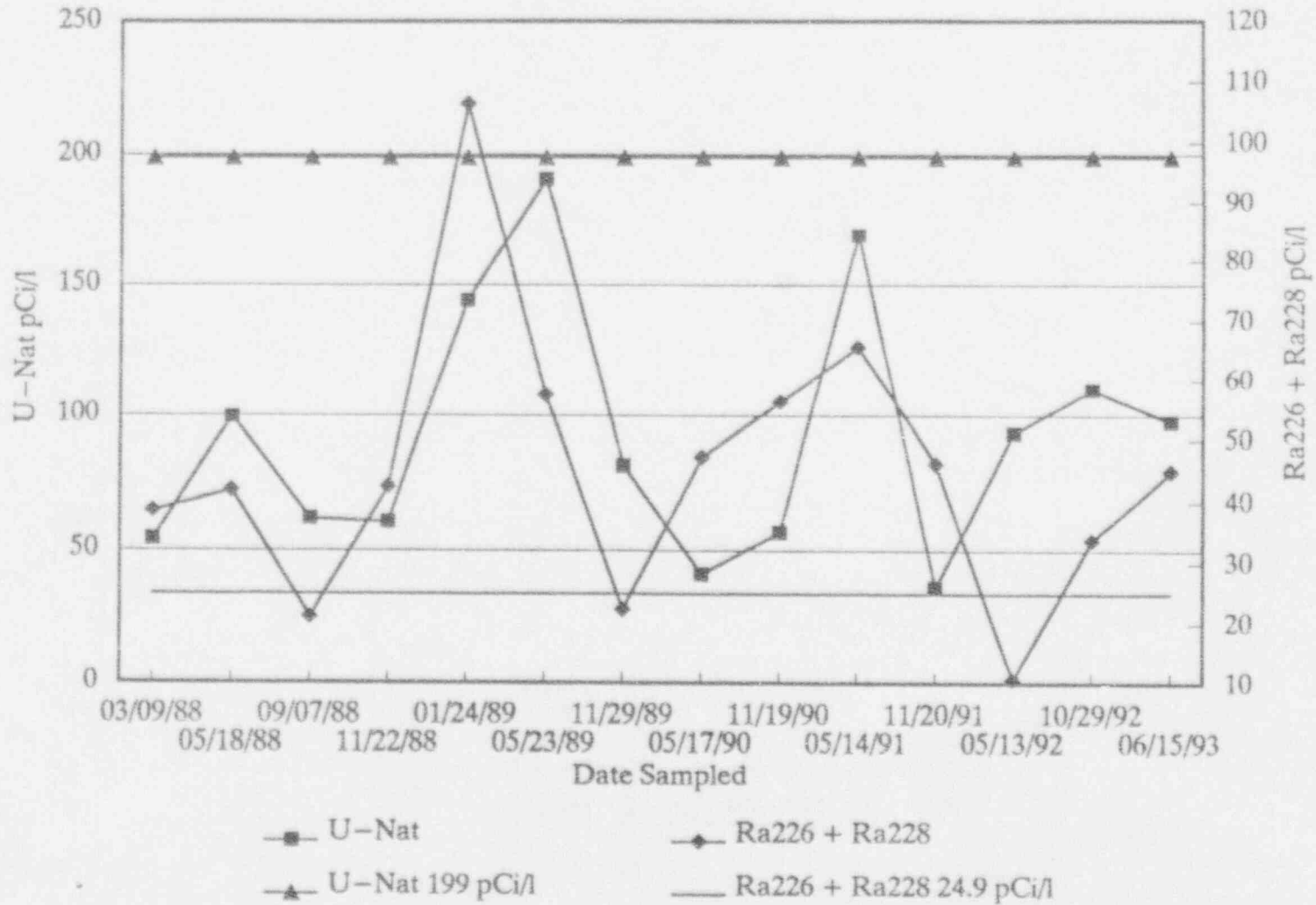


# G.W. 2 U-Nat & Ra226 + Ra228

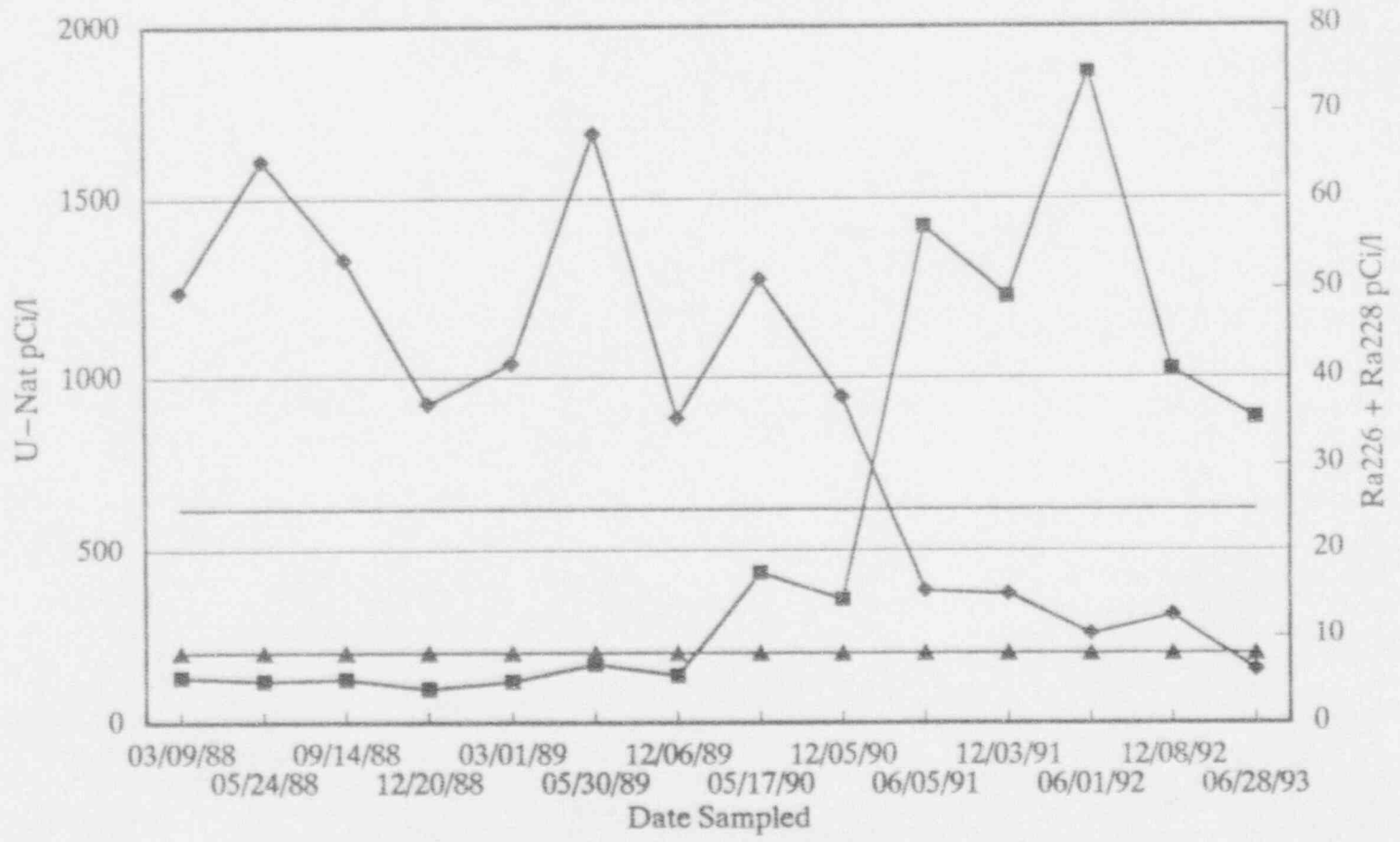


- U-Nat
- ◆ Ra226 + Ra228
- ▲ U-Nat 199 pCi/l
- Ra226 + Ra228 24.9 pCi/l

# G.W. 4 U-Nat & Ra226 + Ra228



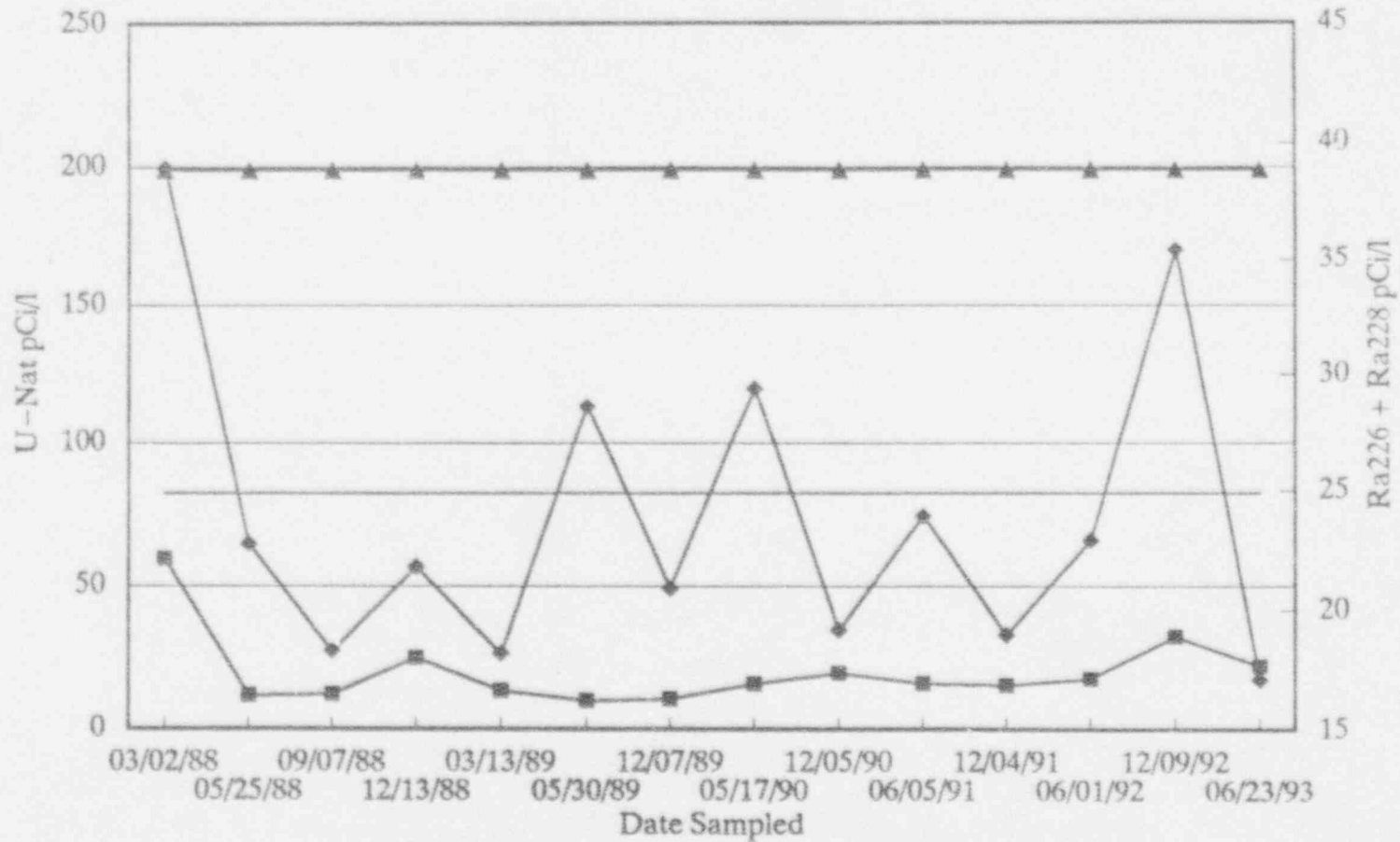
# G.W. 5 U-Nat & Ra226 + Ra228



- U-Nat
- ▲ U-Nat 199 pCi/l
- ◆ Ra226 + Ra228
- Ra226 + Ra228 24.9 pCi/l

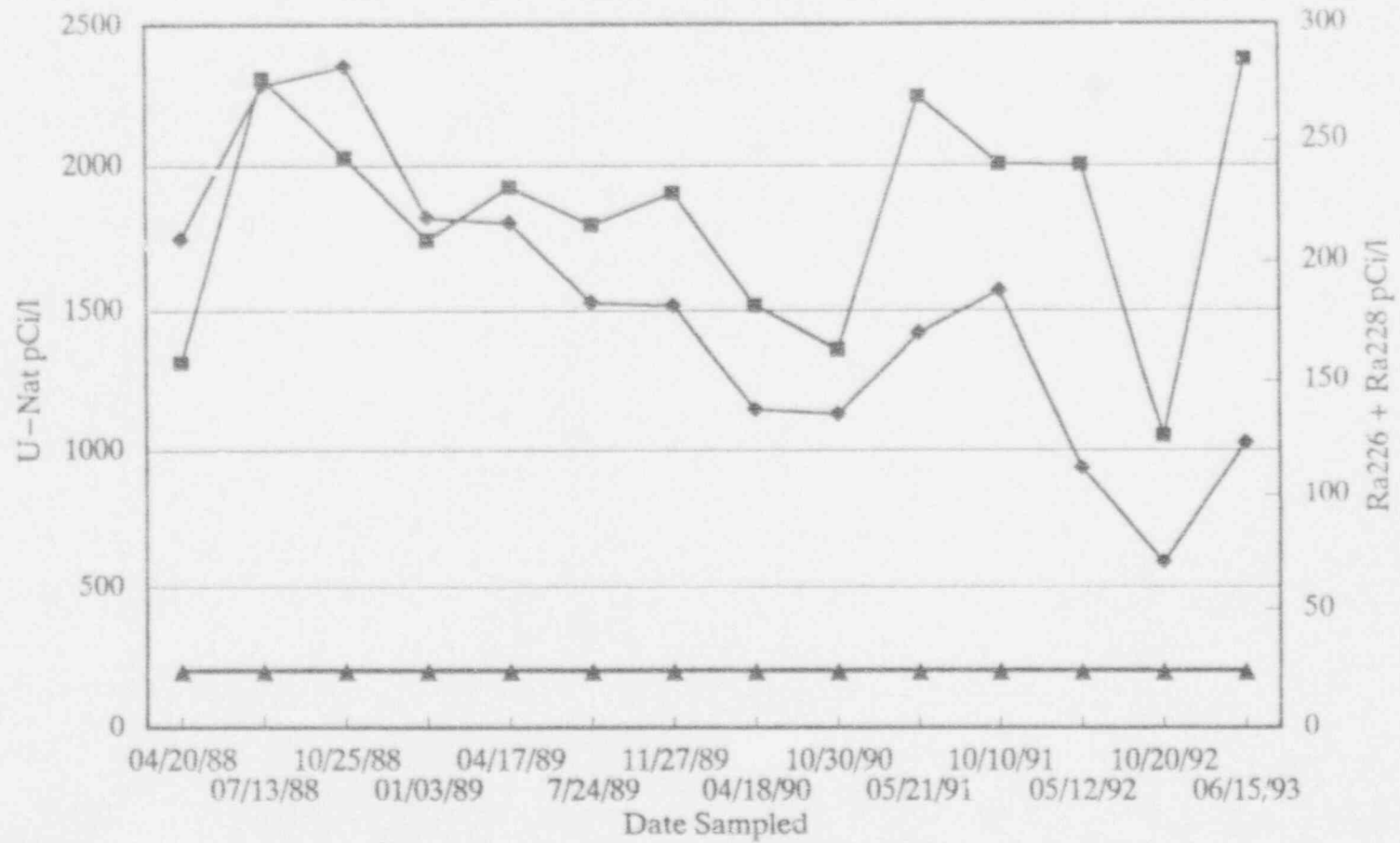


# G.W. 6 U-Nat & Ra226 + Ra228



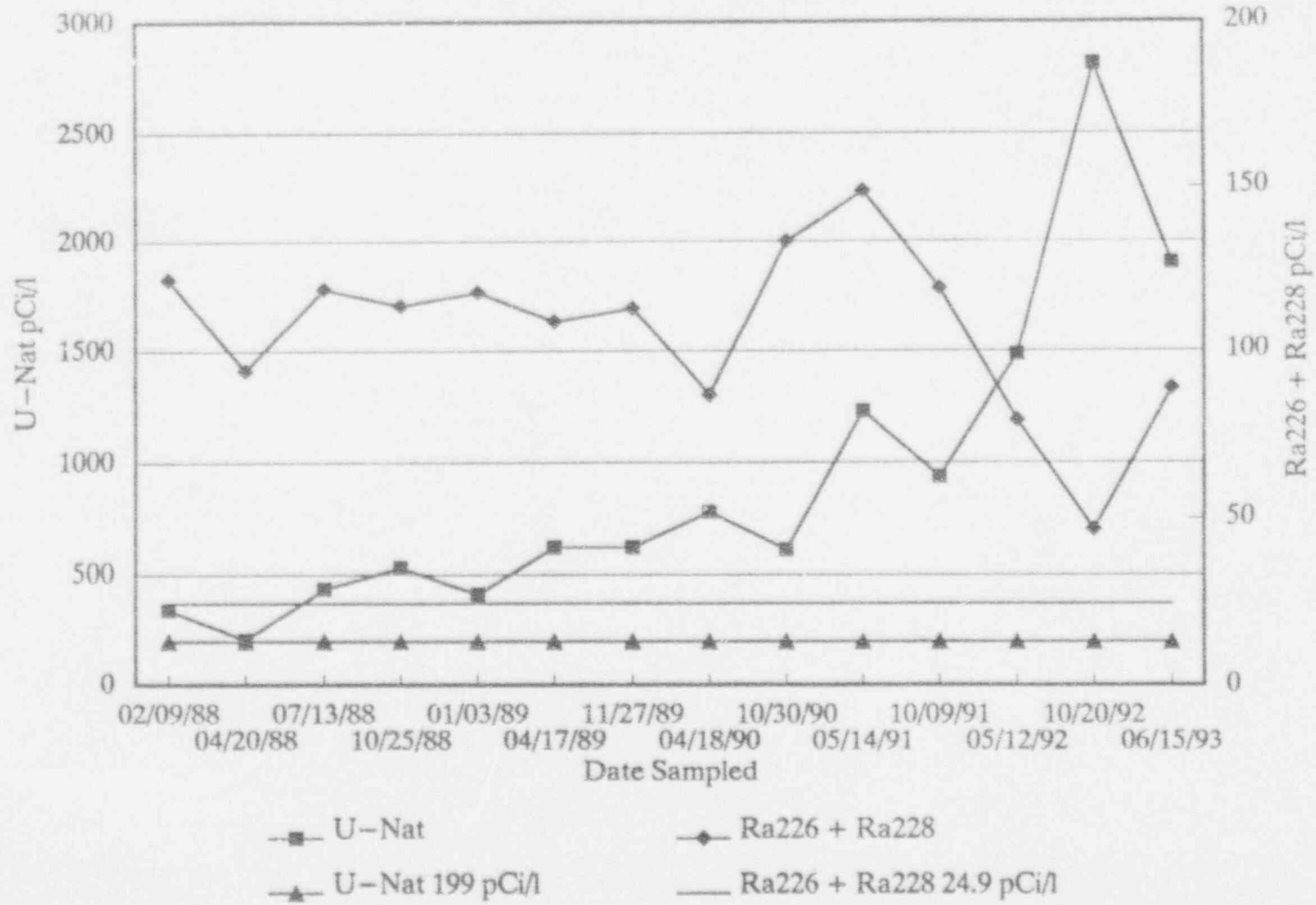
■ U-Nat                      ◆ Ra226 + Ra228  
 ▲ U-Nat 199 pCi/l        — Ra226 + Ra228 24.9 pCi/l

# G.W. 7 U-Nat & Ra226 + Ra228

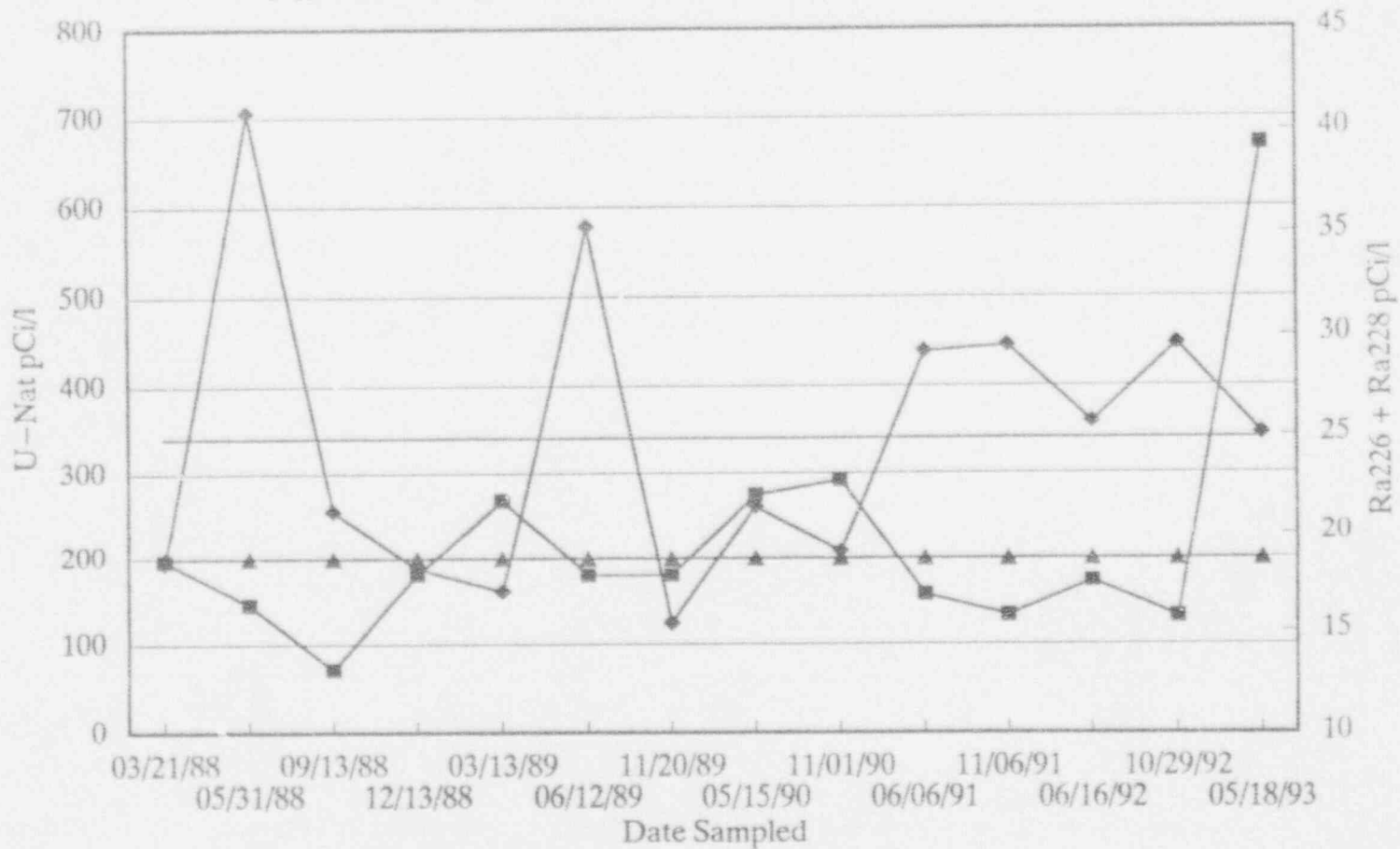


- U-Nat
- ◆ Ra226 + Ra228
- ▲ U-Nat 199 pCi/l
- Ra226 + Ra228 24.9 pCi/l

# G.W. 8 U-Nat & Ra226 + Ra228

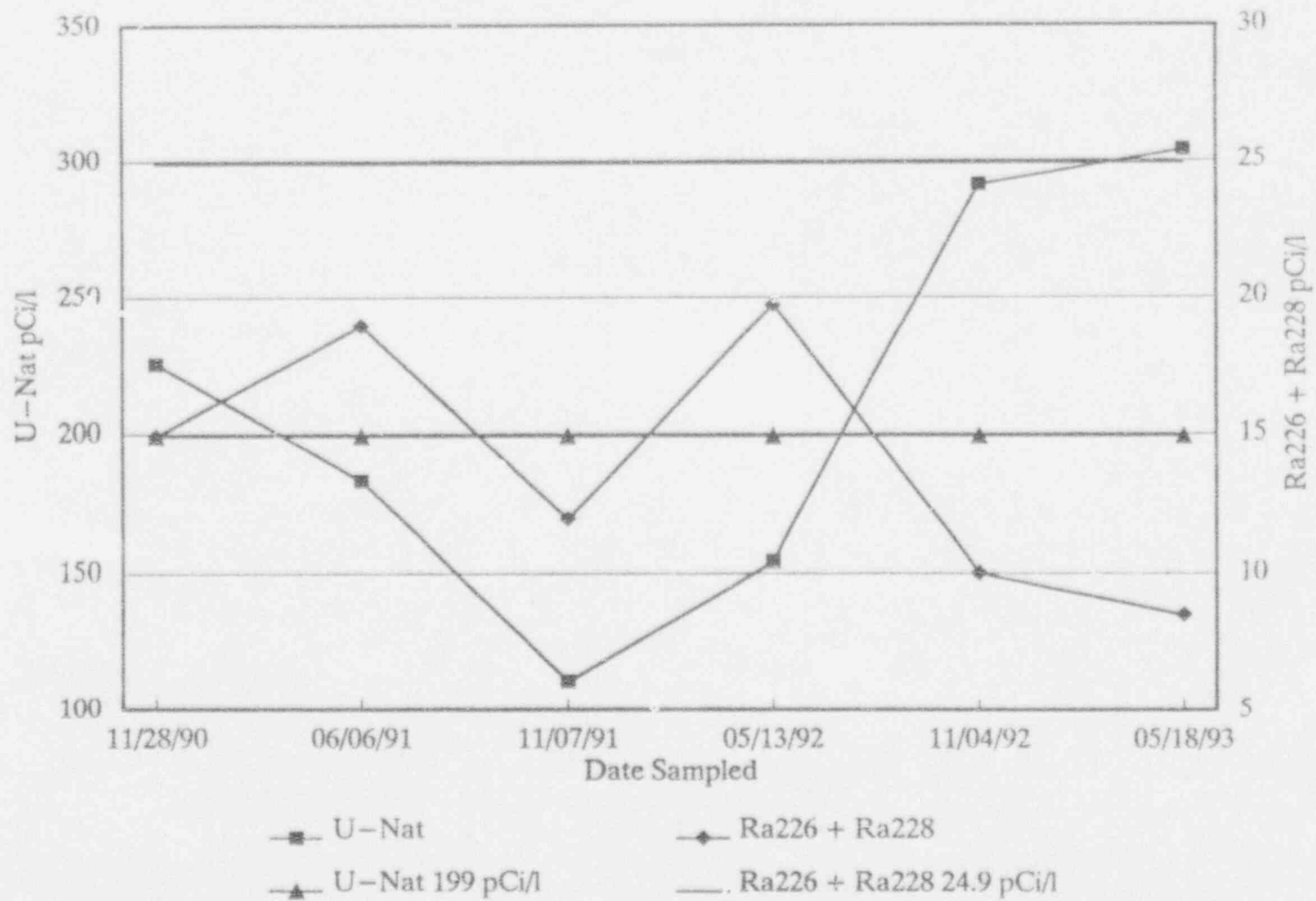


# R.W. 2 U-Nat & Ra226 + Ra228

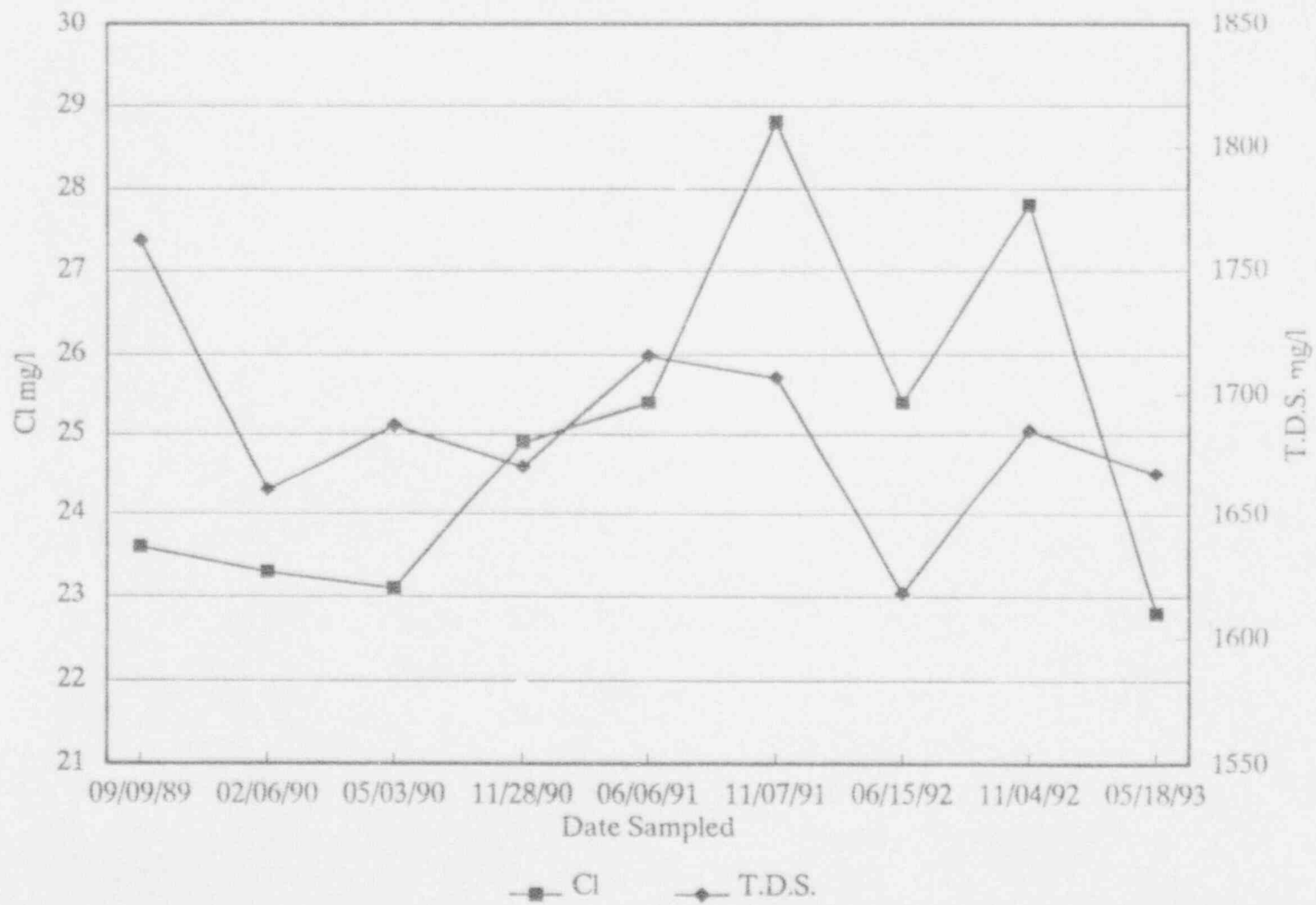


- U-Nat
- ▲ U-Nat 199 pCi/l
- ◆ Ra226 + Ra228
- Ra226 + Ra228 24.9 pCi/l

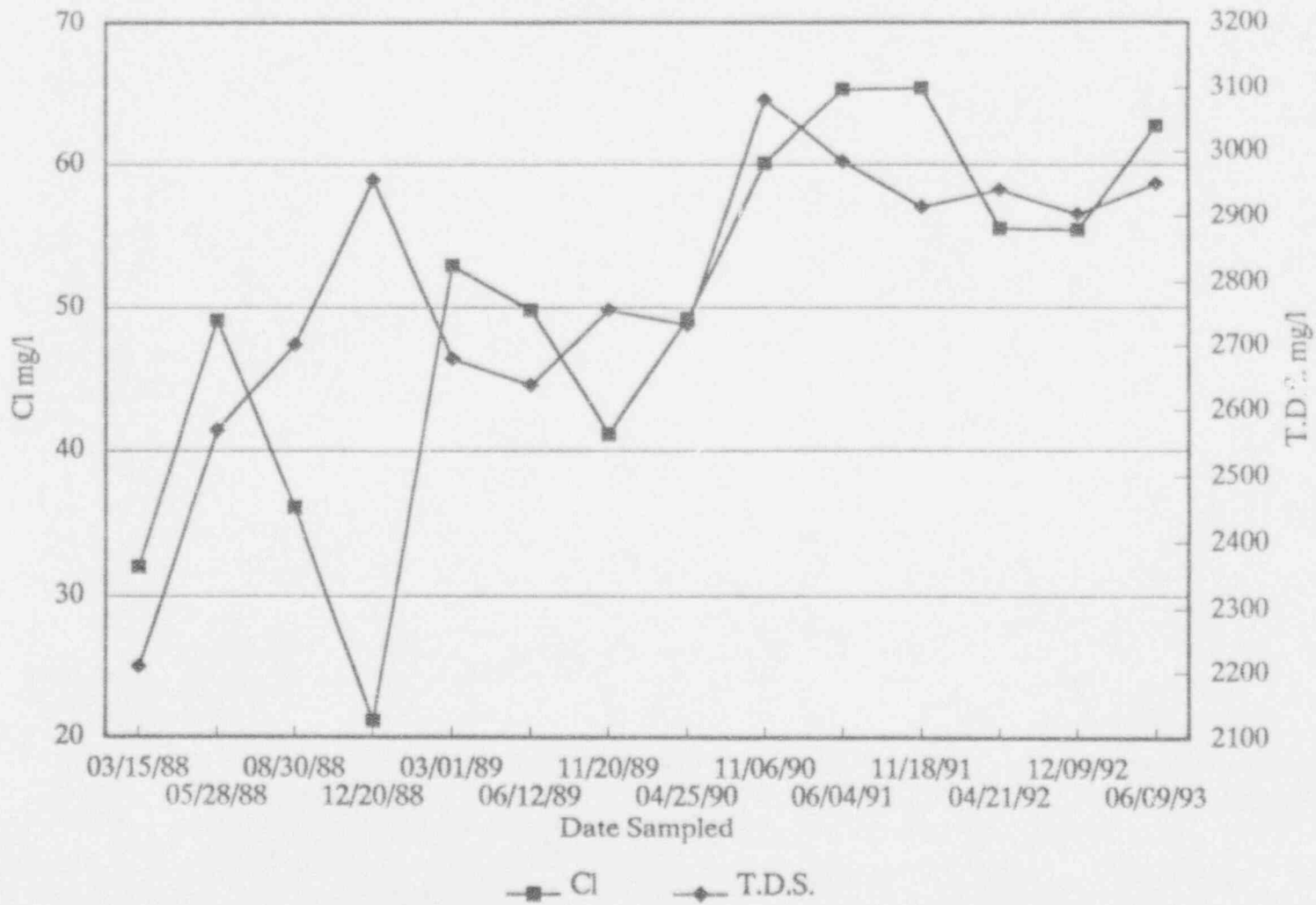
# P.W. 7 U-Nat & Ra226 + Ra228



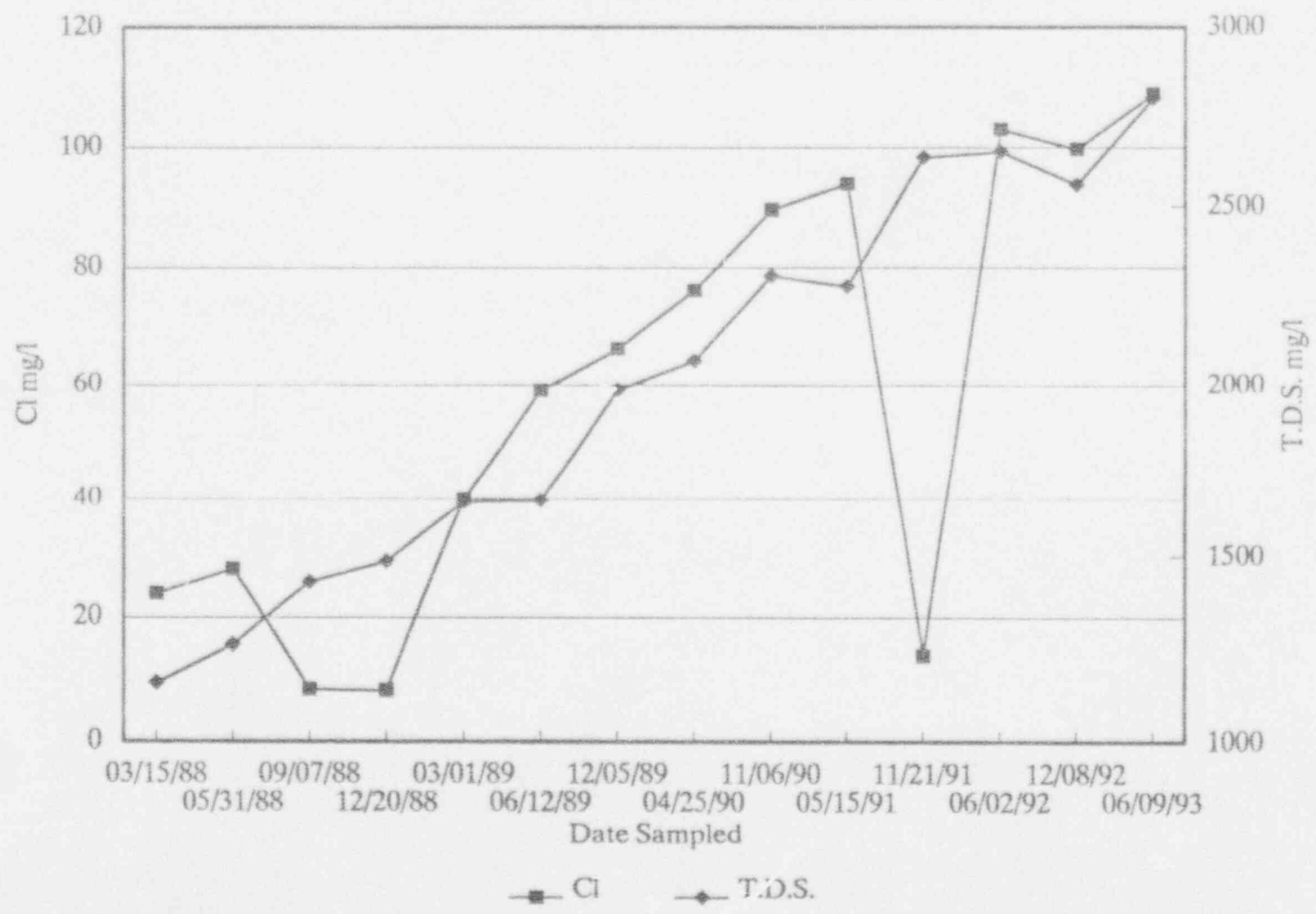
# L.A. 2 Chloride & T.D.S.



# P.W. 1 Chloride & T.D.S.

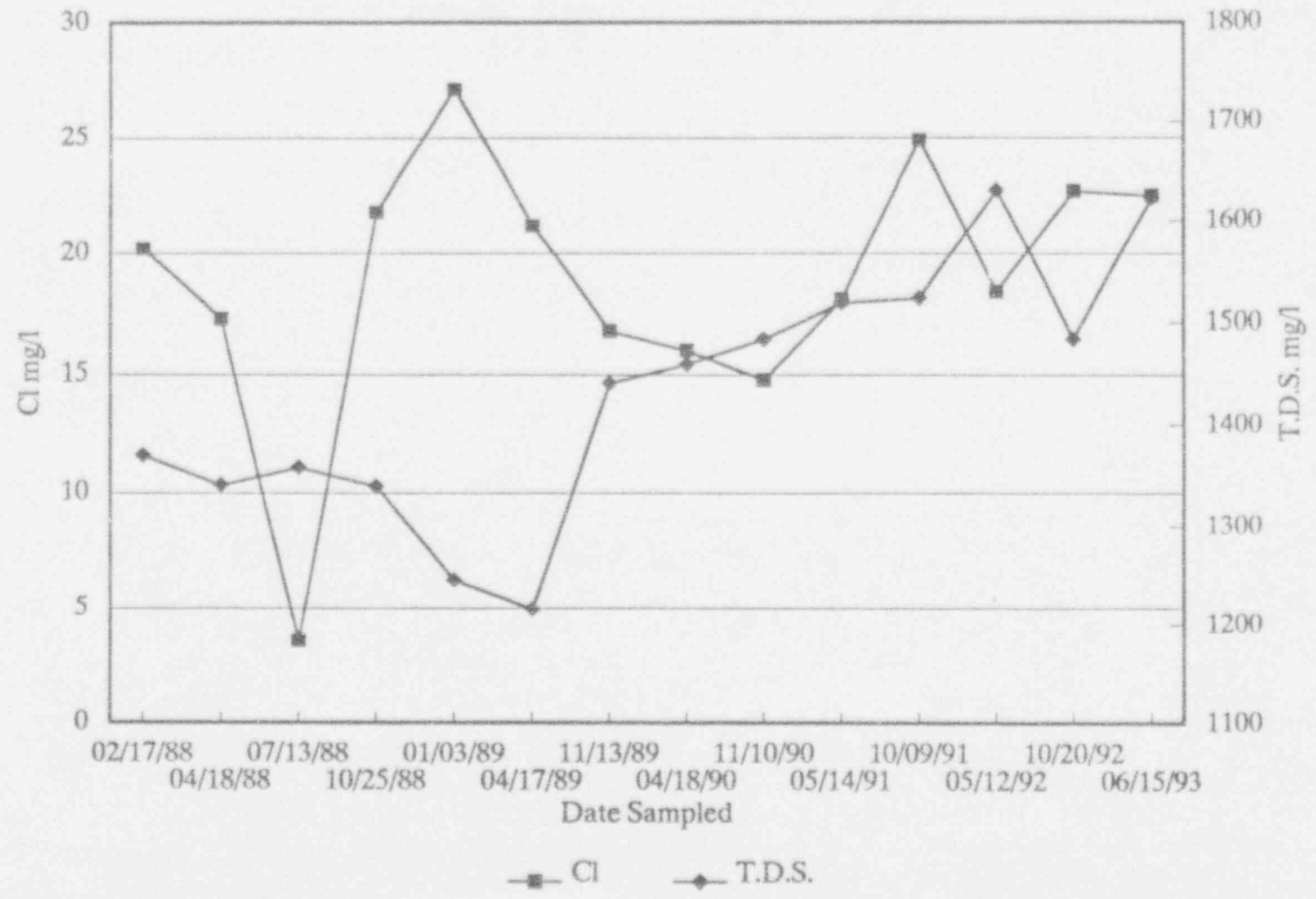


# P.W. 2 Chloride & T.D.S.

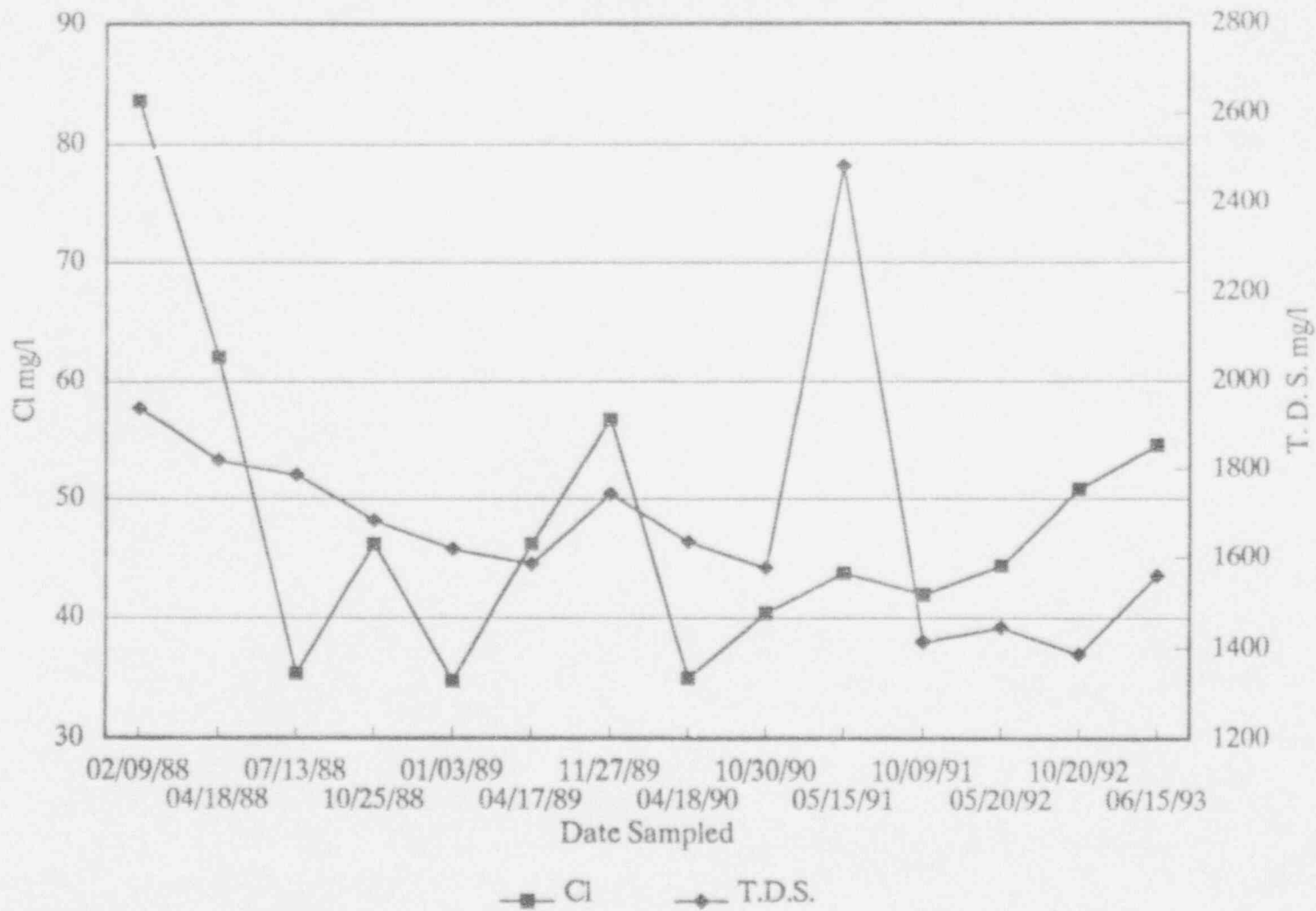




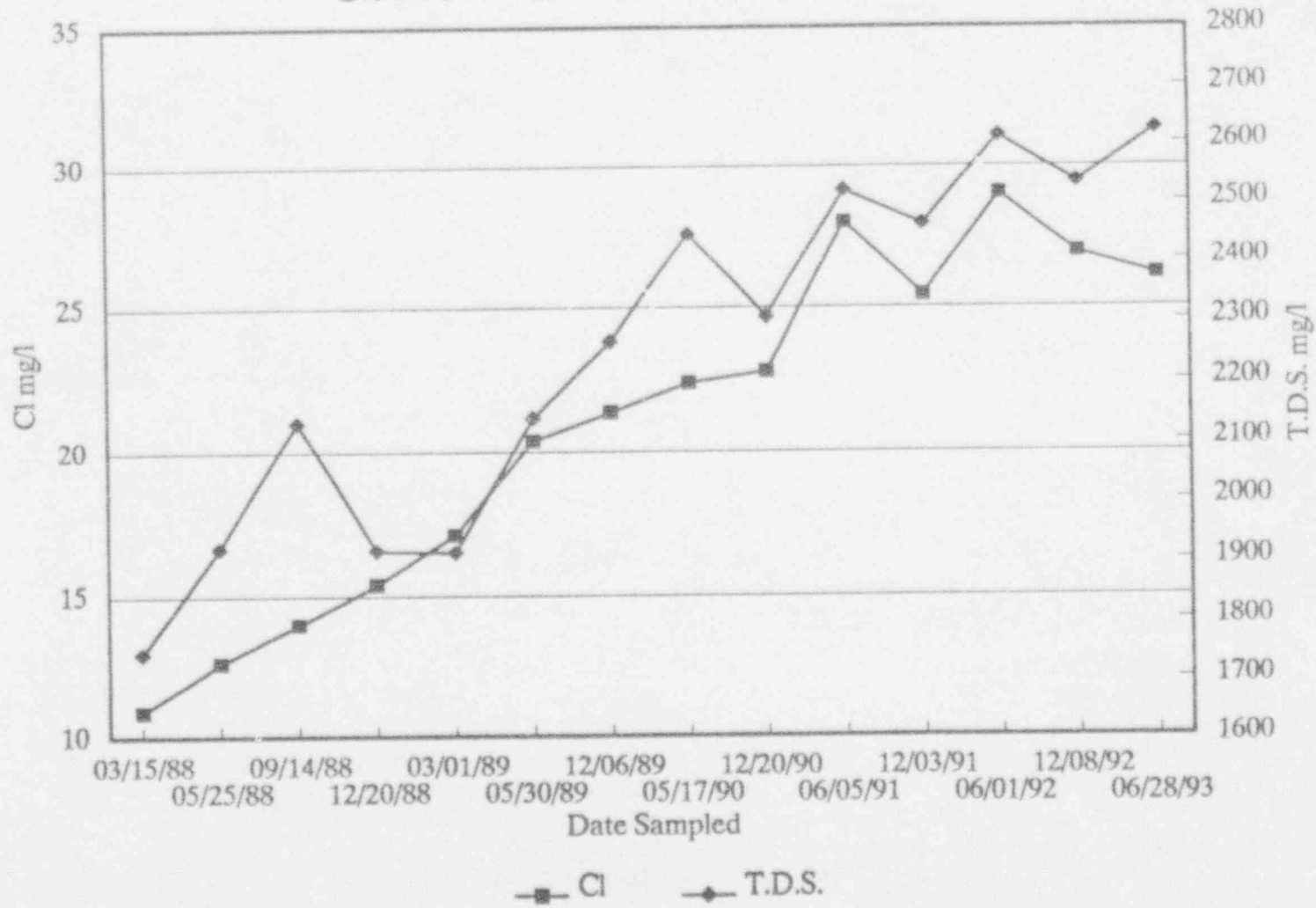
# P.W. 3 Chloride & T.D.S.



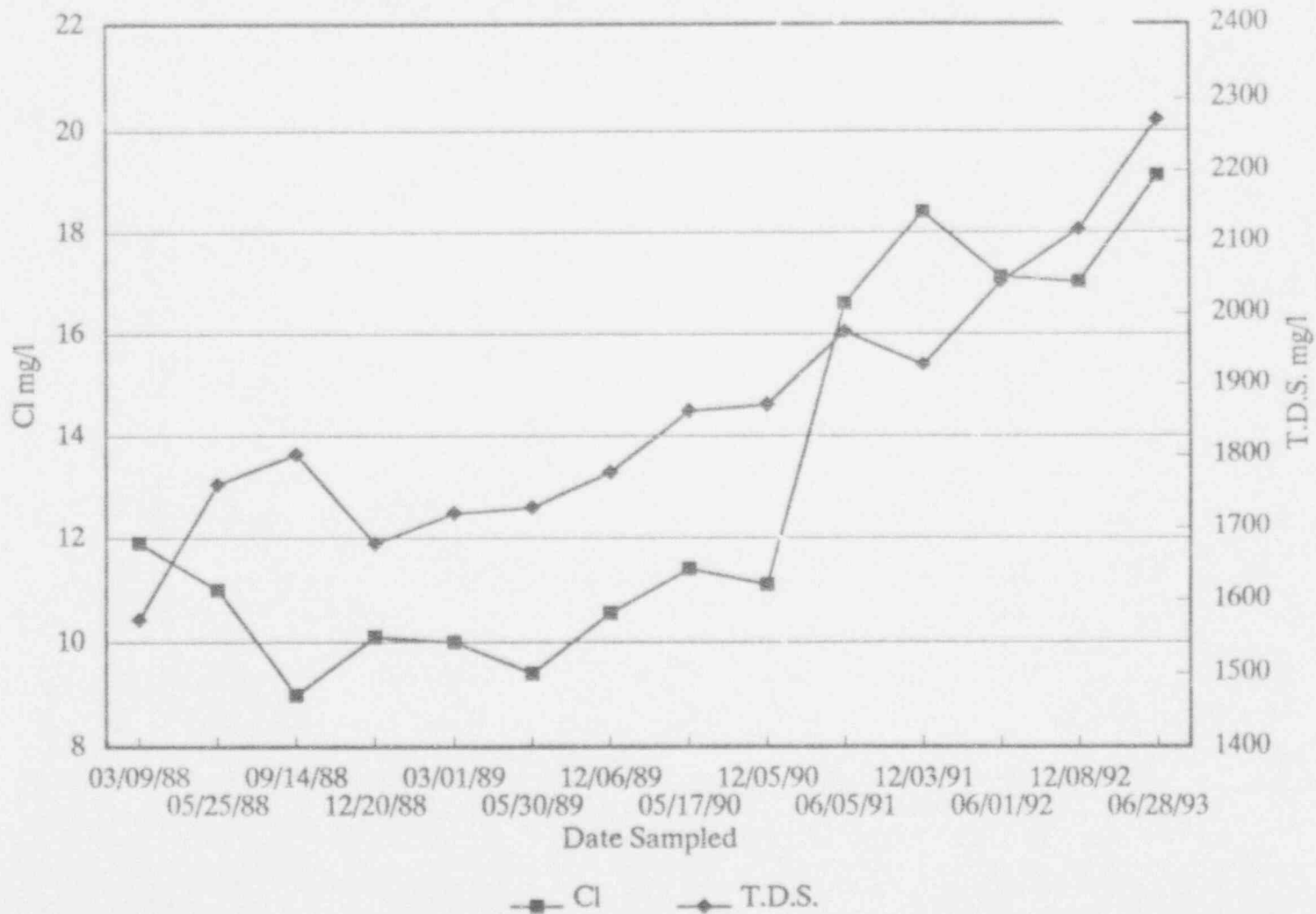
# P.W. 4 Chloride & T.D.S.



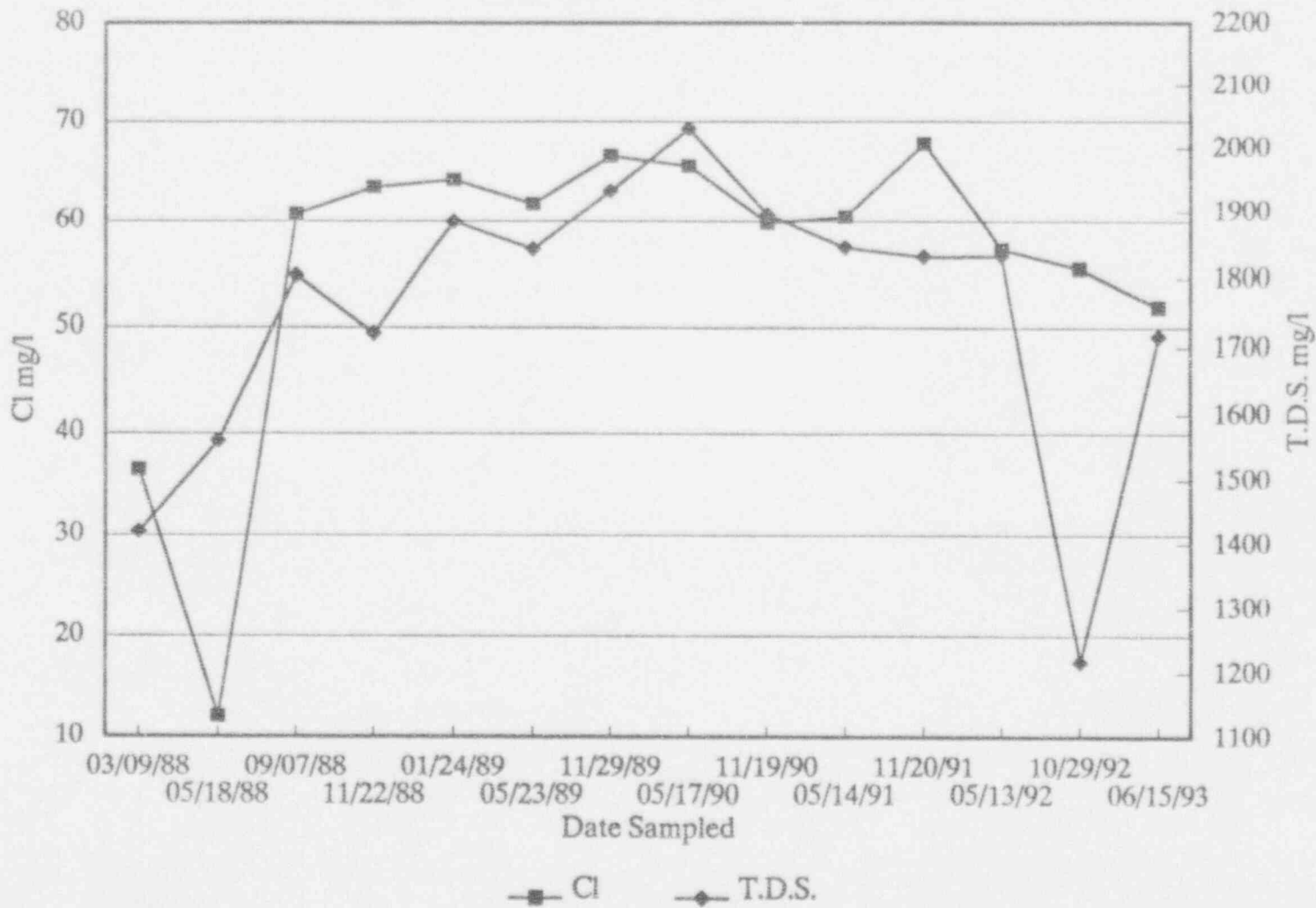
# G.W. 1 Chloride & T.D.S.



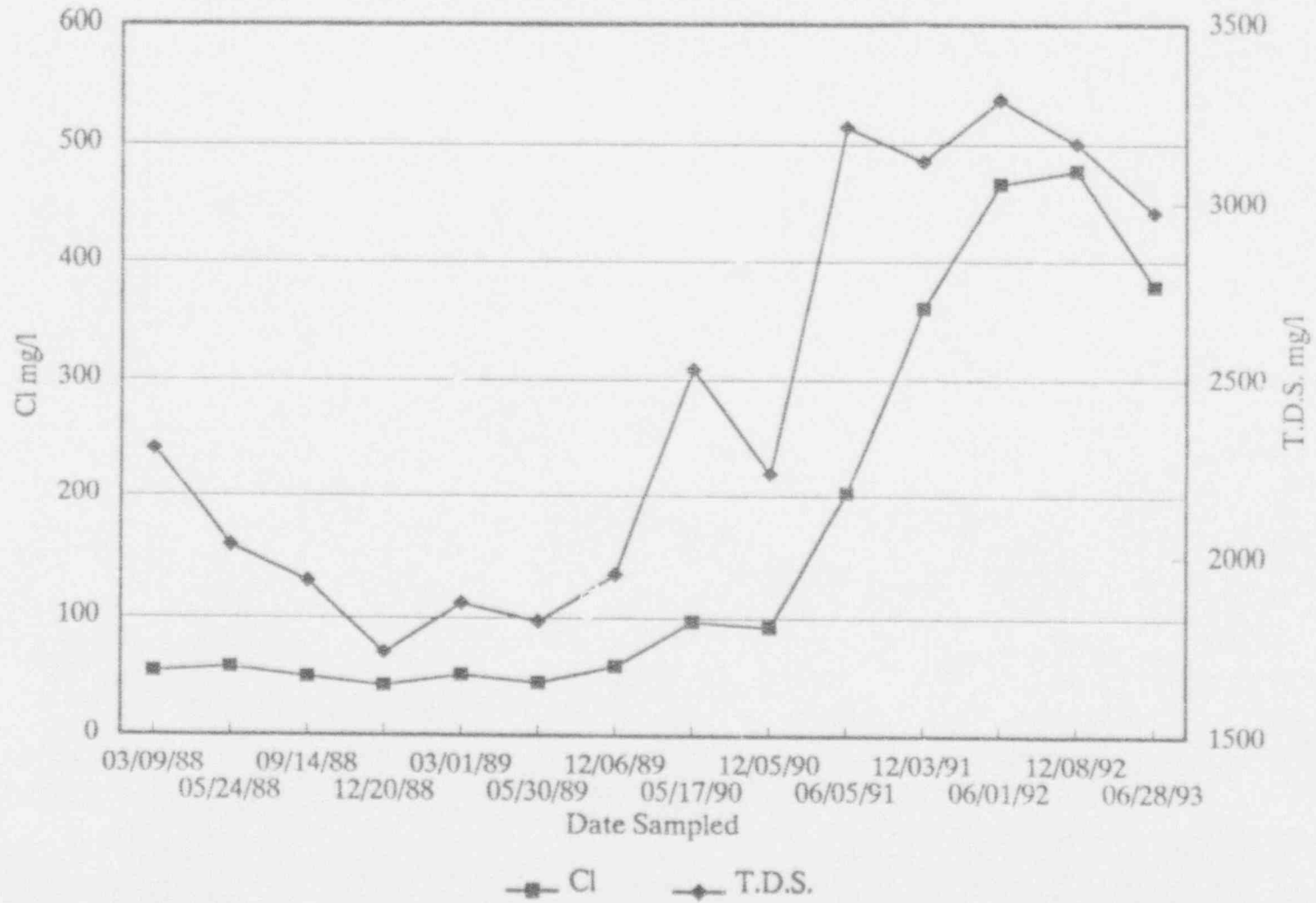
# G.W. 2 Chloride & T.D.S.



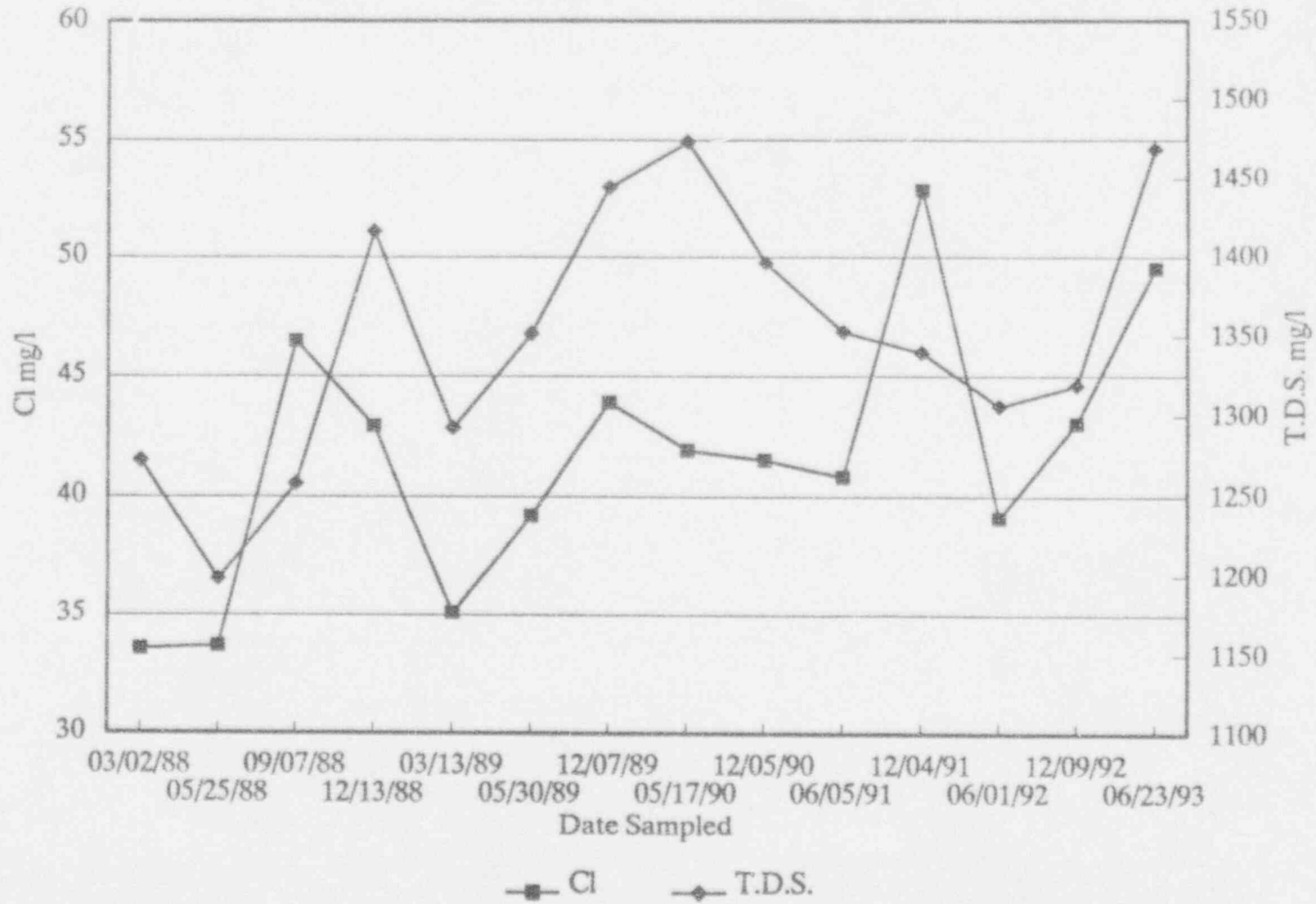
# G.W. 4 Chloride & T.D.S.



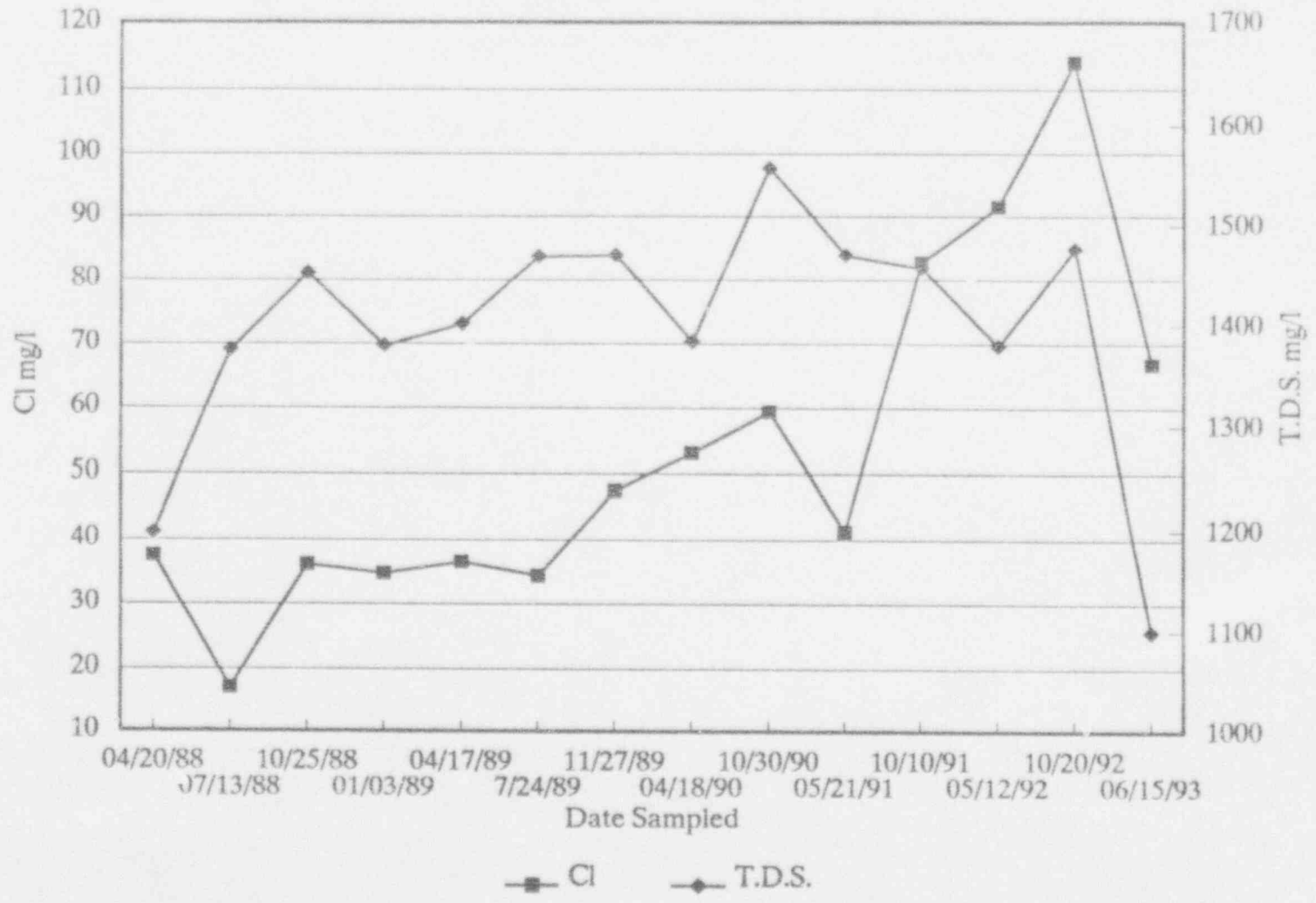
# G.W. 5 Chloride & T.D.S.



# G.W. 6 Chloride & T.D.S.

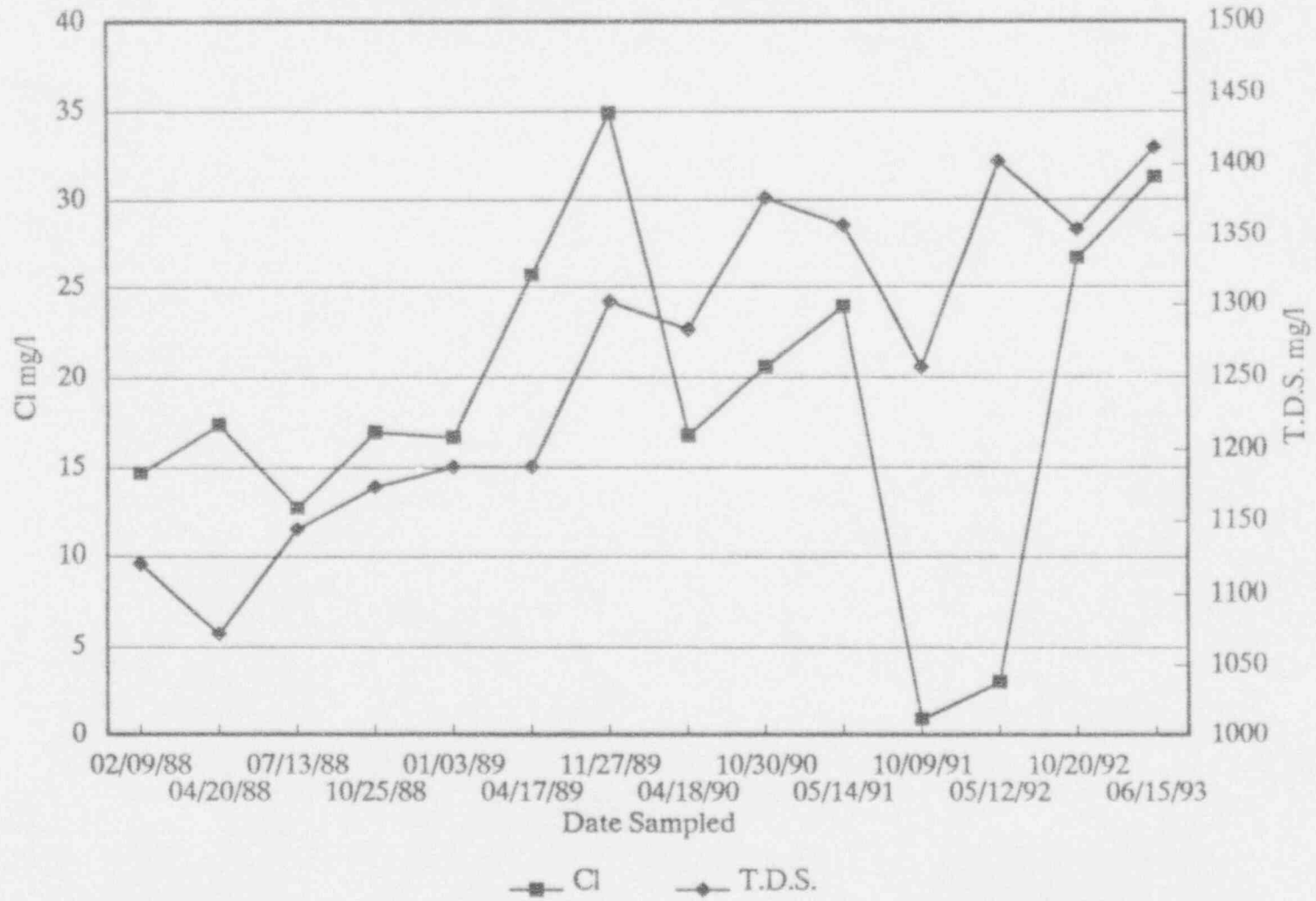


### G.W. 7 Chloride & T.D.S.

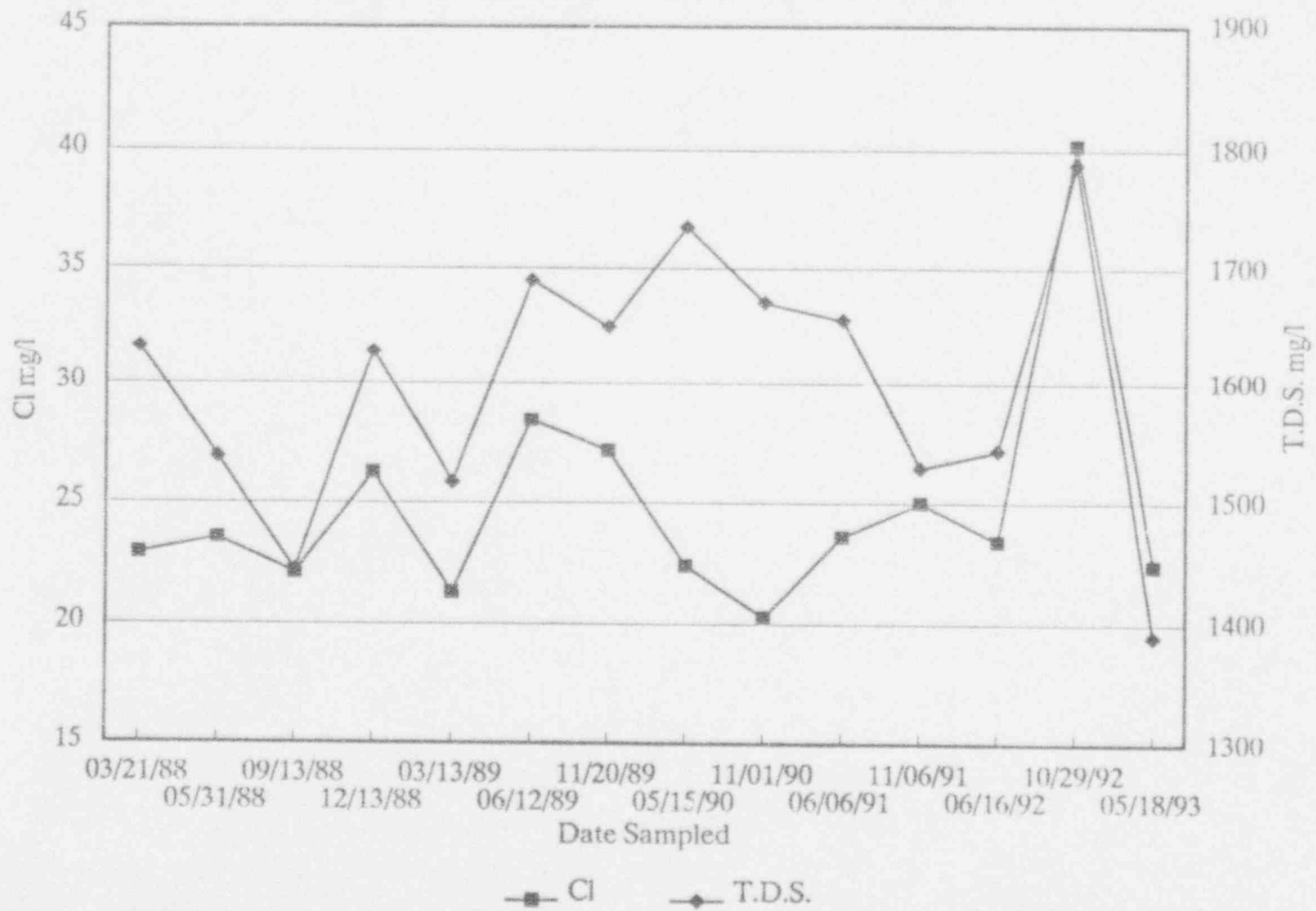




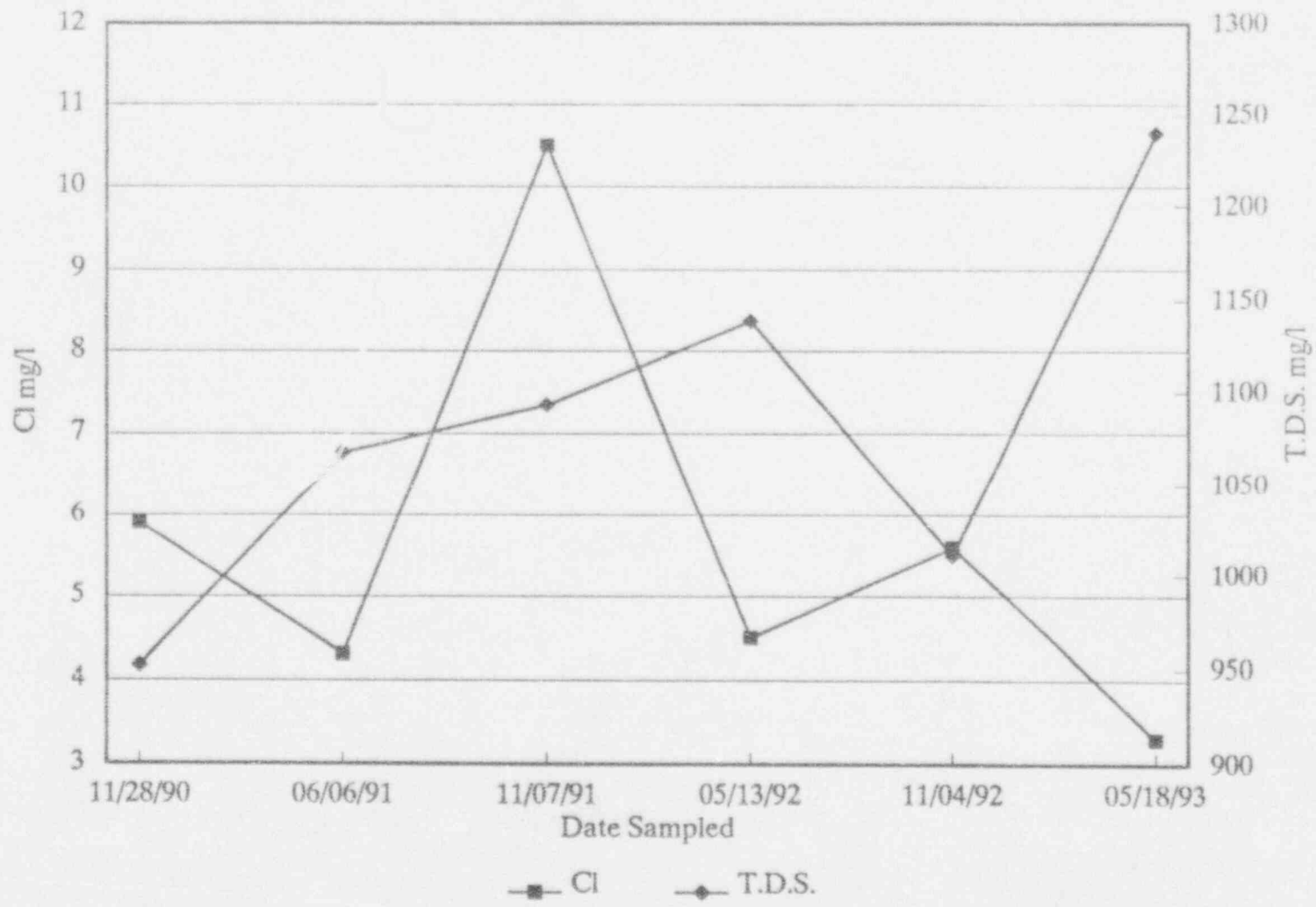
# G.W. 8 Chloride & T.D.S.



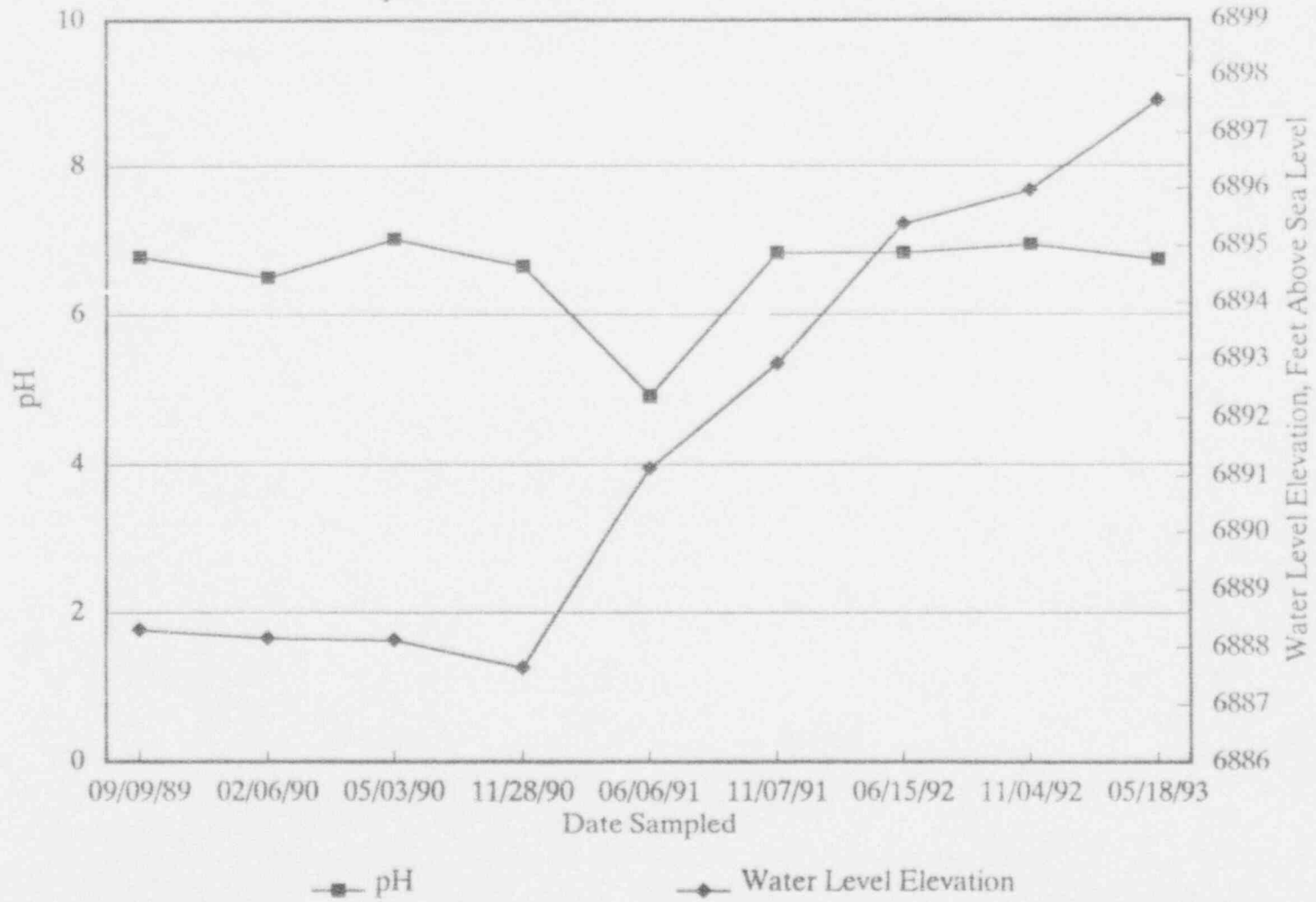
# R.W. 2 Chloride & T.D.S.



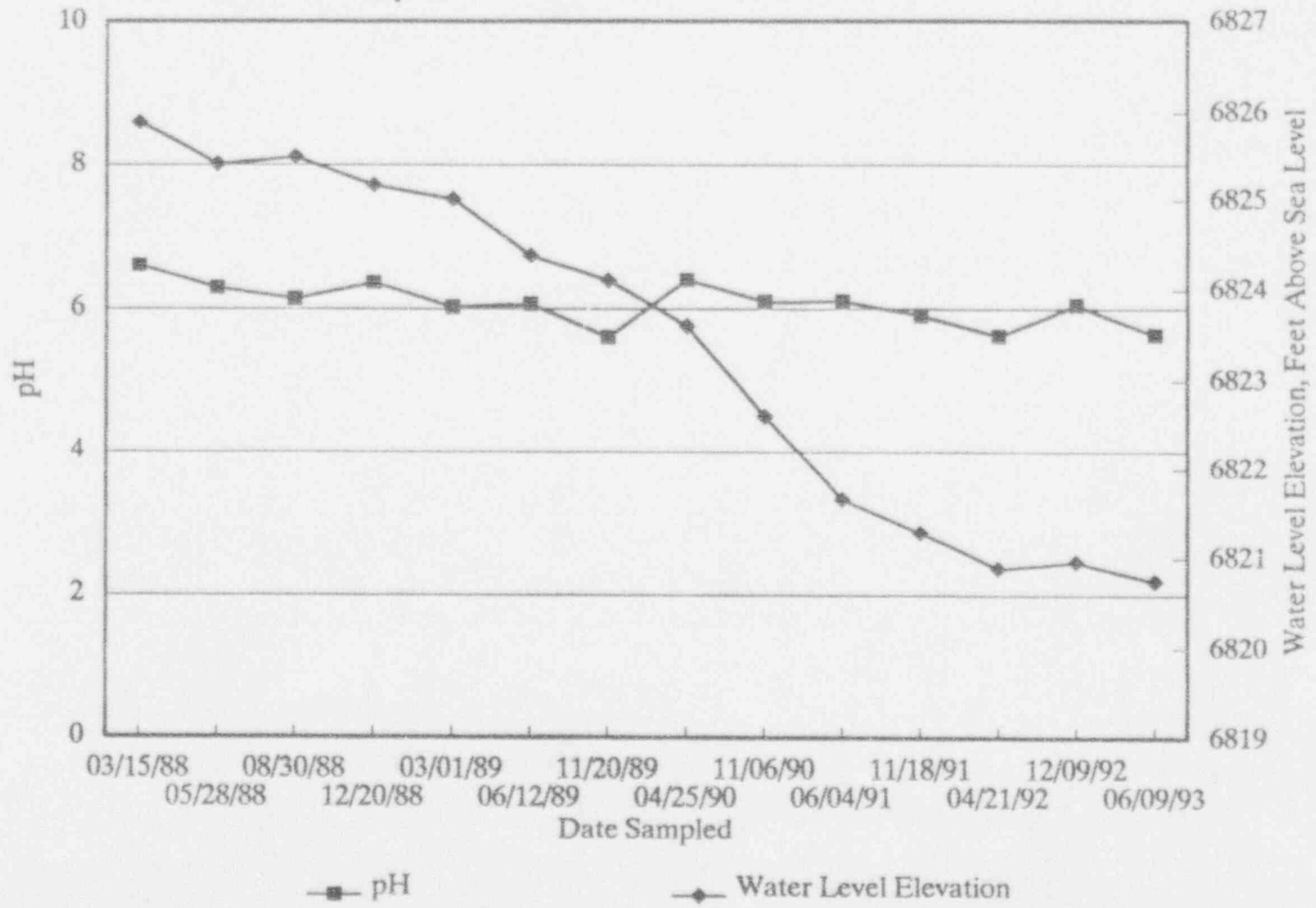
# P.W. 7 Chloride & T.D.S.



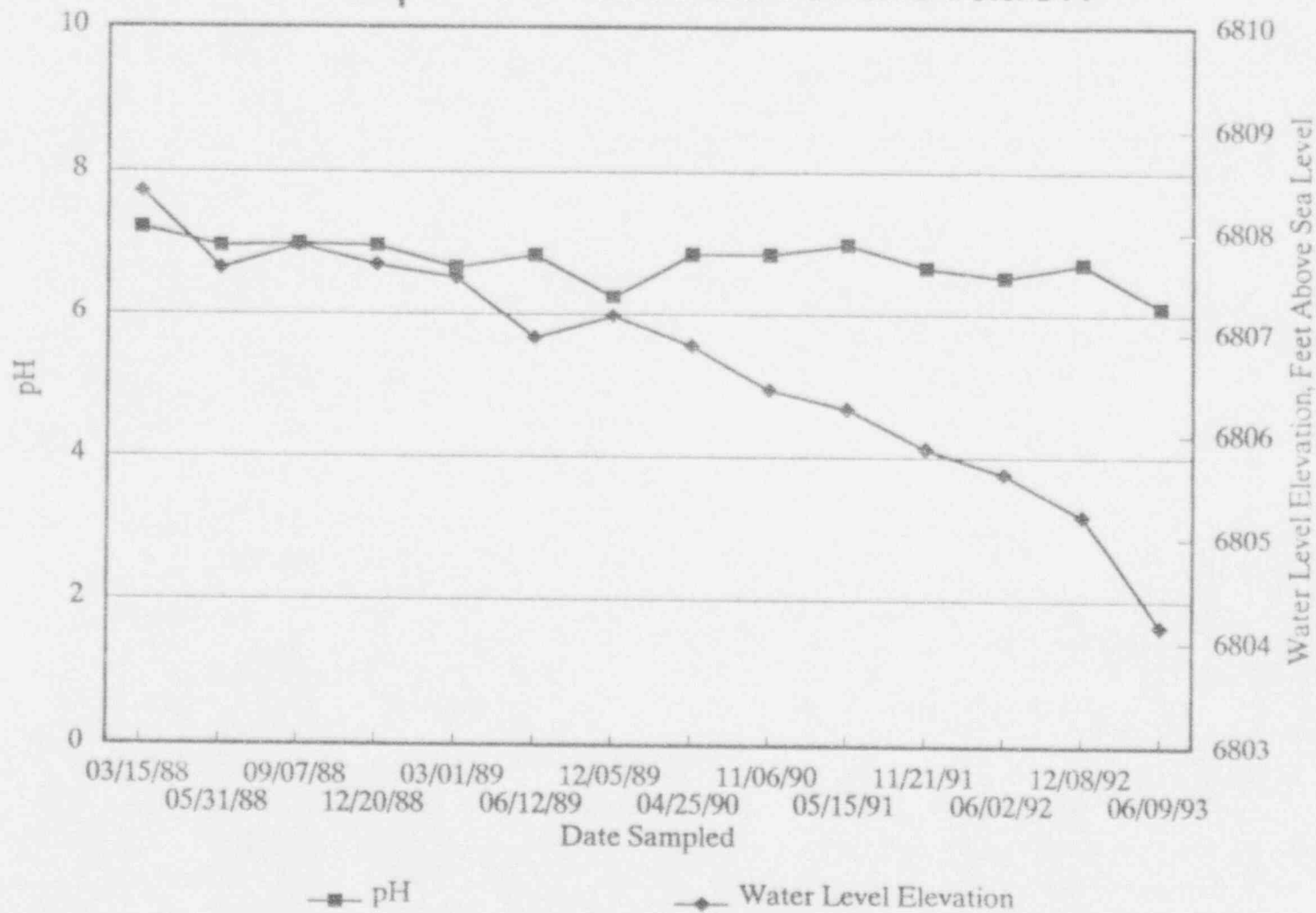
# L.A. 2 pH & Water Level Elevation



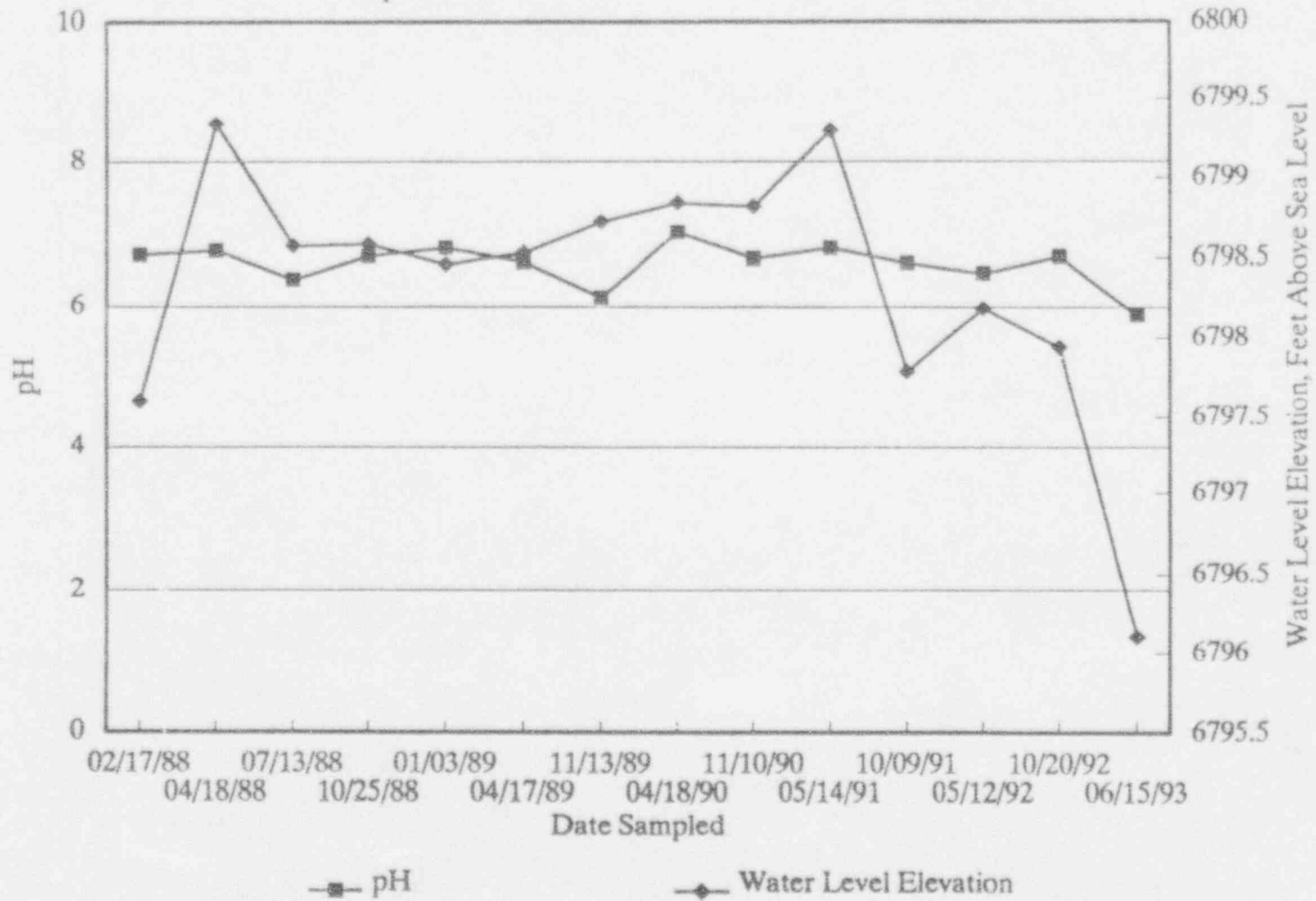
# P.W. 1 pH & Water Level Elevation



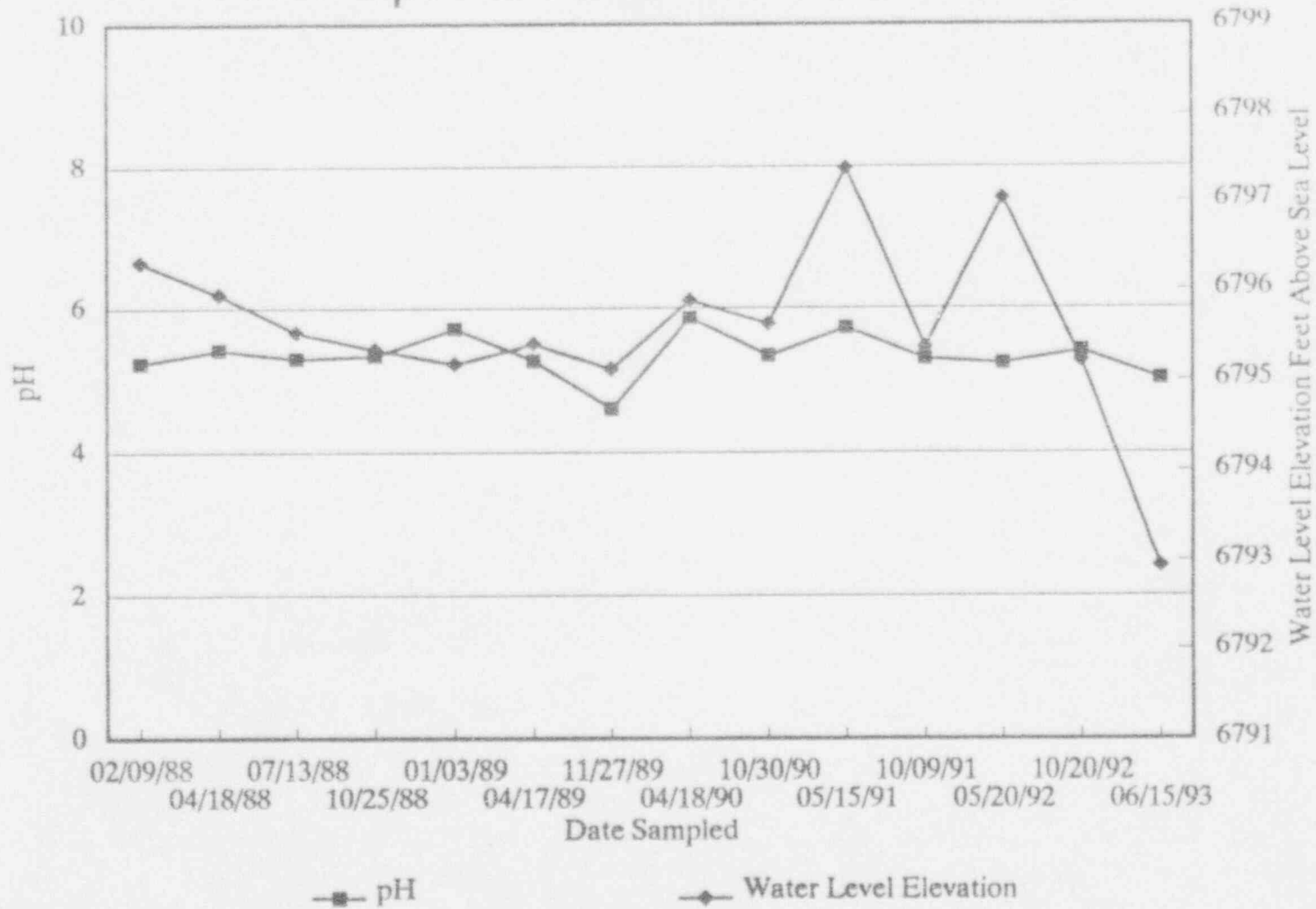
# P.W. 2 pH & Water Level Elevation



# P.W. 3 pH & Water Level Elevation

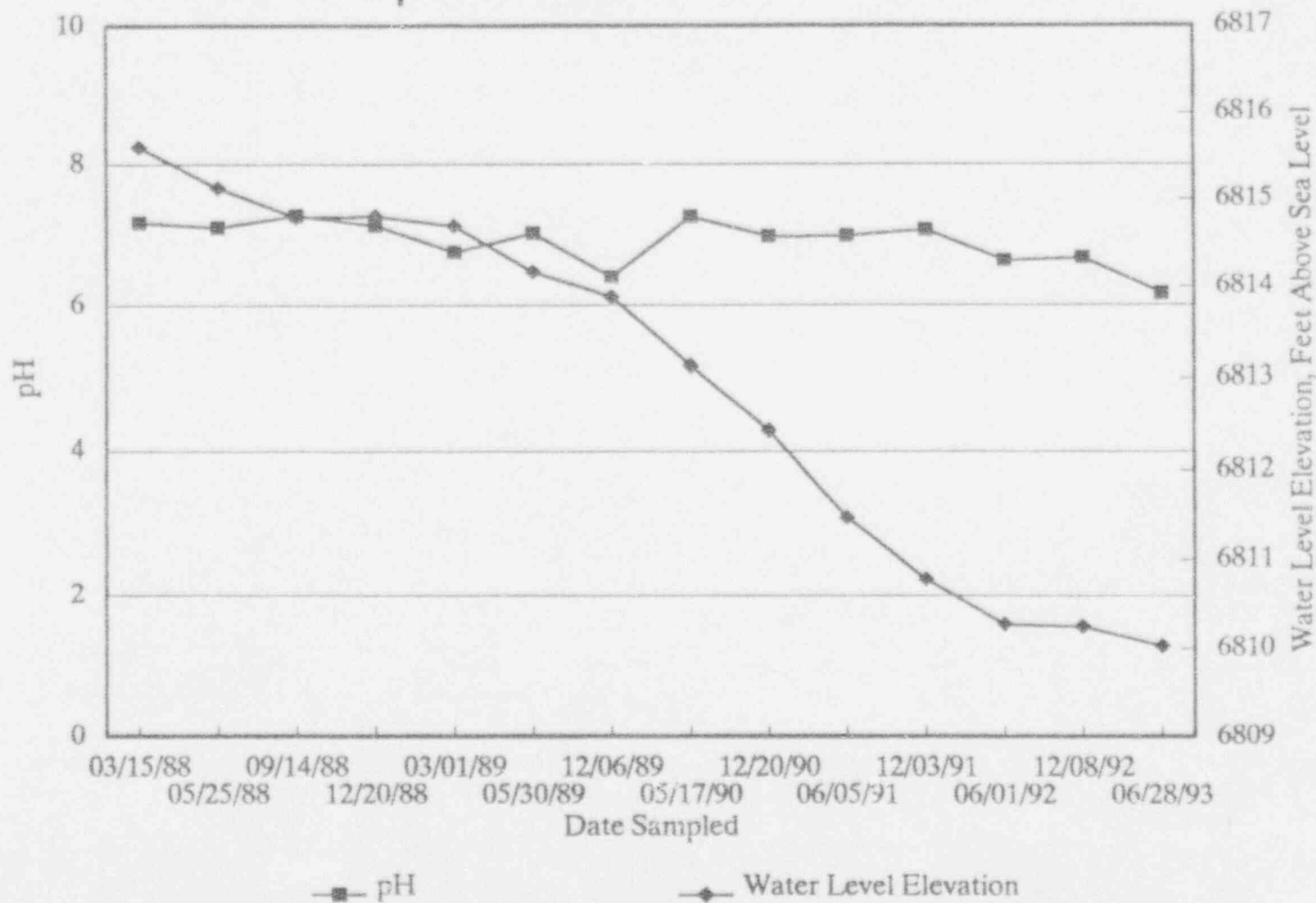


# P.W. 4 pH & Water Level Elevation

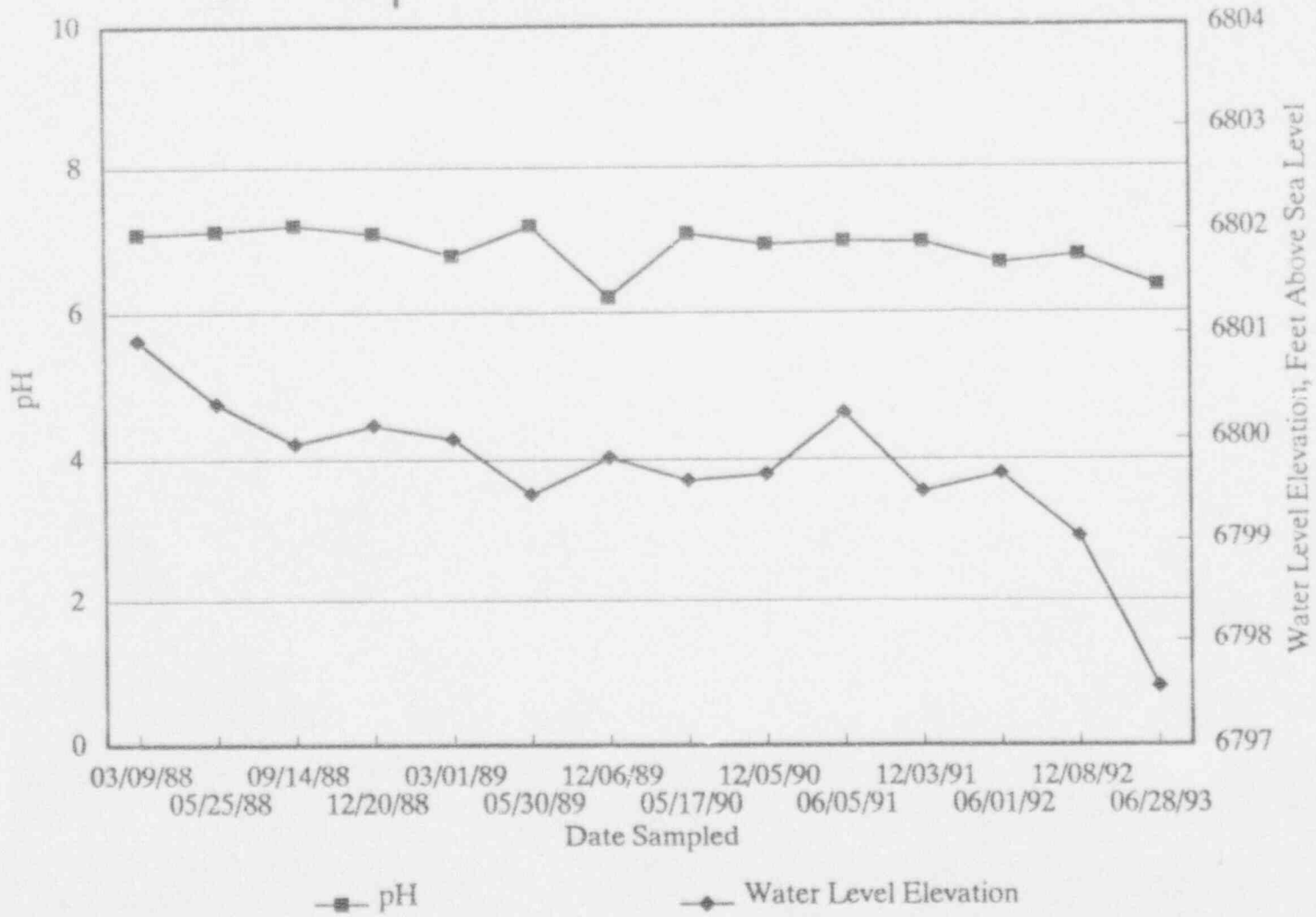




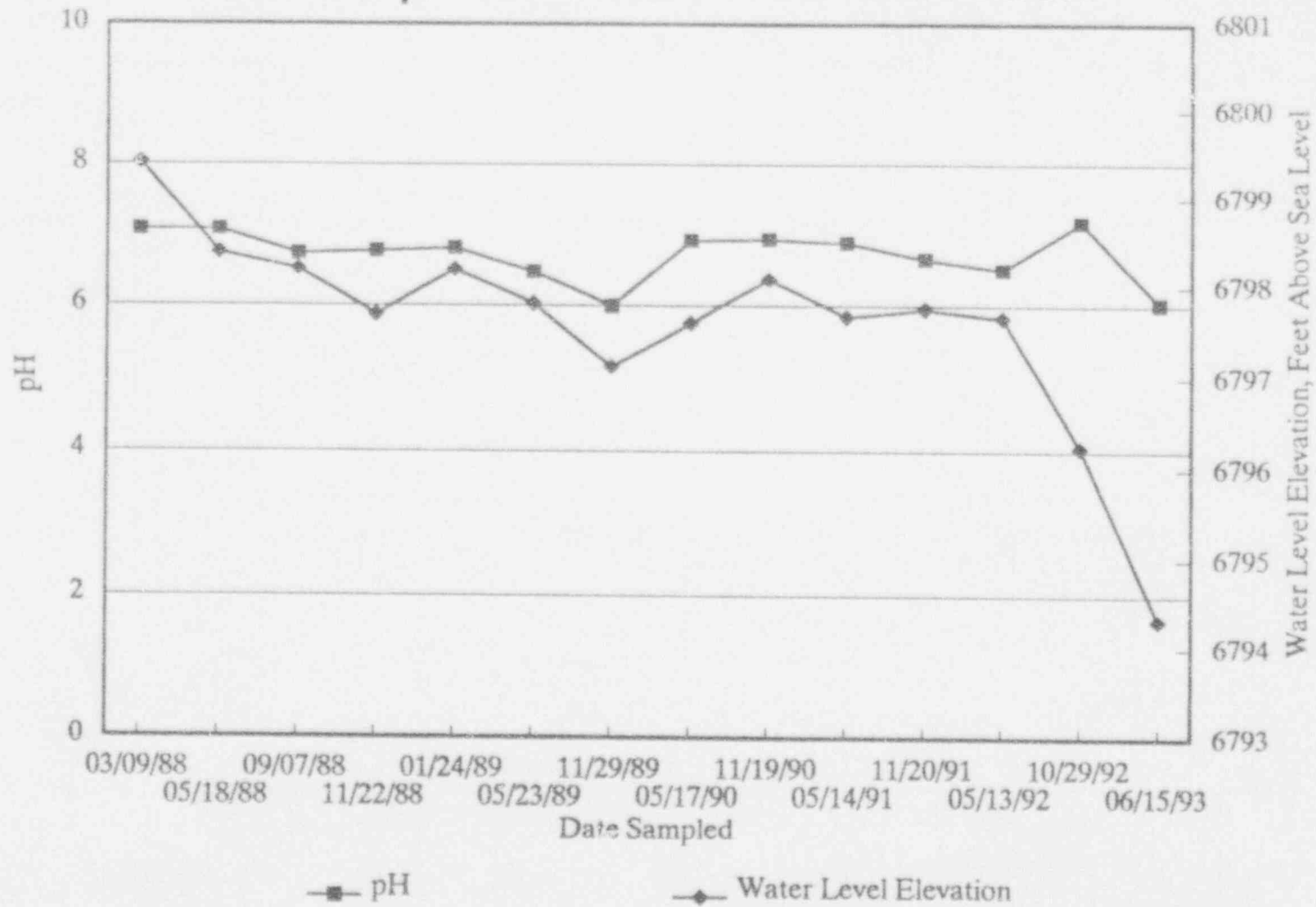
# G.W. 1 pH & Water Level Elevation



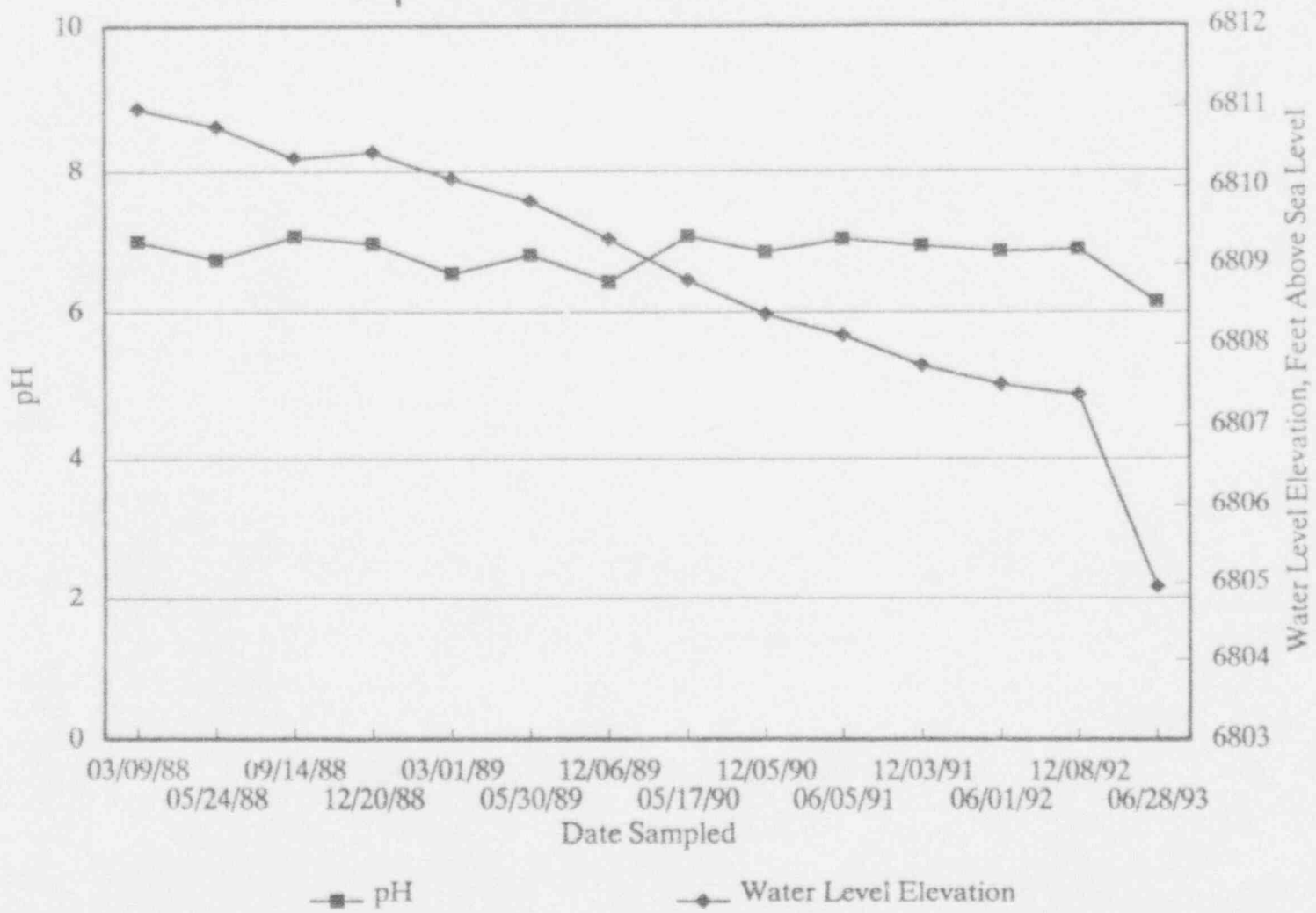
# G.W. 2 pH & Water Level Elevation



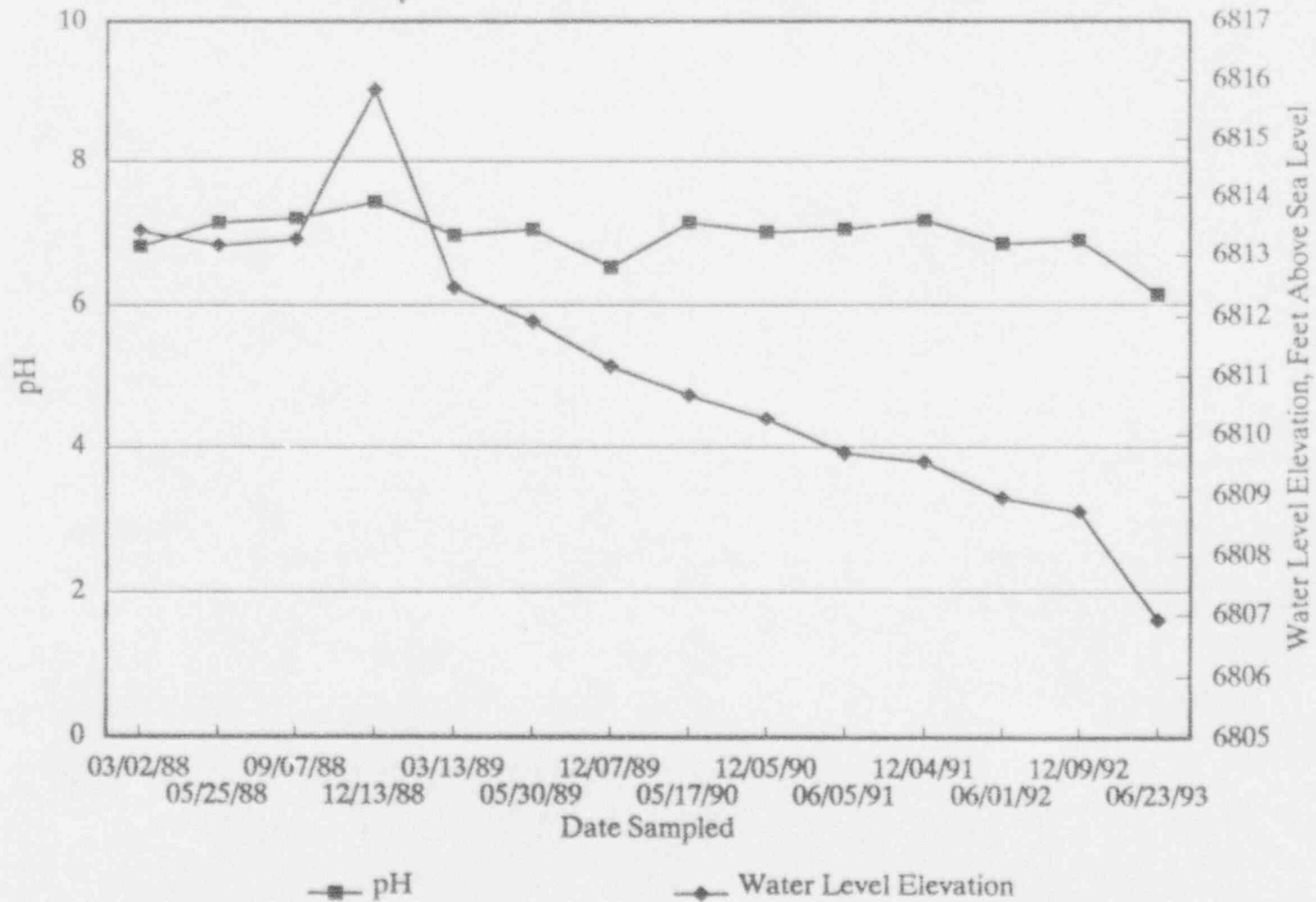
# G.W. 4 pH & Water Level Elevation



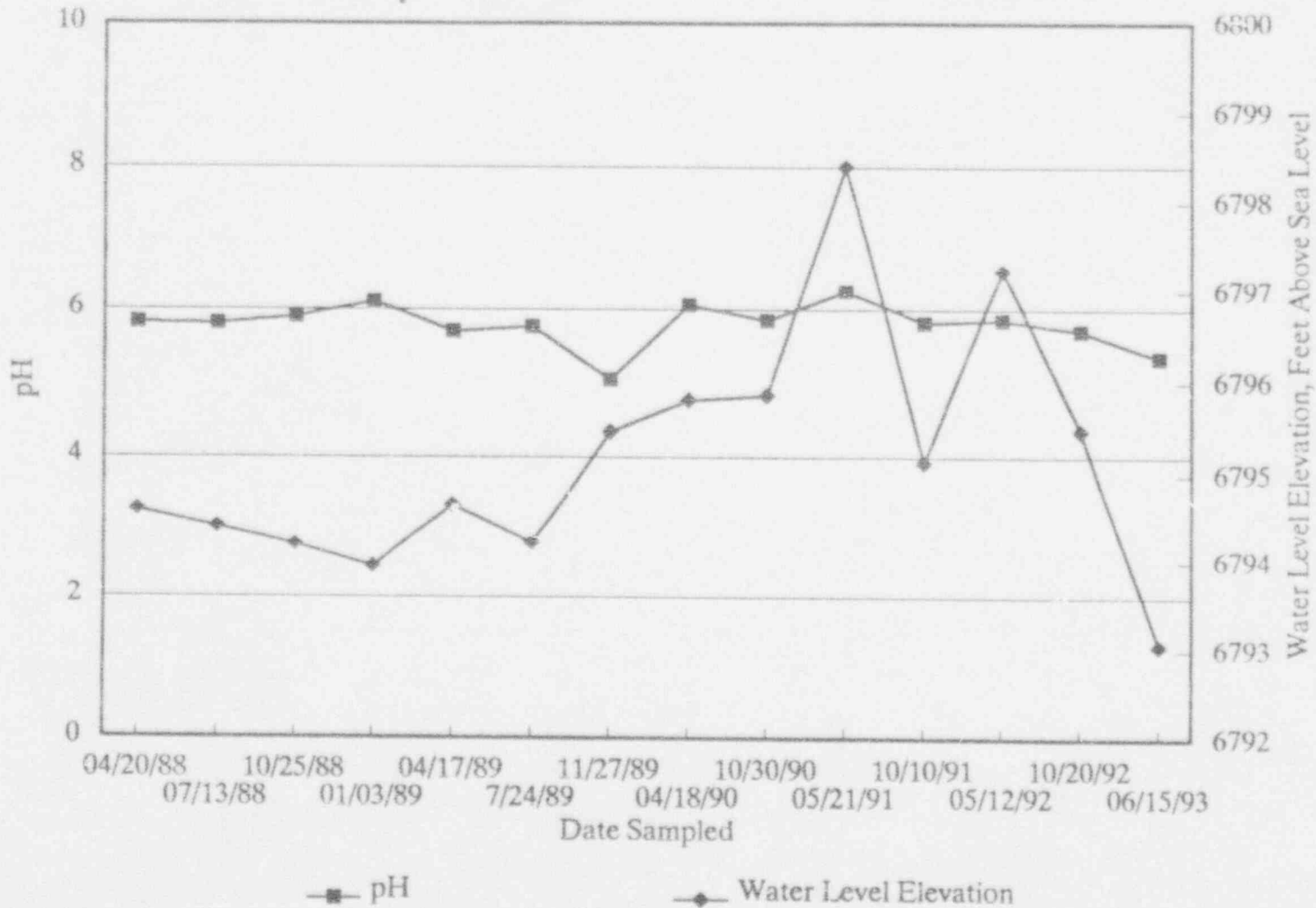
# G.W. 5 pH & Water Level Elevation



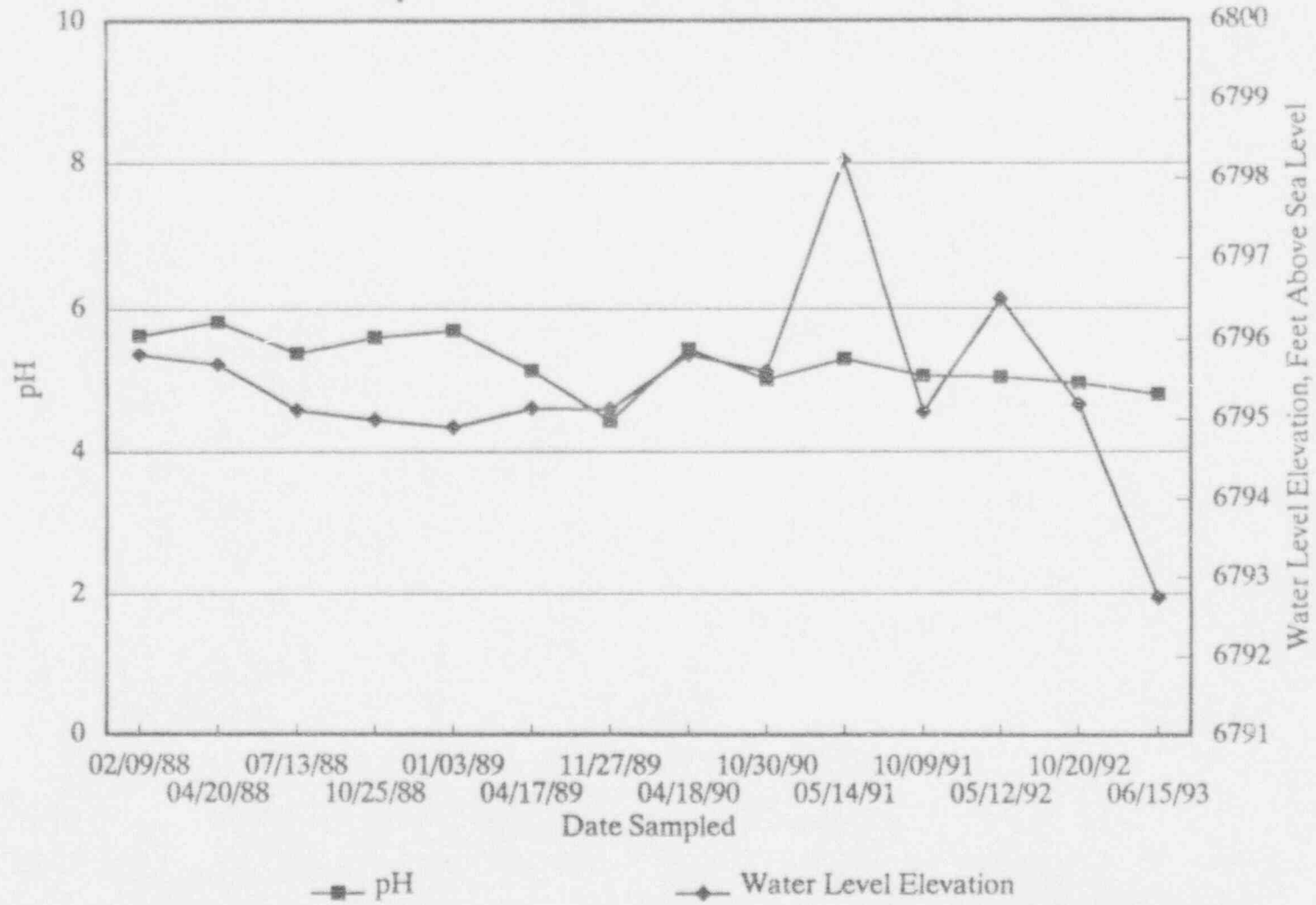
# G.W. 6 pH & Water Level Elevation



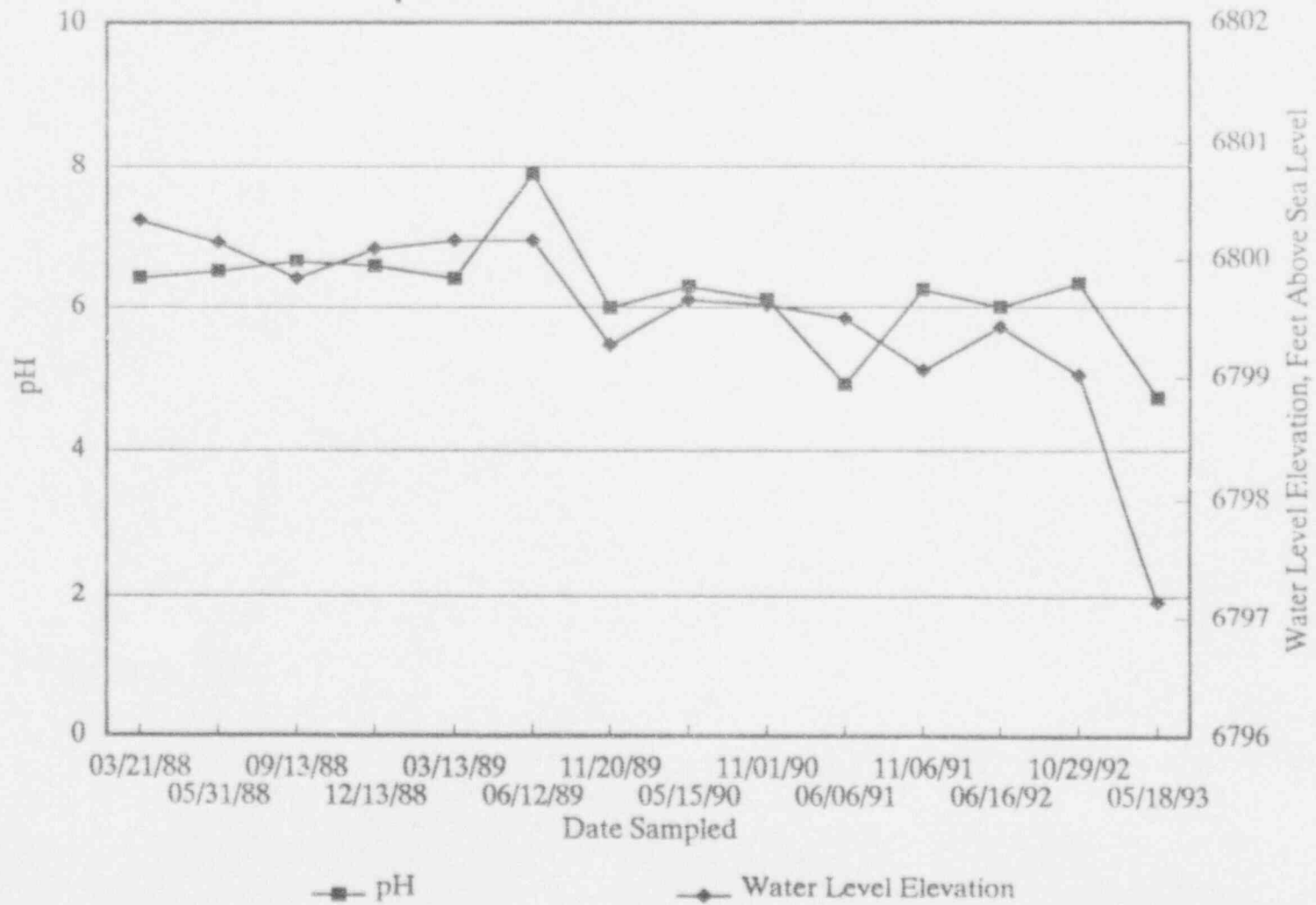
# G.W. 7 pH & Water Level Elevation



# G.W. 8 pH & Water Level Elevation

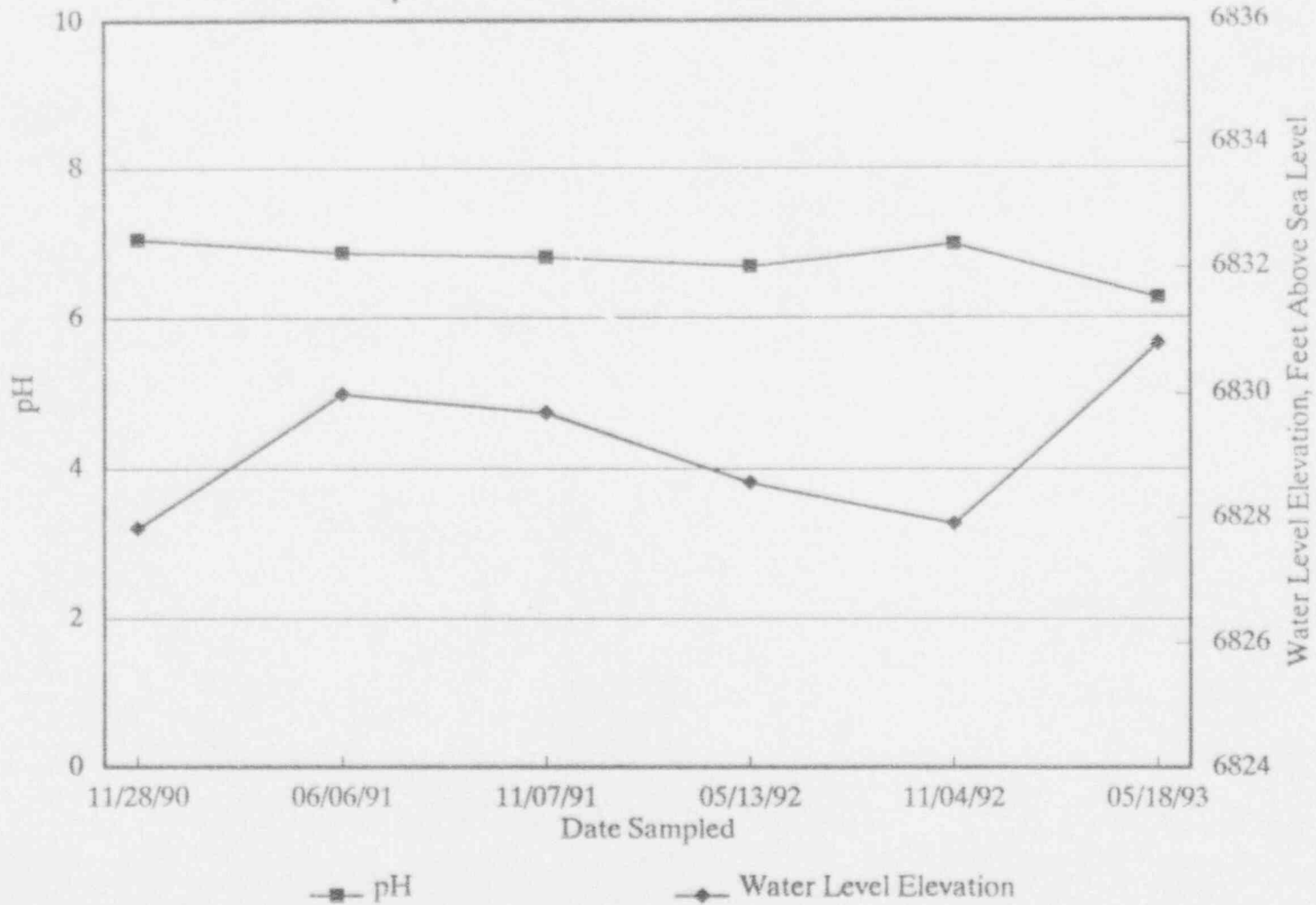


## R.W. 2 pH & Water Level Elevation

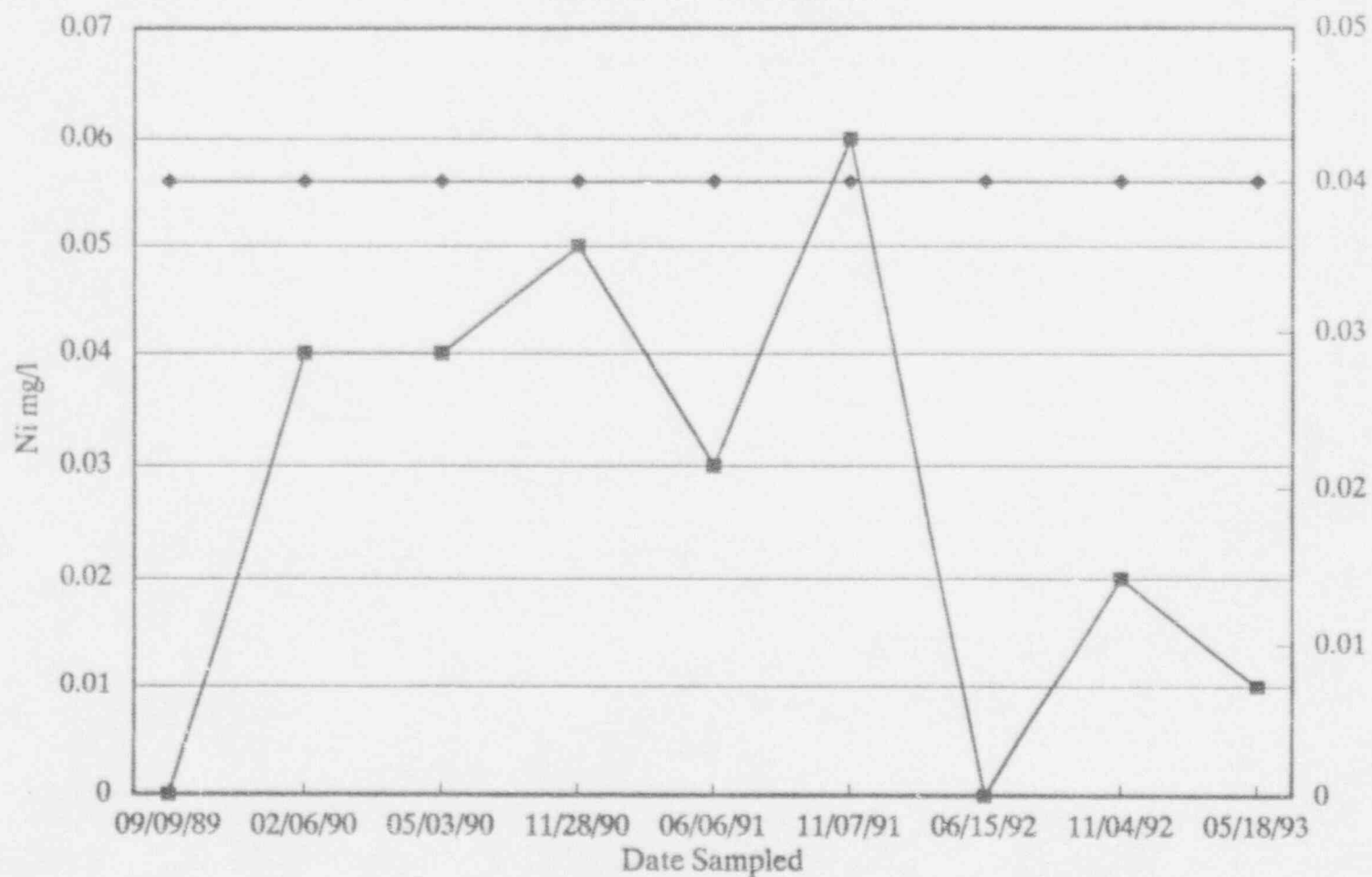




# P.W. 7 pH & Water Level Elevation



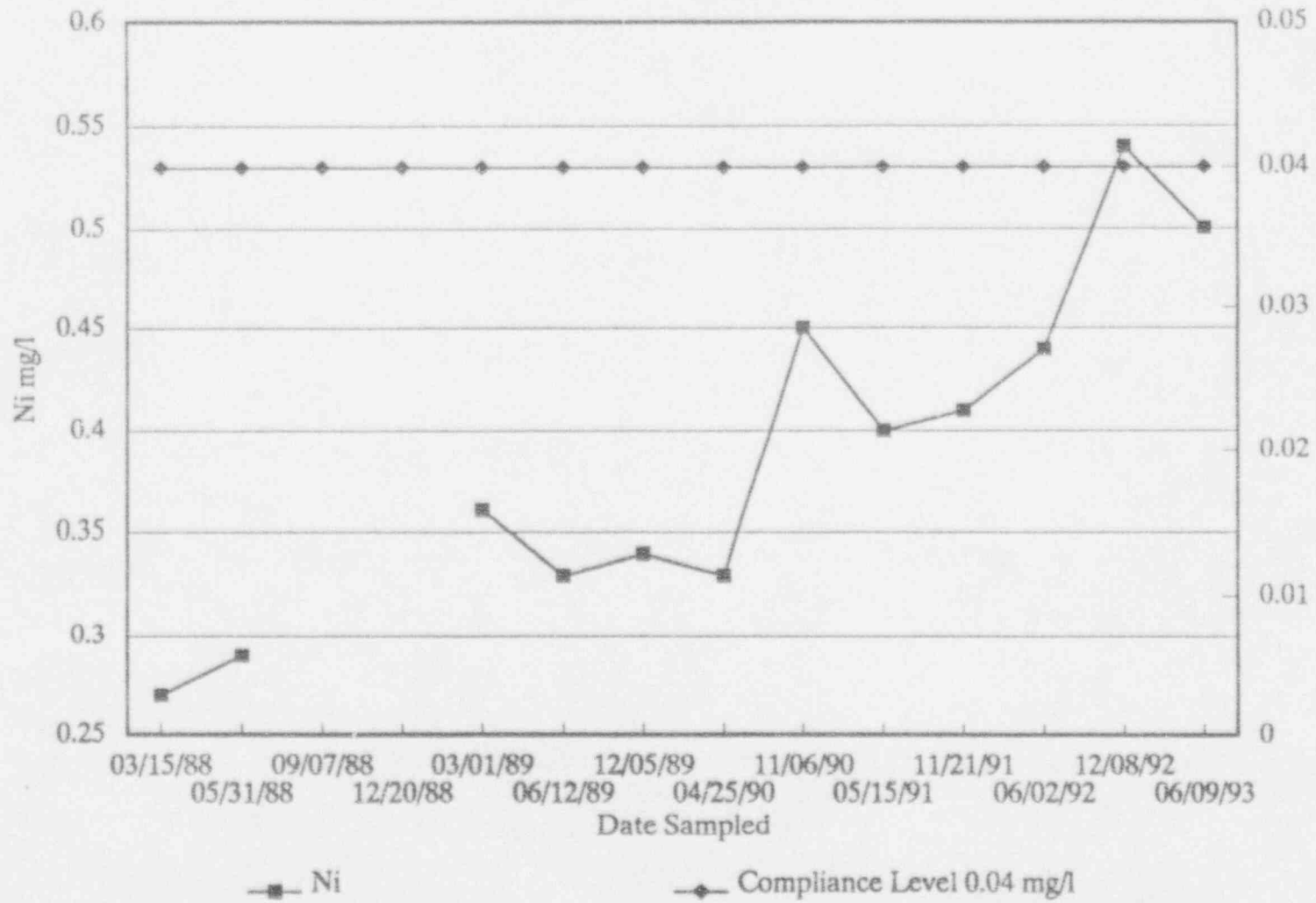
# L.A. 2 Nickel



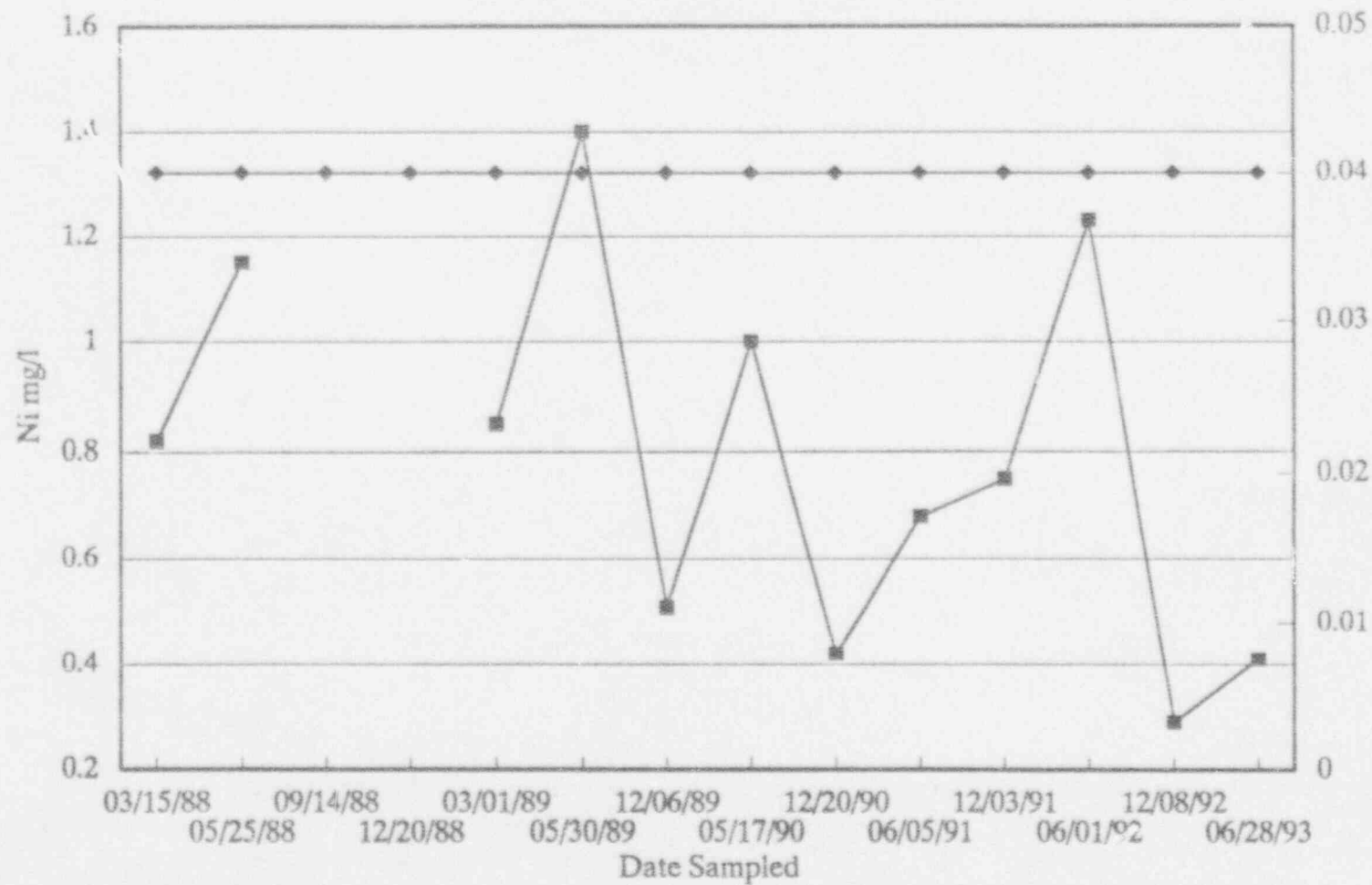
—■— Ni

—◆— Compliance Level 0.04 mg/l

# P.W. 2 Nickel



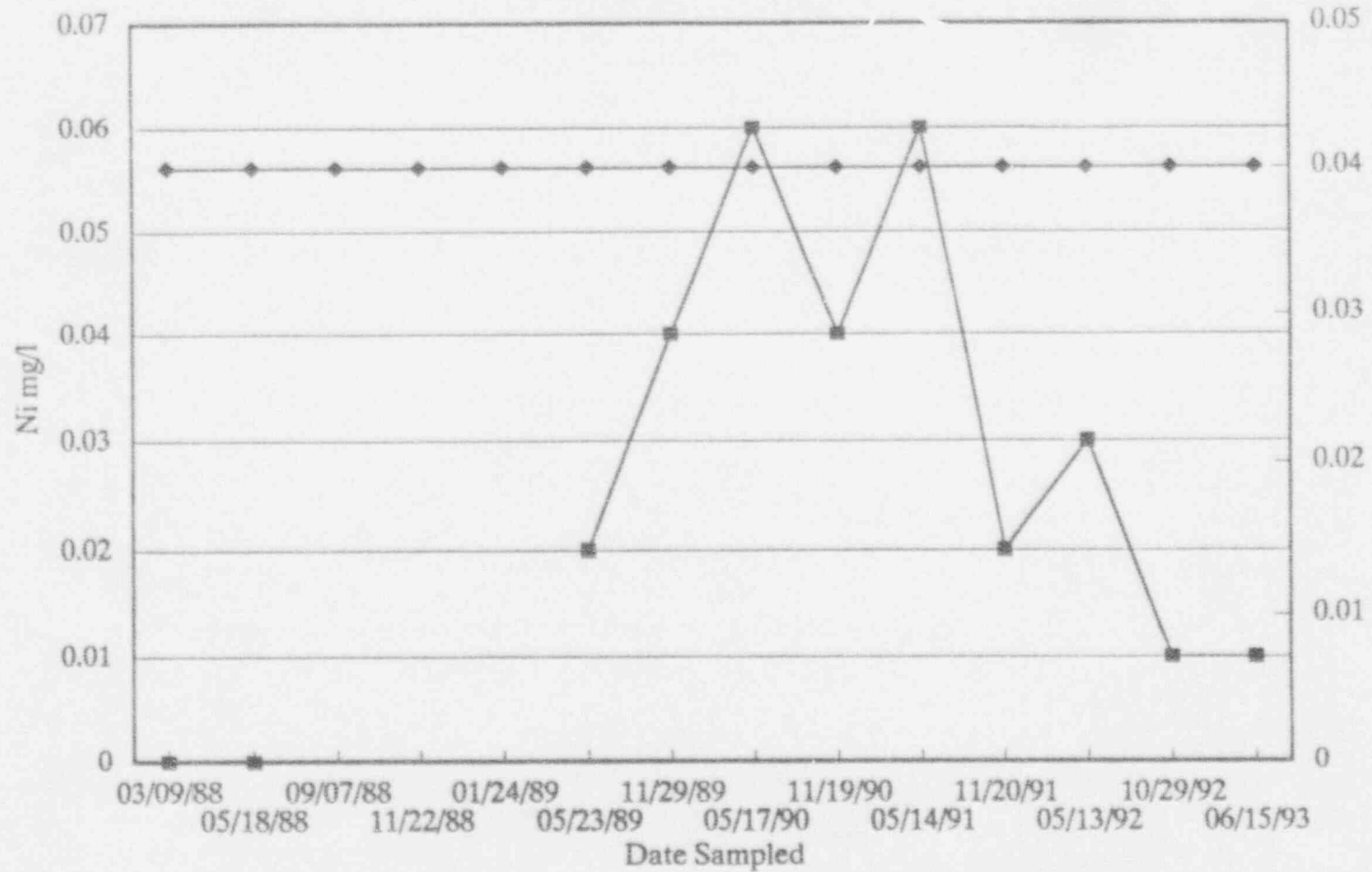
# G.W. 1 Nickel



—■— Ni

—◆— Compliance Level 0.04 mg/l

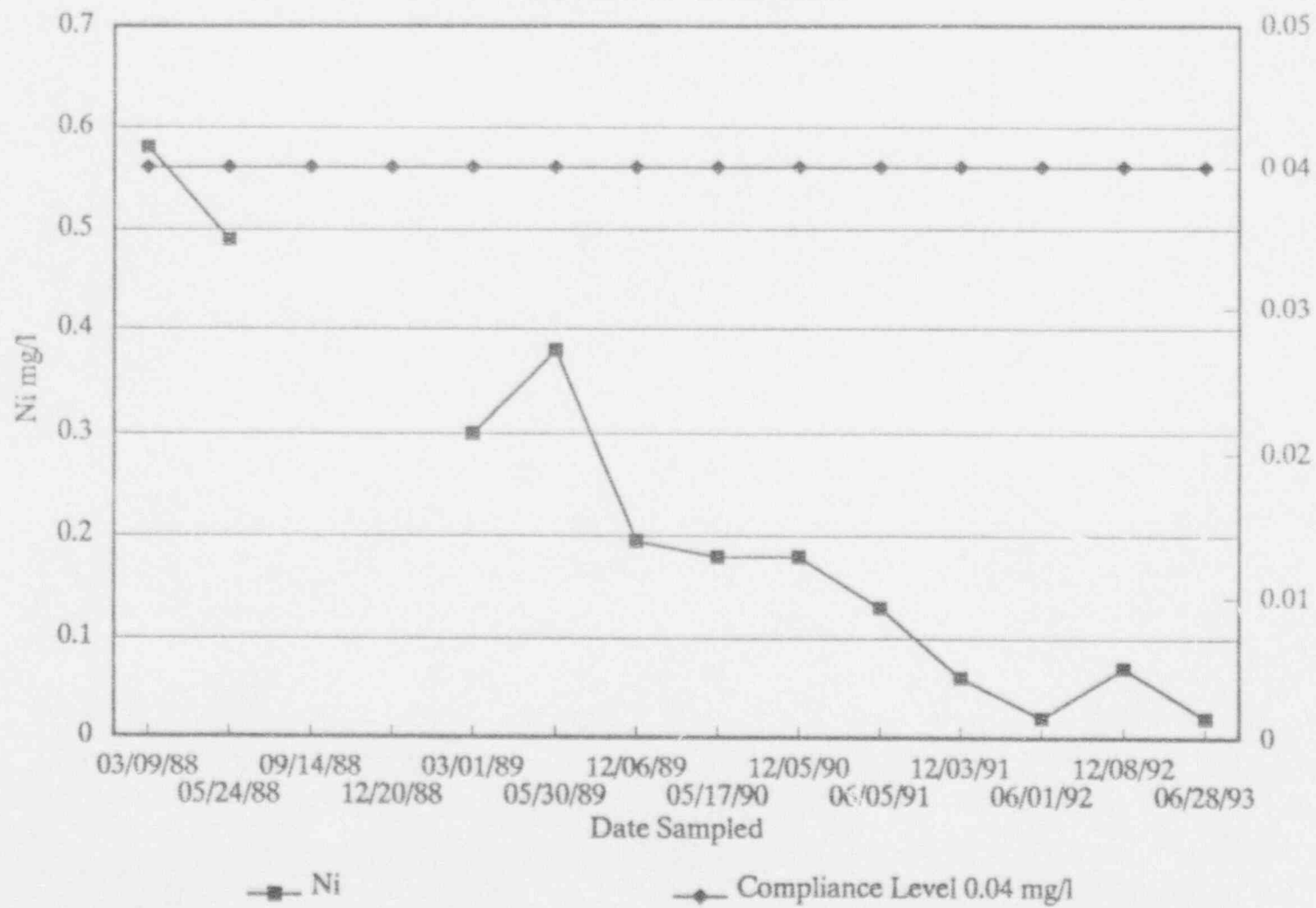
# G.W. 4 Nickel



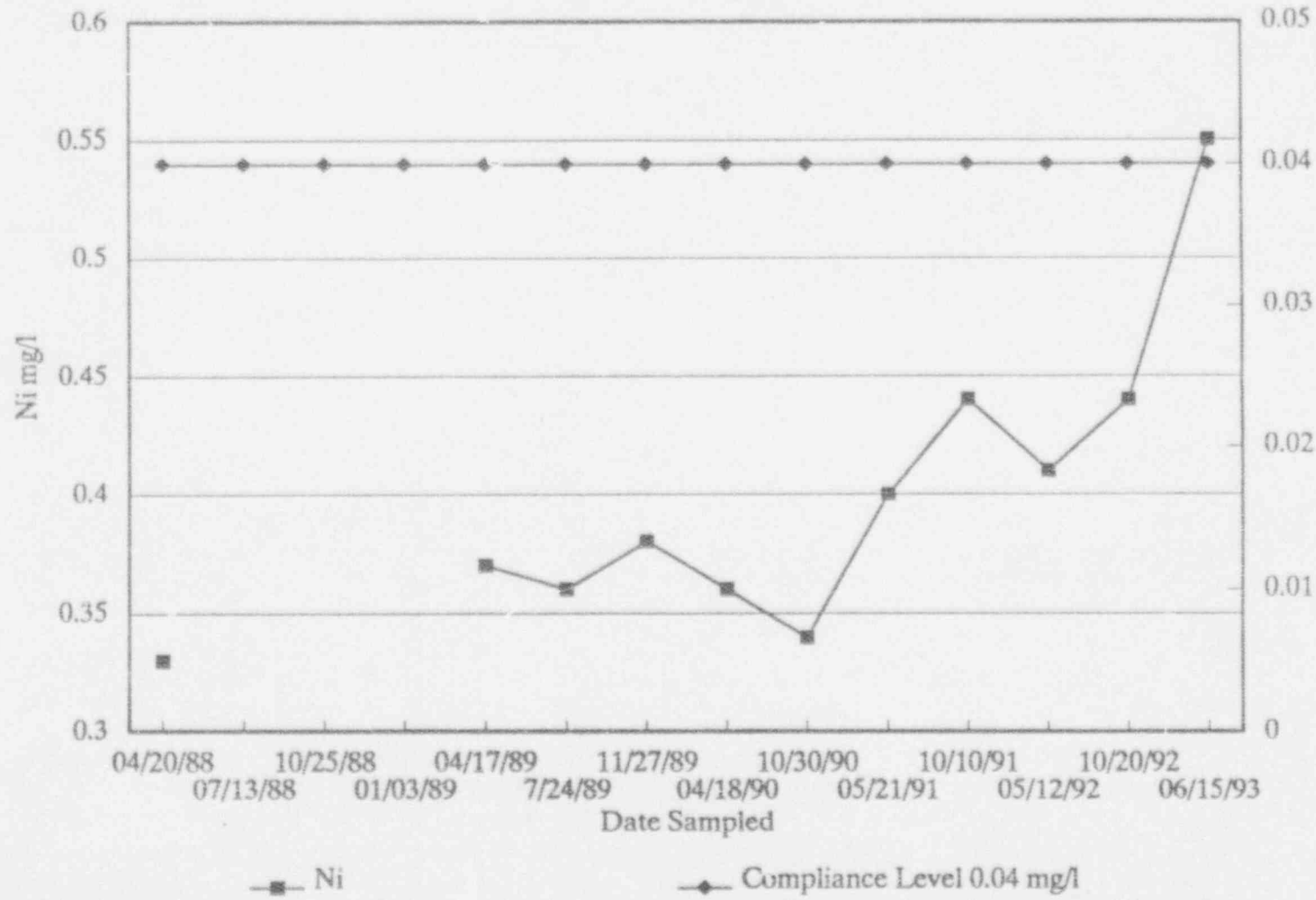
—■— Ni

—◆— Compliance Level 0.04 mg/l

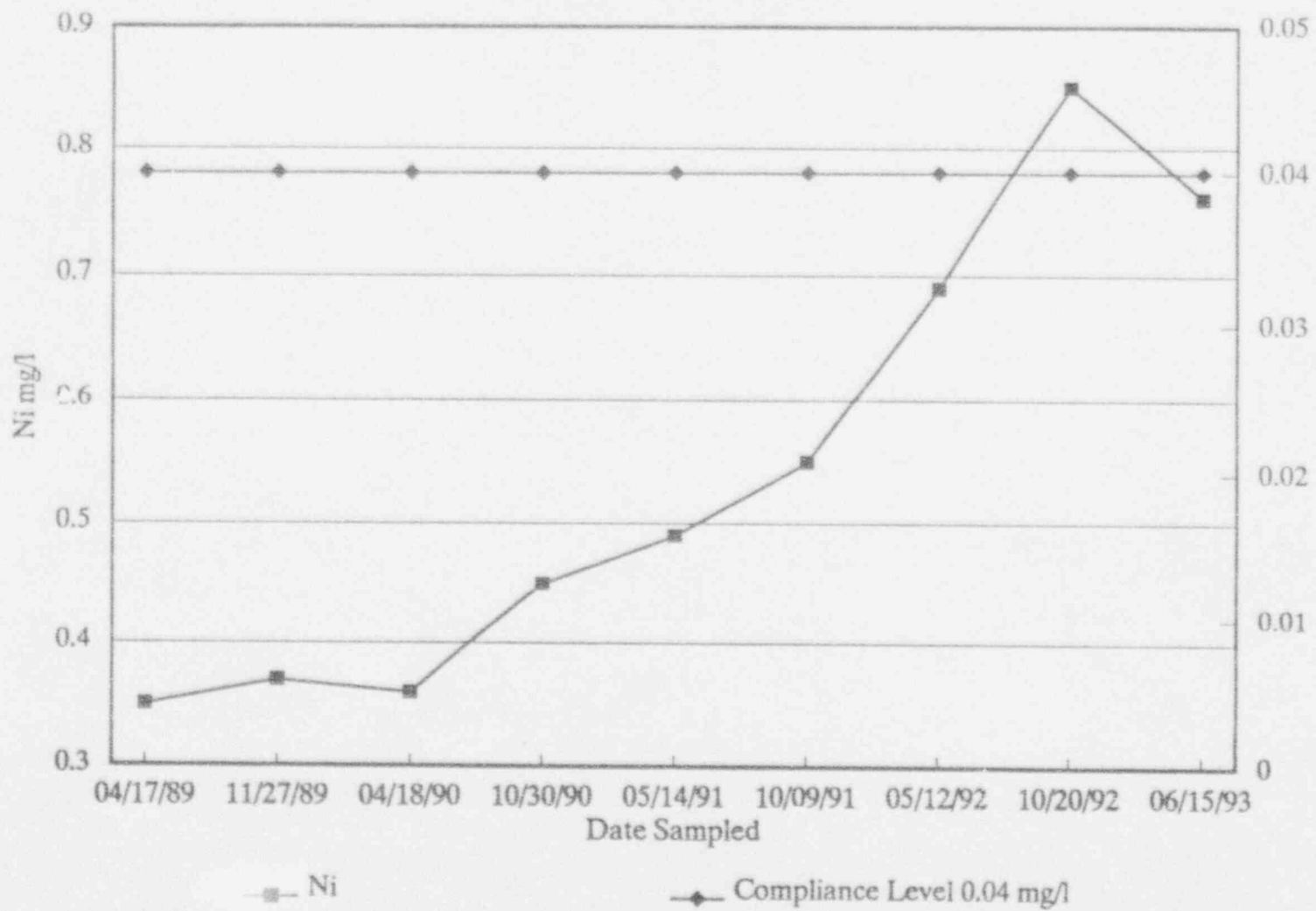
# G.W. 5 Nickel



# G.W. 7 Nickel



# G.W. 8 Nickel





## GROUND WATER ANALYSES FOR H. W. 2

Date Sampled	11/06/91	05/20/92	11/11/92	06/23/93
UNat pCi/l	300.00	315.00	221.00	253.00
UNat % M.P.C.	1.00	1.05	0.74	0.84
Ra226 pCi/l	44.10	34.30	48.40	44.90
Ra226 Error +/-	1.40	2.70	2.40	2.00
Ra226 % M.P.C.	147.00	114.33	161.33	149.67
Ra228 pCi/l	22.20	16.90	14.40	12.80
Ra228 Error +/-	0.80	1.30	1.40	2.10
Ra228 % M.P.C.	74.00	56.33	48.00	42.67
Th231 pCi/l	<1.0	<1.0	<1.0	2.60
Th230 Error +/-				0.30
Th230 % M.P.C.				0.13
Pb210 pCi/l	<1.0	4.60	10.10	7.40
Pb210 Error +/-		0.60	0.90	1.00
Pb210 % M.P.C.		4.60	10.10	7.40
Gross Alpha - U & Rn pCi/l	45.00	34.90	49.50	53.70
Gross Alpha Error +/-	6.70	5.90	7.00	7.30
As mg/l	0.02	0.02	0.02	0.01
Se mg/l	<0.005	<0.005	0.01	<0.005
Fe mg/l	58.30	35.00	64.60	47.00
Pb mg/l	<0.01	0.04	0.05	
Mo mg/l	<0.01	<0.01	<0.01	
Al mg/l	15.40	15.60	17.90	
Be mg/l	0.02	0.02	0.03	0.02
Ni mg/l	0.40	0.26	0.32	0.34
Ag mg/l	<0.01	<0.01	<0.01	
V mg/l	<0.01	<0.01	<0.01	
Cd mg/l	<0.005	<0.005	0.008	
Cr mg/l	0.01	<0.01	<0.01	
Ca mg/l	149.00	143.00	162.00	177.00
Mg mg/l	26.50	22.10	30.10	22.10
Na mg/l	16.60	15.60	15.50	16.40
K mg/l	10.60	10.80	11.30	
NH3 mg/l	<0.05	0.23	<0.05	
NO3 mg/l	<0.01	<0.10	<0.10	<0.01
SO4 mg/l	711.00	661.00	735.00	766.00
Cl mg/l	25.70	21.90	20.10	15.20
TDS mg/l	1129.00	1086.00	1118.00	1052.00
pH	4.58	4.33	4.89	4.05
Water Elevation	6812.78	6812.39	6812.00	6811.85

## GROUND WATER ANALYSES FOR H. W. 3

Date Sampled	11/19/91	06/02/92	12/08/92	06/09/93
UNat pCi/l	43.30	119.00	9.60	89.20
UNat % M.P.C.	0.14	0.40	0.03	0.30
Ra226 pCi/l	21.40	9.90	14.20	18.20
Ra226 Error +/-	0.90	0.50	1.50	1.40
Ra226 % M.P.C.	71.33	33.00	47.33	60.67
Ra228 pCi/l	7.30	<1.0	4.90	9.10
Ra228 Error +/-	1.20		0.40	0.60
Ra228 % M.P.C.	24.33		16.33	30.33
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	4.30	2.70	<1.0	<1.0
Pb210 Error +/-	0.70	0.70		
Pb210 % M.P.C.	4.30	2.70		
Gross Alpha - U & Rn pCi/l	12.00	10.20	14.30	20.00
Gross Alpha Error +/-	3.50	3.20	3.80	1.50
As mg/l	0.07	0.04	0.05	0.05
Se mg/l	<0.005	<0.005	<0.005	<0.005
Fe mg/l	24.10	18.78	19.20	25.50
Pb mg/l	<0.01	<0.01		
Mo mg/l	<0.01	0.04		
Al mg/l	0.28	0.15		
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	0.14	0.14	0.13	0.21
Ag mg/l	<0.01	<0.01		
V mg/l	<0.01	<0.01		
Cd mg/l	<0.005	<0.005		
Cr mg/l	<0.01	0.01		
Ca mg/l	577.00	617.00	639.00	641.00
Mg mg/l	88.20	102.00	94.30	95.20
Na mg/l	102.00	106.00	99.00	103.00
K mg/l	15.30	18.80		
NH3 mg/l	<0.05	0.61		
NO3 mg/l	<0.01	<0.10	<0.10	0.10
SO4 mg/l	1650.00	1685.00	1768.00	1749.00
Cl mg/l	97.30	94.30	117.00	150.00
TDS mg/l	2935.00	2948.00	3061.00	3325.00
pH	6.55	6.60	6.78	6.42
Water Elevation	6838.10	6837.92	6837.53	6837.00

## GROUND WATER ANALYSES FOR E.W. 1

Date Sampled	11/06/91	05/20/92	11/11/92	06/23/93
UNat pCi/l	17.40	28.60	40.30	18.20
UNat % M.P.C.	0.06	0.10	0.13	0.06
Ra226 pCi/l	22.30	29.60	37.10	23.10
Ra226 Error +/-	1.00	2.00	2.00	1.50
Ra226 % M.P.C.	74.33	99.33	123.67	77.00
Ra228 pCi/l	25.20	14.10	30.30	12.80
Ra228 Error +/-	0.90	1.40	1.70	2.20
Ra228 % M.P.C.	84.00	47.00	101.00	42.67
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	<1.0	8.20	11.10	4.50
Pb210 Error +/-		0.70	0.90	1.00
Pb210 % M.P.C.		8.20	11.10	4.50
Gross Alpha -- U & Rn pCi/l	25.00	30.50	37.20	29.30
Gross Alpha Error +/-	5.00	5.50	6.10	5.40
As mg/l	0.09	0.07	0.07	0.08
Se mg/l	<0.005	<0.005	0.009	<0.005
Fe mg/l	235.00	217.00	198.00	216.00
Pb mg/l	<0.01	0.03	0.04	
Mo mg/l	<0.01	0.04	<0.01	
Al mg/l	11.10	15.30	17.20	
Be mg/l	0.08	0.09	0.10	0.10
Ni mg/l	1.38	1.25	1.18	1.48
Ag mg/l	0.01	<0.01	0.02	
V mg/l	0.03	<0.01	0.01	
Cd mg/l	0.011	<0.005	0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	366.00	341.00	358.00	318.00
Mg mg/l	142.00	121.00	116.00	111.00
Na mg/l	44.30	32.60	41.40	35.80
K mg/l	22.00	16.60	21.40	
NH3 mg/l	<0.05	0.29	0.42	
NO3 mg/l	0.03	<0.10	<0.10	<0.01
SO4 mg/l	2196.00	2000.00	1848.00	2078.00
Cl mg/l	17.80	15.60	19.90	24.70
TDS mg/l	2967.00	3023.00	2852.00	3144.00
pH	4.58	4.15	4.55	4.11
Water Elevation	6805.50	6805.35	6804.78	6804.83

## GROUND WATER ANALYSES FOR E. W. 2

Date Sampled	11/06/91	05/20/92	11/11/92	06/23/93
UNat pCi/l	976.00	1133.00	998.00	1316.00
UNat % M.P.C.	3.25	3.78	3.33	4.39
Ra226 pCi/l	33.10	37.60	43.60	29.50
Ra226 Error +/-	1.30	2.20	2.20	1.70
Ra226 % M.P.C.	110.33	125.33	145.33	98.33
Ra228 pCi/l	10.80	18.60	6.50	2.90
Ra228 Error +/-	0.80	0.70	1.70	0.60
Ra228 % M.P.C.	36.00	62.00	21.67	9.67
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	<1.0	9.50	9.70	6.80
Pb210 Error +/-		0.70	0.90	1.00
Pb210 % M.P.C.		9.50	9.70	6.80
Gross Alpha - U & Rn pCi/l	40.00	37.80	43.90	31.00
Gross Alpha Error +/-	6.30	6.10	6.60	5.60
As mg/l	<0.01	<0.01	<0.01	<0.01
Se mg/l	0.081	0.057	0.044	0.029
Fe mg/l	2.50	4.74	8.40	8.09
Pb mg/l	<0.01	0.02	<0.01	
Mo mg/l	0.02	0.01	<0.01	
Al mg/l	45.90	56.10	38.10	
Be mg/l	0.11	0.11	0.09	0.08
Ni mg/l	0.96	0.90	0.63	0.55
Ag mg/l	<0.01	<0.01	0.02	
V mg/l	0.01	<0.01	<0.01	
Cd mg/l	<0.005	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	307.00	279.00	263.00	193.00
Mg mg/l	70.90	81.60	93.70	113.00
Na mg/l	34.30	38.90	40.30	23.70
K mg/l	15.70	15.20	12.80	
NH3 mg/l	<0.05	0.23	<0.05	
NO3 mg/l	0.88	<0.10	<0.10	0.77
SO4 mg/l	1306.00	1244.00	1129.00	1153.00
Cl mg/l	38.80	25.40	20.80	13.20
TDS mg/l	2158.00	2132.00	1602.00	1334.00
pH	3.98	3.61	3.82	3.42
Water Elevation	6799.02	6798.69	6798.73	6798.05

## GROUND WATER ANALYSES FOR E.W. 3

Date Sampled	11/06/91	05/20/92	11/11/92	06/23/93
UNat pCi/l	320.00	332.00	193.00	322.00
UNat % M.P.C.	1.07	1.11	0.64	1.07
Ra226 pCi/l	13.00	11.20	15.50	15.80
Ra226 Error +/-	0.80	0.70	0.70	1.60
Ra226 % M.P.C.	43.33	37.33	51.67	52.67
Ra228 pCi/l	10.60	5.20	2.50	5.50
Ra228 Error +/-	0.90	0.60	1.90	1.10
Ra228 % M.P.C.	35.33	17.33	8.33	18.33
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	<1.0	1.90	4.70	<1.0
Pb210 Error +/-		0.60	0.80	
Pb210 % M.P.C.		1.90	4.70	
Gross Alpha - U & Rn pCi/l	15.00	11.80	15.70	18.50
Gross Alpha Error +/-	3.90	3.40	4.00	4.30
As mg/l	0.11	0.09	0.11	0.07
Se mg/l	<0.005	<0.005	0.008	<0.005
Fe mg/l	28.20	25.80	23.80	33.80
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	0.02	<0.01	<0.01	
Al mg/l	23.00	20.30	16.20	
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	0.22	0.17	0.16	0.25
Ag mg/l	0.02	<0.01	<0.01	
V mg/l	0.01	<0.01	<0.01	
Cd mg/l	0.005	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	141.00	148.00	193.00	202.00
Mg mg/l	22.40	26.60	27.20	29.20
Na mg/l	16.60	18.30	14.80	15.00
K mg/l	8.40	10.70	9.10	
NH3 mg/l	<0.05	0.34	<0.05	
NO3 mg/l	0.05	<0.10	<0.10	<0.01
SO4 mg/l	528.00	520.00	593.00	763.00
Cl mg/l	104.00	91.40	102.00	104.00
TDS mg/l	935.00	996.00	971.00	1225.00
pH	4.81	4.66	5.65	4.45
Water Elevation	6802.02	6802.44	6801.31	6800.46

## GROUND WATER ANALYSES FOR M.W. 30

Date Sampled	11/21/91	06/02/92	10/20/92	06/23/93
UNat pCi/l	35.00	73.70	3.90	39.50
UNat % M.P.C.	0.12	0.25	0.01	0.13
Ra226 pCi/l	10.70	5.00	5.70	11.70
Ra226 Error +/-	0.70	0.40	0.50	1.10
Ra226 % M.P.C.	35.67	16.67	19.00	39.00
Ra228 pCi/l	5.70	5.20	<1.0	4.60
Ra228 Error +/-	0.90	0.80		2.70
Ra228 % M.P.C.	19.00	17.33		15.33
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	<1.0	2.70	1.20	<1.0
Pb210 Error +/-		0.70	0.70	
Pb210 % M.P.C.		2.70	1.20	
Gross Alpha - U & Rn pCi/l	12.00	5.10	6.00	14.00
Gross Alpha Error +/-	3.50	0.90	2.40	3.70
As mg/l	<0.01	<0.01	<0.01	<0.01
Se mg/l	<0.005	<0.005	<0.005	<0.005
Fe mg/l	0.55	0.19	0.74	0.25
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	<0.01	<0.01	<0.01	
Al mg/l	<0.10	<0.10	<0.10	
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	0.01	0.04	0.01	0.02
Ag mg/l	<0.01	<0.01	<0.01	
V mg/l	<0.01	<0.01	<0.01	
Cd mg/l	<0.005	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	137.00	135.00	147.00	154.00
Mg mg/l	12.60	17.20	14.00	15.40
Na mg/l	11.60	12.20	9.20	10.20
K mg/l	7.10	8.37	6.10	
NH3 mg/l	<0.05	0.09	<0.05	
NO3 mg/l	<0.01	<0.10	<0.10	<0.01
SO4 mg/l	234.00	255.00	267.00	292.00
Cl mg/l	4.80	3.90	10.60	2.63
TDS mg/l	604.00	470.00	501.00	524.00
pH	7.44	7.28	7.29	6.01
Water Elevation	6768.88	6768.63	6768.15	6767.25

## GROUND WATER ANALYSES FOR P.W. 5

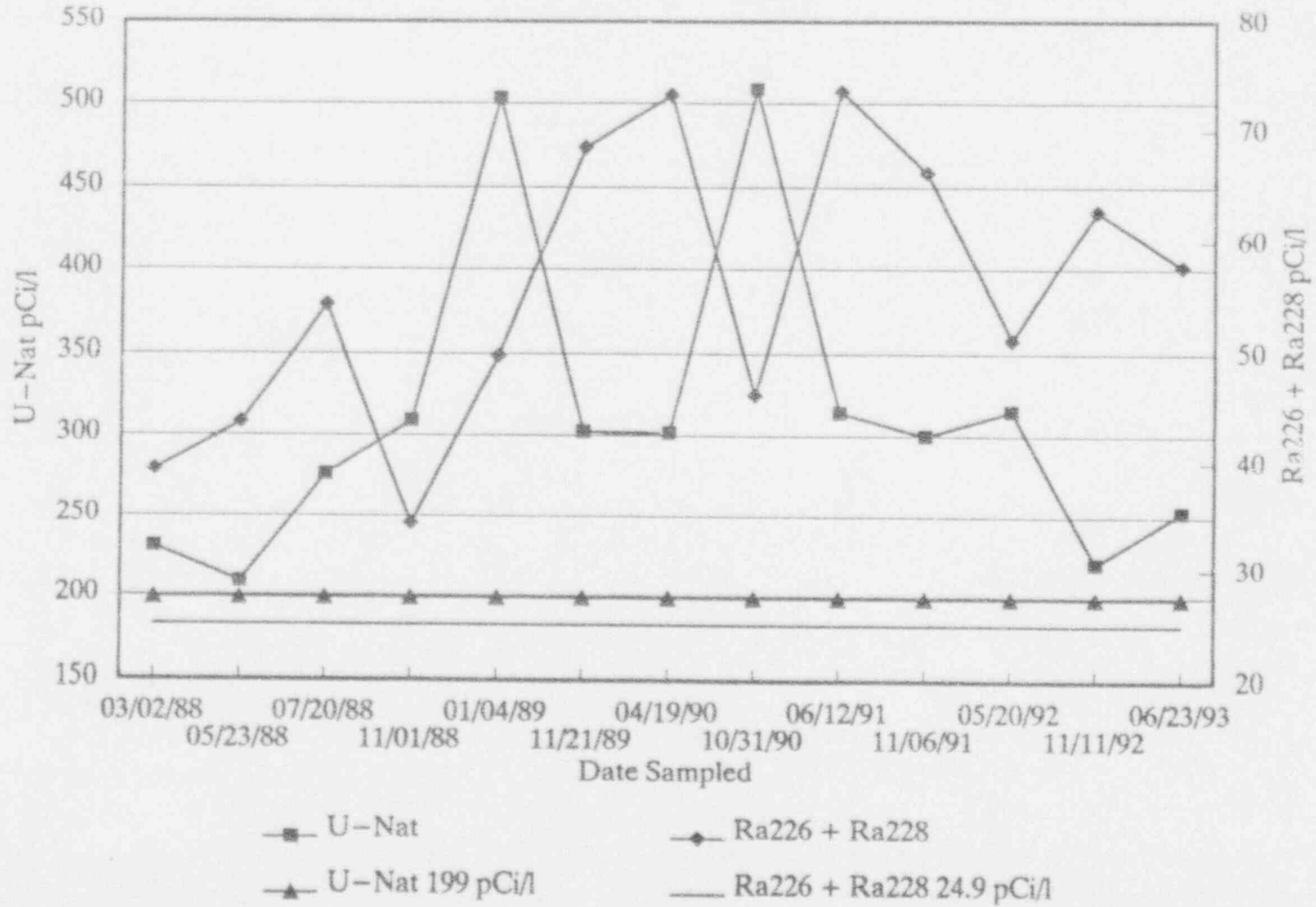
Date Sampled	11/18/91	05/12/92	10/20/92	06/15/93
UNat pCi/l	18.40	26.70	70.00	39.40
UNat % M.P.C.	0.06	0.09	0.23	0.13
Ra226 pCi/l	7.80	8.40	6.80	11.30
Ra226 Error +/-	0.60	0.60	0.50	0.50
Ra226 % M.P.C.	26.00	28.00	22.67	37.67
Ra228 pCi/l	2.50	<1.0	<1.0	1.60
Ra228 Error +/-	0.60			0.80
Ra228 % M.P.C.	8.33			5.33
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	4.00	<1.0	4.20	3.00
Pb210 Error +/-	0.70		0.70	0.90
Pb210 % M.P.C.	4.00		4.20	3.00
Gross Alpha - U & Rn pCi/l	18.00	8.60	14.00	11.80
Gross Alpha Error +/-	2.80	2.90	3.70	3.40
As mg/l	<0.01	<0.01	<0.01	<0.01
Se mg/l	<0.005	<0.005	<0.005	<0.005
Fe mg/l	0.11	0.17	0.40	0.91
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	<0.01	0.02	<0.01	
Al mg/l	<0.10	<0.10	<0.10	
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	<0.01	<0.01	0.02	<0.01
Ag mg/l	<0.01	<0.01	<0.01	
V mg/l	<0.01	<0.01	<0.01	
Cd mg/l	<0.005	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	143.00	135.00	146.00	147.00
Mg mg/l	16.00	18.80	18.20	17.20
Na mg/l	12.60	10.20	9.90	10.50
K mg/l	7.60	7.00	6.10	
NH3 mg/l	<0.05	<0.05	<0.05	
NO3 mg/l	<0.01	<0.10	<0.10	<0.01
SO4 mg/l	238.00	275.00	293.00	283.00
Cl mg/l	8.10	6.60	8.90	7.30
TDS mg/l	596.00	475.00	562.00	581.00
pH	7.12	6.87	6.99	6.30
Water Elevation	6791.84	6791.87	6788.17	6785.90

## GROUND WATER ANALYSES FOR P.W. 6

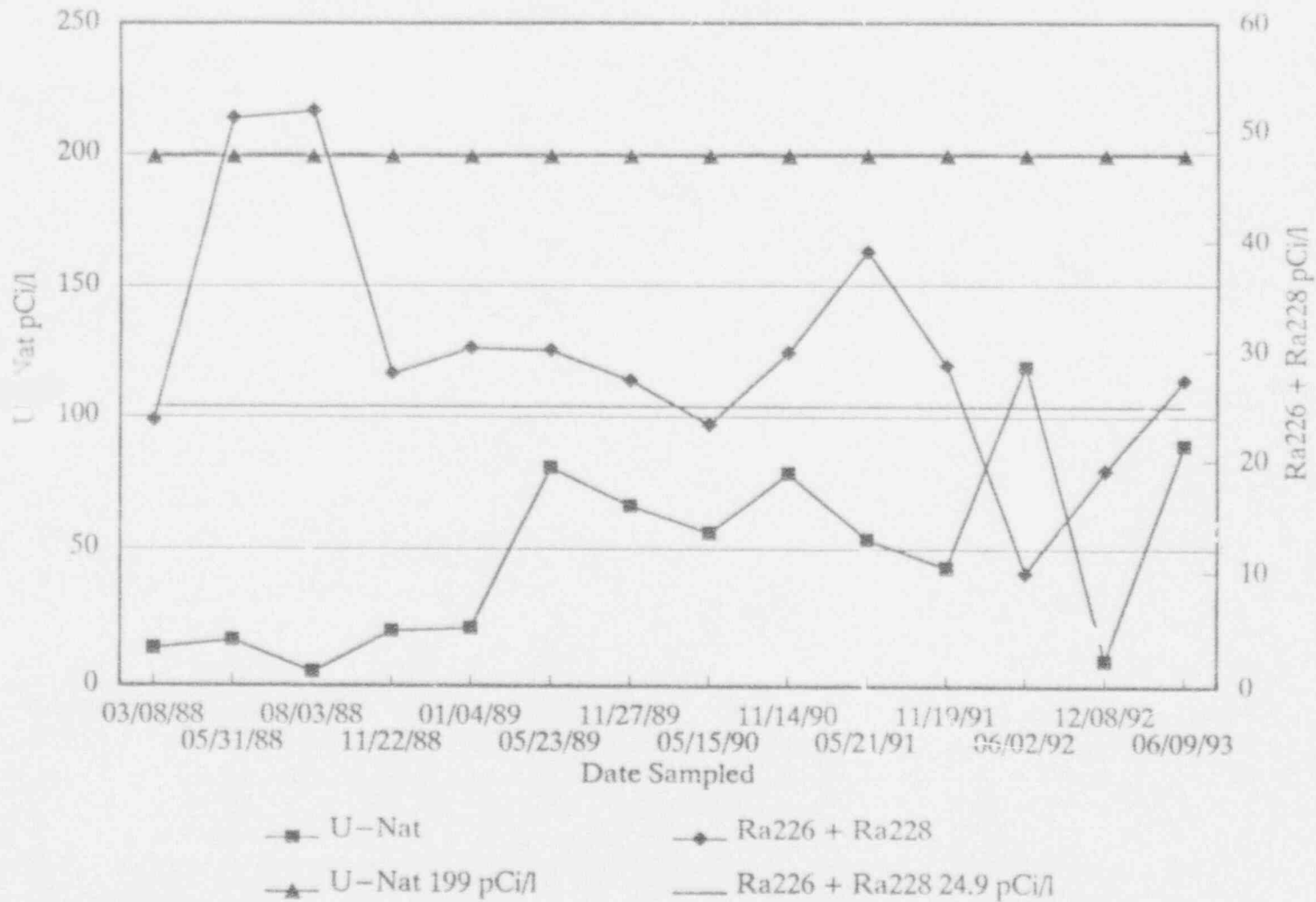
Date Sampled	11/07/91	05/13/92	11/04/92	05/18/93
UNat pCi/l	21.00	18.30	8.80	34.90
UNat % M.P.C.	0.07	0.06	0.03	0.12
Ra226 pCi/l	9.80	10.90	11.00	8.50
Ra226 Error +/-	0.90	0.60	0.90	0.50
Ra226 % M.P.C.	32.67	36.33	36.67	28.33
Ra228 pCi/l	3.60	5.40	<1.0	4.10
Ra228 Error +/-	0.90	0.50		0.40
Ra228 % M.P.C.	12.00	18.00		
Th230 pCi/l	<1.0	<0.2	<1.0	<1.0
Th230 Error +/-				
Th230 % M.P.C.				
Pb210 pCi/l	<1.0	<1.0	<1.0	1.50
Pb210 Error +/-				0.70
Pb210 % M.P.C.				1.50
Gross Alpha - U & Rn pCi/l	10.00	11.00	12.40	9.40
Gross Alpha Error +/-	3.20	3.30	3.50	2.10
As mg/l	<0.01	<0.01	<0.01	<0.01
Se mg/l	<0.005	<0.005	<0.005	<0.005
Fe mg/l	2.30	2.40	2.83	2.19
Pb mg/l	<0.01	<0.01	<0.01	
Mo mg/l	<0.01	<0.01	0.02	
Al mg/l	0.18	<0.10	<0.10	
Be mg/l	<0.01	<0.01	<0.01	<0.01
Ni mg/l	0.02	<0.01	<0.01	<0.01
Ag mg/l	0.01	<0.01	<0.01	
V mg/l	<0.01	<0.01	<0.01	
Cd mg/l	<0.005	<0.005	<0.005	
Cr mg/l	<0.01	<0.01	<0.01	
Ca mg/l	153.00	168.00	163.00	169.00
Mg mg/l	22.20	23.10	24.20	22.70
Na mg/l	18.90	16.50	19.60	18.70
K mg/l	7.90	8.71	8.70	
NH3 mg/l	<0.05	0.12	0.07	<0.05
NO3 mg/l	0.01	<0.10	<0.10	<0.10
SO4 mg/l	368.00	376.00	367.00	392.00
Cl mg/l	8.90	3.80	9.40	3.30
TDS mg/l	737.00	723.00	738.00	736.00
pH	7.05	6.93	7.13	6.41
Water Elevation	6825.54	6826.20	6825.02	6824.83



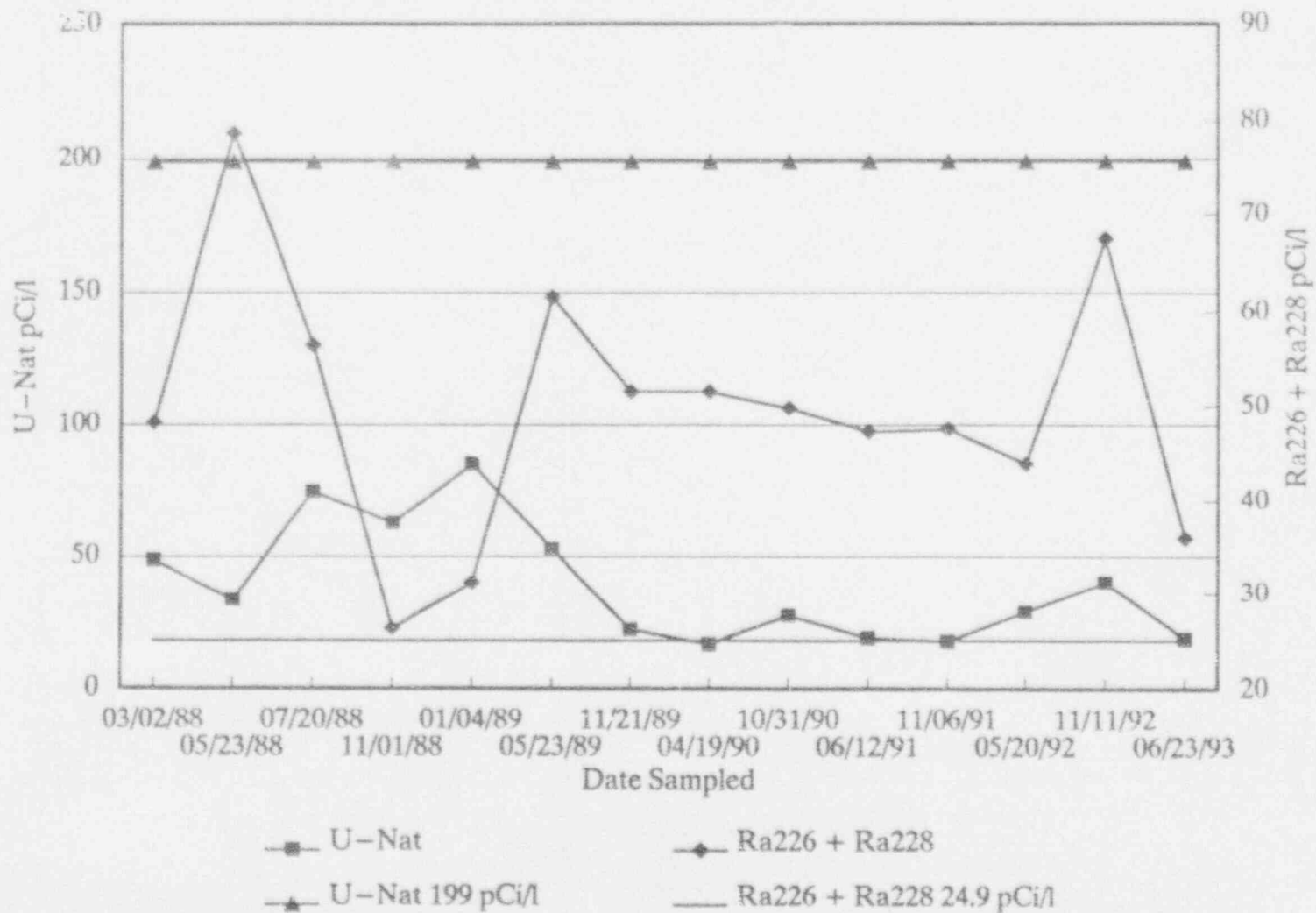
# H.W. 2 U-Nat & Ra226 + Ra228



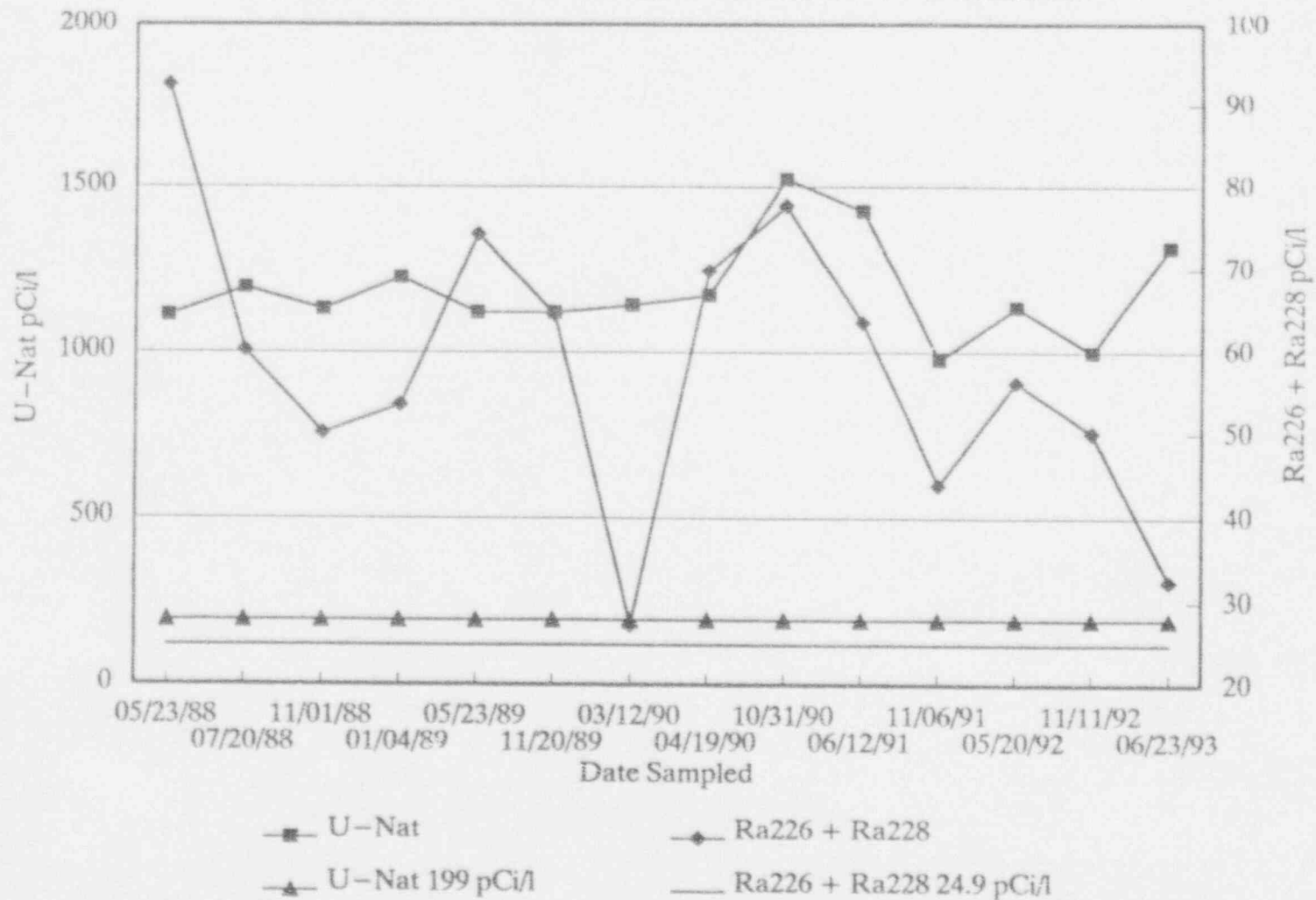
# H.W. 3 U-Nat & Ra226 + Ra228



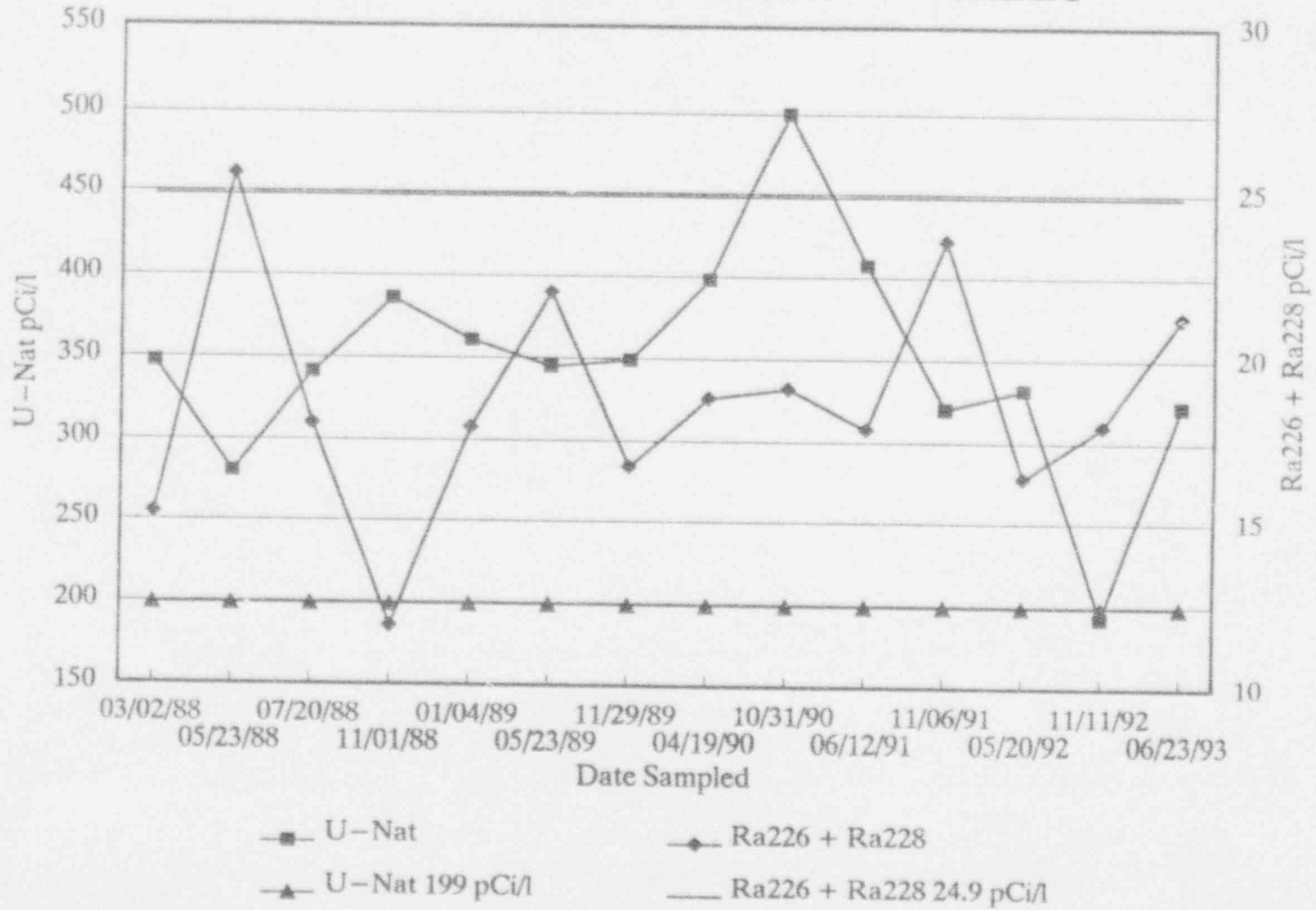
# E.W. 1 U-Nat & Ra226 + Ra228



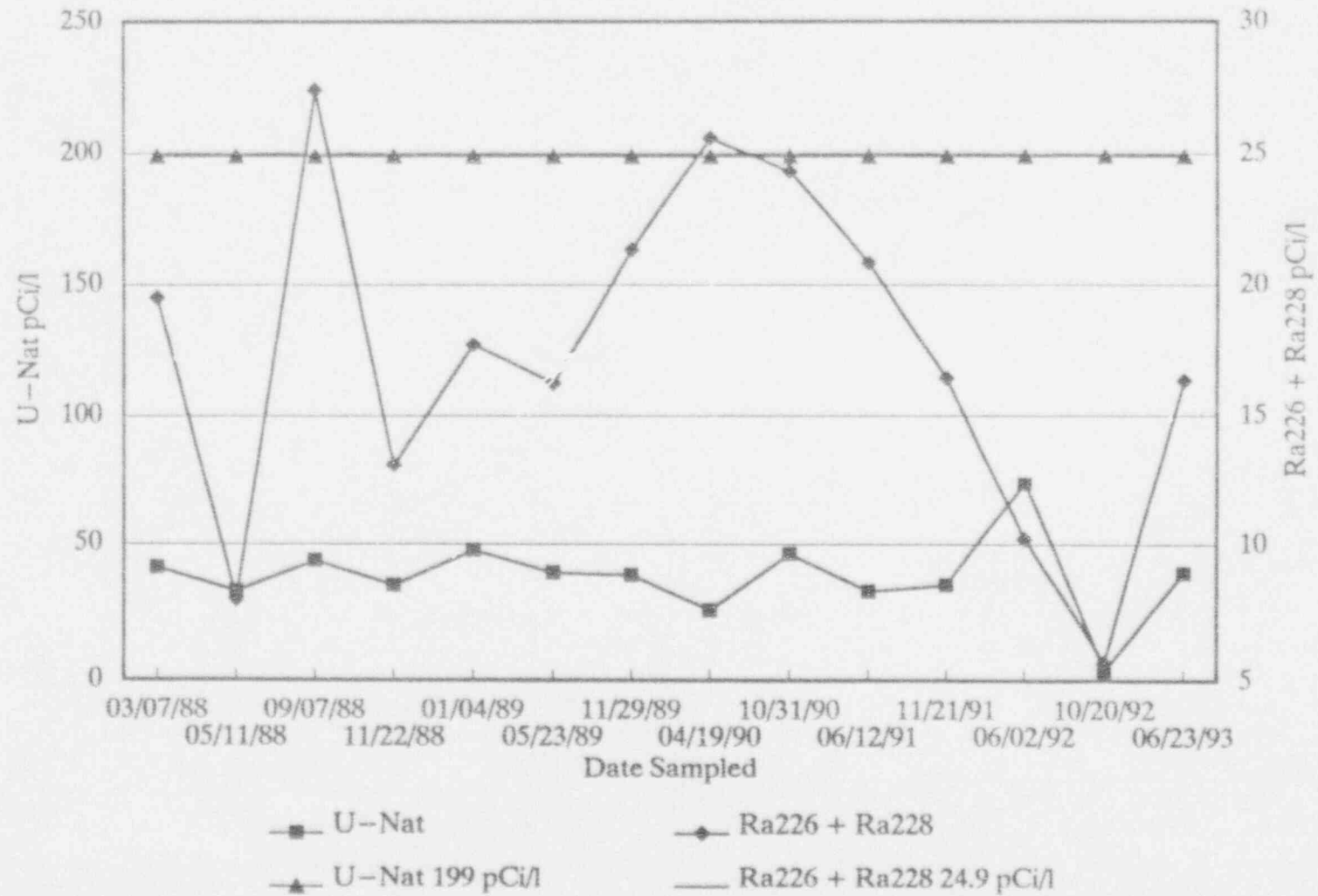
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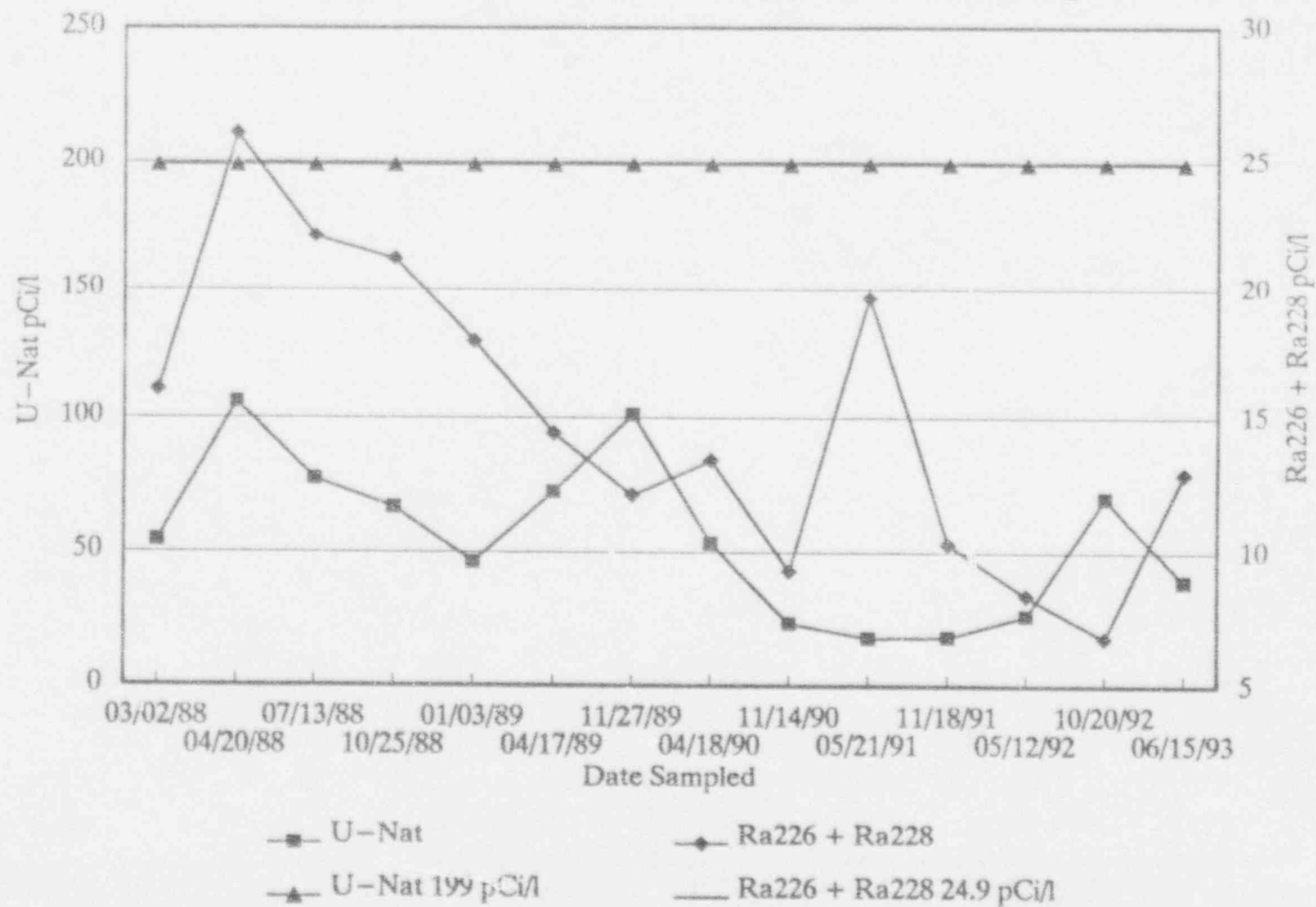
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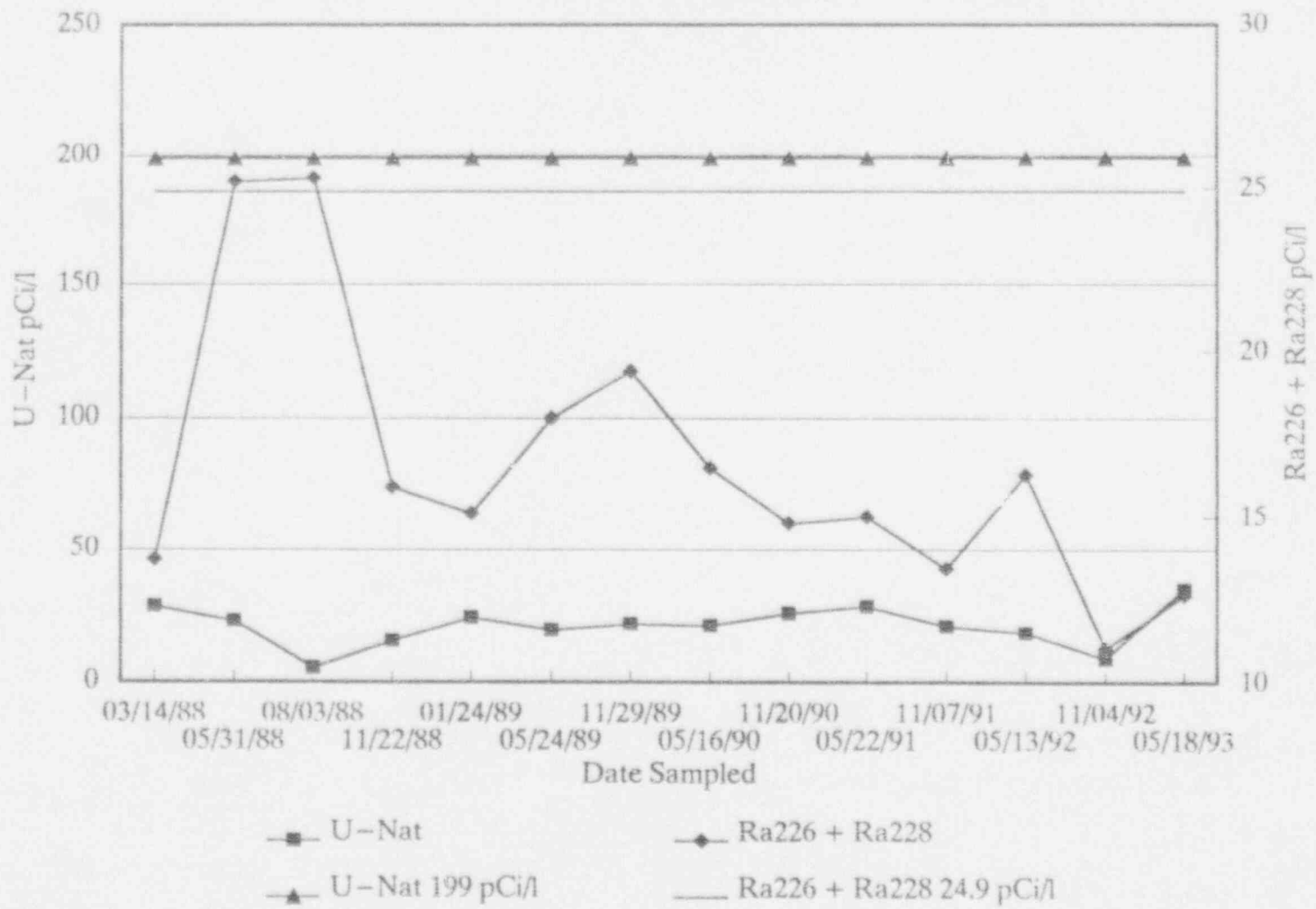
# M.W. 30 U-Nat & Ra226 + Ra228



# P.W. 5 U-Nat & Ra226 + Ra228

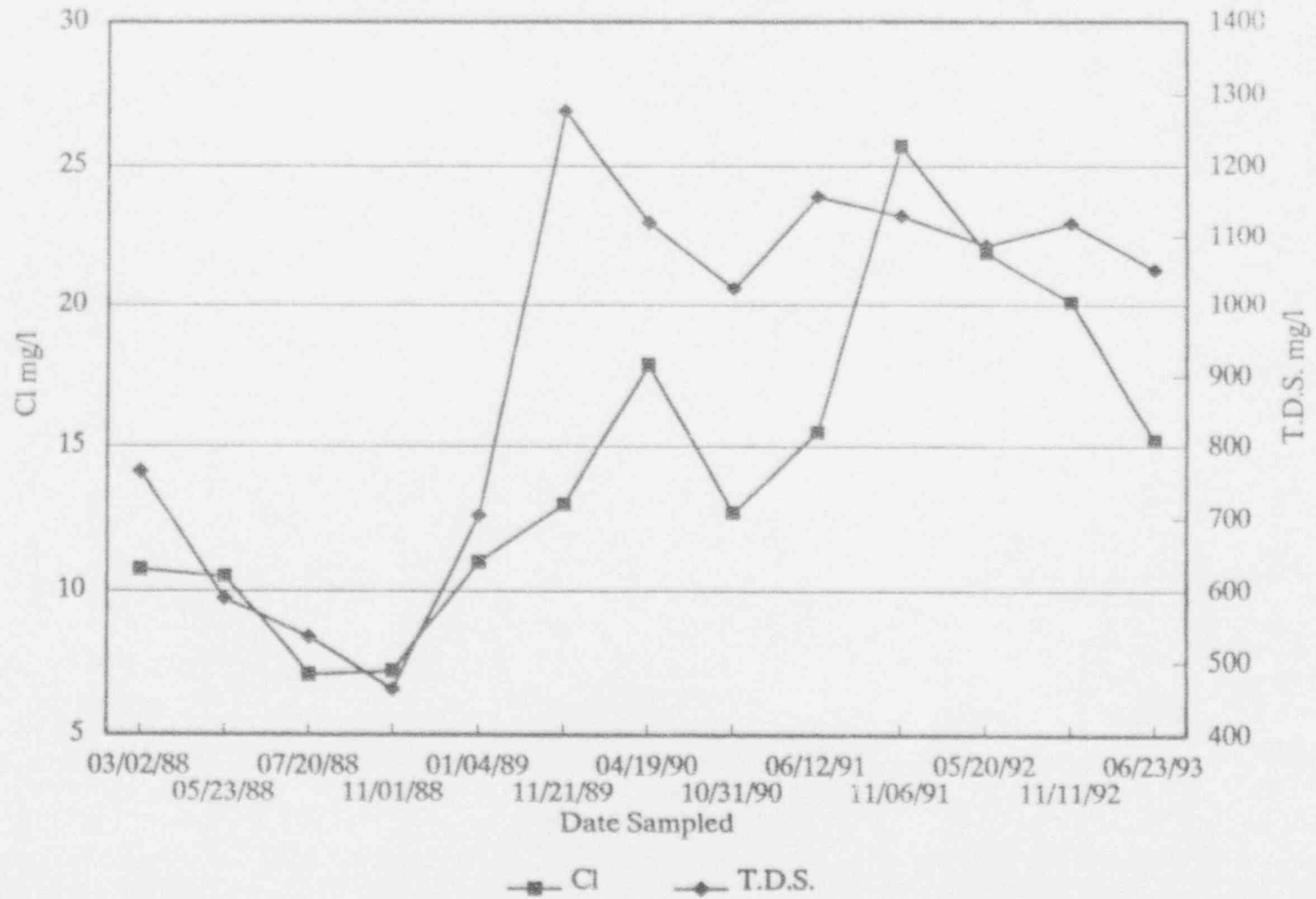


# P.W. 6 U-Nat & Ra226 + Ra228

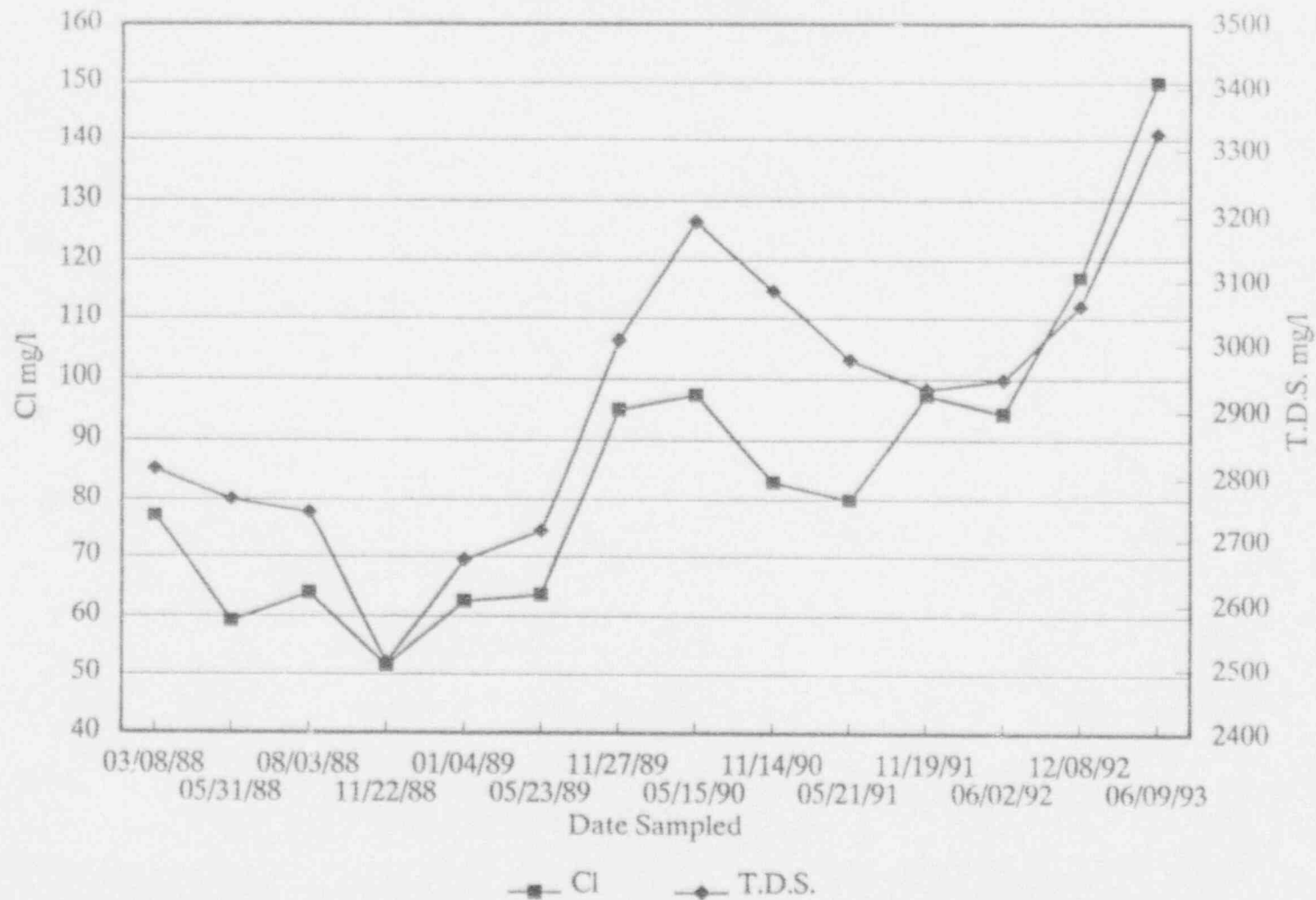




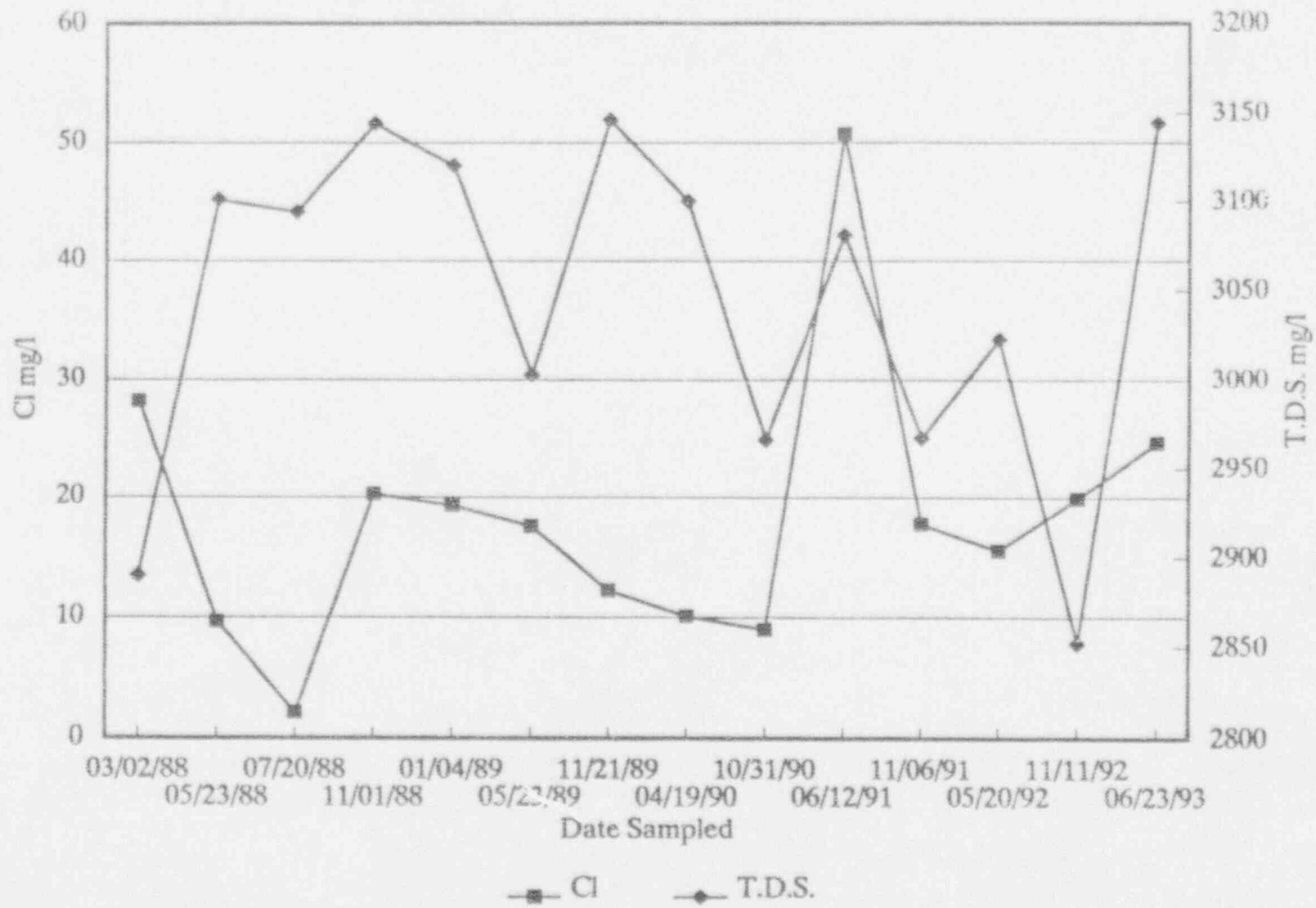
# H.W. 2 Chloride & T.D.S.



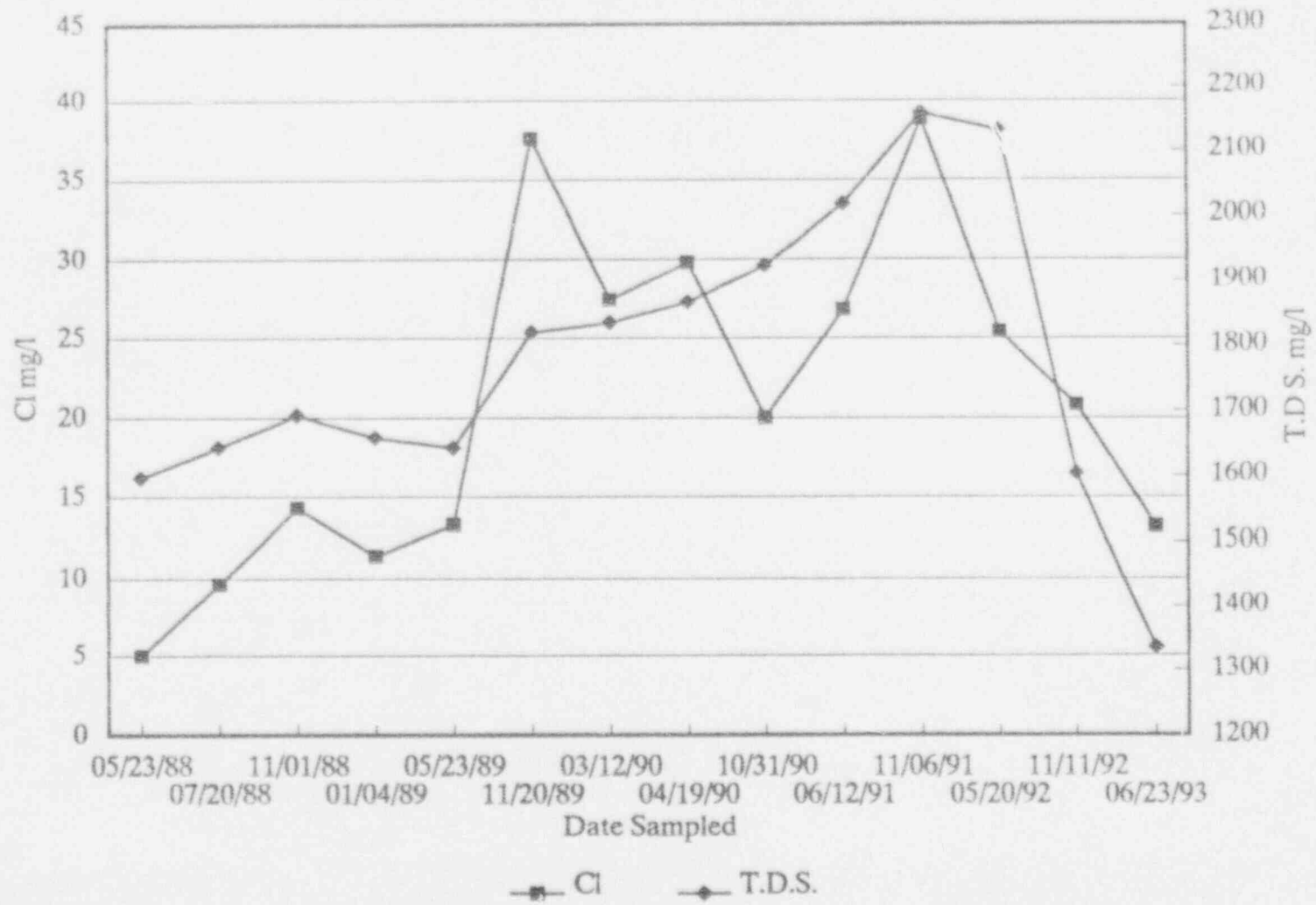
### H.W. 3 Chloride & T.D.S.



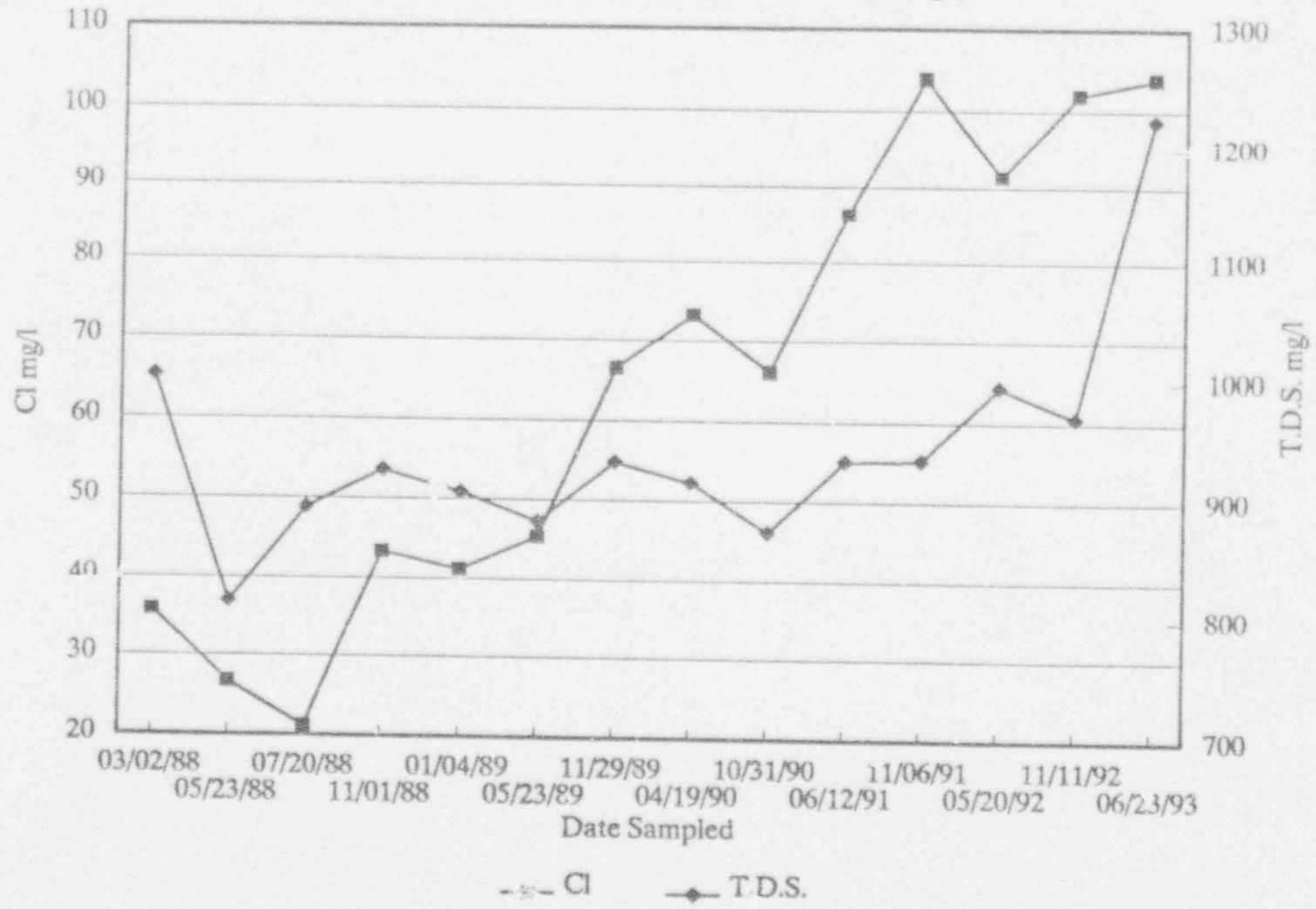
# E.W. 1 Chloride & T.D.S.



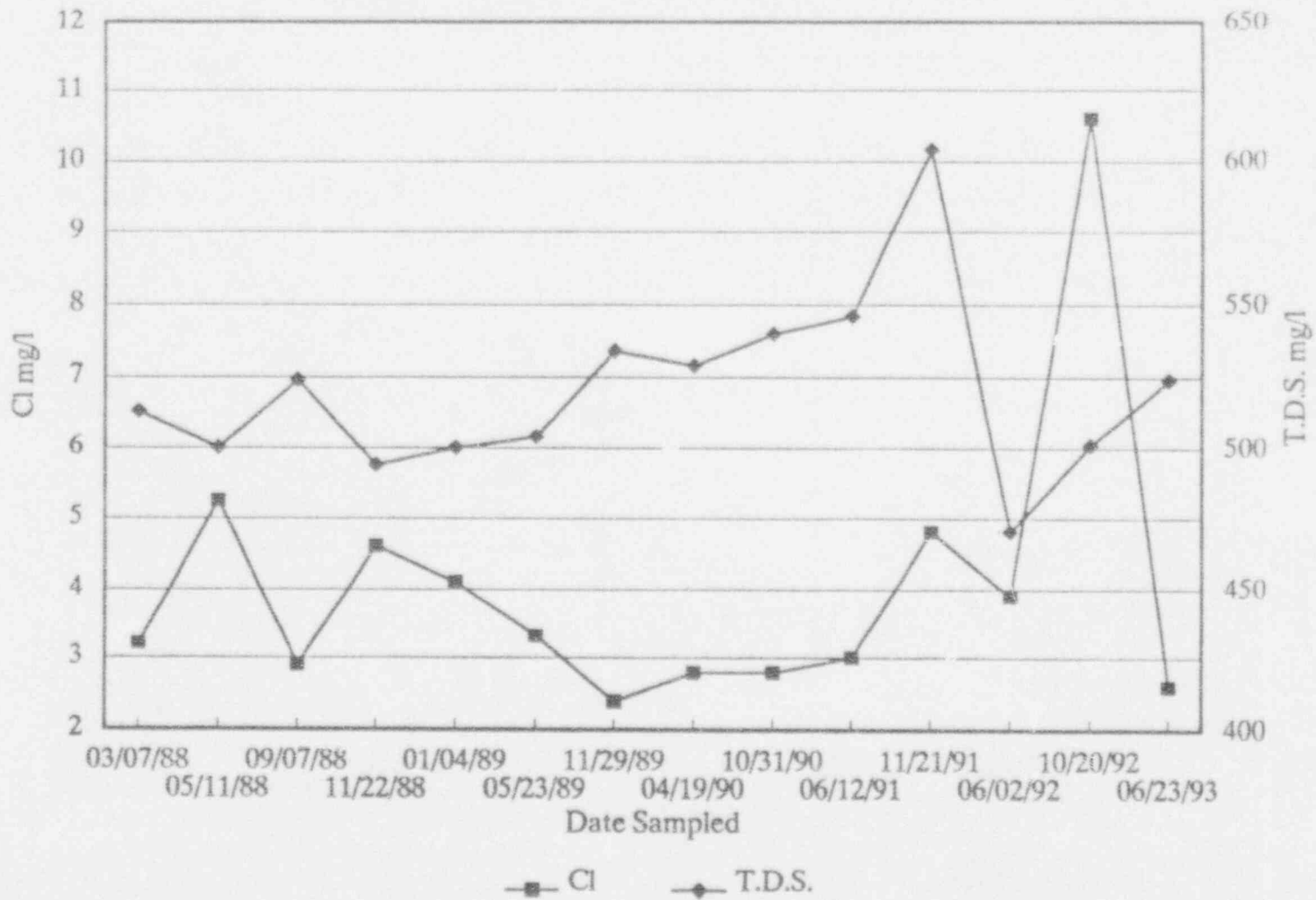
# E.W. 2 Chloride & T.D.S.



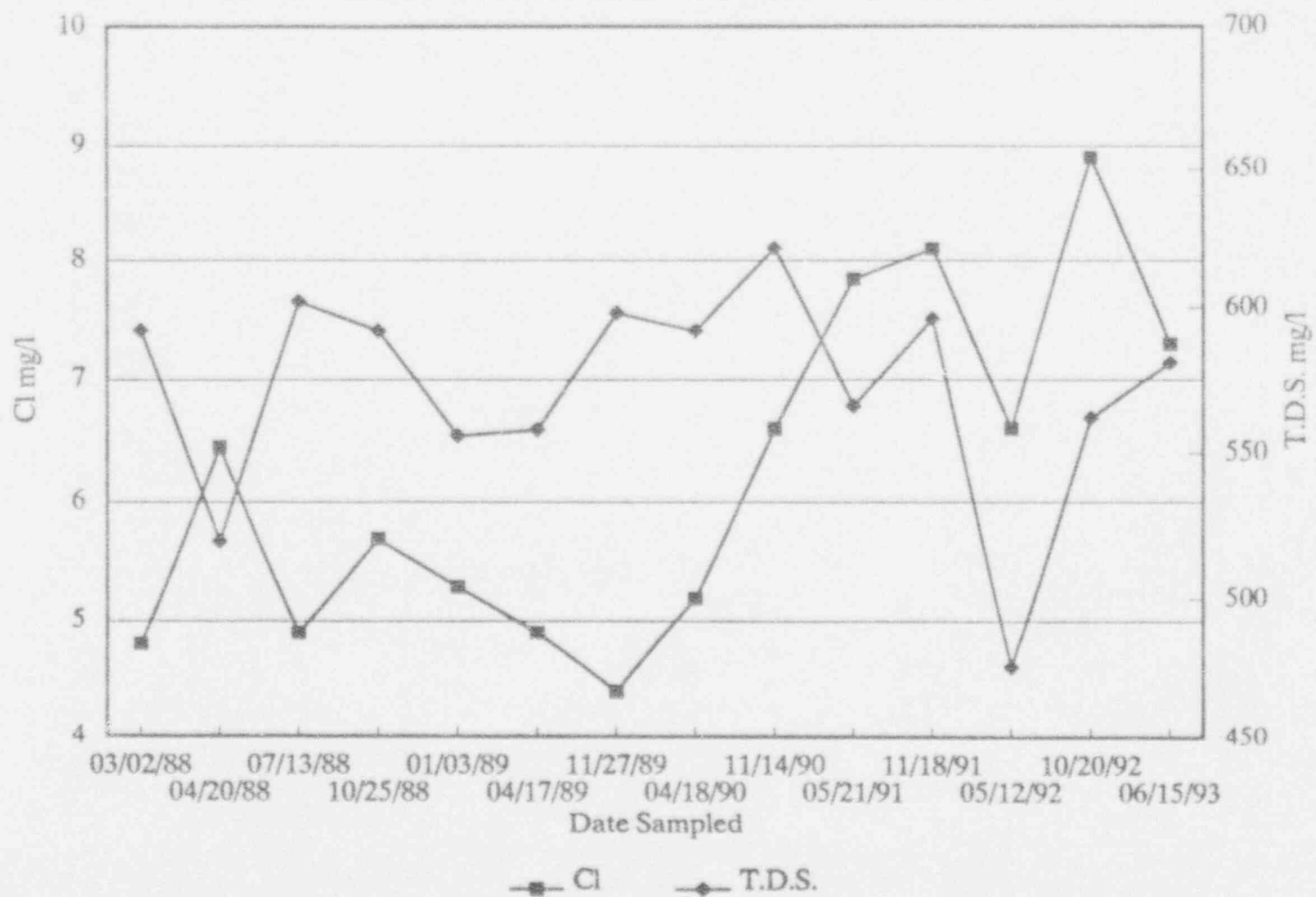
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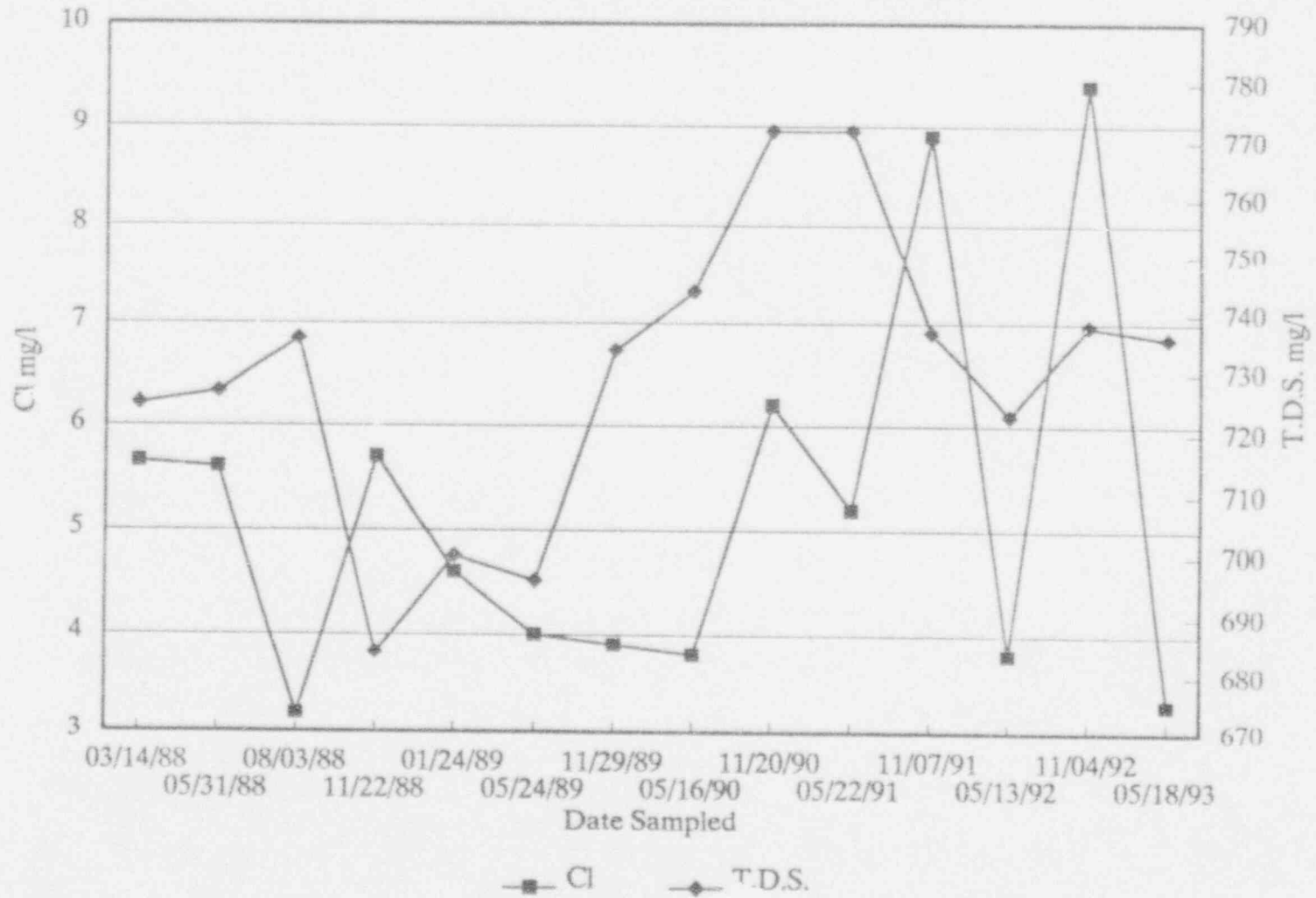
# M.W. 30 Chloride & T.D.S.



# P.W. 5 Chloride & T.D.S.

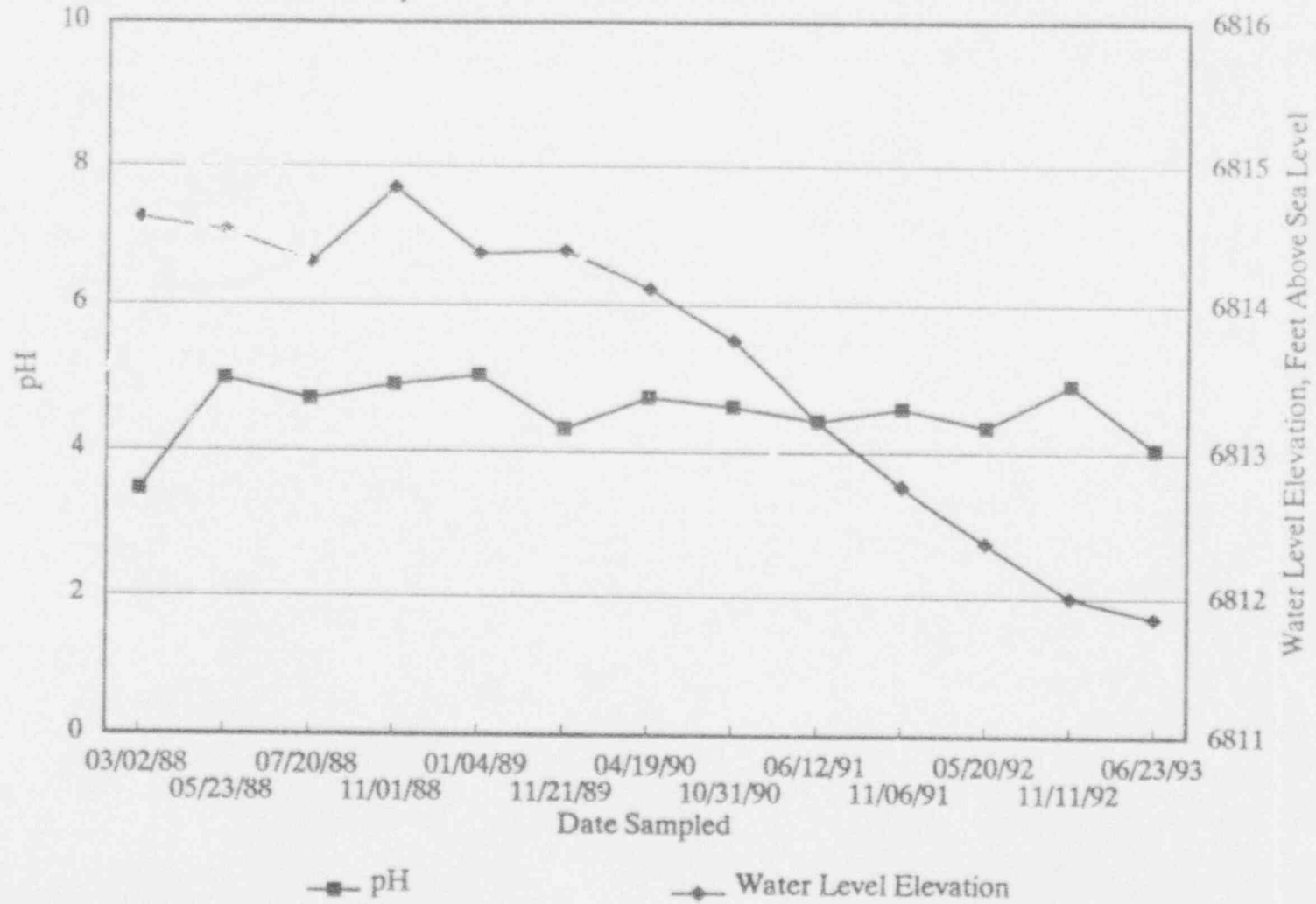


# P.W. 6 Chloride & T.D.S.

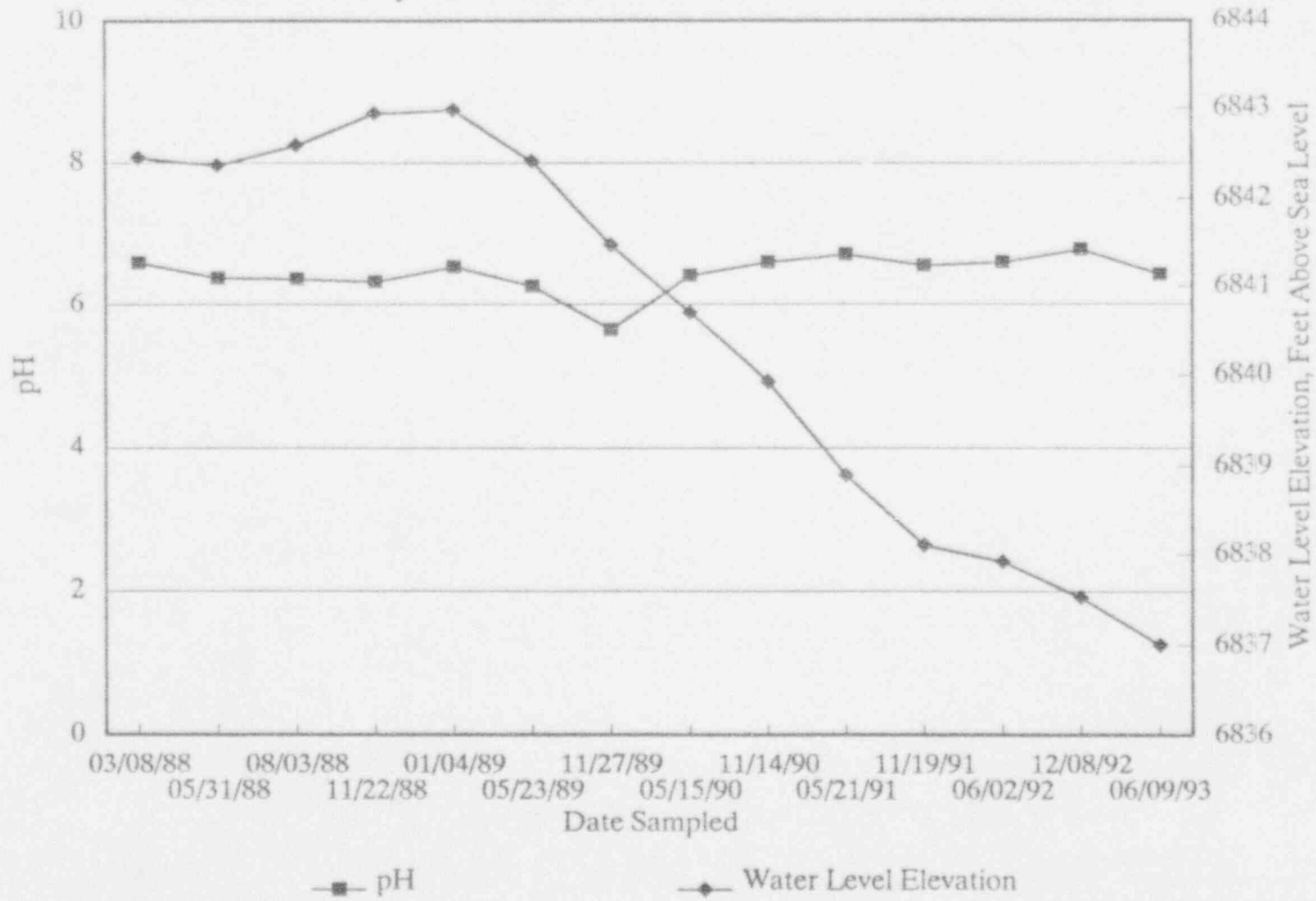




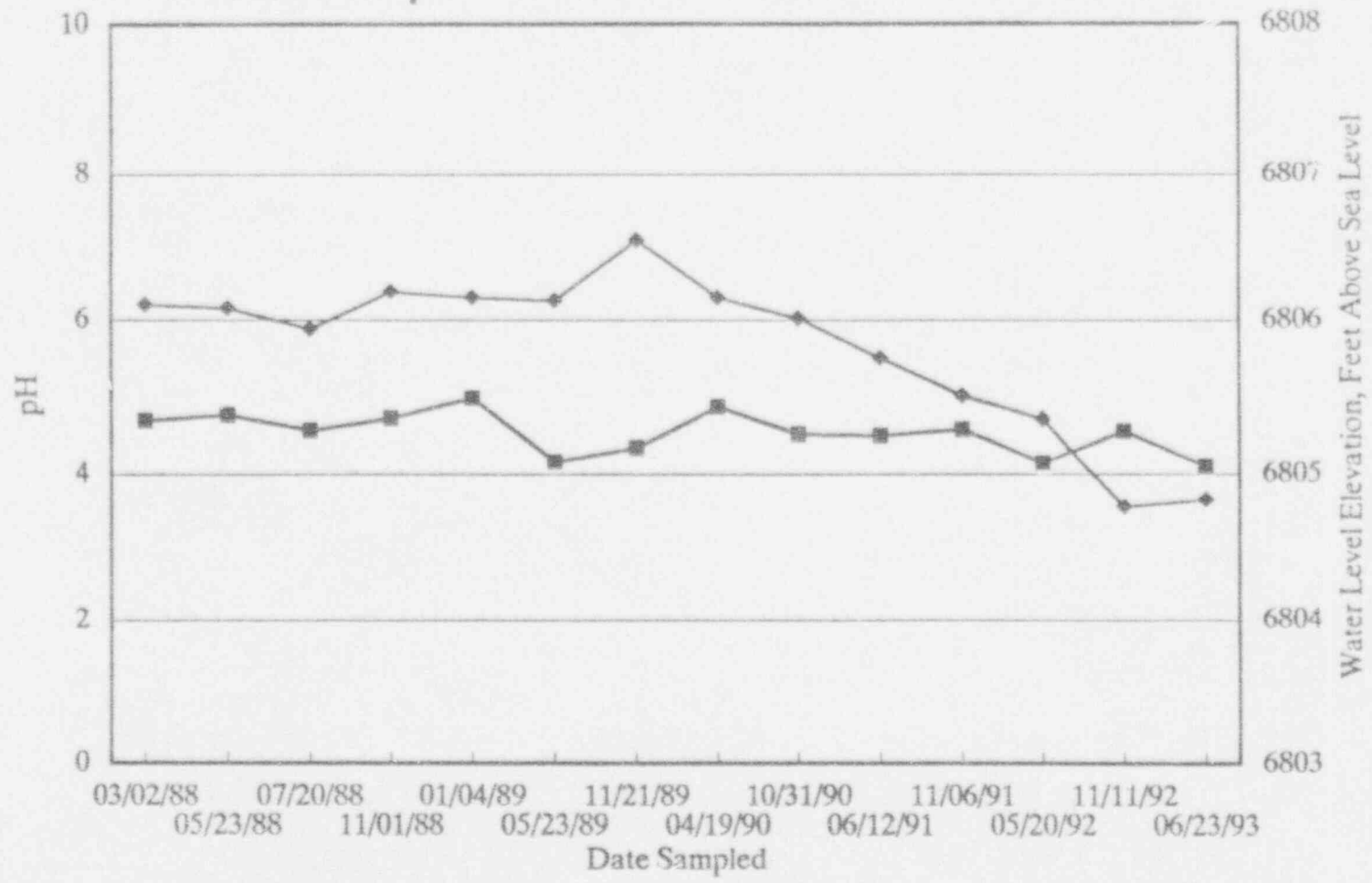
# H.W. 2 pH & Water Level Elevation



# H.W. 3 pH & Water Level Elevation

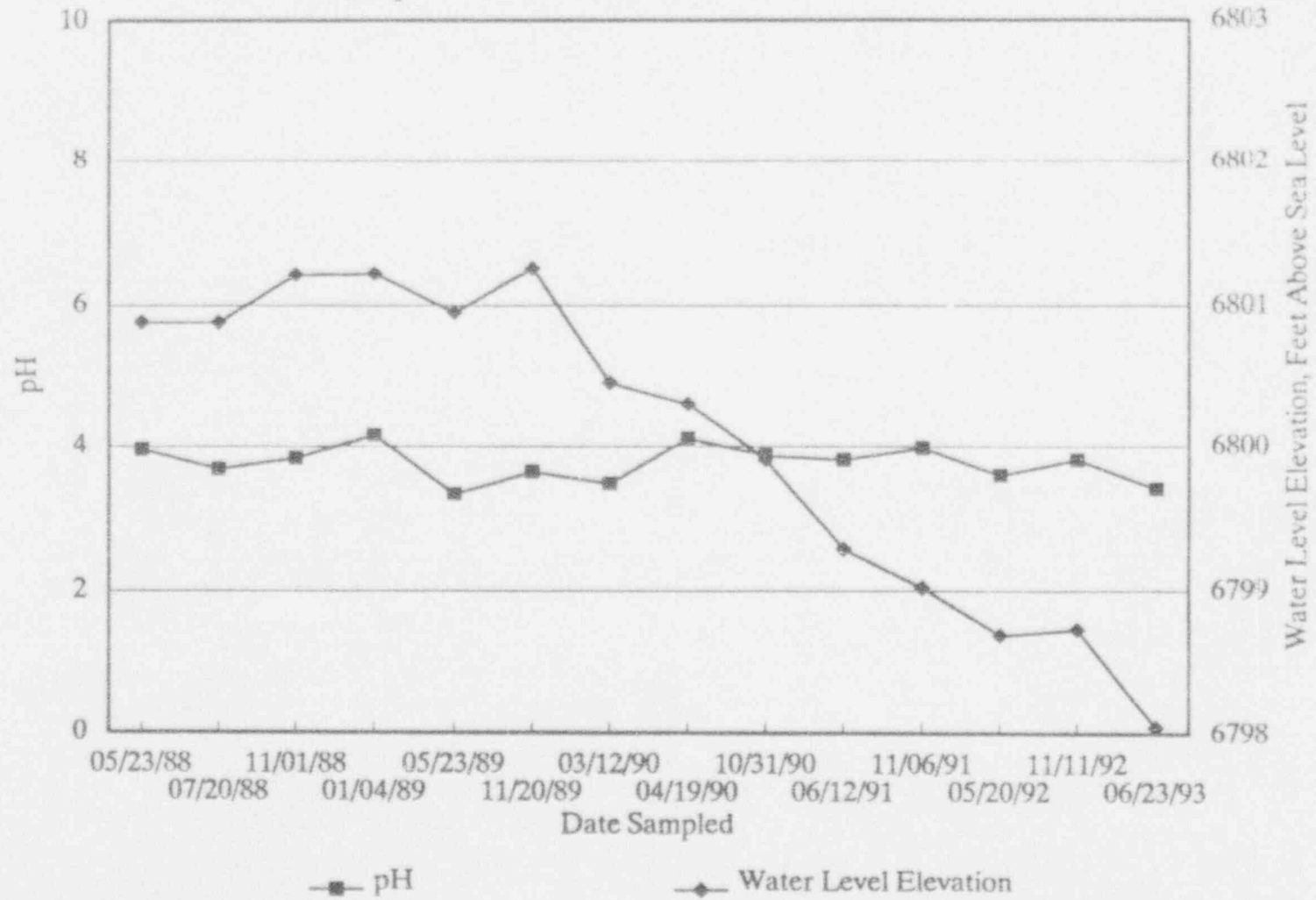


# E.W. 1 pH & Water Level Elevation

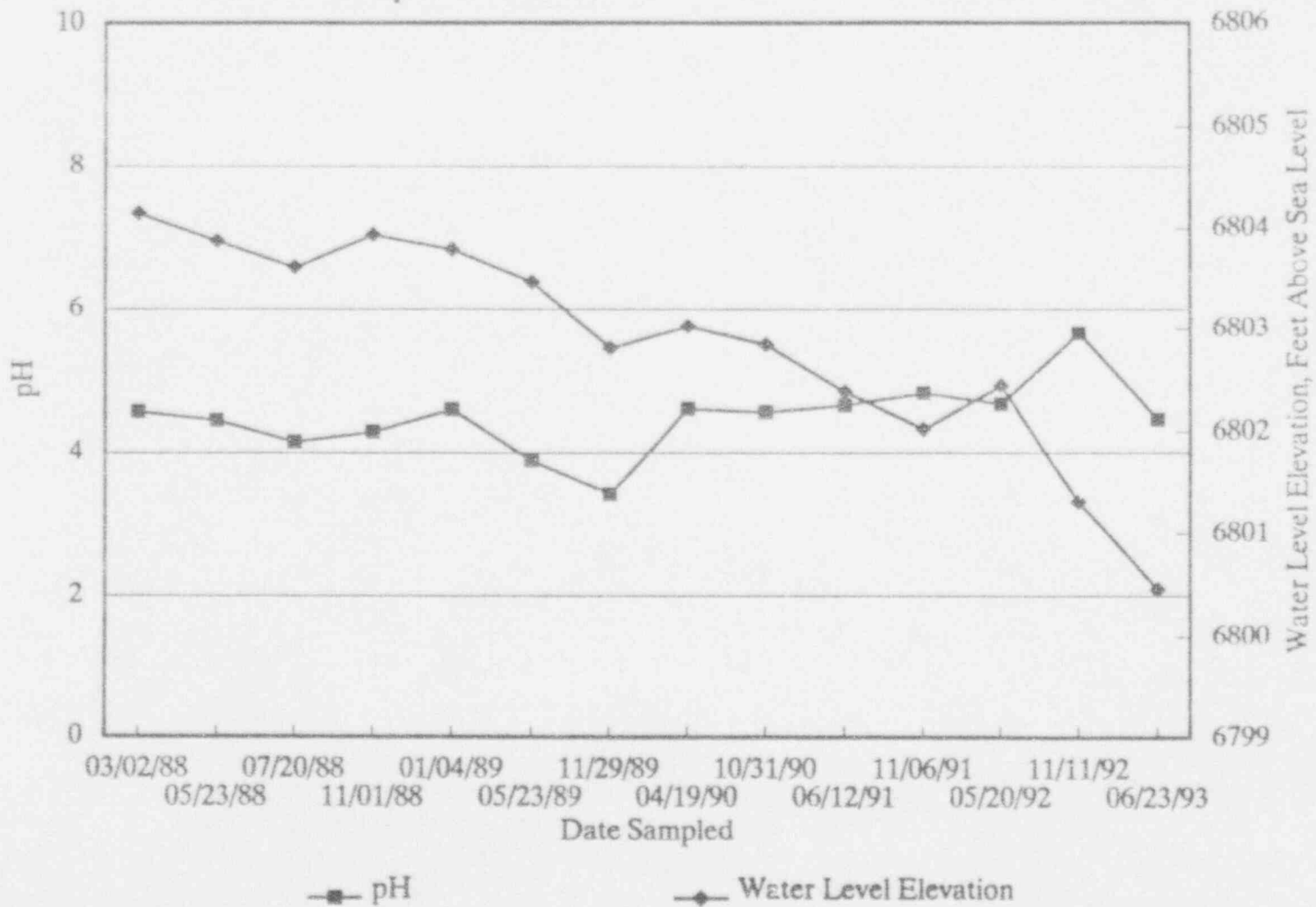


pH
  Water Level Elevation

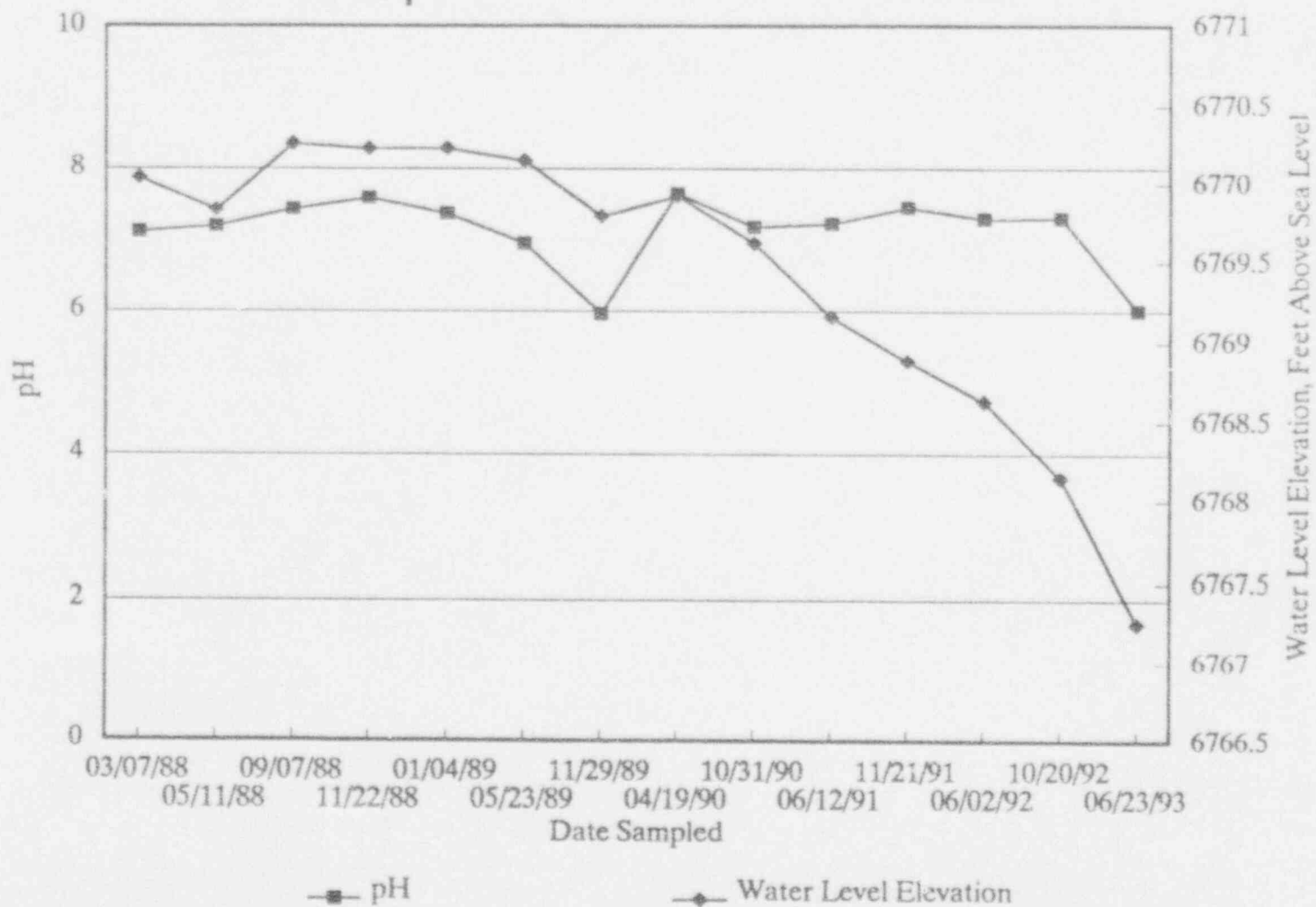
# E.W. 2 pH & Water Level Elevation



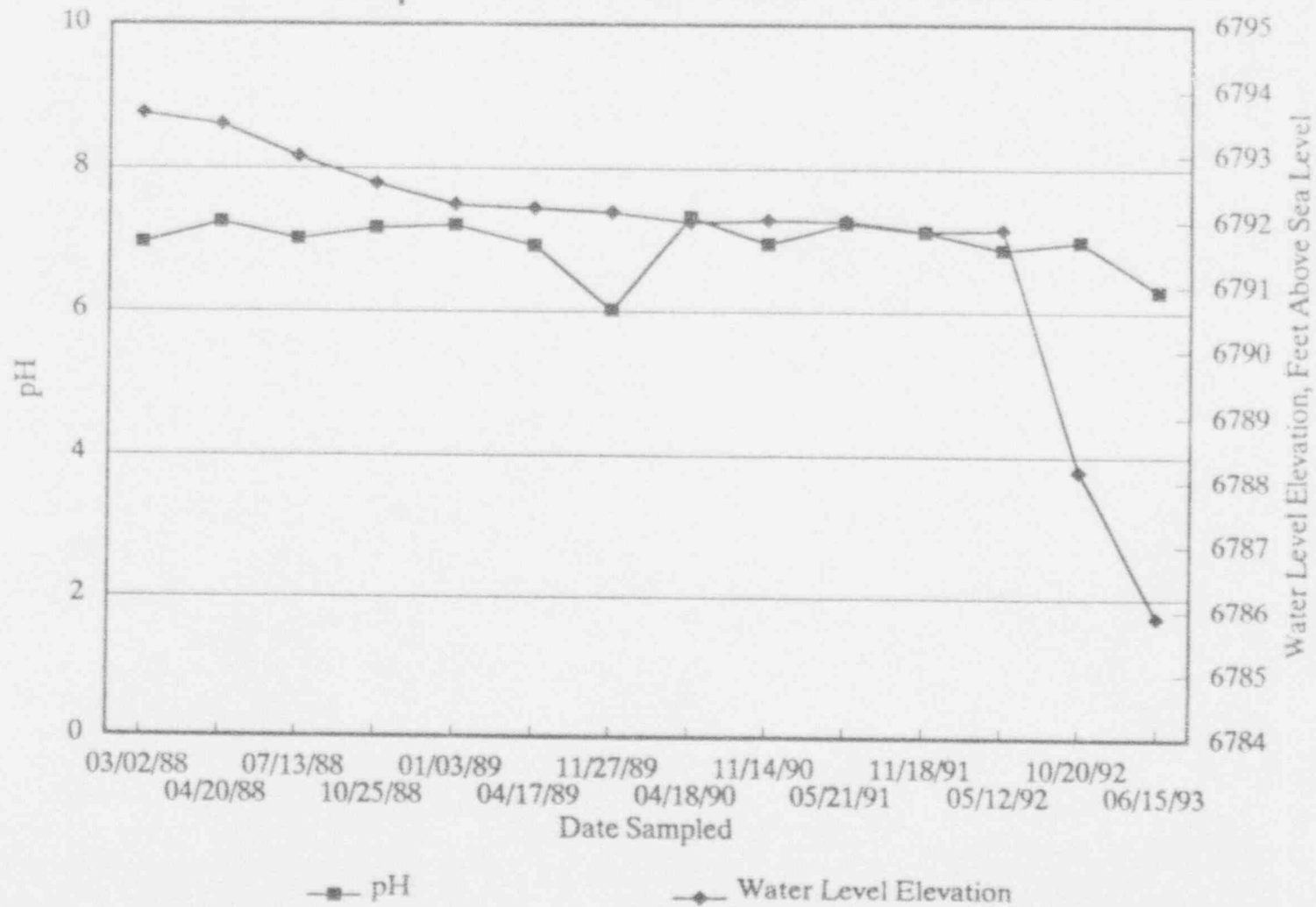
# E.W. 3 pH & Water Level Elevation



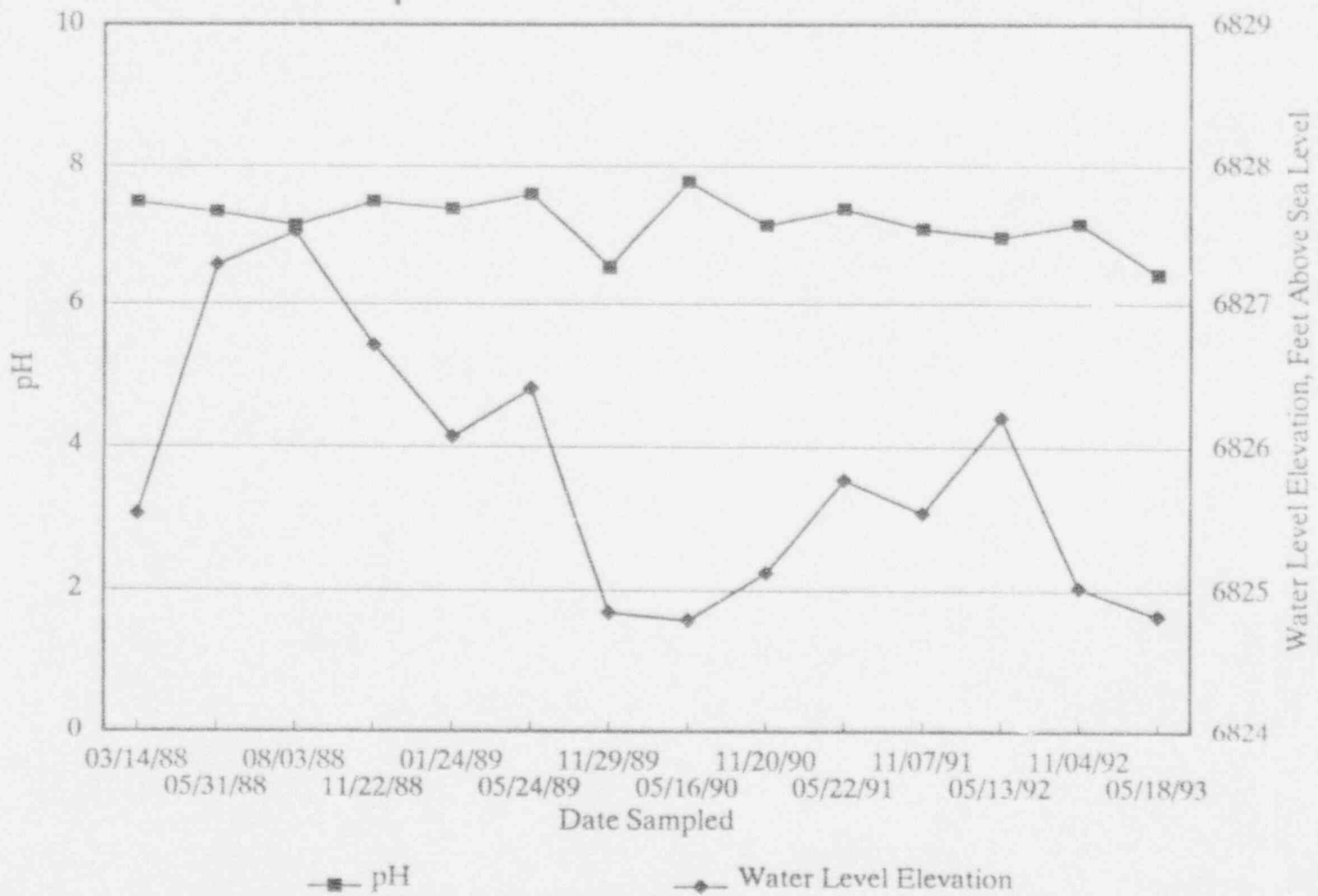
# M.W. 30 pH & Water Level Elevation



## P.W. 5 pH & Water Level Elevation



# P.W. 6 pH & Water Level Elevation





IX/RO /System - Operation Results

4.0

### IX/RO System - Operation Results

The IX/RO system facility operated effectively throughout the past twelve months. A change in operating procedures was initiated in November, 1992 when the water being treated began to receive only IX treatment, by-passing the RO membrane final polishing procedure. This action was taken after observing the clean-up phase in the IX units for a six month period. Only minimal improvement in the water cleanup could be noted by passage through the RO membranes.

The facility had a total through-put of 30,341,500 gallons, with 2,662,000 gallons of RO permeate, 1,687,000 gallons of RO reject and 25,992,455 gallons of IX water produced. This change in procedure allowed a total of 28,220,700 gallons of clean water to be re-injected. Of this total, 17,492,400 gallons were injected through eleven wells in the Inactive Tailings pile area into the Lower Wind River (LWR) aquifer. 10,728,300 gallons were injected through seven wells in the A-9 below-grade tailings area into the Upper Wind River (UWR) aquifer. A water balance tabulation is in Appendix 5-1. Raw water pumped from each area is tabulated in Appendix 5-2 and clean water re-injected into each area wells is tabulated in Appendix 5-3.

The effectiveness of the system is shown by comparing the assay data tabulations for the blended raw water, the softened water and the de ionized (IX) water. Data tabulations and certain element graphics follow this discussion on the next few pages. The analyses cover a period from 11/04/92 through 08/23/93.

ANALYSES FOR I.X. R.O. RAW FEED WATER

Date Sampled	11/04/92	11/11/92	12/15/92	01/13/93	02/24/93	03/22/93	04/21/93	05/24/93	06/21/93	07/26/93	08/25/93
UNat pCi/l	31.80	63.50	81.50	68.00	78.50	45.00	56.50	46.50	70.30	23.00	93.30
UNat % M.P.C.	0.11	0.21	0.27	0.23	0.26	0.15	0.19	0.16	0.23	0.08	0.31
Ra226 pCi/l	23.50	8.30	25.20	27.10	26.30	28.90	23.30	20.20	21.20	22.30	30.30
Ra226 Error +/-	1.80	0.60	2.40	2.00	1.40	1.50	1.50	1.50	1.50	1.50	1.80
Ra226 % M.P.C.	78.67	27.67	84.00	90.33	87.67	96.33	77.67	67.33	70.67	74.33	101.00
Ra228 pCi/l	7.10	2.50	13.90	6.40	11.10	16.30	5.90	9.60	7.60	4.30	<1.0
Ra228 Err. +/-	0.50	0.70	1.10	2.60	0.60	1.20	0.80	0.50	1.50	0.80	<1.0
Ra228 % M.P.C.	23.67	8.33	46.33	21.33	37.00	54.33	19.67	32.00	25.33	14.33	<1.0
Th230 pCi/l	<1.0	<1.0	15.00	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-			4.60								
Th230 % M.P.C.			0.75								
Pb210 pCi/l	1.10	6.50	<1.0	<1.0	<1.0	2.10	<1.0	1.10	<1.0	5.00	3.70
Pb210 Error +/-	1.00	0.80				0.50		0.70		0.60	0.30
Pb210 % M.P.C.	1.10	5.50				2.10		1.10		5.00	3.70
Gross Alpha pCi/l	25.20	8.70	25.90	27.50	26.90	29.30	24.60	21.50	23.00	28.70	30.50
Gross Alpha Error +/-	5.00	2.90	5.10	5.30	5.20	5.40	4.90	2.70	4.80	5.40	5.50
As mg/l	0.005	0.06	0.06	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	0.006	0.009
Se mg/l	<0.005	0.012	<0.005	0.010	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	0.001
Fe mg/l	47.70	55.80	48.10	80.90	49.40	49.60	42.00	51.80	22.60	34.30	64.80
Pb mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Mn mg/l	<0.01	0.01									
Al mg/l	2.86	3.95	3.95	2.42	3.56	3.36	2.73	2.89	1.86	2.45	9.41
Be mg/l	0.04	0.05	0.04	0.02	0.05	0.04	0.04	0.05	0.03	2.54	9.40
Ni mg/l	0.29	0.35	0.30	0.19	0.30	0.34	0.31	0.34	0.15	<0.01	0.06
Ag mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.22	0.63
V mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cr mg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cd mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Ca mg/l	249.00	213.00	211.00	211.00	234.00	228.00	174.00	213.00	191.00	218.00	271.00
Mg mg/l	54.80	44.80	48.80	41.30	52.90	53.00	42.20	45.20	37.10	45.00	69.20
Na mg/l	66.80	60.00	60.50	38.80	49.80	50.00	110.00	54.60	101.00	46.50	65.00
K mg/l	14.20	13.60									
NH3 mg/l	7.94	8.80	<0.10	8.05	<0.10	<0.10	<0.10	0.10	<0.10	<0.10	<0.10
NO3 mg/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SO4 mg/l	875.00	931.00	893.00	696.00	773.00	844.00	829.00	834.00	643.00	779.00	1125.00
Cl mg/l	188.00	199.00	153.00	234.00	186.00	156.00	224.00	188.00	234.00	150.00	175.00
SiO2 mg/l	1410.00	1439.00	1464.00	1246.00	22.60	25.10	1397.00	22.30	26.40	25.60	25.30
TDS mg/l	3.26	3.26	3.03	3.19	1455.00	1514.00	1372.00	1372.00	1241.00	1210.00	1886.00
pH					3.40	3.27	3.90	2.91	3.95	3.15	3.15

WATER ANALYSES FOR I.X.R.O. SOFTENER

Date Sampled	11/04/92	12/15/92	02/24/93	03/22/93	04/21/93	05/24/93	06/21/93	07/26/93	08/23/93
UNat pCi/l	6.10	17.50	26.30	6.00	29.20	160.00	6.90	1.40	121.00
UNat % M.P.C.	0.02	0.06	0.09	0.02	0.10	0.53	0.02	0.00	0.40
Ra226 pCi/l	0.70	0.80	0.50	<1.0	1.00	0.90	1.30	0.60	17.30
Ra226 Error +/-	0.20	0.30	0.20	0.20	0.20	0.20	0.60	0.30	0.80
Ra226 % M.P.C.	2.33	2.67	1.67		3.33	3.00	4.33	2.67	57.67
Ra228 pCi/l	1.70	2.70	<1.0	2.70	<1.0	1.30	<1.0	2.30	3.20
Ra228 Error +/-	0.50	0.30		0.50		0.50	1.40	1.40	0.60
Ra228 % M.P.C.	5.67	9.00		9.00		4.33	7.67	7.67	10.67
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-									
Th230 % M.P.C.	0.00								
Pb210 pCi/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.20
Pb210 Error +/-									0.50
Pb210 % M.P.C.	0.00								3.20
Gross Alpha pCi/l	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	1.00	<5.0	22.10
Gross Alpha Error +/-							1.00		4.70
As mg/l	0.004	0.04	0.06	0.01	<0.01	0.01	<0.01	0.035	0.005
Se mg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	0.001
Fe mg/l	1.51	1.01	1.74	0.29	2.06	0.79	0.20	0.23	49.10
Pb mg/l	<0.01								
Mn mg/l	<0.01		0.13	0.04	0.17	0.05	0.02	0.01	8.23
Mo mg/l	<0.01								
Al mg/l	0.16	0.51	0.35	0.21	0.50	0.20	<0.10	<0.10	7.29
Be mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.06
Ni mg/l	<0.01	<0.01	0.05	<0.01	<0.01	<0.01	0.01	<0.01	0.57
Ag mg/l	<0.01								
V mg/l	<0.01								
Cd mg/l	0.008								
Cr mg/l	<0.01								
Ca mg/l	6.34	5.60	3.60	2.00	5.70	2.84	2.40	1.30	222.00
Mg mg/l	1.99	0.95	2.20	<1.0	3.40	0.55	0.30	0.19	68.50
Na mg/l	557.00	499.00	472.00	519.00	488.00	482.00	446.00	472.00	144.00
K mg/l	2.36								
NH3 mg/l	0.48								
NO3 mg/l	<0.10	<0.10	<0.10	<0.10	<0.10	0.20	<0.01	<0.10	0.22
SO4 mg/l	872.00	886.00	875.00	887.00	831.00	822.00	588.00	745.00	1112.00
Cl mg/l	193.00	155.00	174.00	163.00	176.00	188.00	244.00	163.00	179.00
SiO2 mg/l	1508.00	1460.00	23.10	22.20	1508.00	23.00	24.40	21.60	24.90
TDS mg/l	3.72	3.03	1446.00	1520.00	1377.00	1390.00	1377.00	1297.00	1920.00
pH			3.40	3.27	3.95	2.94	2.80	4.69	4.50

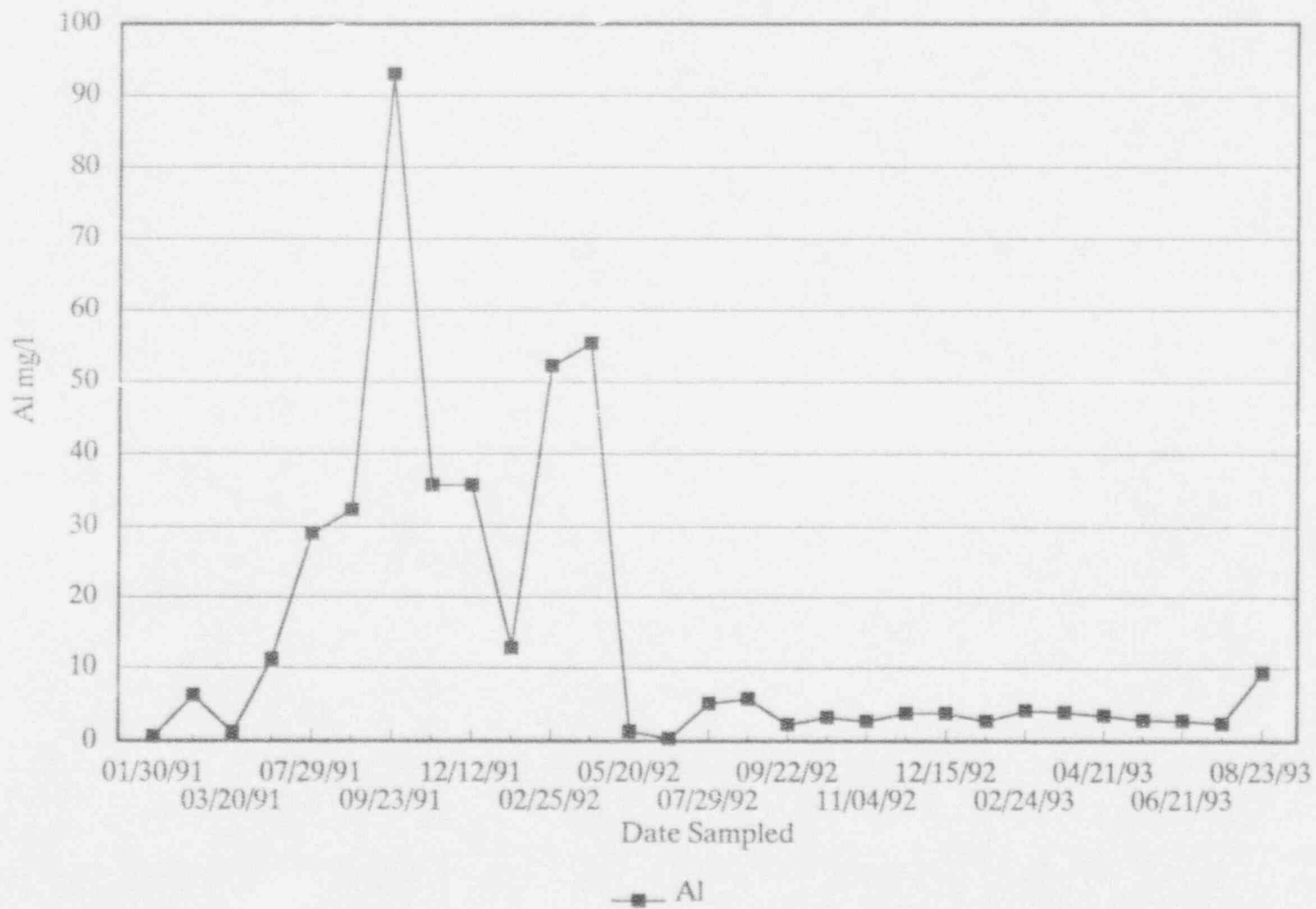
WATER ANALYSES FOR I.X./RO, I.X. UNIT

Date Sampled	11/04/92	12/15/92	02/24/93	03/22/93	04/21/93	05/24/93	06/21/93	07/26/93	08/23/93
UNat pCi/l	13.50	9.20	18.80	6.00	12.10	13.70	5.50	<0.2	112.00
UNat % M.P.C.	0.05	0.03	0.06	0.02	0.04	0.05	0.02	0.00	0.37
Ra226 pCi/l	1.60	<0.2	0.90	<1.0	1.30	0.90	0.90	0.80	18.10
Ra226 Error +/-	0.30		0.40		0.20	0.20	0.20	0.30	0.80
Ra226 % M.P.C.	5.33		3.00		4.33	3.00	3.00	2.67	60.33
Ra228 pCi/l	1.40	<1.0	<1.0	2.00	2.30	<1.0	<1.0	1.90	<1.0
Ra228 Error +/-	0.40			0.40	0.80			0.50	
Ra228 % M.P.C.	4.67			6.67	7.67			6.33	
Th230 pCi/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Th230 Error +/-									
Th230 % M.P.C.	0.00								
Pb210 pCi/l	4.50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Pb210 Error +/-	1.10								
Pb210 % M.P.C.	4.50								
Gross Alpha pCi/l	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<5.0	18.20
Gross Alpha Error +/-									4.30
As mg/l	0.004	0.04	0.06	0.01	<0.01	<0.01	0.01	0.003	0.074
Se mg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	0.001
Fe mg/l	1.71	0.56	0.83	0.56	0.52	0.69	0.23	<0.10	47.20
Pb mg/l	<0.01								
Mo mg/l	0.02								
Mn mg/l			0.10	0.04	0.14	0.06	0.02	0.02	7.75
Al mg/l	0.20		0.33	0.18	0.40	0.12	<0.10	0.15	8.90
Be mg/l	<0.01	0.46	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.05
Ni mg/l	<0.01	<0.01	0.04	<0.01	0.01	<0.01	<0.01	<0.01	0.51
Ag mg/l	<0.01	<0.01							
V mg/l	<0.01								
Cd mg/l	0.005								
Cr mg/l	0.01								
Ca mg/l	6.80	5.90	4.30	2.00	4.50	3.25	2.90	1.63	244.00
Mg mg/l	1.90	1.06	1.80	<1.0	3.30	0.80	0.40	0.32	63.70
Na mg/l	549.00	495.00	461.00	520.00	473.00	465.00	451.00	443.00	140.00
K mg/l	2.90								
NH3 mg/l	0.58								
NO3 mg/l	<0.10	<0.10	<0.10	<0.10	<0.10	0.20	<0.01	<0.10	<0.10
SO4 mg/l	778.00	853.00	657.00	848.00	616.00	752.00	644.00	771.00	1123.00
Cl mg/l	248.00	154.00	186.00	210.00	169.00	185.00	251.00	160.00	172.00
SiO2 mg/l	1510.00	1486.00	20.70	22.70	1514.00	22.00	22.40	23.20	25.4
TDS mg/l	3.55	3.46	1436.00	1524.00	3.87	1356.00	1344.00	1287.00	1936.00
pH			3.40	3.37		3.63	3.19	4.13	4.10

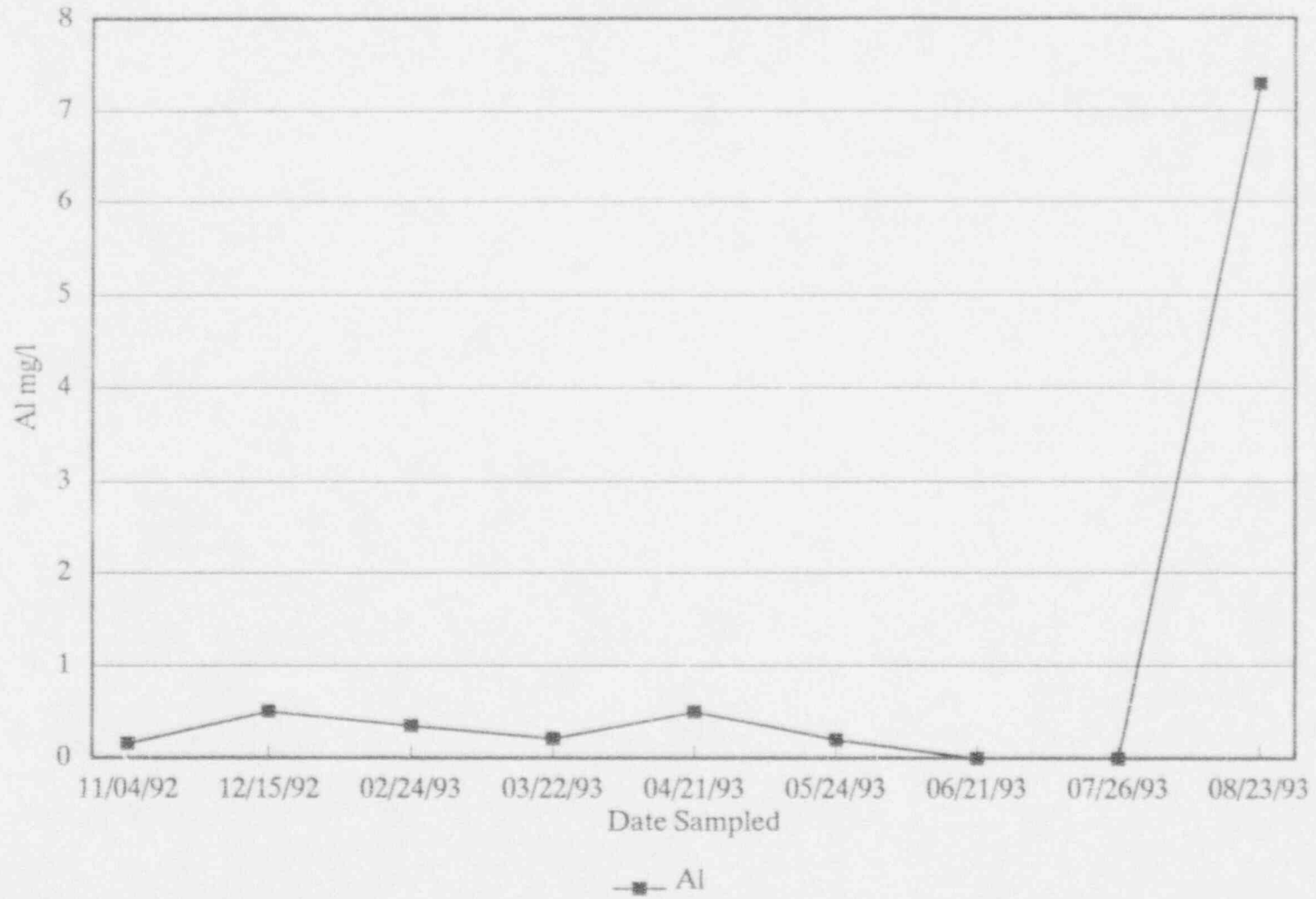
## ANALYSES FOR I.X./R.O. INJECTION WATER

Date Sampled	06/21/93	07/26/93	08/23/93
UNat pCi/l	4.40	2.00	15.90
UNat % M.P.C.	0.01	0.01	0.05
Ra226 pCi/l	5.60	0.80	6.00
Ra226 Error +/-	0.80	0.20	0.50
Ra226 % M.P.C.	18.67	2.67	20.00
Ra228 pCi/l	2.20	2.30	1.40
Ra228 Error +/-	0.50	1.50	0.60
Ra228 % M.P.C.	7.33	7.67	4.67
Th230 pCi/l	<1.0	<1.0	<1.0
Th230 Error +/-			
Th230 % M.P.C.			
Pb210 pCi/l	<1.0	<1.0	<1.0
Pb210 Error +/-			
Pb210 % M.P.C.			
Gross Alpha pCi/l	6.00	<5.0	8.10
Gross Alpha Error +/-	2.40		2.80
As mg/l	<0.01	0.001	<0.001
Se mg/l	<0.005	<0.001	0.002
Fe mg/l	1.83	<0.10	2.82
Pb mg/l			
Mn mg/l	1.03	0.36	3.79
Al mg/l	0.43	<0.10	<0.10
Be mg/l	0.01	<0.01	<0.01
Ni mg/l	0.08	0.04	0.19
Ag mg/l			
V mg/l			
Cd mg/l			
Cr mg/l			
Ca mg/l	86.10	24.10	127.00
Mg mg/l	21.40	8.70	43.80
Na mg/l	340.00	450.00	399.00
K mg/l			
NH3 mg/l			
NO3 mg/l	<0.01	<0.10	<0.10
SO4 mg/l	653.00	774.00	1122.00
Cl mg/l	231.00	172.00	188.00
TDS mg/l	1413.00	1393.00	1956.00
pH	5.67	6.98	6.90

# I.X./R.O. Raw Feed Aluminum

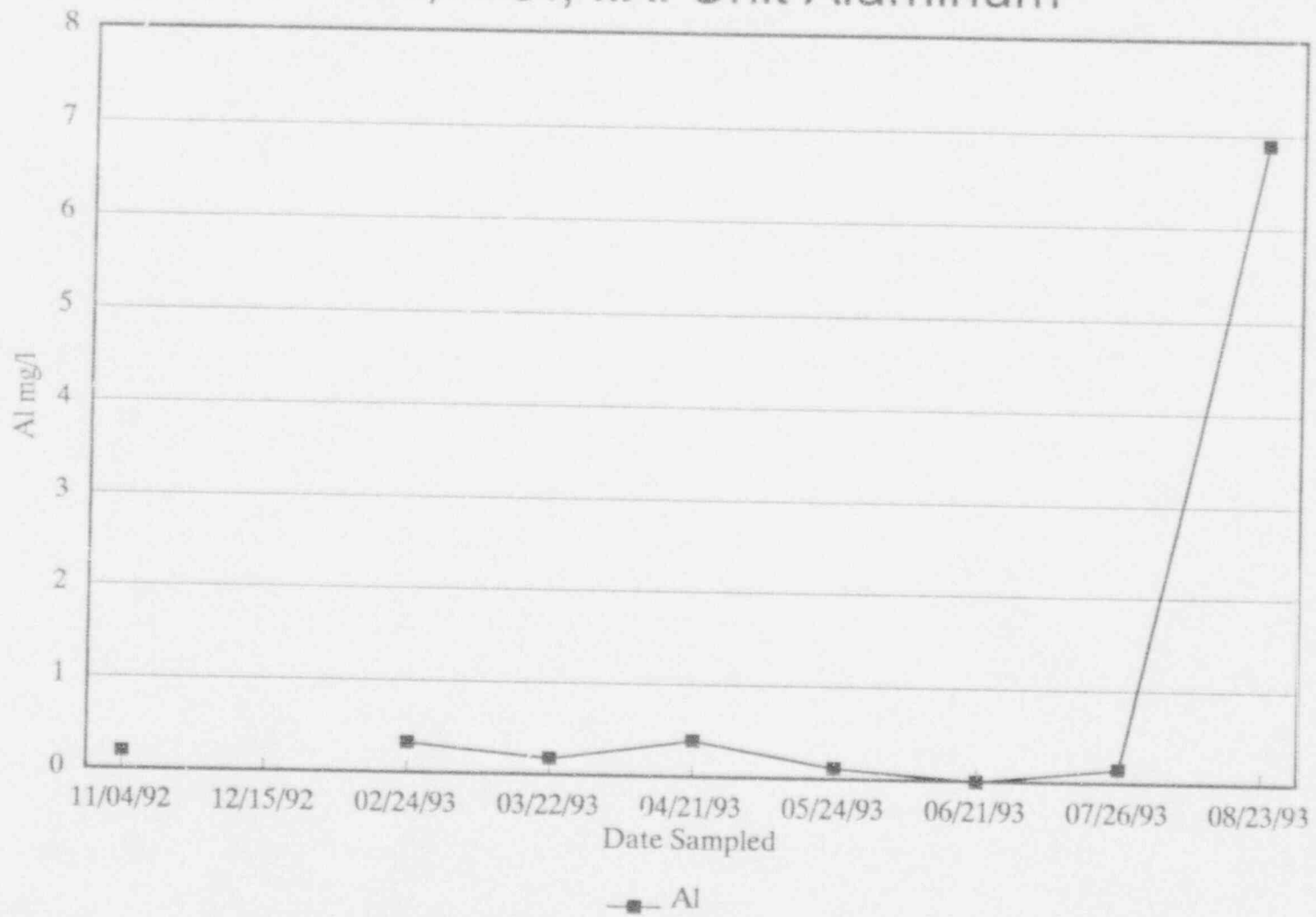


# I.X./R.O. Softener Aluminum

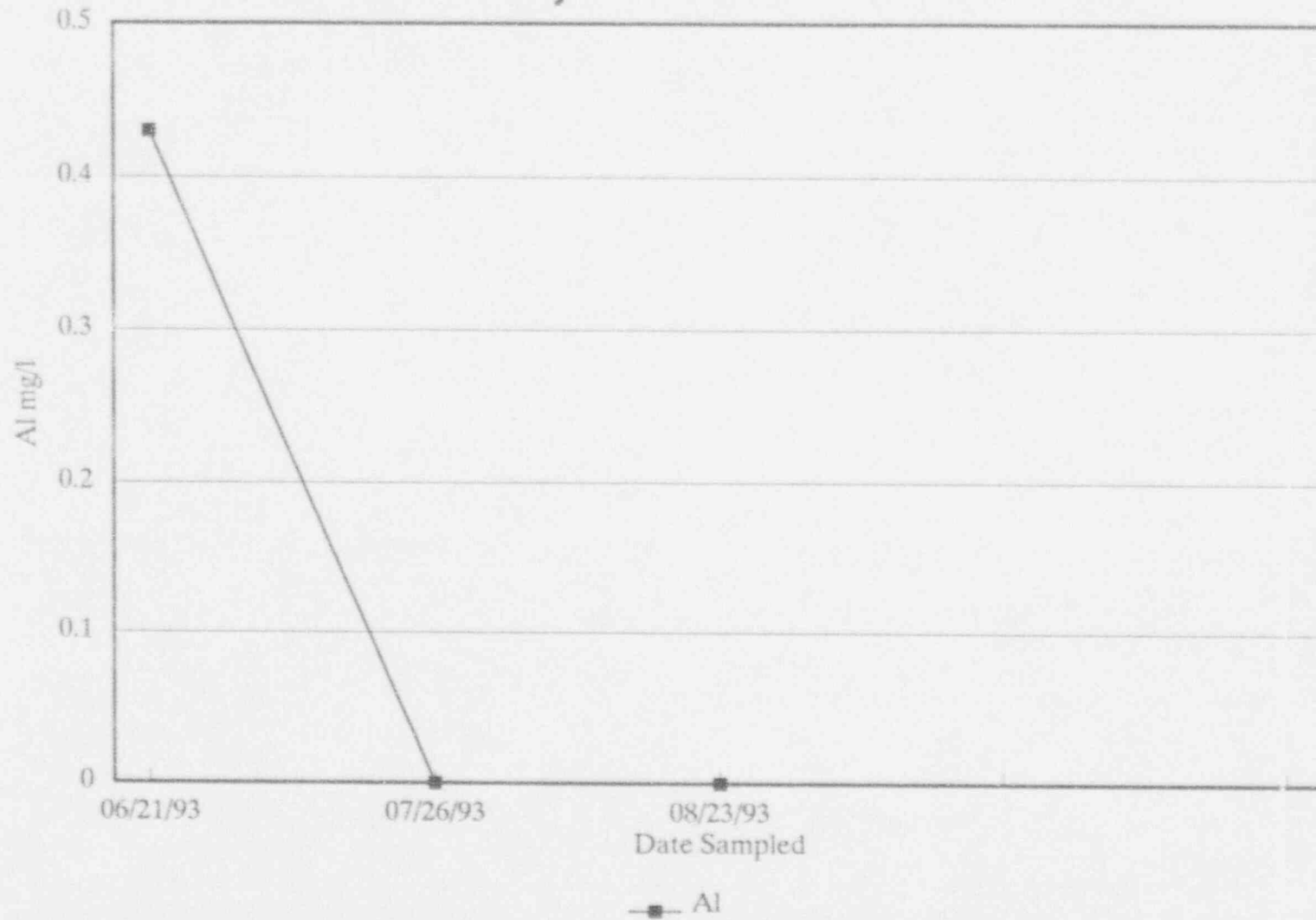




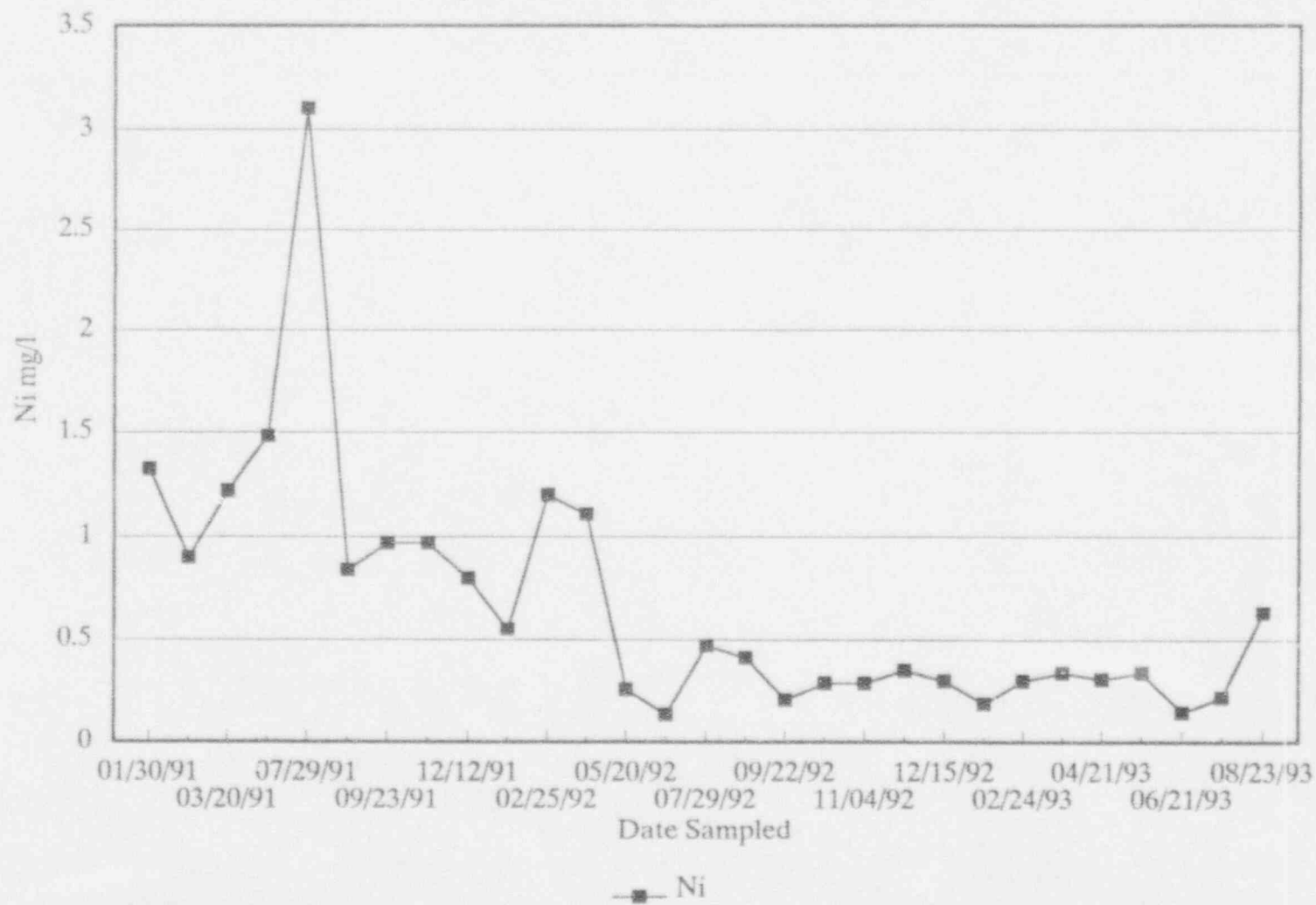
# I.X./R.O., I.X. Unit Aluminum



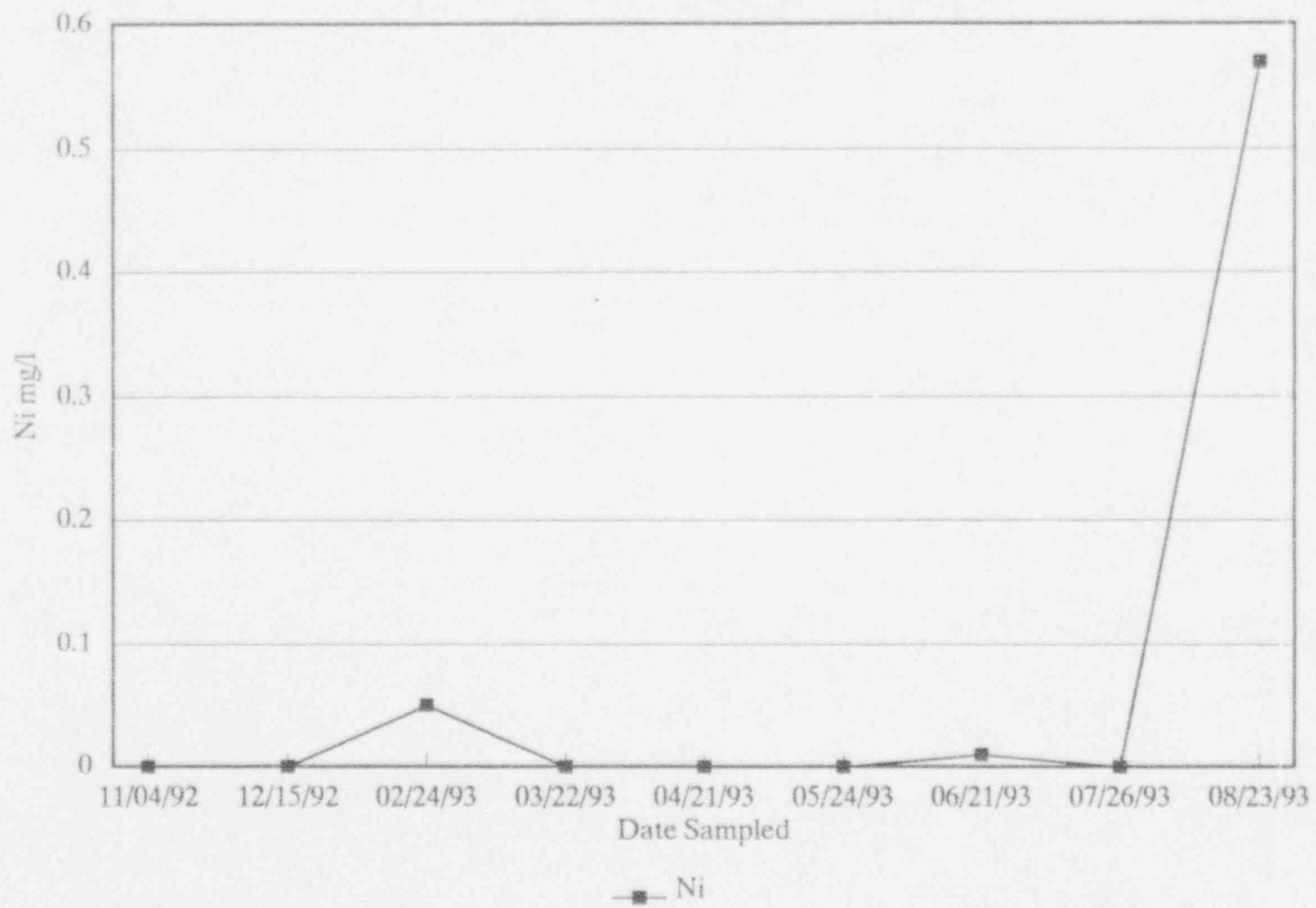
# I.X./R.O. Injection Water Aluminum



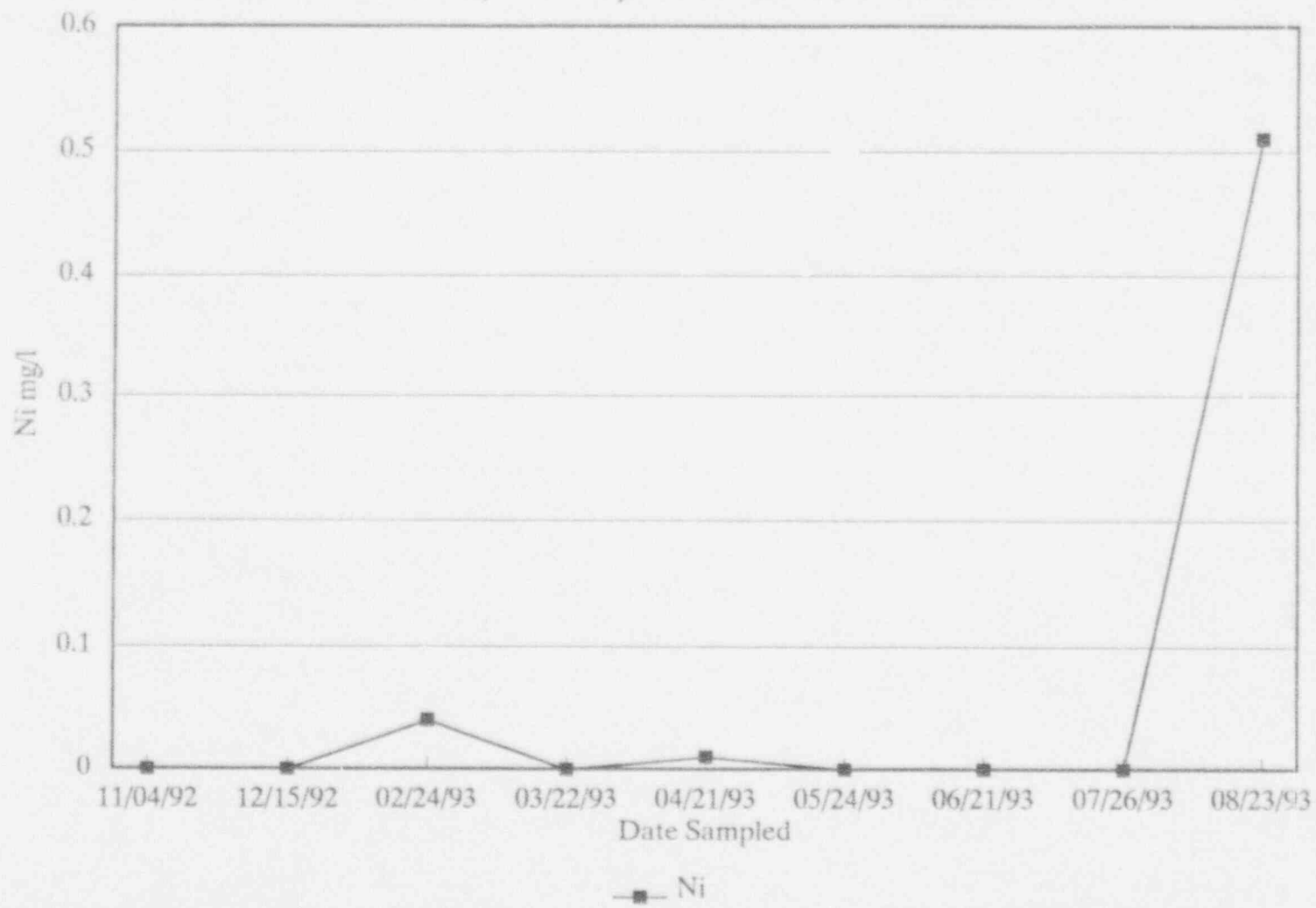
# I.X./R.O. Raw Feed Nickel



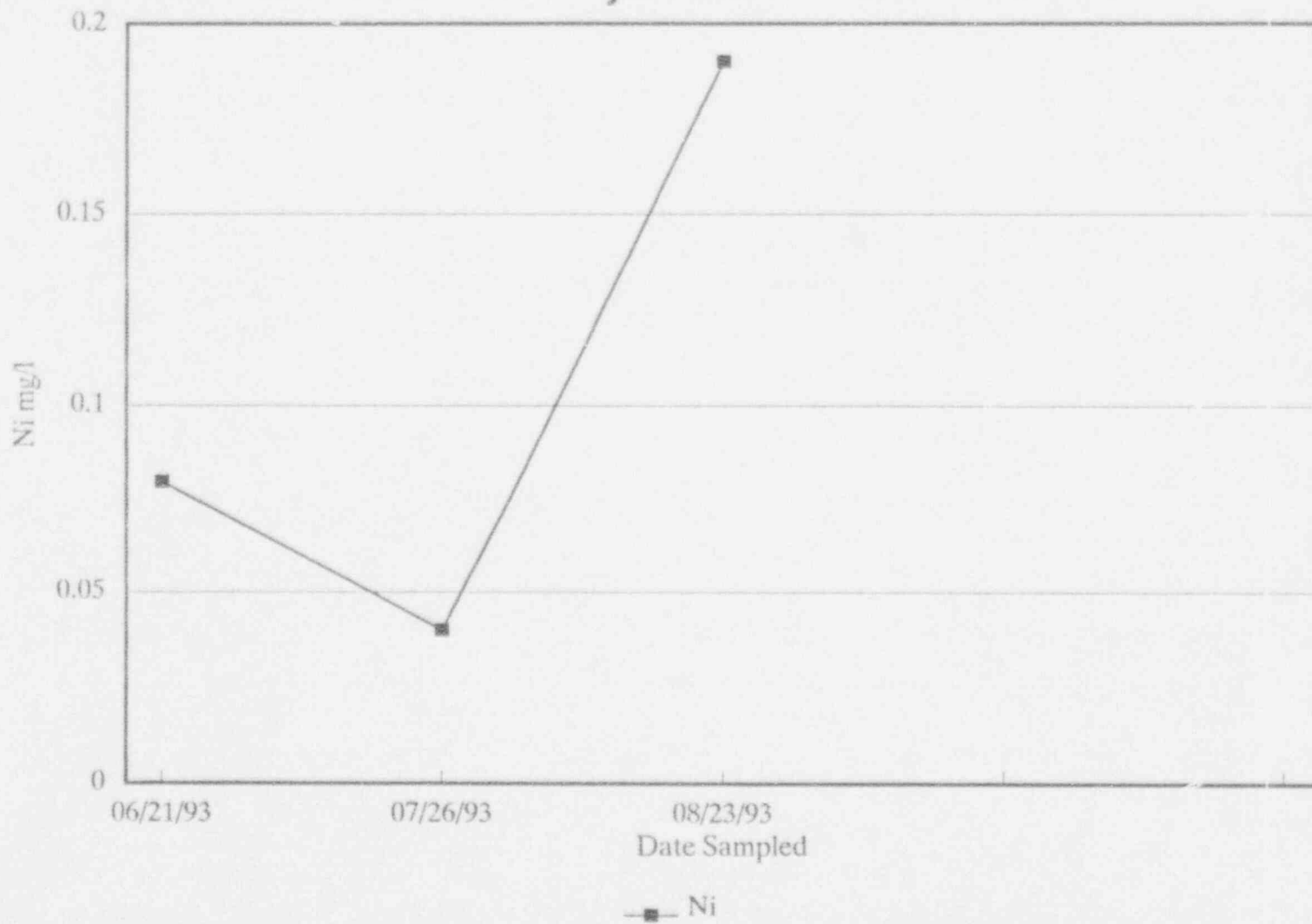
# I.X./R.O. Softener Nickel



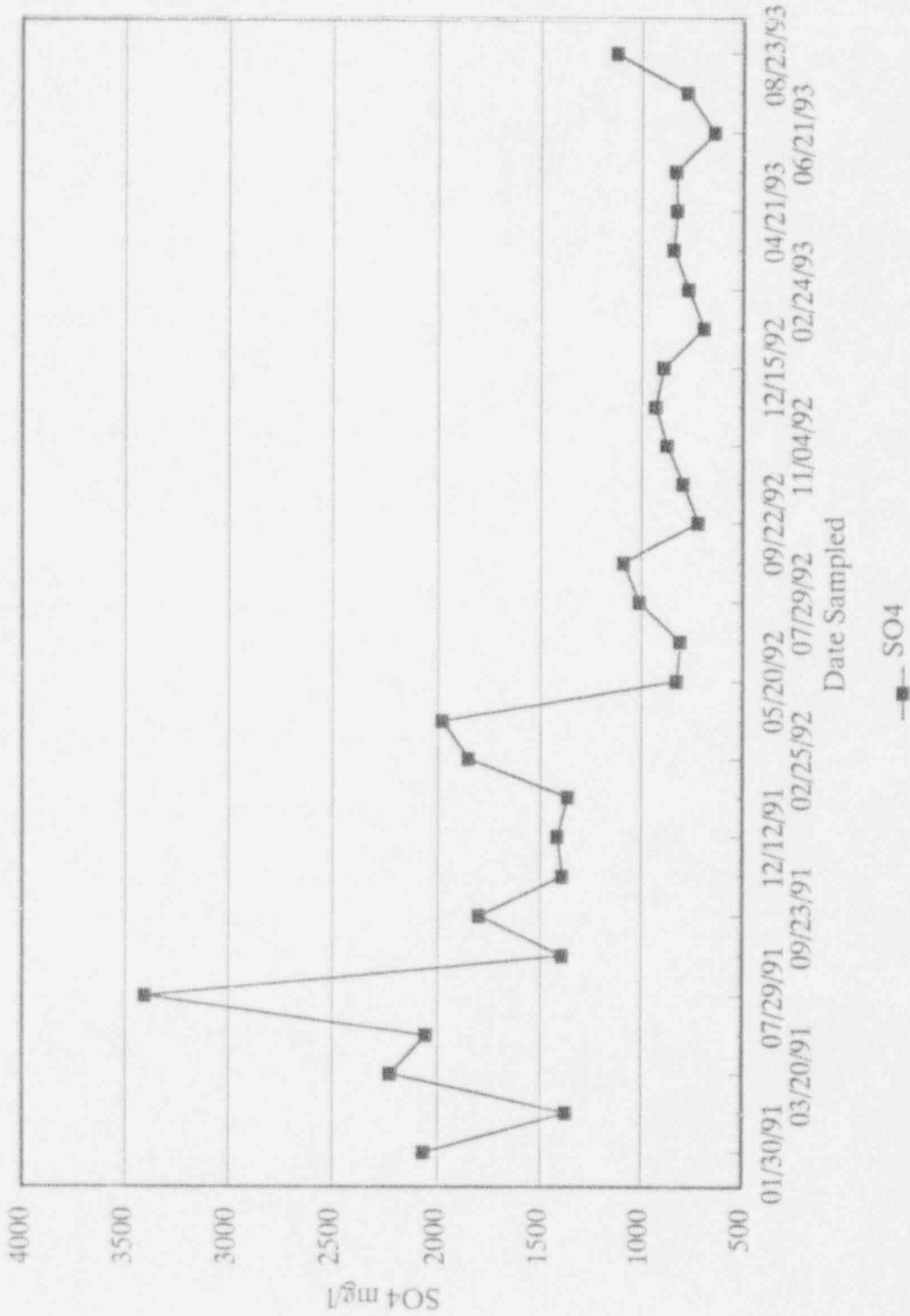
# I.X./R.O., I.X. Unit Nickel



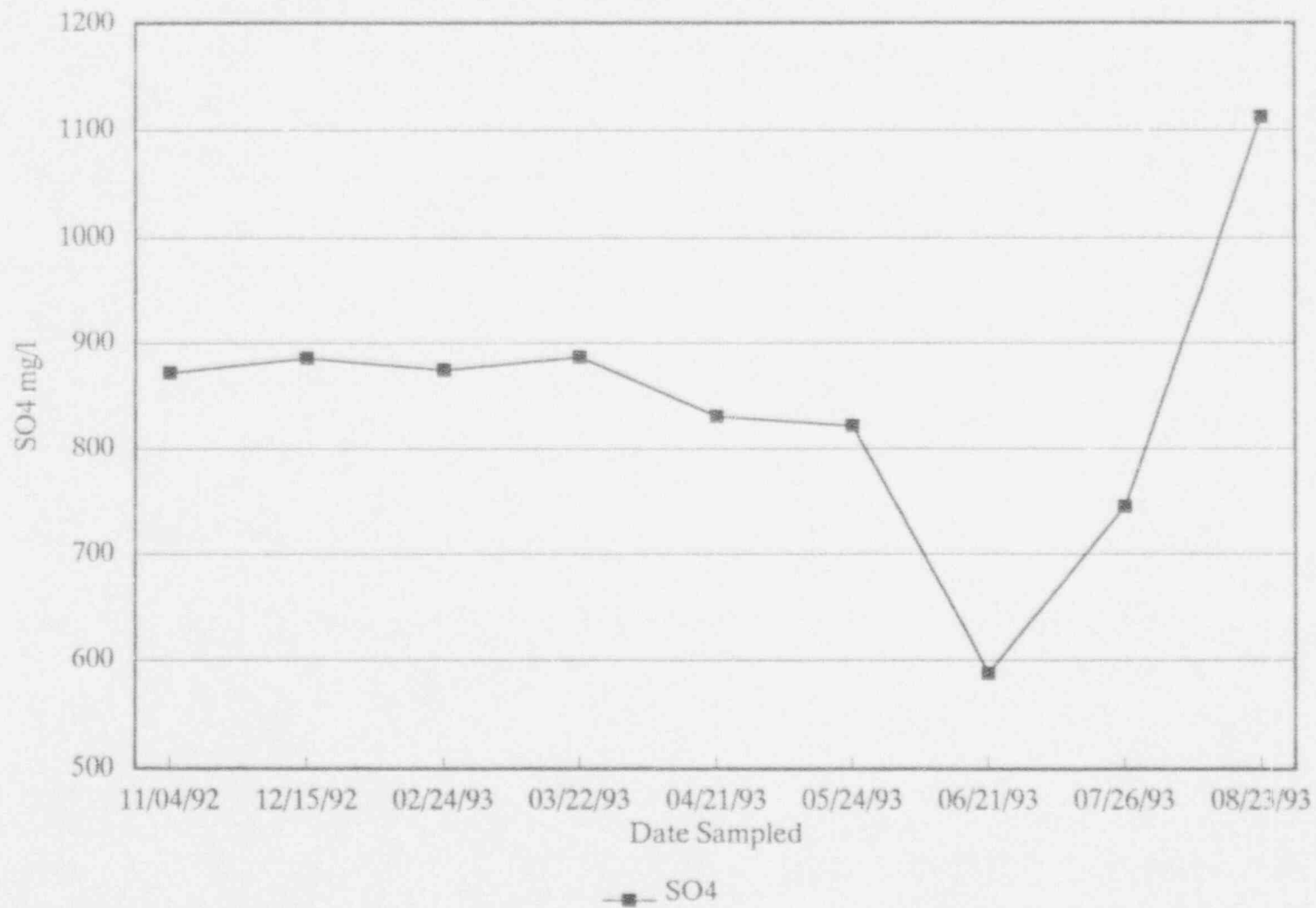
# I.X./R.O. Injection Water Nickel



# I.X./R.O. Raw Feed Sulfate

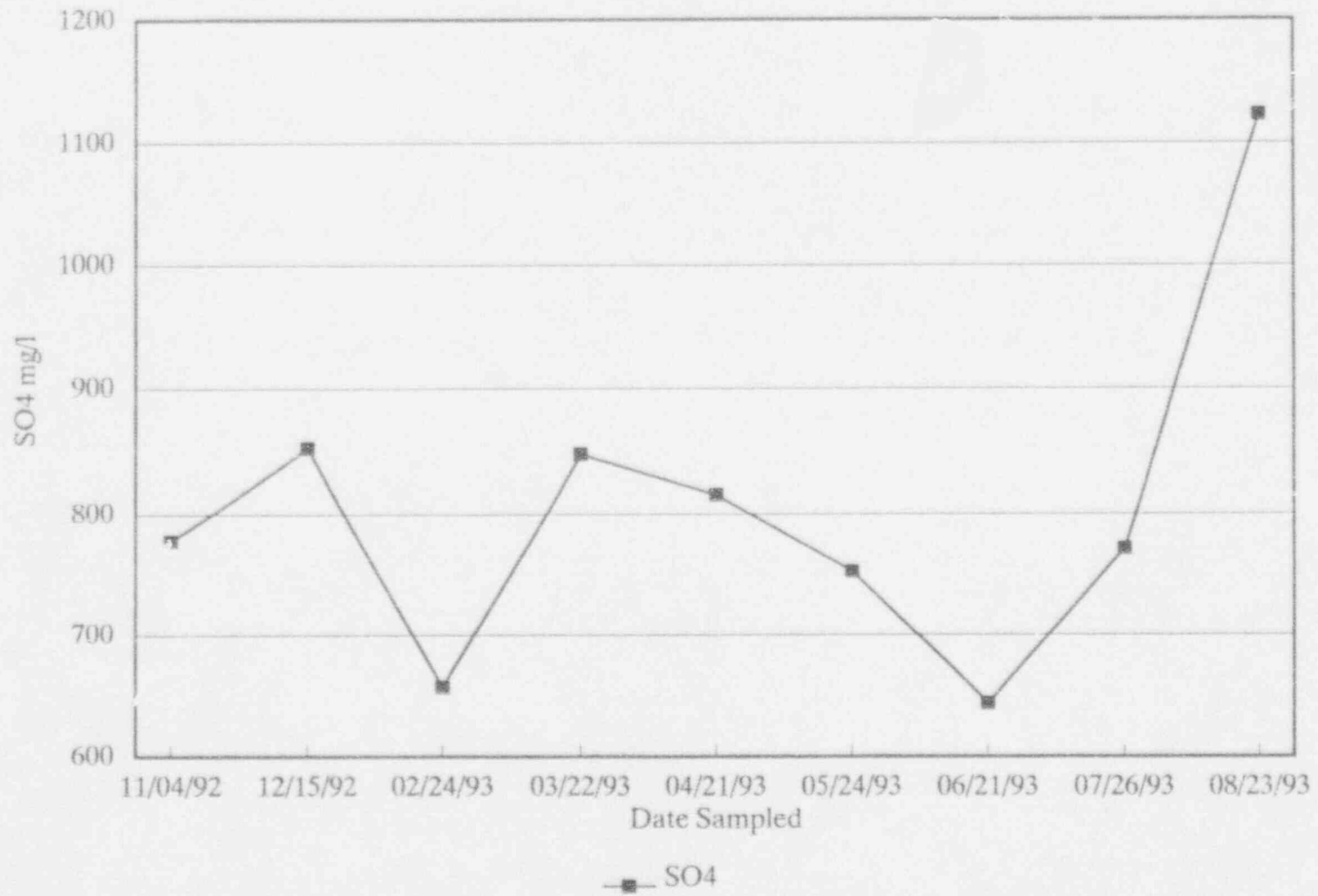


# I.X./R.O. Softener Sulfate

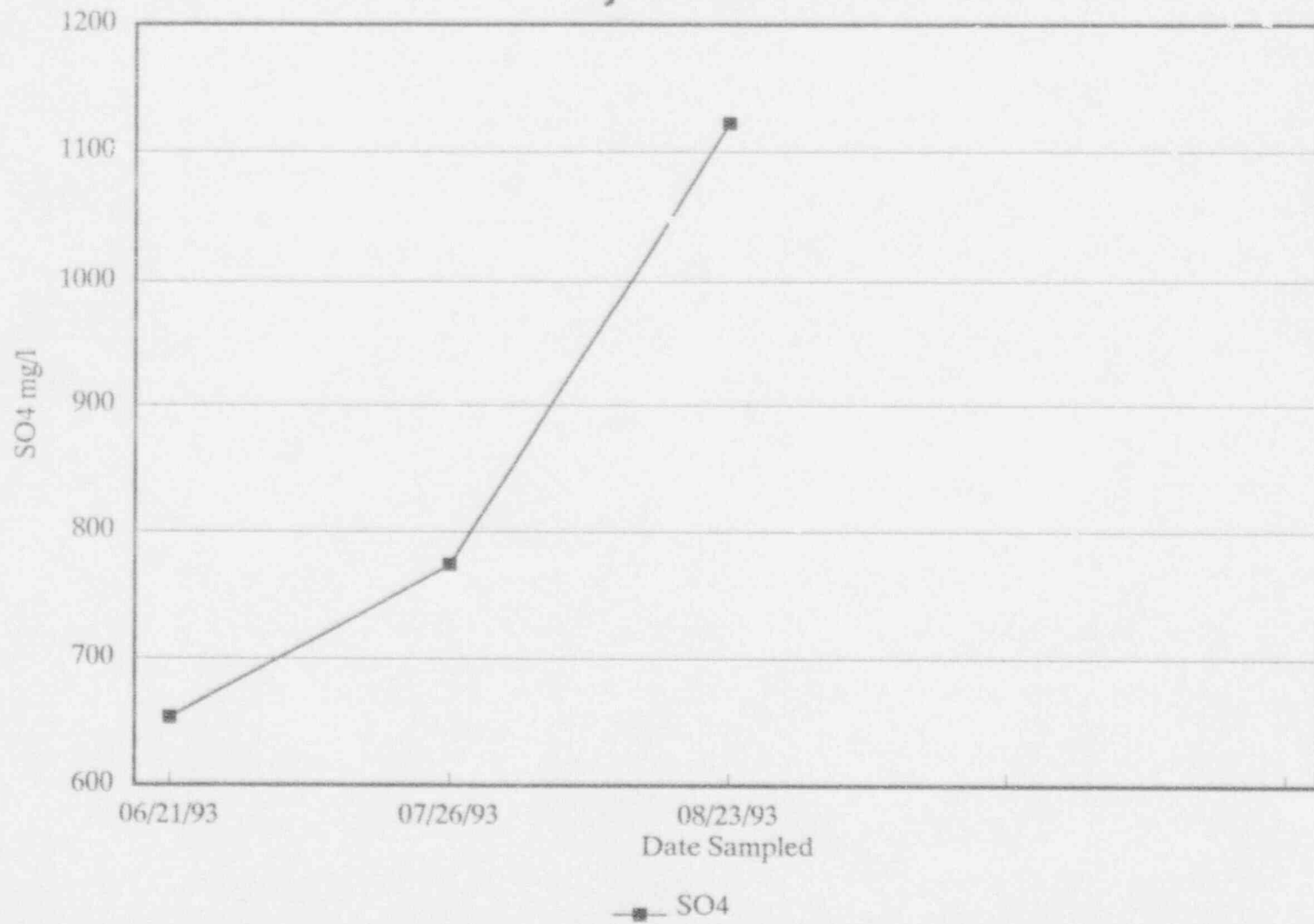




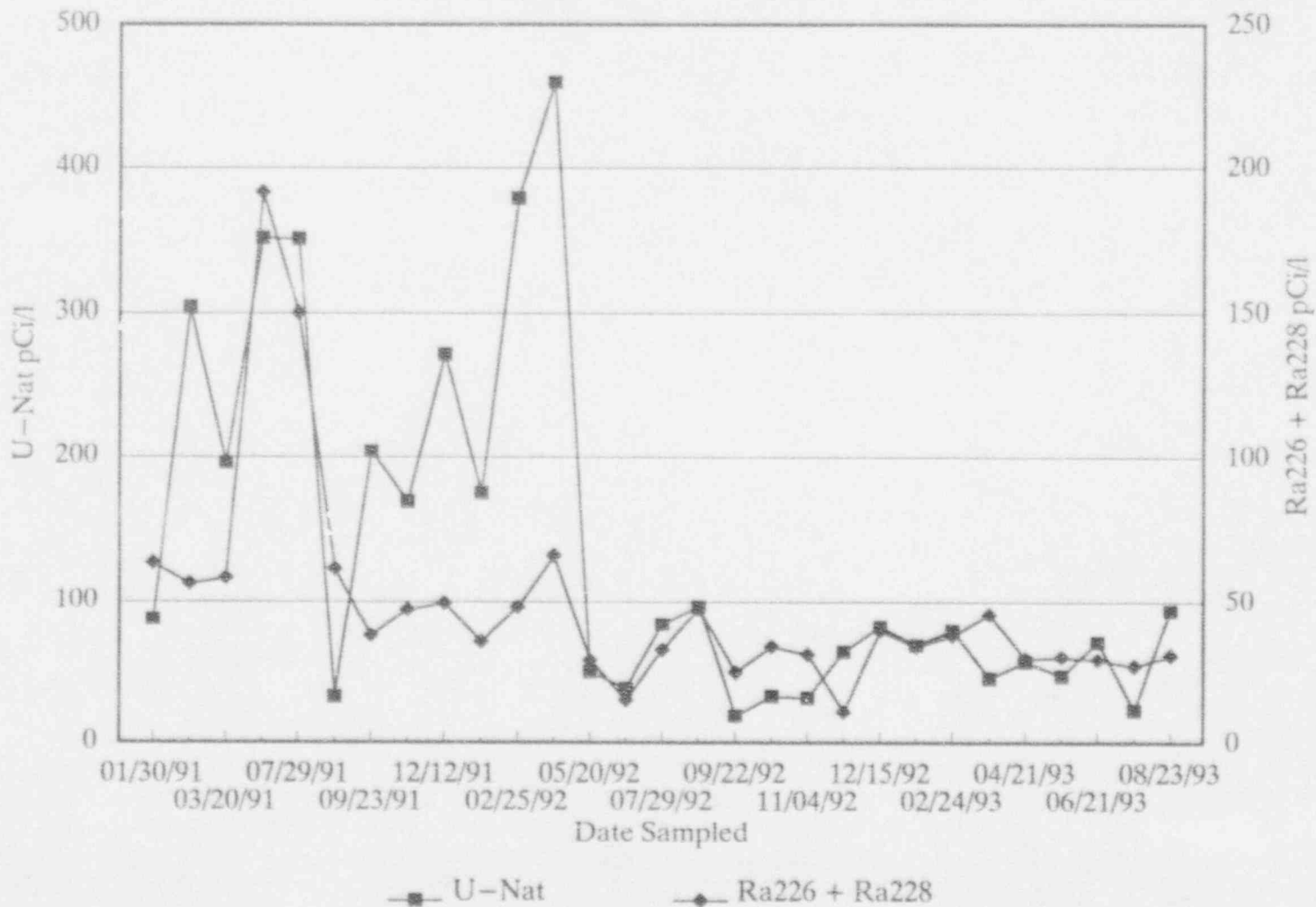
# I.X./R.O., I.X. Unit Sulfate



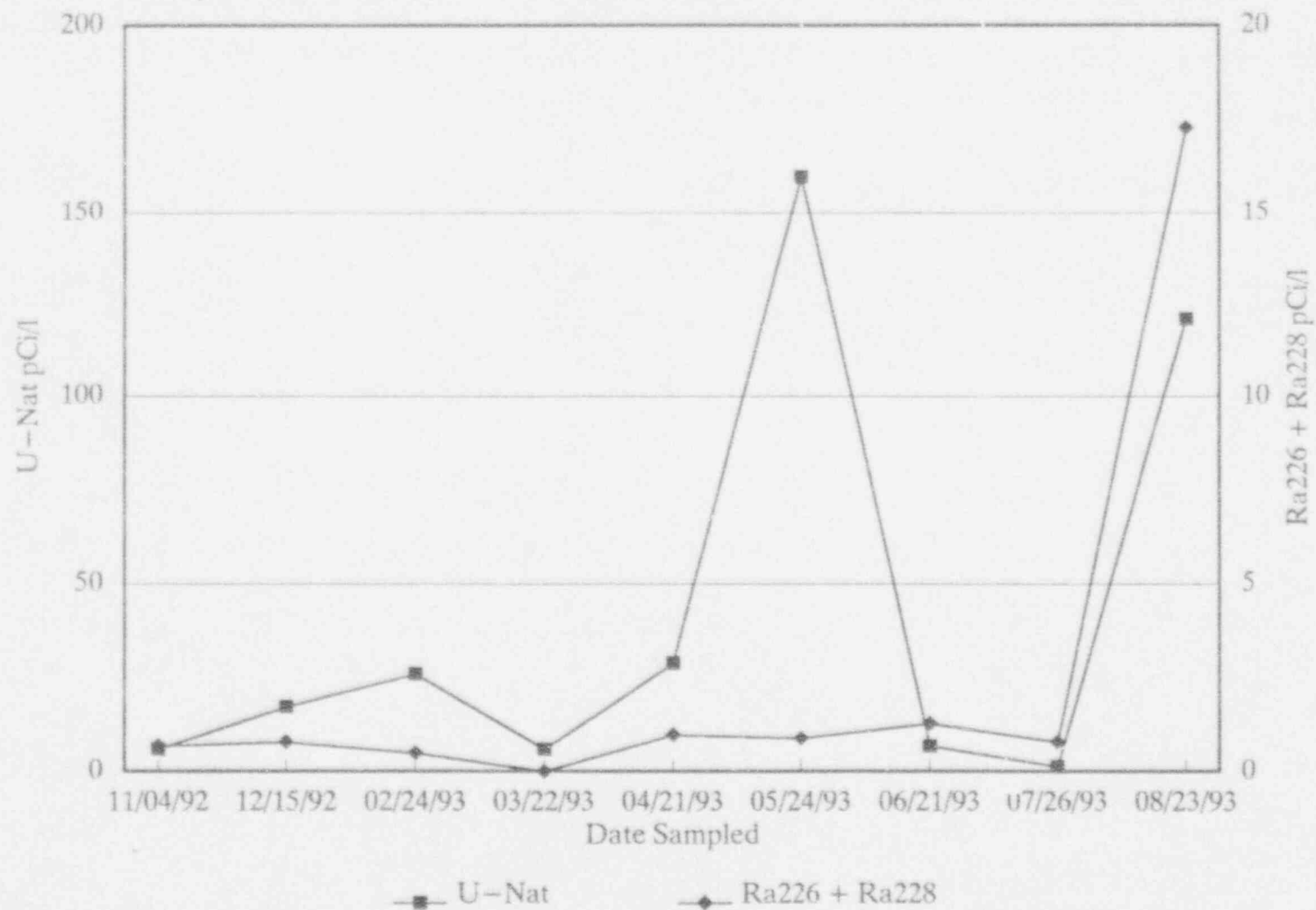
# I.X./R.O. Injection Water Sulfate



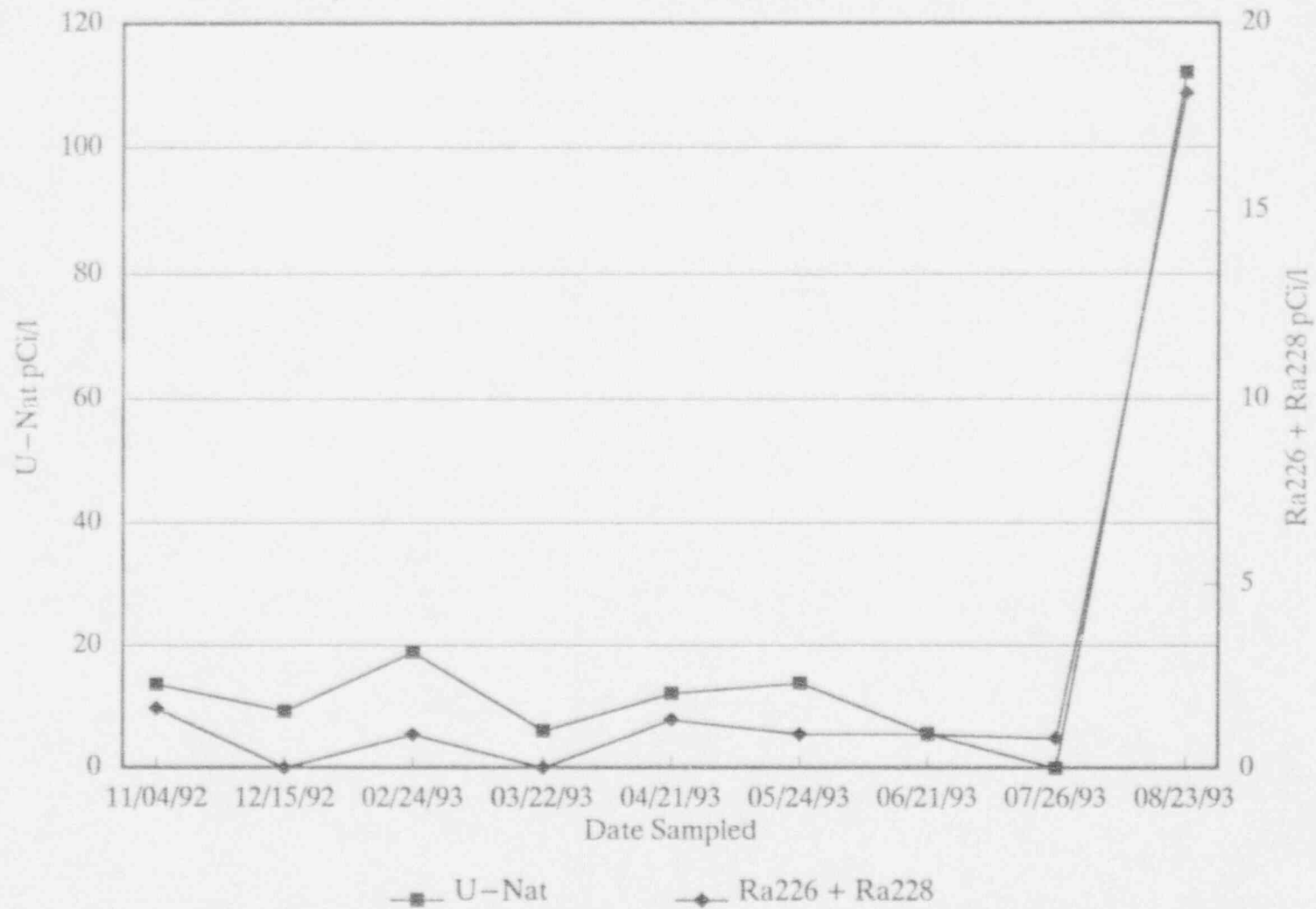
# I.X./R.O. Raw Feed U-Nat & Ra226 + Ra228



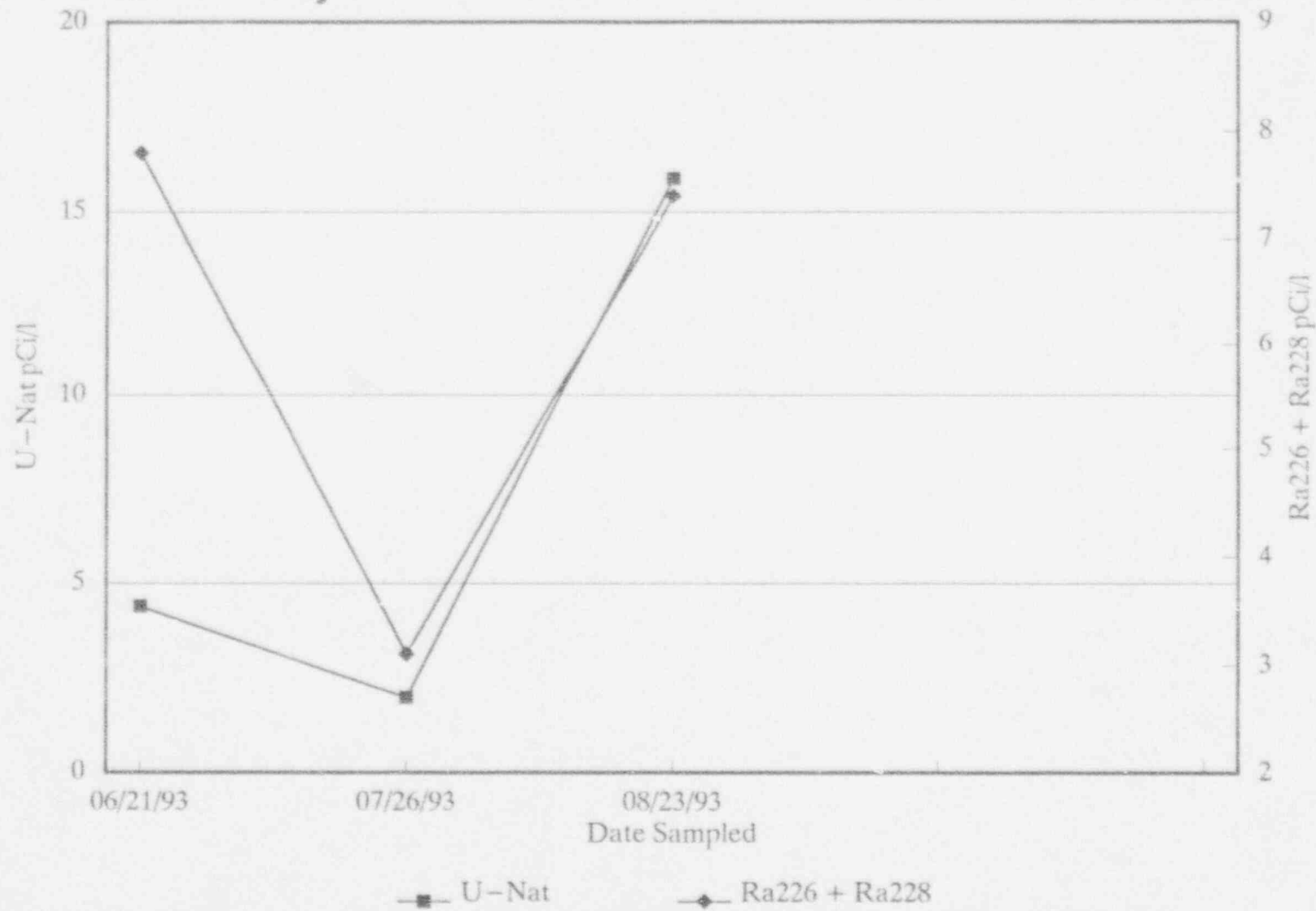
# I.X./R.O. Softener U-Nat & Ra226 + Ra228



# I.X./R.O., I.X. Unit U-Nat & Ra226 + Ra228



# I.X./R.O. Injection Water U-Nat & Ra226 + Ra228



Appendix

5.0

Water Balance

Water Source

Inactive Tailings Area

<u>Well No.</u>	<u>Days Pumped</u>	<u>Gallons Produced</u>
MWC-36	161	16,985
MWC-42	365	4,204,800
MWC-47	365	1,839,600
MWC-48	365	3,153,600
MWC-49	365	5,256,000
MWC-52	365	5,781,600
MWC-55	42	274,773
MWC-56	39	128,730
MWC-57	39	170,800
MWC-58	52	172,120
MWC-59	53	195,626
		<u>21,194,634</u>

A-9 Tailings Area

GW-3C	300	1,080,000
GW-3D	314	1,537,344
MW-24	365	893,520
MW-32	365	1,051,200
MW-60	51	186,816
MW-61	51	86,034
MW-62	365	<u>7,311,690</u>
		12,364,756

Total water pumped from wells 33,559,390

Collected Water (gallons)

Well water pumped to IX/RO facility 33,559,390

Water Used For:

RO system cleaning/IX regeneration  
which is discharged to evaporation pond 3,217,890

Feed to IX and RO Treatment Systems:

Permeate produced to storage 2,662,000

Reject discharged to evaporation pond 1,687,000

IX produced to storage 25,992,500



Injected Water (gallons)

Inventory: RO Permeate/IX in Storage Pond 9/30/92	70,200
Production: RO Permeate	2,662,000
IX Water	<u>25,992,500</u>
	28,724,700
Evaporation: Estimate from average annual lake evaporation rate for Gas Hills, WY area @ 42" per year	366,200
Injected: Pumped from Storage Pond (metered)	28,220,700
Inventory: IX Water in Storage Pond 9/30/03	137,800

Collection Wells  
Operating 9/30/93

Inactive Tailings Pile - LWR Aquifer

Avg. Water Quality

<u>Hole No</u>	<u>Avg. Pumping Rate</u>	10/92		9/93	
		pH	TDS	pH	TDS
MWC-36	0.07 gpm (Aband, 3/10/93)	6.89	1410	6.89	1375
MWC-42	9.0 gpm				
MWC-47	3.5 gpm				
MWC-48	6.0 gpm				
MWC-49	10.0 gpm	6.98	1510	6.89	1061
MWC-52	11.0 gpm				
MWC-55	5.5 gpm				
MWC-56	2.8 gpm				
MWC-57	3.5 gpm	-		5.30	3240
MWC-58	3.5 gpm				
MWC-59	4.5 gpm				
	<u>59.37 gpm</u>				
	Pumping as of 9/30/93				
					59.3 gpm

A-9 Below-Grade Tailings - UWR Aquifer

<u>Hole No</u>	<u>Avg. Pumping Rate</u>
GW-3-C	2.5 gpm (Ceased pumping 7/27/93)
GW-3-D	3.4 gpm (Ceased pumping 9/13/93)
MW-24	1.7 gpm
MW-32	2.0 gpm
MWC-60	3.0 gpm (Begin pumping 8/11/93)
MWC-61	2.5 gpm (Begin pumping 8/11/93)
MWC-62	4.5 gpm (Begin pumping 8/11/93)
DW-4	<u>13.9</u> gpm
	33.5 gpm for all wells
	Pumping as of 9/30/93
	27.6 gpm

Avg. Water Quality (excluding DW-4)

10/92		9/93	
pH	TDS	pH	TDS
5.03	2400	5.38	3090

Injection Wells

Inactive Tailings Pile - LWR Aquifer

<u>Hole No.</u>	<u>Avg. Injection Rate</u>	<u>Comment</u>	<u>Injection Rate 9/30/93</u>
MWI-37	1.5 gpm	(Cease Injecting 9/20/93)	0.00
MWI-38	0.5 gpm	(Cease Injecting 9/20/93)	0.00
MWI-39	1.5 gpm	(Cease Injecting 9/20/93)	0.00
MWI-43	1.5 gpm		1.5 gpm
MWI-16	1.0	(Cease Injecting 7/10/93)	0.00
MWI-44	1.5 gpm		1.5 gpm
MWI-50	1.0 gpm		1.0 gpm
MWI-51	16.0 gpm		16.0 gpm
MWI-66	13.0 gpm	(Begin Injecting 8/09/93)	13.0 gpm
MWI-64	3.5 gpm	(Begin Injecting 9/22/93)	3.5 gpm
MWI-65	<u>2.5 gpm</u>	(Begin Injecting 7/22/93)	<u>2.5 gpm</u>
	43.5 gpm		39.0 gpm
MWI-52	(Will begin injecting in 1994 with I/A injection remaining at 39.0 gpm)		

A-9 Below-Grade Tailings - UWR Aquifer

<u>Hole No.</u>	<u>Avg. Injection Rate</u>	<u>Comment</u>	<u>Injection Rate 9/30/93</u>
MW-29	15.9 gpm		15.0
MW-31	1.0 gpm		1.0
MWI-53	8.0 gpm		9.0
MWI-54	2.0 gpm		2.0
MWI-63	2.0 gpm	(Begin Injecting 7/29/93)	2.0
GW-3C	2.5 gpm	(Begin Injecting 9/15/93)	2.5
GW-3D	<u>2.5 gpm</u>	(Begin Injecting 9/15/93)	<u>2.5</u>
	Avg. 26.0 gpm		34.0 gpm
	(exclude GW-3C, GW-3D and MWI-63)		

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