TABLE 1
CROTON WELL FIELD PUMPING RATES
AND OPERATING SCHEDULE ON MARCH 30, 1988

WELL	PUMPING RATE (gpm)	OPERATING TIME	AVERAGE PRODUCTION RATE (gpm)
#1	650	5:00am - 12:00pm	514.6
#3	480	12:00pm - 5:00am	100.0
Shallow Well #2	--[1]	10:00am - 2:00pm	20.0[2]
Upper Well #1	--[1]	10:00am - 2:00pm	36.0[2]
Upper Well #2	--[1]	10:00am - 2:00pm	36.0[2]

[1]Individual pumping rates for Shallow Well #2, Upper Well #1, and Upper Well #2 are not available. The combined pumping rate of the three wells is 550 gpm.

[2]Estimated rates

TABLE 2
WELL CONSTRUCTION DETAILS AND ELEVATIONS OF
WATER-LEVEL MEASURING POINTS, CROTON WELL FIELD

Station	Elevation of Measuring Point (ft above mean sea level)	Total Depth (ft below land surface)	Screened Interval (ft below land surface)	Well Diameter (inches)	Date Installed
1	52.31	65.5	51 to 65.5	12	9/77
1A	43.85	12	Dug	36 Approx.	?
2	44.81	20	Dug	36 Approx.	?
3	51.99	72	44 to 72	17	10/69
4	49.50	80	10 to 80	1.5	3/88
5	49.11	75	45 to 75	1.5	3/88
6	45.72	70	5 to 70	1.5	3/88
6-inch Steel	48.92	98	?	6	?
7	43.14	52.5	7.5 to 52.5	1.5	3/88
Croton River					
CRE (East)	42.50				
CRW (West)	42.88				

TABLE 3
WATER-LEVEL ELEVATIONS
CROTON WELL FIELD

Station	Elevation of Measuring Point	March 30, 1988		April 11, 1988	
		Depth to Water	Elevation of Water	Depth to Water	Elevation of Water
1A	43.85	6.18	37.67	6.92	36.93
2	44.81			7.85	36.96
3	51.99			15.61	36.38
4	49.50	11.92	37.58	13.12	36.38
5	49.11	9.40	39.71	9.15	39.96
6	45.72	6.19	39.53	6.97	38.75
7	43.14	5.95	37.19	6.70	36.44
6-inch steel	48.92			13.52	35.40
CRW	42.88	3.25	39.63	3.98	38.90
CRE	42.50	3.04	39.46	3.49	39.01

Elevations measured in feet relative to mean sea level.
March data collected while several wells pumping. April data collected when only Well 1 was pumping and all other wells had been off for the preceding week.

TABLE 4
SCHEDULE OF WATER-LEVEL
MEASUREMENTS DURING AQUIFER TEST

Elapsed Time (minutes)	Frequency of Measurement
0 - 1	Every 15 seconds
1 - 5	Every 30 seconds
5 - 10	Every minute
10 - 30	Every 2 minutes
30 - 60 (1 hour)	Every 5 minutes
60 - 120	Every 10 minutes
120 - 180	Every 20 minutes
180 - 360	Every 30 minutes
360 - 1440	Every hour
1440 - 5760 (4 days)	Every 2 hours

TABLE 5
AQUIFER PROPERTIES FROM PUMP TEST

	Unconfined aquifer (Theis solution)		Confined aquifer (Jacob solution)		Confined aquifer (Theis solution)	
	S	T (ft^2/min)	S	T (ft^2/min)	S	T (ft^2/min)
Well 1a	0.21	45.21	0.1636	46.25	0.2114	43.34
Well 2	5.94E-2	46.89	5.83E-2	42.32	6.49E-2	44.6
Well 3	------	18.50*	------	18.48	------	23.69
Well 4	2.02E-2	15.93	3.35E-2	13.39	3.36E-2	13.41
Well 5	0.1036	61.44	7.15E-2	76.71	9.90E-2	53.64
Well 6	0.1482	22.74	0.116	26.48	0.1477	22.39
Well 7	7.05E-2	41.33	6.19E-2	42.4	7.09E-2	40.63
6 in. steel well	3.06E-3	29.62	3.41E-3	28.14	2.83E-3	29.14

*Analyzed using the Cooper-Jacob (1946) method with saturated thickness correction for unconfined aquifers.

TABLE 6
SUMMARY OF KEY SENSITIVITY RUNS

Run No.	Hydraulic Conductivity (ft/min)	River Leakage Factor (ft/min)	Boundary Elevations[1] Upper (ft)	Boundary Elevations[1] Lower (ft)	Recharge (in/yr)	Line Element Elevations (ft)	Residuals[2] (ft) OW-4	OW-5	OW-6	OW-7	1A
17	.57	.0456	49.0	34.0	0	49.0 - 34.5	.80	-.39	.66	-.17	.97
21	.57	.0456	54.0	34.0	0	49.0 - 34.5	.76	-.51	.59	-.21	.93
20	.57	.0456	44.0	34.0	0	49.0 - 34.5	.84	-.27	.72	-.15	1.00
19	.57	.0456	49.0	39.0	0	49.0 - 34.5	.63	-.44	.57	-.32	.79
18	.57	.0456	49.0	24.0	0	49.0 - 34.5	1.11	-.30	.82	.07	1.26
8	1.02	.0368	49.0	37.5	0	49.0 - 37.5	-.01	-.60	-.38	-.70	.17
1	.57	.0368	49.0	37.5	0	49.0 - 37.5	1.00	.01	1.02	.16	1.25
9	.20	.0368	49.0	37.5	0	49.0 - 37.5	4.38	1.90	2.69	2.42	4.65
1	.57	.0368	49.0	37.5	0	49.0 - 37.5	1.00	.01	1.02	.16	1.25
6	.57	.0368	49.0	37.5	0	44.0 - 32.5	4.81	4.51	5.32	4.17	5.12
7	.57	.0368	49.0	37.5	0	54.0 - 42.5	-2.78	-4.45	-3.22	-3.81	-2.57
76	.45	.00368	47.0	34.0	15	47.5 - 35.0	3.00	1.77	3.20	2.68	3.68
48	.45	.0368	47.0	34.0	15	47.5 - 35.0	.29	-.67	.53	.17	.89
77	.45	.368	47.0	34.0	15	47.5 - 35.0	-.38	-1.11	-.07	-1.11	.14
39	.45	.0368	--[3]	--[4]	0	47.5 - 35.0	.43	-.67	.48	-.58	.32
40	.45	.0368	--[3]	--[4]	15	47.5 - 35.0	.38	-.72	.44	-.61	.22
48[5]	.45	.0368	47.0	34.0	15	47.5 - 35.2	.29	-.67	.53	-.17	.89

[1]Hydraulic heads specified at upper and lower ends of model

[2]Observed - calculated hydraulic head

[3]Constant flux into model domain equal to 220,000 gpd

[4]Constant flux out of model domain equal to 220,000 gpd

[5]Final calibration run

TABLE 7
SIMULATED PUMPING RATES AND MAXIMUM ALLOWABLE SIMULATED PUMPING TIME FOR ANALYSIS OF DROUGHT CONDITIONS

PRESENT WELLFIELD

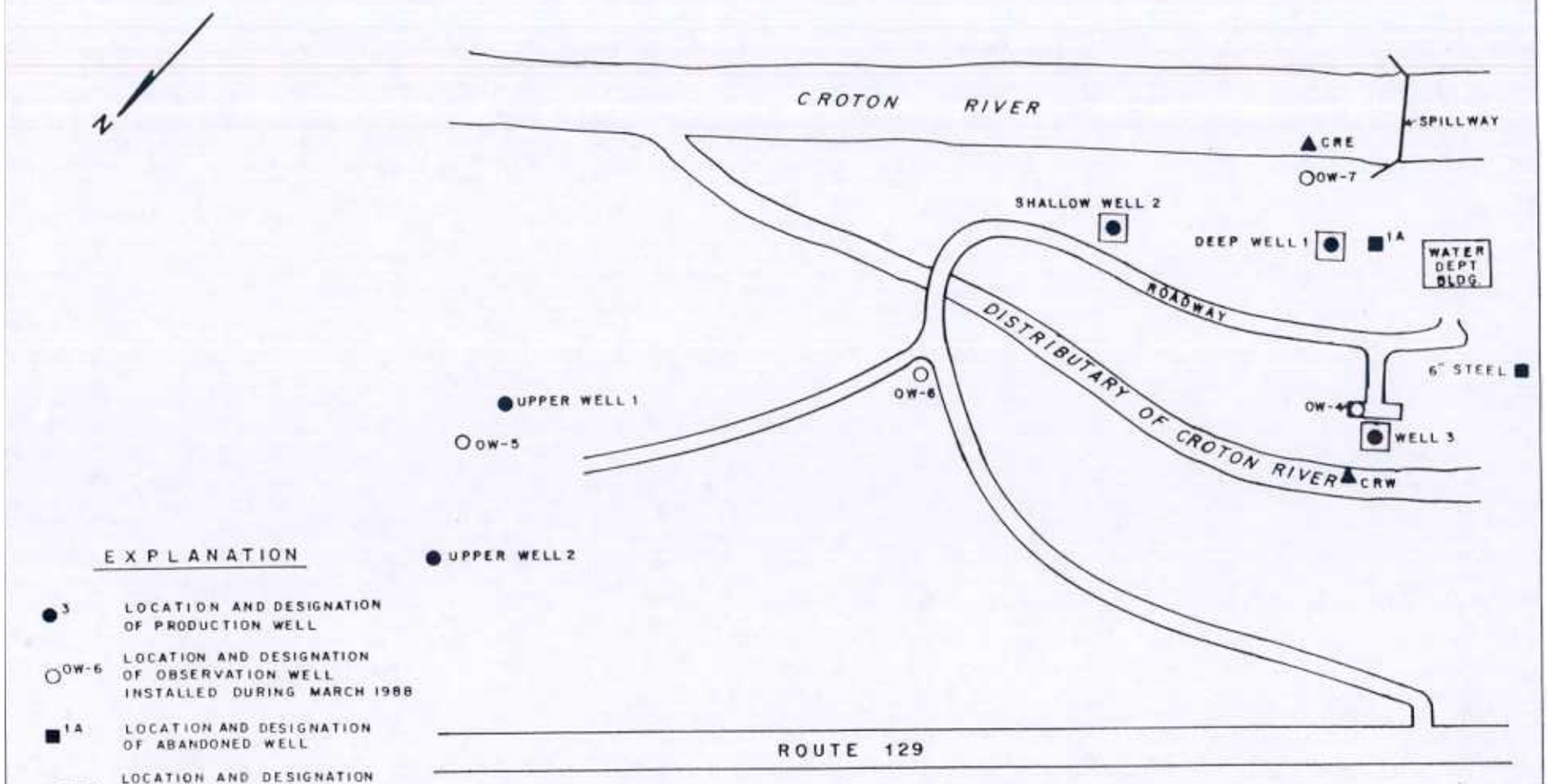
Total Well Field Pumpage (mgd)	Pumping Rates in Wells (gpm)					Maximum Pumping Time (days)
	Deep Well 1	Well 3	Upper Well 1	Upper Well 2	Shallow Well 2	
1.3	677	134	46	46	20	41
1.9	990	195	67	67	20	25
2.6	1354	267	92	92	20	16

HYPOTHETICAL THREE-WELL SYSTEM

Total Well Field Pumpage (mgd)	Pumping Rates in Wells (gpm)			Maximum Pumping Time (days)
	Deep Well 1	Well 3	New Upper Well	
1.3	300	300	300	45
1.9	440	440	440	27
2.6	600	600	600	17

GERAGHTY & MILLER, INC.
Ground-Water Consultants

COMPILED BY: C. GILROY	DATE: 7-88	SCALE: SHOWN	PREPARED FOR: VILLAGE OF CROTON ON HUDSON, CROTON-ON-HUDSON, NEW YORK
PREPARED BY: E. WILSON	FILE NO: NY1394CH1		
PROJECT MGR: F. van der LEEDEN			



SUBJECT: SITE MAP OF VILLAGE OF CROTON WELL FIELD CROTON-ON-HUDSON, NEW YORK

FIGURE 1

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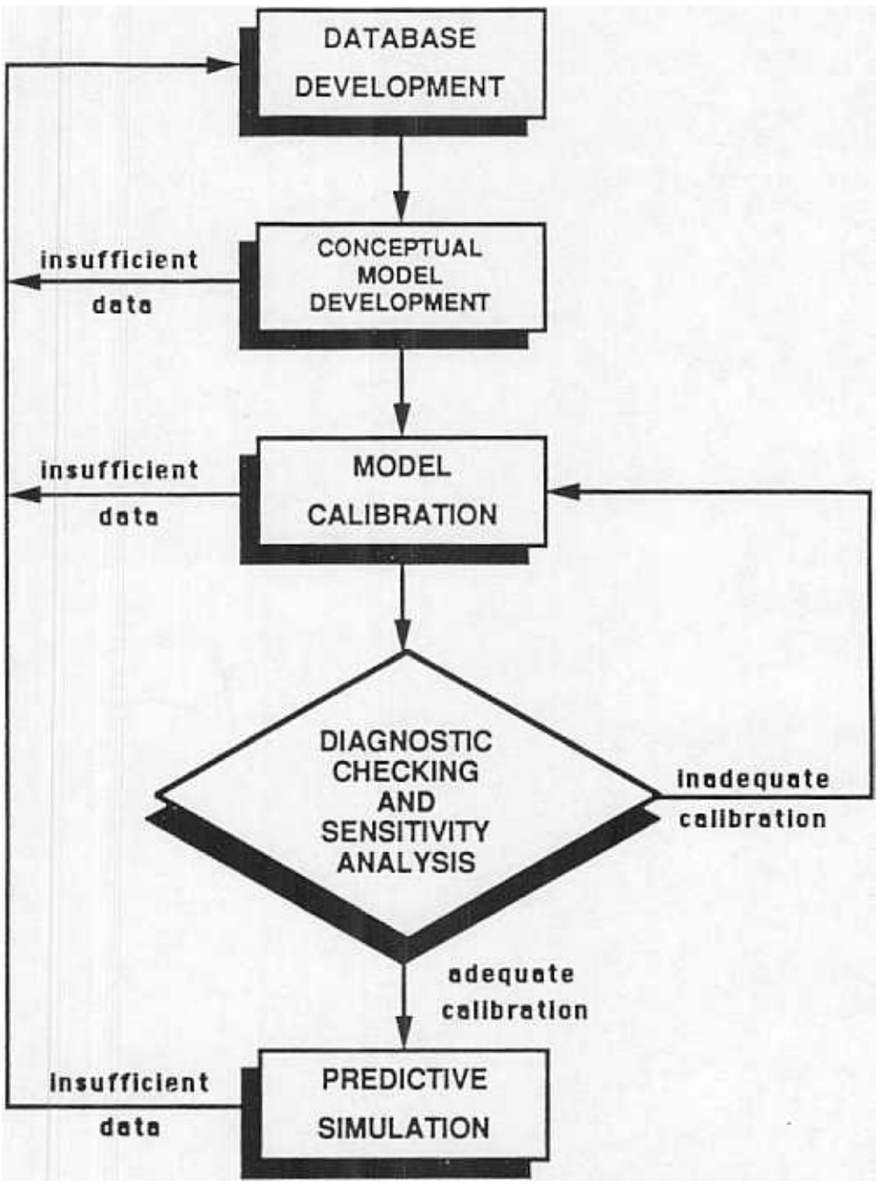

ITERATIVE MODEL-BUILDING PROCEDURE

Figure 2 Iterative model construction and calibration procedure.

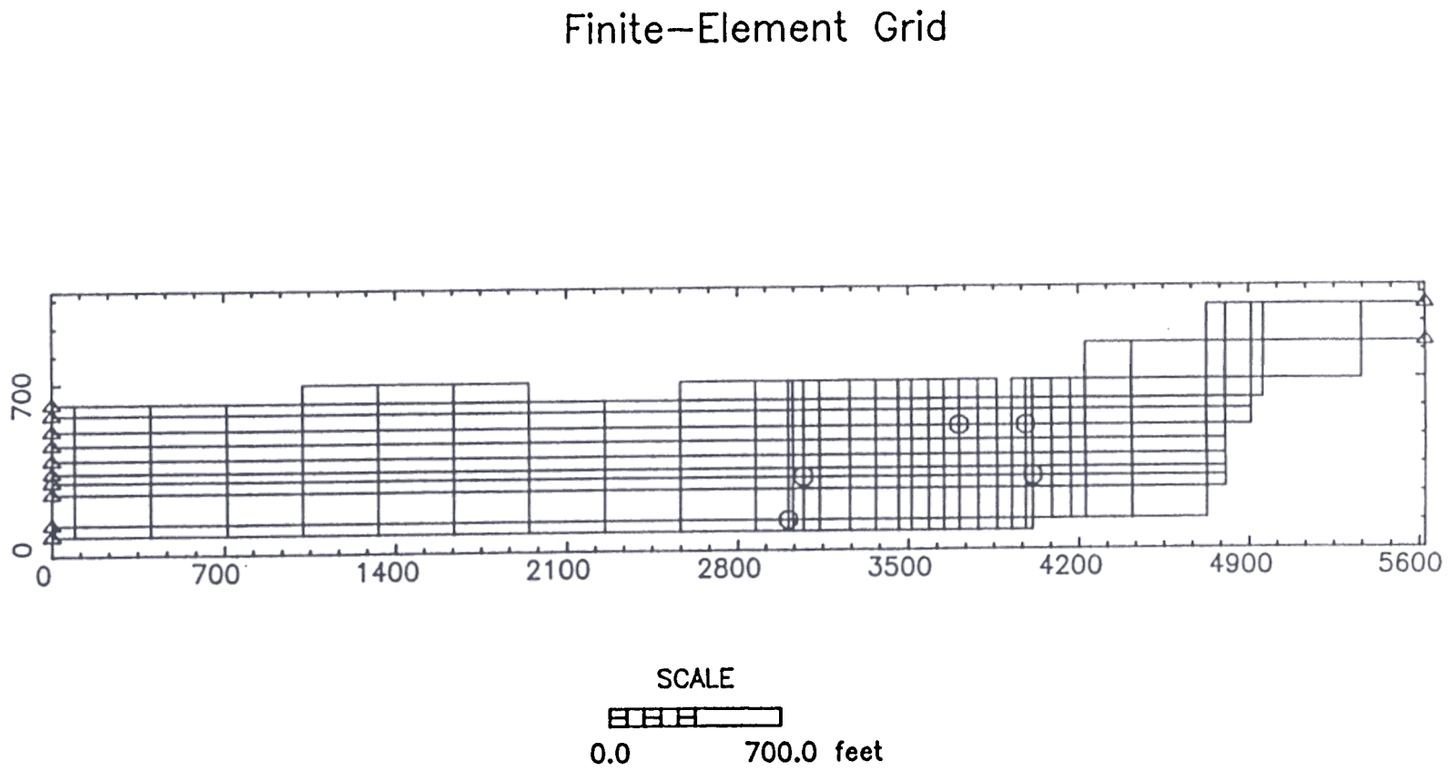

Figure 3 Finite-element mesh for Croton wellfield flow model.

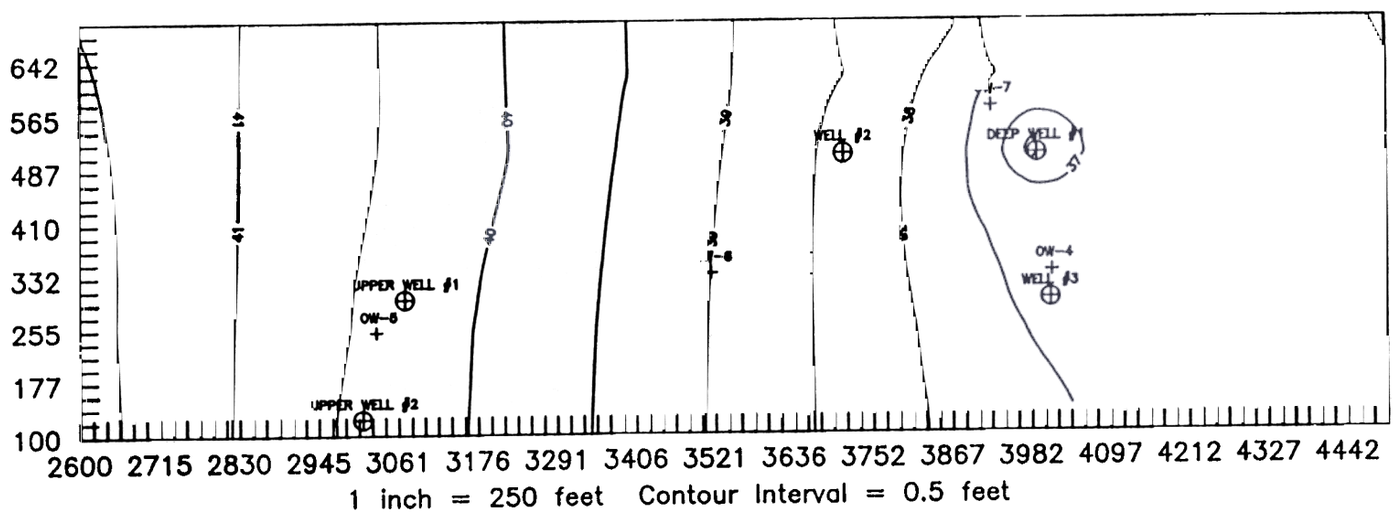

Figure 4 Calibrated steady-state water-table surface, Croton wellfield.

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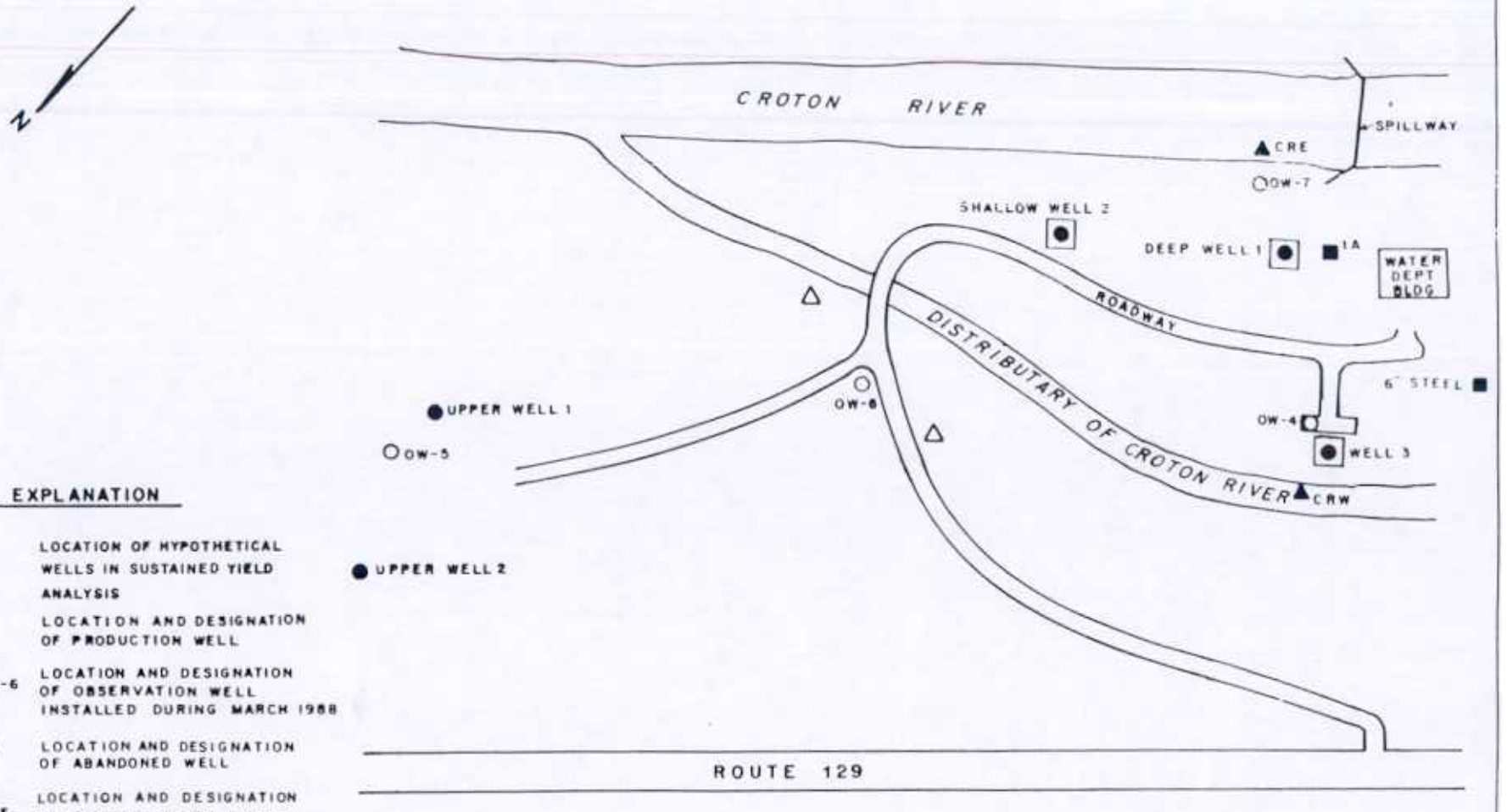
Ground-Water Consultants

COMPILED BY: C GILROY	DATE: 7-88	SCALE: SHOWN	PREPARED FOR: VILLAGE OF CROTON ON HUDSON
PREPARED BY: E WILSON	FILE NO: NY1394CH1		CROTON-ON-HUDSON, NEW YORK
PROJECT MGR: F. van der LEEDEN			



SUBJECT: LOCATION OF HYPOTHETICAL WELLS IN MODELING ANALYSIS

FIGURE 5

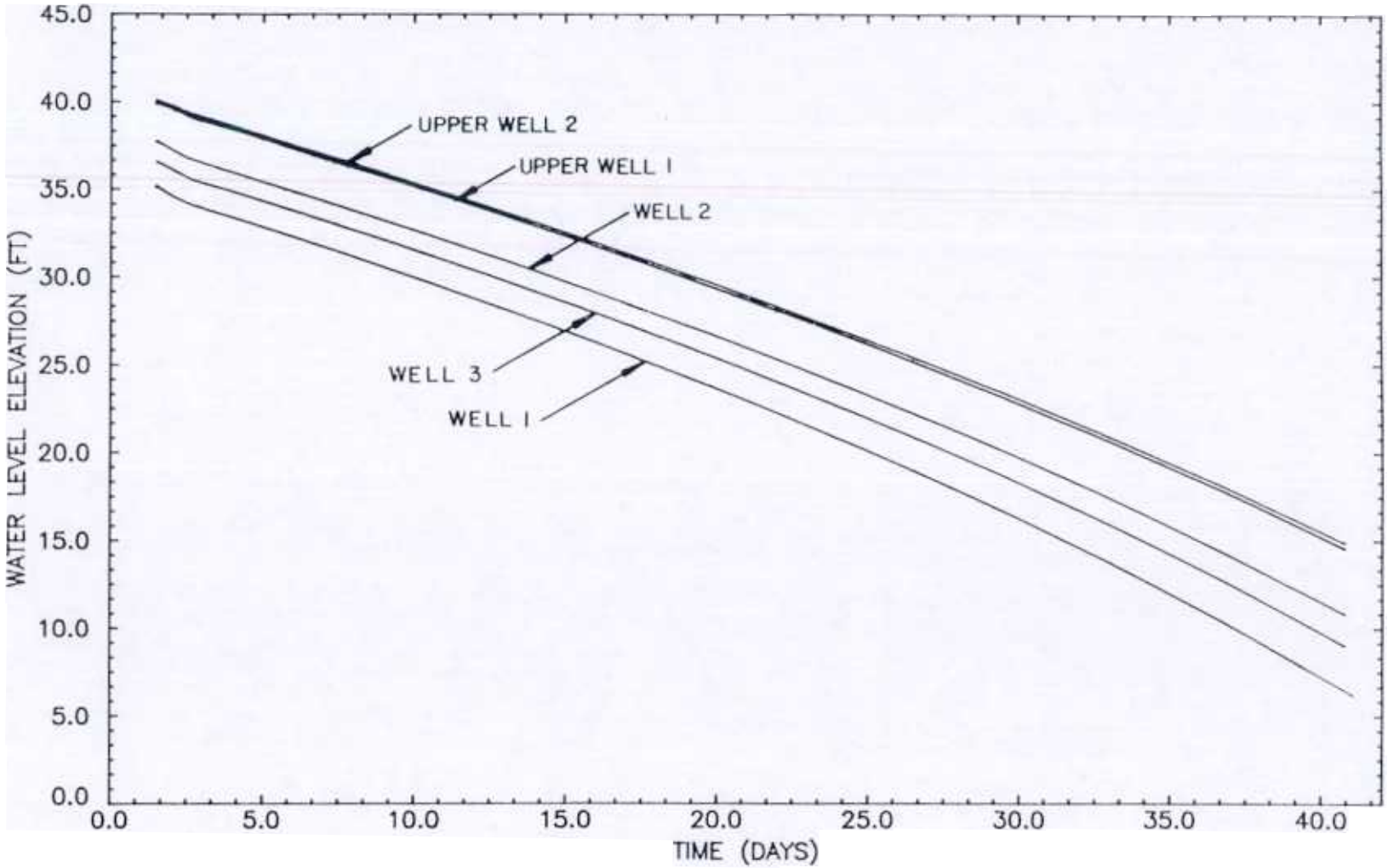


Figure 6 Water elevations in Croton wellfield pumping wells under simulated drought conditions (total pumpage = 1.3 mgd).

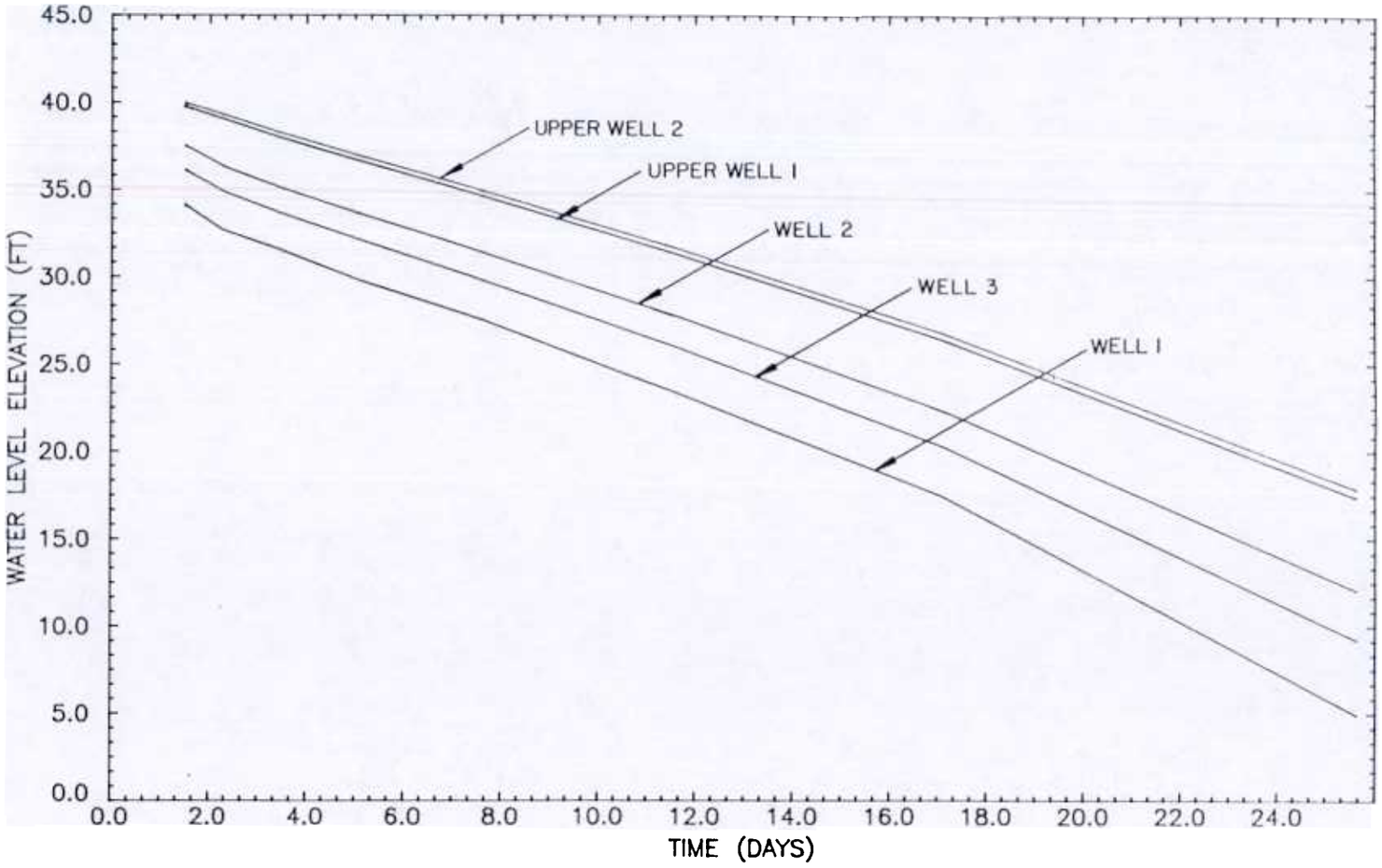


Figure 7 Water elevations in Croton wellfield pumping wells under simulated drought conditions (total pumpage = 1.9 mgd).

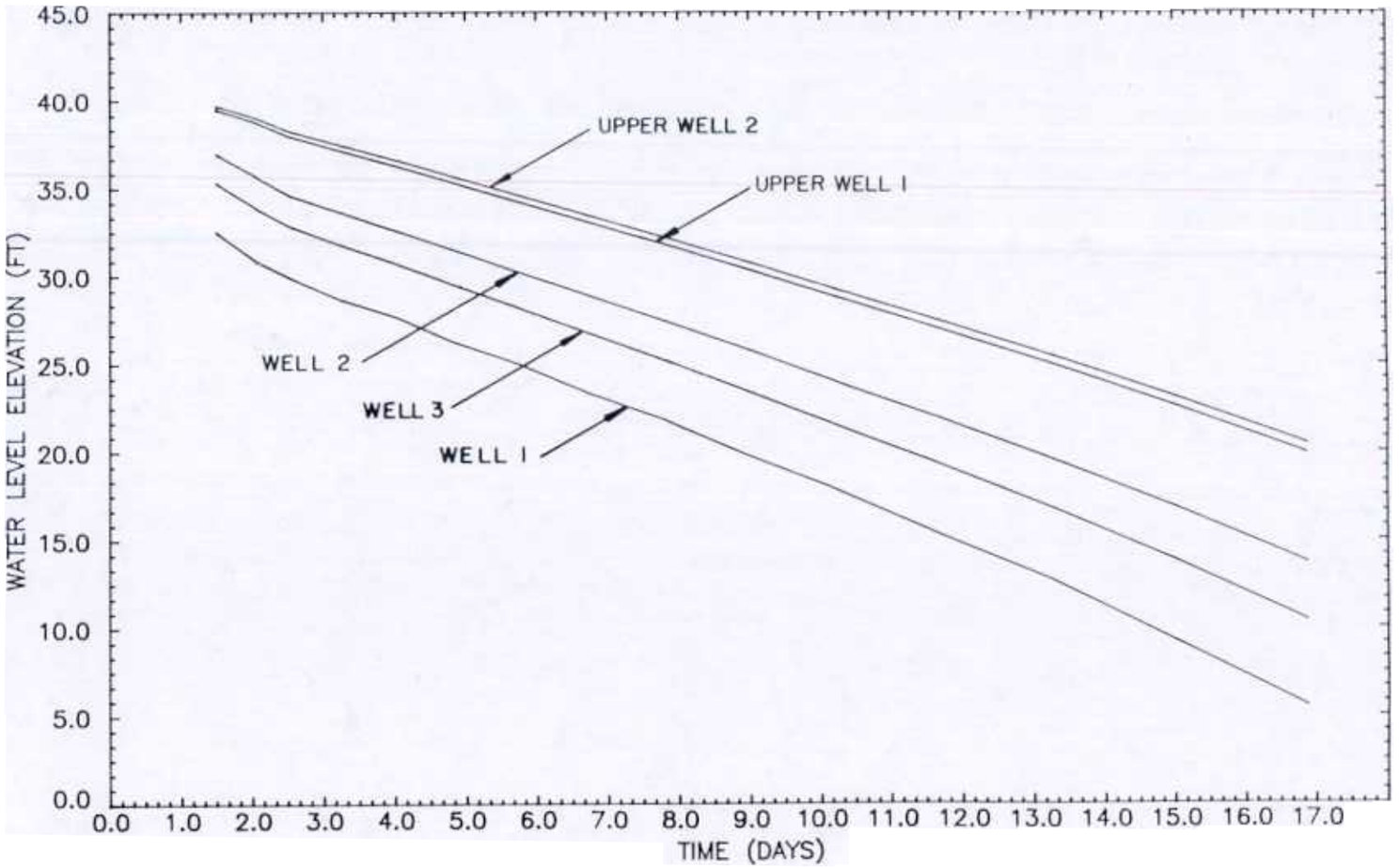


Figure 8 Water elevations in Croton wellfield pumping wells under simulated drought conditions (total pumpage = 2.6 mgd).

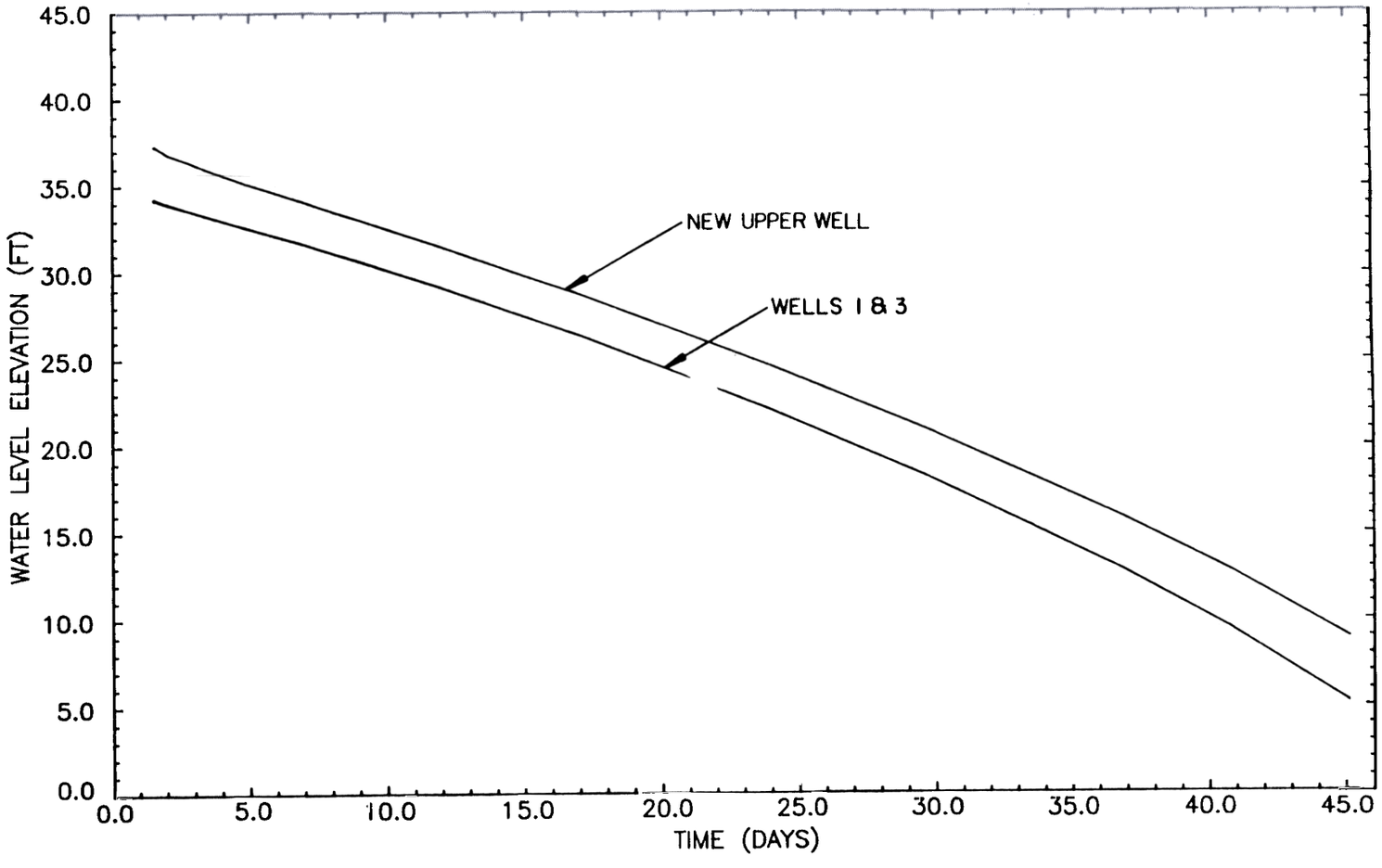


Figure 9 Water elevations with three wells pumping under simulated drought conditions (total pumpage 1.3 mgd).

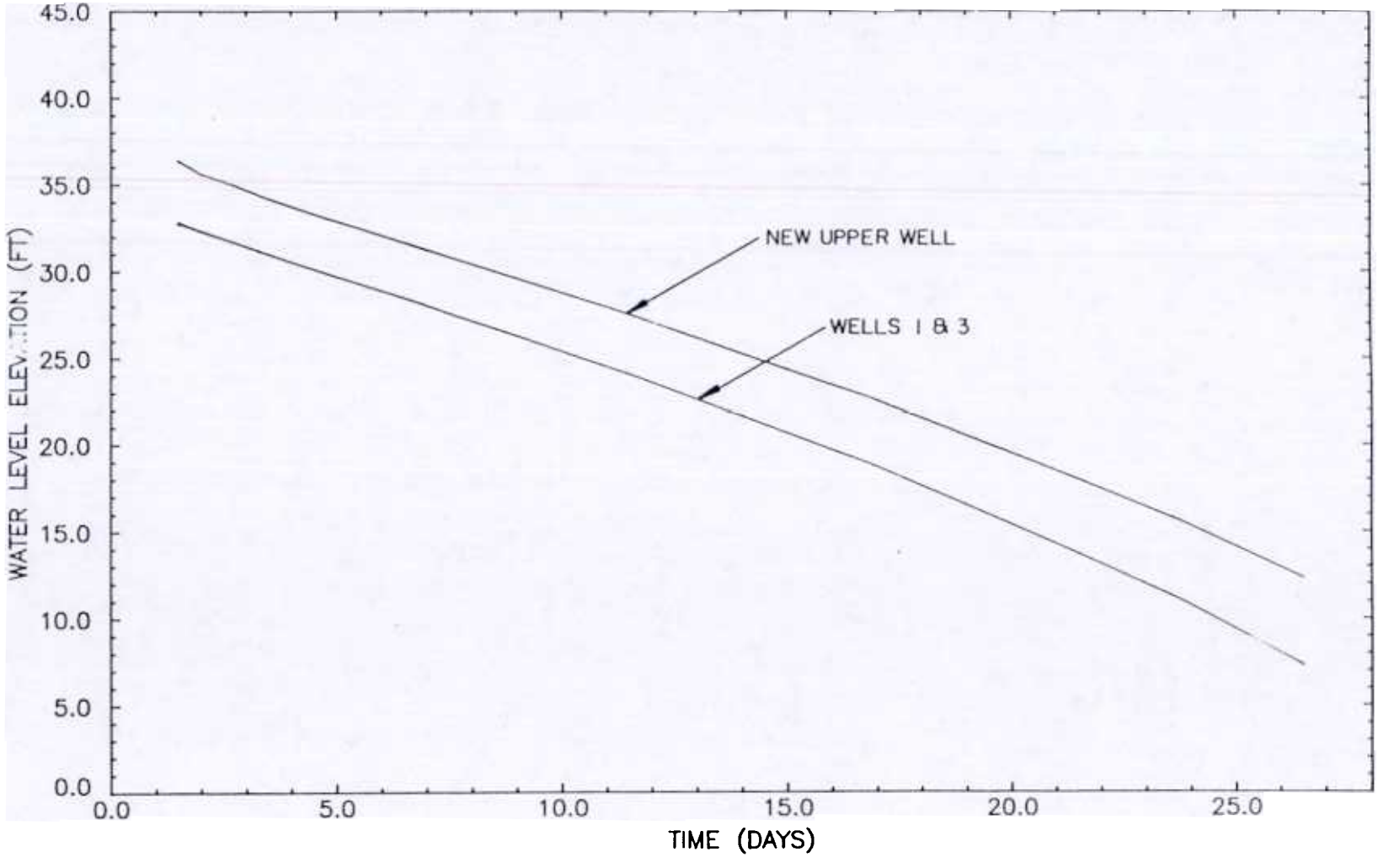


Figure 10 Water elevations with three wells pumping under simulated drought conditions (total pumpage = 1.9 mgd).

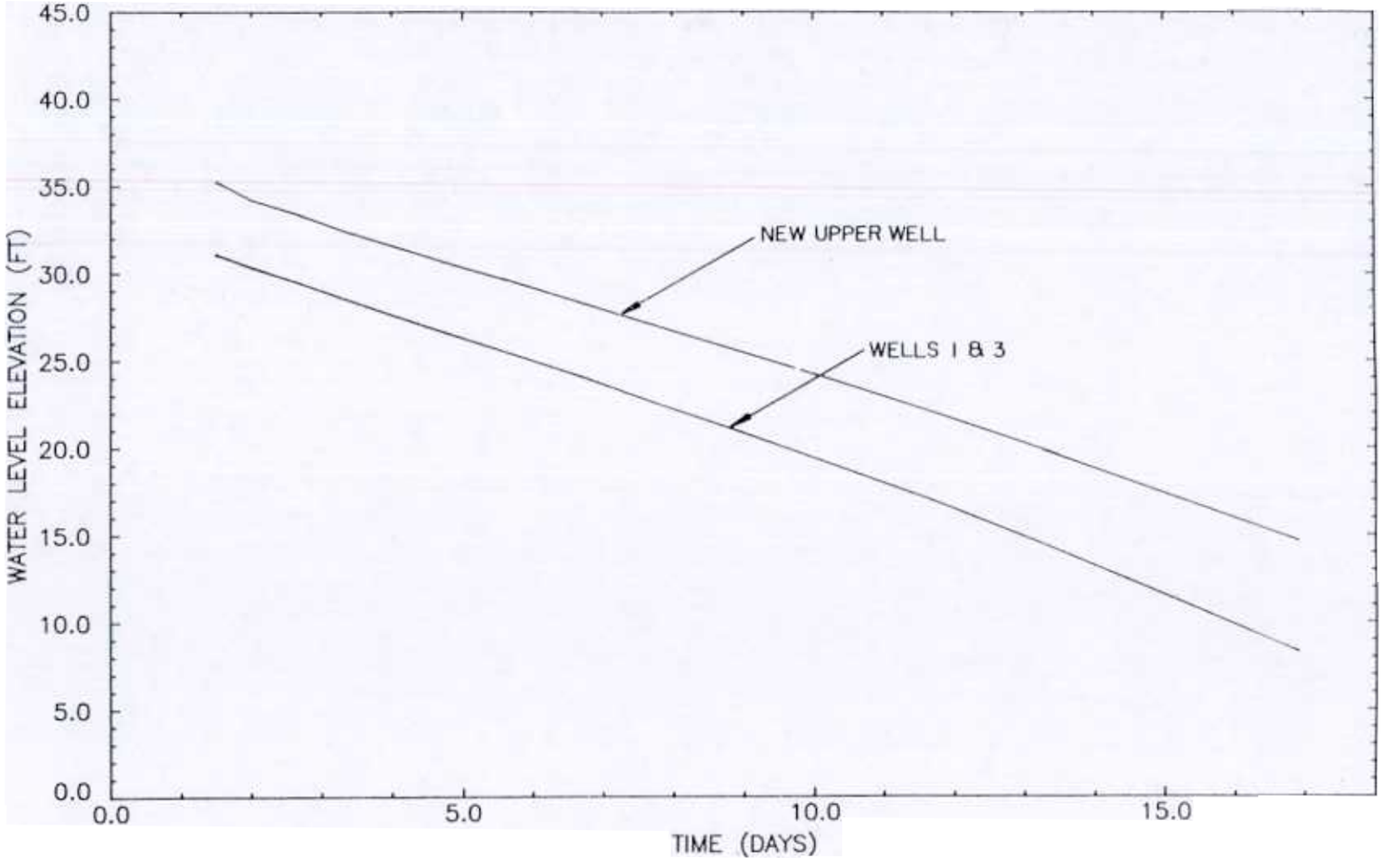


Figure 11 Water elevations with three pumping wells under simulated dought conditions (total pumpage = 2.6 mgd).