

1981 ATMOSPHERIC LOADING FOR LAKE HURON

BY

Edward Klappenbach

for

U.S. ENVIRONMENTAL PROTECTION AGENCY

GREAT LAKES NATIONAL PROGRAM OFFICE

536 SOUTH CLARK STREET

CHICAGO, ILLINOIS 60605

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## ATMOSPHERIC LOADINGS FOR LAKE HURON

### Introduction

To determine atmospheric loadings of nutrients and metals to Lake Huron, the USEPA's Great Lakes National Program Office operates five (5) automatic sensing wet/dry precipitation collectors. These collectors have been in operation since the spring of 1981. They are located at the following places in Michigan (see Figure 1):

	<u>Site I.D.</u>	<u>SAROAD Number</u>
1) Bay City	AQ	23 0420 002
2) Mount Clemens	DQ	23 3660 002
3) Port Austin	BQ	23 2340 002
4) Port Sanilac	CQ	23 4800 001
5) Tawas Point	QZ	23 4110 002

Isopleths of atmospheric loadings for April through December of 1981 were drawn based upon these five GLAD sites (see Figures 2-9).

### Methods

The precipitation sample was collected and forwarded to a contractor at the USEPA, Region V, Central Regional Laboratory for nutrients and metals analyses. The nutrients for which an analysis is performed include nitrates, total Kjeldahl nitrogen (TKN), ammonia, total phosphorus, total organic carbon (TOC), sulfate, chloride, and silica. Each precipitation sample was also analyzed for the following metals: aluminum, barium, beryllium, boron, cadmium, calcium, chromium, cobalt, copper, iron, lead, lithium, magnesium, manganese, mercury, nickel, potassium, silver, sodium, strontium, titanium, vanadium, and zinc.

### Computational Techniques

Once their concentrations were known, the atmospheric loadings for each of the nutrient parameters were calculated in  $\text{mg/m}^2$  (or  $\text{kg/km}^2$ ). Addition of the 1981 weekly loadings by site gave an estimate of the loadings for the nine month period (April-December). As was done with the nutrients, the atmospheric loadings of the various metals can be determined using the product of the weekly wet sample volume (ml) and the concentration of each parameter ( $\text{ug/l}$ ). These loadings were expressed in  $\text{ug/m}^2$  or  $\text{g/km}^2$ .

Addition of the weekly loadings at each of the five sites provided an estimate of the metals loadings to Lake Huron from April through December of 1981 (Table 2). Table 3 is a summary of the nine month atmospheric loadings of nutrients and metals at each of the five sites.

## Results

Figures 2-9 are isopleths of the April through December loadings of nitrates, ammonia, total phosphorus, total organic carbon, sulfates, chlorides, cadmium, and lead over Lake Huron based upon the GLAD network measurements and the seasonal wind flow patterns during this time period. Also attached are the plots of weekly rainfall amounts, nutrients loadings, and metals loadings at each of the five sites. These plots are a graphical representation of selected parameters in Table 2.

The area of Lake Huron is 59,500 km<sup>2</sup>. Estimates of atmospheric loadings to the lake can be made using the April through December data from the U.S. and Canadian atmospheric deposition networks. However, it should be noted that no wet deposition monitoring site is operational north of Tawas Point. To gain a better idea of the wet deposition in the northern half of the Lake Huron, a weekly wet deposition site should be established at Alpena, Cheboygan, or Rogers City.

#### IV. Location of Another Sampler on Lake St. Clair

Locating another wet deposition sampler on the Lake St. Clair shoreline would not produce better atmospheric loading estimates to this lake. It must be kept in mind that Lake St. Clair is a relatively minute body of water when compared with the Great Lakes. Variations in loadings between closely sited wet deposition collectors will undoubtedly raise questions about the quality assurance of the sampled data.

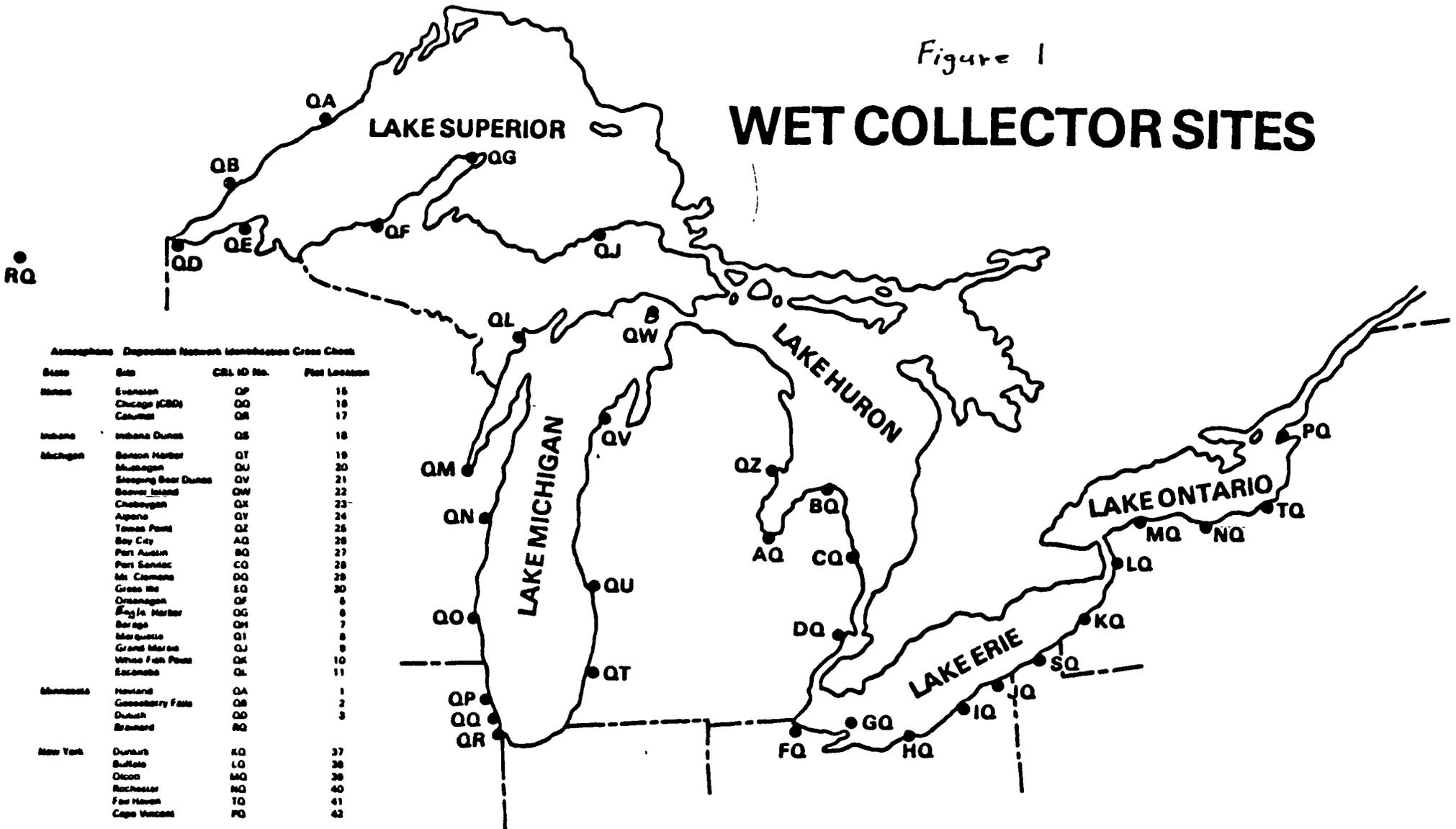
The prevailing annual wind direction is southwest to westerly, and the primary emission sources in the U.S. are at the southwestern end of this lake (Detroit). Therefore, I feel this site is sufficient for atmospheric loading estimates to Lake St. Clair, and I would not recommend locating another sampler on this lake.

#### V. Placing an Organic Sampler at Lake St. Clair

At the present time an organic sampler should not be located at the Mount Clemens site. Thought should be given towards locating an organics sampler at this site only after an acceptable sampler has been developed. The organics sampler will also be limited to sampling during periods of precipitation only.

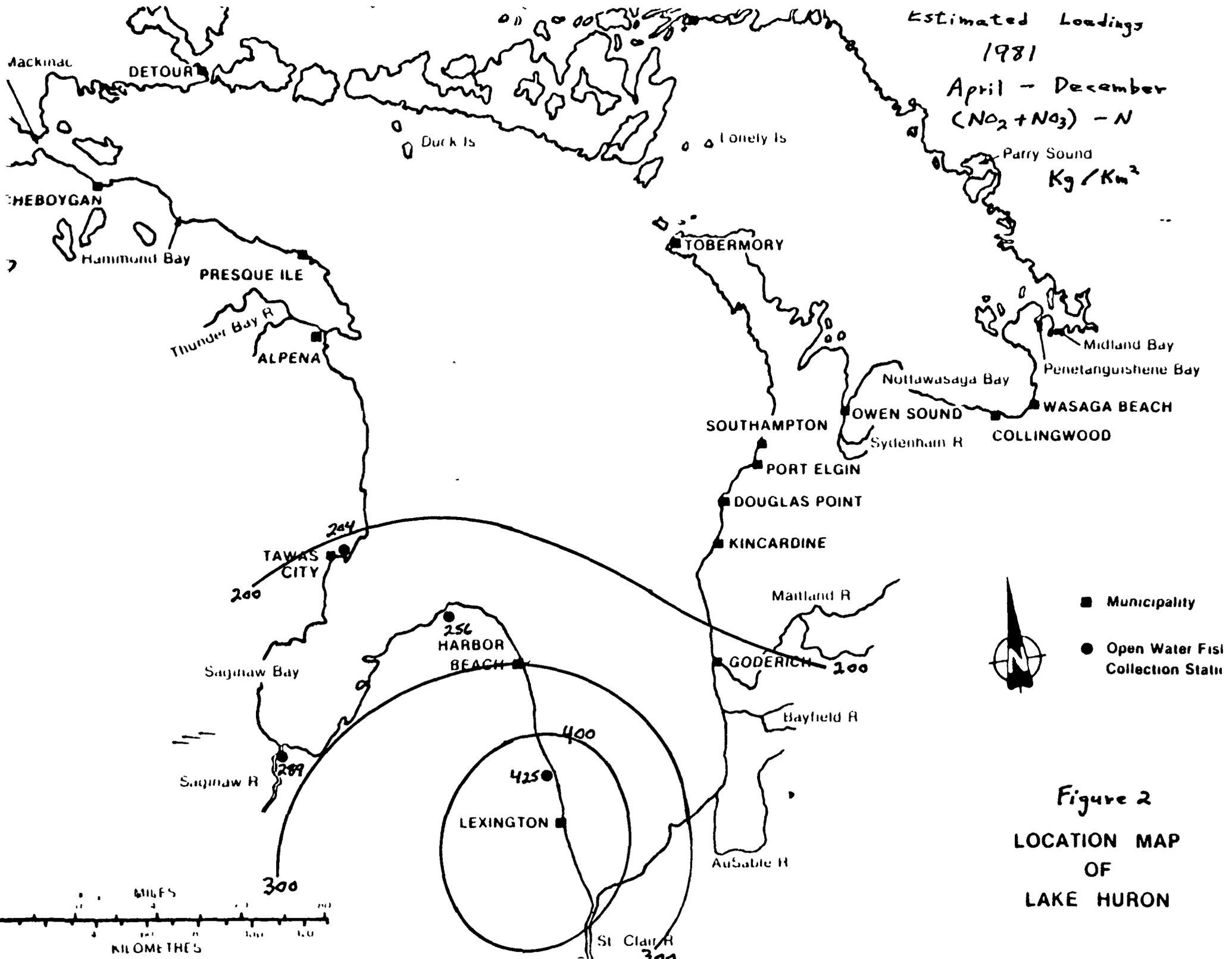
Figure 1

# WET COLLECTOR SITES

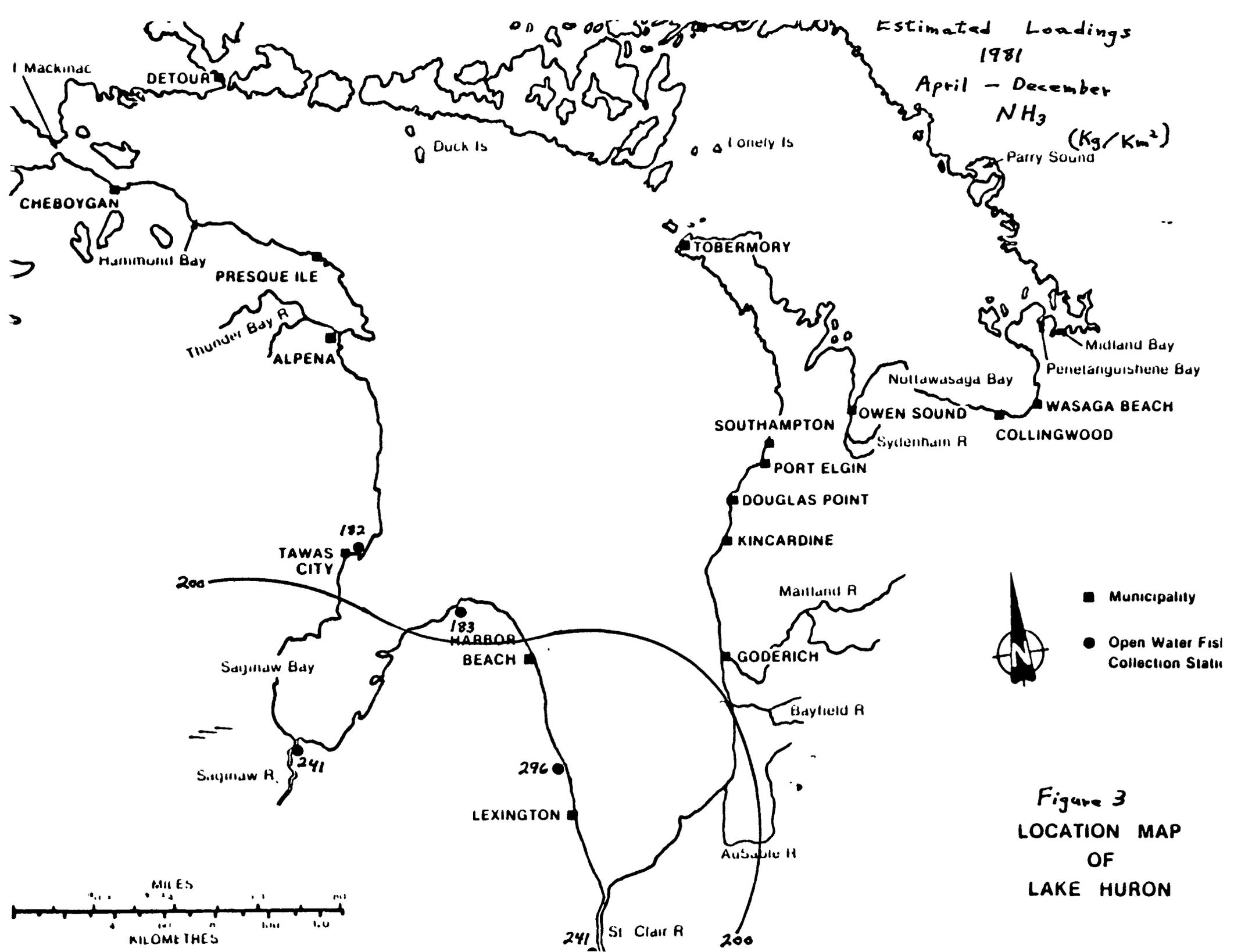


Atmospheric Deposition Network Identification Cross Check

State	Site	CBL ID No.	Plot Location
Illinois	Evanston	QP	16
	Chicago (CBD)	QD	18
	Calumet	QR	17
Indiana	Indiana Dunes	QS	18
Michigan	Benson Harbor	QT	19
	Muskegon	QU	20
	Sleeping Bear Dunes	QV	21
	Bowen Island	QW	22
	Chubbagan	QX	23
	Apton	QY	24
	Tawas Point	QZ	25
	Bay City	AA	26
	Perr Austin	AB	27
	Perr Sanilac	AC	28
	Ms. Comans	AD	29
	Grass Is.	AE	30
	Ontonagon	AF	6
	Bagin Harbor	AG	6
	Beraga	AH	7
Marquette	AI	8	
Grand Marais	AJ	9	
Whitefish Point	AK	10	
Esconob	AL	11	
Minnesota	Howard	QA	1
	Gooseberry Falls	QB	2
	Duluth	QC	3
	Brainerd	QD	3
New York	Dunkirk	FE	37
	Buffalo	LO	38
	Olson	MO	38
	Rochester	NO	40
	Four Haven	TO	41
	Cape Vincent	FO	42
Ohio	Totals	FO	31
	Put-in-Bay	GO	32
	Lorain	HO	33
	Fairport Harbor	IO	34
	Conneaut	JO	36
Pennsylvania	Erie	EO	36
Wisconsin	Carruocope	OE	4
	Green Bay	OM	12
	Manitowish	OP	13
	Manitowish	OS	14



**Figure 2**  
**LOCATION MAP**  
**OF**  
**LAKE HURON**



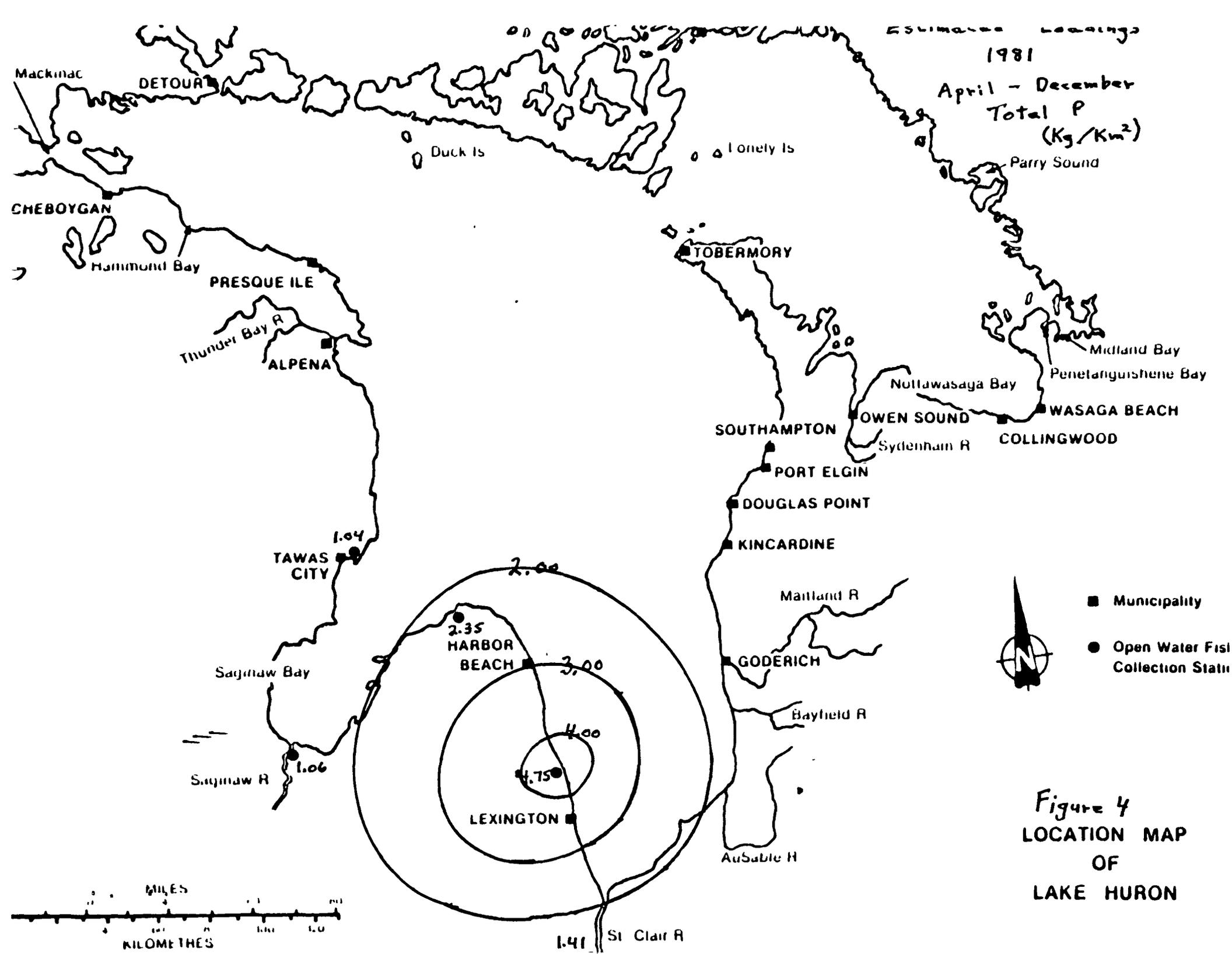
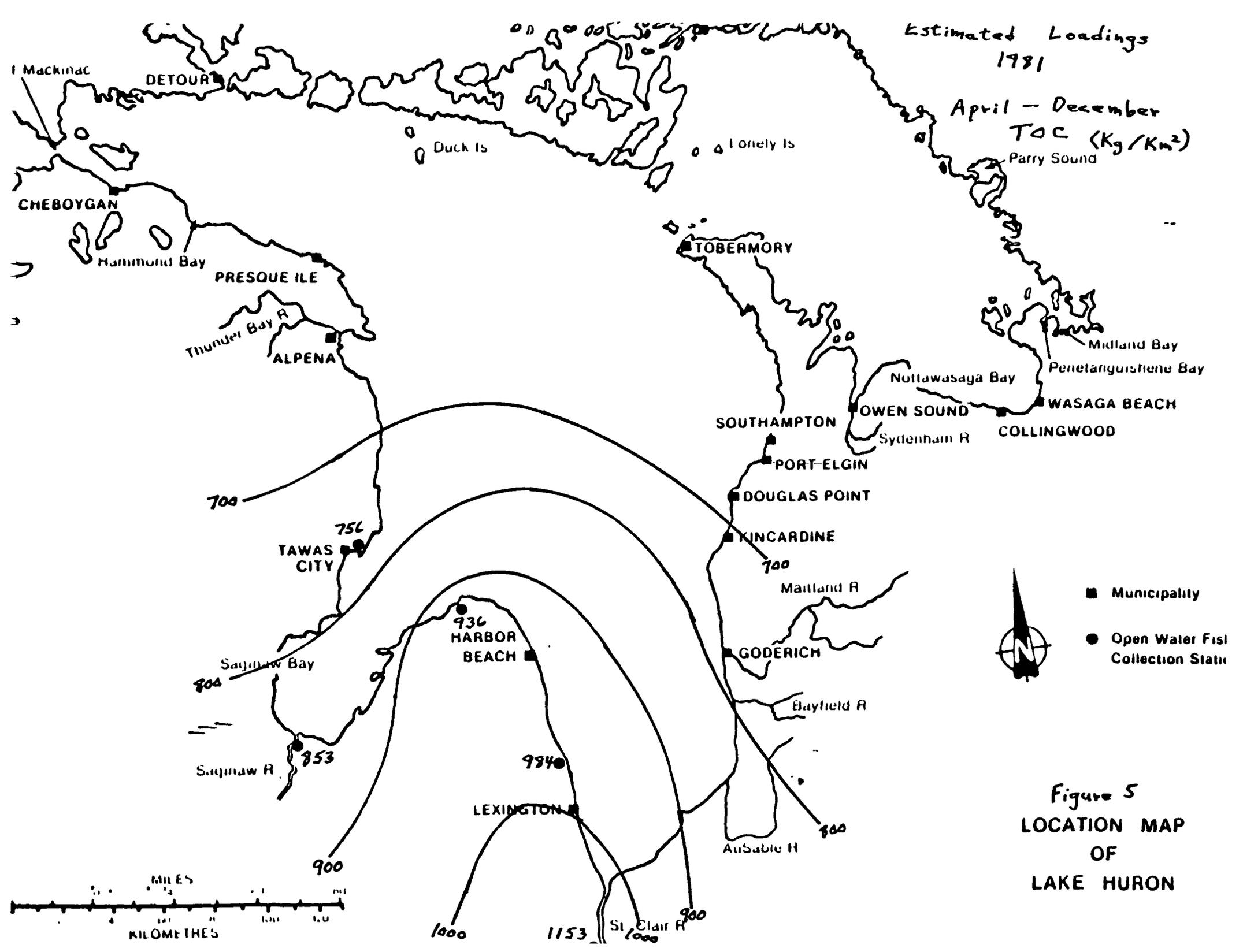


Figure 4  
 LOCATION MAP  
 OF  
 LAKE HURON



**Figure 5**  
**LOCATION MAP**  
**OF**  
**LAKE HURON**

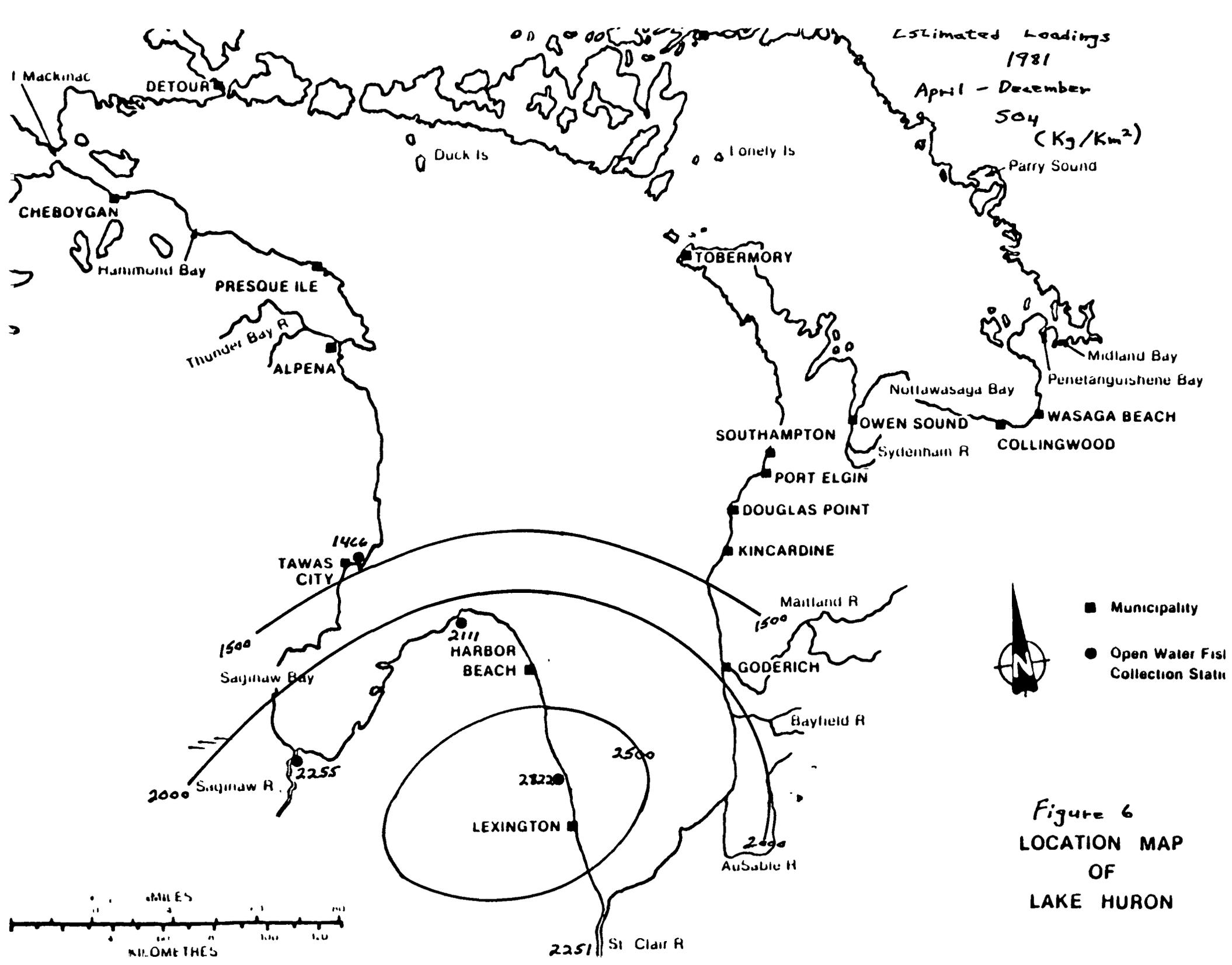


Figure 6  
LOCATION MAP  
OF  
LAKE HURON

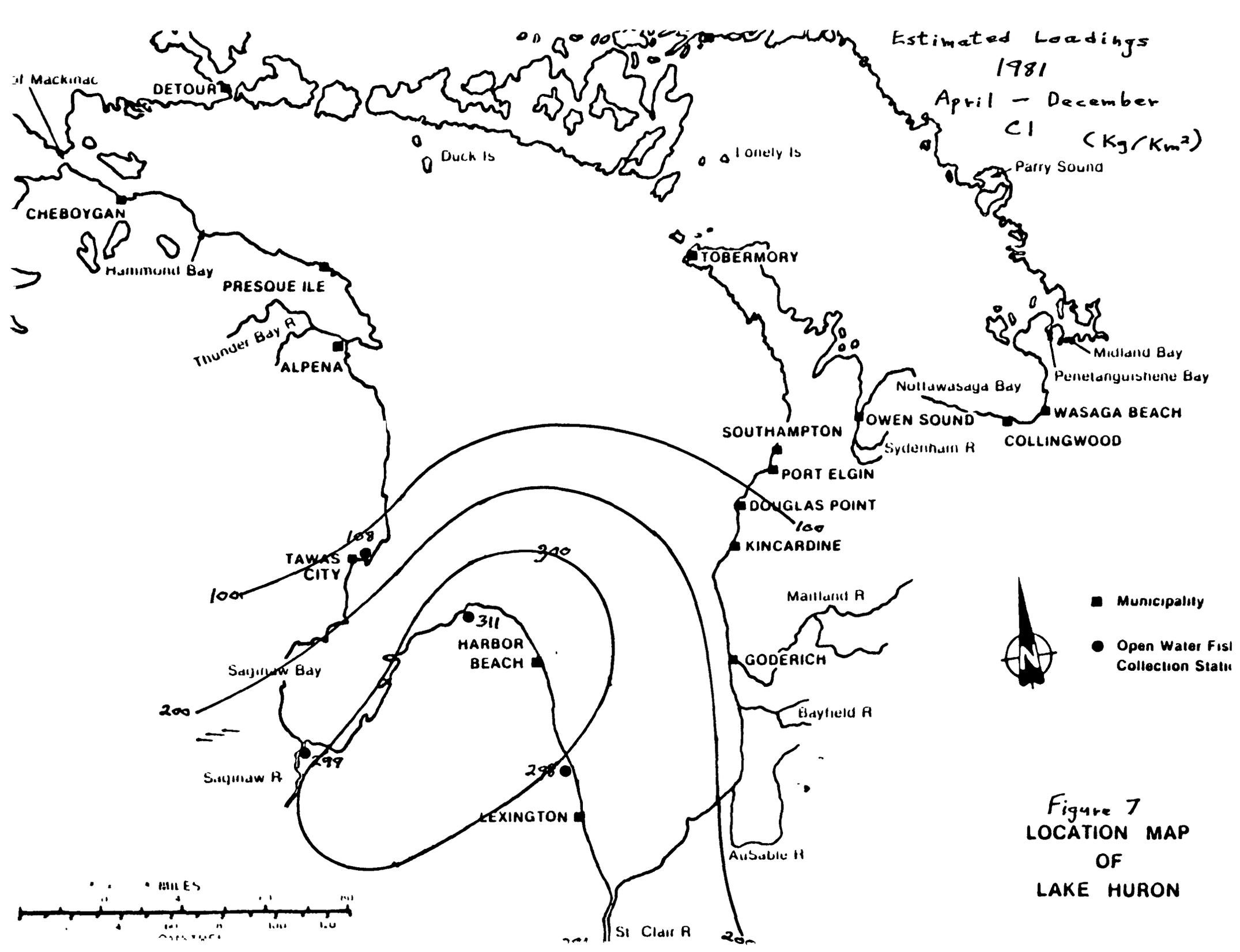


Figure 7  
LOCATION MAP  
OF  
LAKE HURON

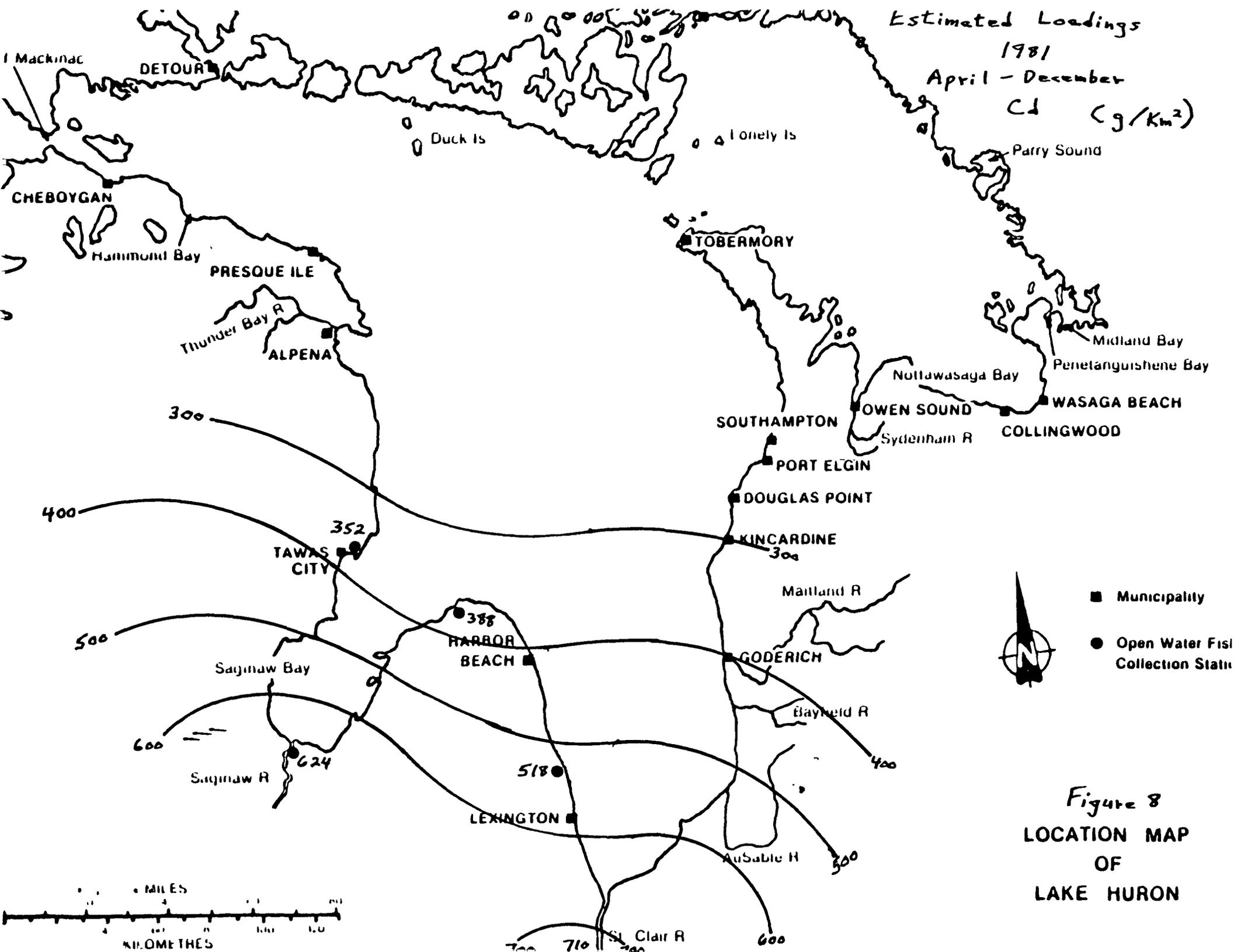


Figure 8  
 LOCATION MAP  
 OF  
 LAKE HURON

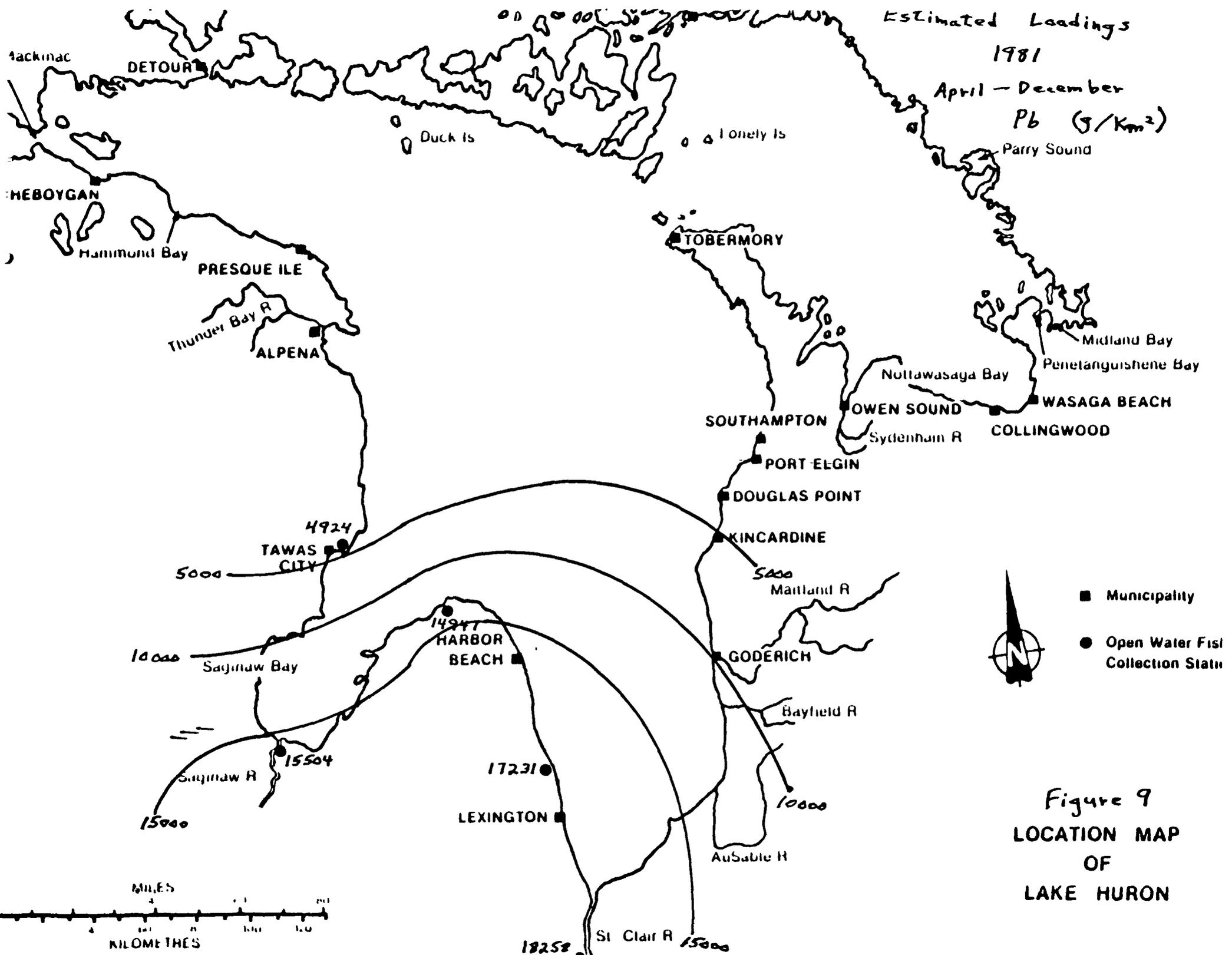


Figure 9  
LOCATION MAP  
OF  
LAKE HURON

Table 1  
Precipitation Samplers for Lake Huron

<u>Site</u>	<u>Sampling Start Date</u>	<u>Number of Sample Months During 1981</u>
1) Bay City	3/24/81	9
2) Mount Clemens	3/24/81	9
3) Port Austin	4/07/81	9
4) Port Sanilac	3/17/81	9
5) Tawas Point	5/05/81	8

LAKE-MUNON STPL-23 420 2

OBS	DATE	YEAR	SIZE	PHFLD	CONDFLD	CONDLAB	PHLAB	NITRATE	AMMONIA	NITROGEN	TOTALP	TOC	SULFATE	CHLORIDE	SILICA	ALKA	ACIDS	MERCURY
102	810331	81	600	4.26	12.5	14.0	4.70	0.31	0.41	0.62	0.001	0.10	1.97	0.19	0.07	.	5.70	0.10
103	810414	81	3250	4.55	23.0	22.0	4.50	0.44	0.42	0.49	.	0.10	2.40	0.40	0.10	.	6.30	0.00
104	810428	81	2190	4.40	40.0	45.0	4.08	0.91	0.68	0.75	0.002	1.00	4.39	0.44	0.10	.	15.00	0.10
105	810505	81	550	4.60	41.0	37.0	4.16	0.78	0.70	0.78	0.002	1.00	3.78	0.34	0.10	.	11.00	0.10
106	810512	81	3660	4.15	40.0	34.0	4.10	0.38	0.30	0.34	0.003	1.00	3.22	0.40	0.10	.	12.00	0.10
107	810526	81	322	4.60	41.0	38.0	.	0.61	0.31	0.40	0.001	3.13	3.39	0.33	0.10	.	.	0.00
108	810609	81	361	5.25	18.0	22.0	.	0.43	0.85	0.71	0.001	1.83	2.48	0.31	0.10	.	.	0.10
109	810616	81	1270	4.60	26.0	30.0	4.17	0.44	0.35	0.39	0.001	1.80	2.62	0.30	0.10	.	10.00	0.10

OBS	CADMIUM	COPPER	IRON	LEAD	NICKEL	SILVER	CALCIUM	MG	SODIUM	POTASS	ARSENIC	ALUMINUM	BARIUM	BERYLIUM	COBALT	CHROMIUM	MOLY
102	1.00	3.00	60.00	48.90	15	.	0.55	0.12	0.59	0.22	0.05	45.0	2.50	0.5	2.5	.	.
103	2.27	3.00	253.00	15.00	15	.	0.25	0.04	0.07	0.08	.	45.0	2.50	.	2.5	15.50	.
104	1.00	3.00	60.00	75.26	.	1.50	0.66	0.06	0.16	0.11	.	45.0	2.50	.	.	.	.
105	1.00	3.00	60.00	75.88	15	1.50	0.44	0.05	0.20	0.06	.	45.0	2.50	.	.	6.53	.
106	1.00	3.00	60.00	15.00	15	.	0.20	0.03	0.33	0.12	.	45.0	2.50	.	.	2.50	.
107	1.00	3.00	60.00	30.43	15	4.24	0.50	0.08	0.23	0.13	.	145.4	2.50	.	2.5	8.66	.
108	.	.	.	.	.	.	0.44	0.10	0.36	0.02	.	.	.	.	.	.	.
109	2.00	3.00	60.00	45.00	15	5.00	0.20	0.04	0.26	0.08	0.02	45.0	2.50	0.5	2.5	9.00	.

OBS	VANADIUM	YTRIUM	TITANIUM	BORON	ZINC	MANGA	TIN	CA	MAG	NA	K	NEGPH	NEGPL	NO3LOAD	NH4LOAD	TKNLOAD	TPLOAD	TOCLOAD
102	.	.	3.00	5.00	25.0	2.50	.	550	120.0	590	220	-4.26	-4.70	2.8953	3.8292	5.7906	0.009340	0.934
103	.	.	3.00	15.00	25.0	8.33	.	250	40.0	70	80	-4.55	-4.50	22.2594	21.2476	24.7889	.	5.059
104	.	.	3.00	15.00	25.0	2.50	.	460	60.0	160	110	-4.40	-4.08	31.0215	23.1809	25.5672	0.068179	34.090
105	.	.	3.00	15.00	25.0	5.85	.	440	50.0	200	60	-4.60	-4.16	6.6778	5.9929	6.6778	0.017123	8.561
106	.	.	3.00	15.00	25.0	2.50	.	200	30.0	330	120	-4.15	-4.10	21.6492	17.0915	19.3703	0.170915	56.972
107	.	.	23.78	15.00	25.0	6.16	.	500	80.0	230	130	-4.60	.	3.0575	1.5538	2.0049	0.005012	15.688
108	.	.	.	.	.	.	.	440	100.0	360	20	-5.25	.	2.4163	4.7764	3.9897	0.005619	10.283
109	.	.	.	14.00	.	2.50	.	200	40.0	260	80	-4.60	-4.17	8.6983	6.9191	7.7098	0.019769	35.584

OBS	SO4LOAD	CLLOAD	SILOAD	ALKLOAD	NIONLOAD	MGLOAD	CDLOAD	CULOAD	FELOAD	PBLOAD	NILOAD	AGLOAD	CALOAD	MGLoad	MALOAD
102	18.399	1.7745	0.6538	.	53.24	0.9340	9.340	28.019	560.4	456.71	140.094	.	5136.8	1120.75	5510.4
103	121.415	20.2358	5.0589	.	318.71	0.0000	114.838	151.768	12799.1	758.84	758.842	.	12647.4	2023.58	3541.3
104	149.653	14.9994	3.4090	.	511.34	3.4090	34.090	102.269	2045.4	2565.58	.	51.134	15681.2	2045.37	5454.3
105	32.362	2.9108	0.8561	.	94.17	0.8561	8.561	25.684	513.7	649.63	128.419	12.862	3767.0	428.06	1712.3
106	183.448	22.7836	5.6972	.	683.66	5.6972	56.972	170.915	3418.3	854.57	854.573	.	11394.3	1709.15	18800.6
107	16.992	1.6540	0.5012	.	.	0.0000	5.012	15.037	300.7	152.52	75.184	21.352	2506.1	400.98	1152.8
108	13.936	1.7420	0.5619	.	.	0.5619	.	.	.	.	.	.	2472.5	561.93	2023.0
109	51.794	5.9306	1.9769	.	197.69	1.9769	39.538	59.306	1186.1	889.60	296.532	98.864	3953.8	790.75	5139.9

OBS	KLOAD	ASLOAD	ALLOAD	BALOAD	BELOAD	COLOAD	CRLOAD	MOLOAD	VLOAD	YLOAD	TILOAD	BLOAD	INLOAD	MNLOAD	SNLOAD	DATENUM
102	2054.71	0.4670	420.28	23.349	4.6698	23.349	.	.	.	.	28.019	46.698	233.49	23.349	.	91
103	4047.16	.	2276.53	126.474	.	126.474	786.137	.	.	.	151.768	758.842	1264.74	421.411	.	105
104	3749.85	.	1534.03	85.224	.	.	.	.	.	.	102.269	511.343	852.24	85.224	.	119
105	513.68	.	385.26	21.403	.	.	55.905	.	.	.	25.684	128.419	214.03	50.084	.	126
106	6836.59	.	2563.72	142.429	.	.	142.429	.	.	.	170.915	854.573	1424.29	142.429	.	133
107	651.59	.	728.78	12.531	.	12.531	43.406	.	.	.	119.191	75.184	125.31	30.875	.	147
108	112.39	.	.	.	.	.	.	.	.	.	.	.	.	.	.	161
109	1581.51	0.3954	889.60	49.422	9.8864	49.422	177.919	.	.	.	.	276.763	.	49.422	.	168

LAKE HURON SITE=23 420 2

OBS	DATE	YEAR	SIZE	PHFD	COND	C	N	A	N	T	C	S	H	S	I	A	M	C	C	I	N	S	C						
																								D	L	A	B	R	M
110	810623	81	1450	4.62	22.0	29.0	4.19	0.42	0.47	0.52	0.001	1.20	2.92	0.20	0.10	11.00	0.10	2.00	3.00	60.00	45	15	5.0	0.2					
111	810630	81	2940	4.30	46.0	41.0	4.01	0.48	0.47	0.54	0.001	1.60	4.42	0.10	0.52	14.00	0.12	2.00	3.00	60.00	45	15	5.0	257.0					
112	810707	81	1242	4.33	32.0	40.0	4.25	0.52	0.50	0.49	0.001	2.50	3.72	0.10	0.10	13.30	0.10	2.00	7.00	60.00	45	15	5.0	174.0					
113	810721	81	394	4.00	86.0	113.0	3.54	1.20	1.01	1.07	0.002	2.70	13.60	0.50	0.10	31.00	0.10			60.00	45	15	5.0	90.0					
114	810728	81	1000	5.14	8.0	10.8	4.50	0.12	0.24	0.25	0.001	0.10	0.87	0.32	0.10	7.20	0.10	2.00	3.00	60.00	45	15	5.0	213.0					
115	810803	81	500	4.07	4.6	58.0	3.74	0.57	0.22	0.29	0.002	2.50	5.03	0.36	0.10	18.00	0.10	2.00	3.00	60.00	45	15	5.0	160.0					
116	810811	81	1090	4.38	32.0	44.0	3.81	0.59	0.34	0.33	0.001	1.40	3.53	0.10	0.10	12.80	0.10	3.00	3.00	60.00	45	15	5.0						
117	810825	81	1560	4.33	46.0	66.0	3.70			0.70	0.001	3.11	6.50	0.30	0.10	22.30	0.10			11.60									
118	810901	81	3540	4.32	46.0	59.0	3.81	0.58	0.53	0.39	0.001	1.90	5.48	0.40	0.10	20.00	0.10	0.02		6.80									
119	810908	81	4300	5.41	14.0	18.0	4.33	0.23	0.15	0.13	0.001	0.86	1.86	0.20	0.10	8.60	0.10			3.90									
120	810922	81	7130	4.61	12.0	15.0	4.37	0.09	0.08	0.06	0.001	1.22	1.10	0.30	0.10	6.28	0.10												
121	810929	81	1120	4.22	38.0	47.0	3.95	0.58	0.49	0.57	0.003	0.50	4.25	0.30	0.10	17.00	0.10	0.13	4.95	24.40	45	9	5.0	297.0					
122	811006	81	3720	4.60	28.0	30.5	4.15	0.34	0.28	0.25	0.001	0.10	2.48	0.10	0.10	14.00	0.10	0.11	5.37	9.88		9	5.0	137.0					
123	811027	81	915	4.67	16.0	22.0	4.17	0.38	0.17	0.18	0.004	1.85	1.75	0.20	0.10	8.00	0.10	0.07		4.34			2.2	200.0					
124	811124	81	1500	4.64	16.0	21.0	4.28	0.35	0.16	0.44	0.002	0.30	1.54	1.40	0.10	8.00	0.10	0.13	3.00	4.90	45	9	5.0	171.0					
125	811201	81	1500	4.21	26.0	37.0	3.99	0.53	0.46	0.38	0.005	1.54	3.93	3.30	0.10	14.50	0.10	0.27	3.00	33.30	45	9	5.0	443.0					
126	820105	82	1800	4.50	18.0	26.5	4.08	0.39	0.20	0.18	0.001	0.54	1.62	0.10	0.10	10.00	0.10	2.00	3.00	4.00	45	9	5.0	153.0					

OBS	M	S	P	A	A	B	B	C	V	T	Z	M	T	M	A	N	M	N	N	N	N	T		
																							O	P
110	0.03	0.2	0.05	0.02	45.0	2.50	0.5	2.5	9			18.00		2.50		200	30.0	200	50	-4.62	-4.19	10.787	12.071	13.356
111	49.60	30.0			45.0	2.50	0.5	2.5	9					2.50		257	49.6	30		-4.30	-4.01	21.967	21.909	24.713
112	25.20	30.0			45.0	2.50	0.5	2.5								176	25.2	30		-4.33	-4.25	10.053	9.666	9.473
113																								
114	16.60	216.0			45.0	2.50	0.5	2.5	9					2.50		90	16.6	216		-5.14	-4.50	1.868	3.736	3.891
115	31.40	61.0			45.0	2.50	0.5	2.5	9					2.50		213	31.4	61		-4.07	-3.74	4.436	1.712	2.257
116	28.90	30.0			45.0	2.50	0.5	2.5	9					2.50		160	28.9	30		-4.38	-3.81	10.010	5.769	5.599
117				0.31																-4.33	-3.70			16.998
118				0.47																-4.32	-3.81	31.960	29.205	21.490
119				0.16																-5.41	-4.33	15.395	10.040	8.701
120			0.02	0.16														20		-4.61	-4.37	9.989	8.879	6.659
121	45.70			0.45	40.2	2.37	0.4	3.0	9	4	2	8.96	12.1	3.32	1.03	297	45.7			-4.22	-3.95	10.112	8.543	9.937
122	17.00	30.0		0.33	34.2	1.90	0.4	3.0	9	3	4	7.90	7.7	1.70	0.70	137	17.0	30		-4.60	-4.15	19.688	16.214	14.476
123	32.00	15.0		0.16	22.0	0.80	0.1	0.6				0.20			0.40	200	32.0	15		-4.67	-4.17	5.412	2.421	2.564
124	25.20	30.0		0.33	12.0	0.82	0.4	3.0	9	5		9.36	3.0	1.39	0.69	171	25.2	30		-4.64	-4.28	8.172	3.736	10.274
125	57.90	177.0		0.83	22.3	2.71	0.4	3.0	9	5		5.63	60.3	6.74	1.77	443	57.9	177		-4.21	-3.99	12.375	10.741	8.873
126	16.00	30.0	0.03	0.27	17.0	0.90	0.4	3.0	9	5	4	5.00	5.0	0.90	1.00	153	16.0	30	30	-4.50	-4.08	10.927	5.604	5.043

LAKE=HURON SITE=23 420 2

	T	S	C	A	H	C	C	F	P	N	A	C	M		
OBS	LOAD	LOAD	LOAD	LOAD	LOAD	LOAD	LOAD	LOAD	LOAD	LOAD	LOAD	LOAD	LOAD		
110	0.02568	30,821	75.00	5.137	2.5684	282.52	2.5684	51.368	77.05	1541.0	1155.8	385.26	128.42	5137	770.5
111	0.04574	73,222	202,28	4.576	23.7973	640.70	5.4917	91.528	137.29	2745.8	2059.4	686.46	228.32	11761	2269.9
112	0.01933	48,332	71,92	1.933	1.9333	257.13	1.9333	38.666	.	135.3	.	.	96.66	3403	487.2
113	0.01227	16,559	83,41	3.067	0.6133	190.12	0.6133	.	.	.	.	.	.	.	.
114	0.01557	1,557	13,54	4.981	1.5566	112.08	1.5566	31.132	46.70	934.0	700.5	233.49	77.83	1401	258.4
115	0.01557	19,457	39,15	2.802	0.7783	140.09	0.7783	15.566	23.35	467.0	350.2	116.74	38.91	1658	244.4
116	0.01497	23,754	59,89	1.697	1.6967	217.18	1.6967	50.901	50.90	1018.0	763.5	254.50	84.83	2715	490.3
117	0.02428	75,520	157,84	7.285	2.4283	541.51	2.4283	.	.	281.7	.	.	.	.	.
118	0.05510	104,697	301,97	22.041	5.5104	1102.07	5.5104	1.102	.	374.7	.	.	.	.	.
119	0.06693	57,543	124,50	13.387	6.6934	575.63	6.6934	.	.	261.0	.	.	.	.	.
120	0.11099	135,402	122,08	33.296	11.0986	696.99	11.0986	.	.	.	.	.	.	.	.
121	0.05230	8,717	74,09	5.230	1.7434	296.38	1.7434	2.266	86.30	425.4	784.5	156.91	87.17	5178	796.7
122	0.05791	5,791	143,61	5.791	5.7906	810.68	5.7906	6.370	310.95	572.1	.	521.15	289.53	7933	984.4
123	0.05697	26,349	24,93	2.849	1.4243	113.94	1.4243	0.997	.	61.8	.	.	31.33	2849	455.8
124	0.04670	7,005	35,96	32.689	2.3349	186.79	2.3349	3.035	70.05	114.4	1050.7	210.14	116.74	3993	588.4
125	0.11674	35,957	91,76	77.052	2.3349	338.56	2.3349	6.304	70.05	777.5	1050.7	210.14	116.74	10344	1351.9
126	0.02802	15,130	45,39	2.802	2.8019	280.19	2.8019	56.038	84.06	112.1	1260.8	252.17	140.09	4287	448.3

	N	K	A	A	B	B	C	C	M	V	Y	T	Z	M	S	D	
OBS	LOAD	LOAD	LOAD	LOAD	LOAD	LOAD	LOAD	LOAD	LOAD	LOAD							
110	5136.8	1284.2	0.516	1155.8	64.21	12.842	64.210	231.16	.	.	.	.	462.31	.	64.21	175	
111	1372.9	.	.	2059.4	114.41	22.882	114.410	411.88	.	.	.	.	.	.	114.41	182	
112	580.0	.	.	870.0	48.33	9.666	48.332	.	.	.	.	.	.	.	.	189	
113	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	203	
114	3362.3	.	.	700.5	38.91	7.783	38.915	140.09	.	.	.	.	.	.	38.91	210	
115	474.8	.	.	350.2	19.46	3.891	19.457	70.05	.	.	.	.	.	.	19.46	216	
116	509.0	.	.	763.5	42.42	8.483	42.417	152.70	.	.	.	.	.	.	42.42	224	
117	.	.	7.528	.	.	.	.	.	.	.	.	.	.	.	.	235	
118	.	.	25.899	.	.	.	.	.	.	.	.	.	.	.	.	245	
119	.	.	10.709	.	.	.	.	.	.	.	.	.	.	.	.	252	
120	.	2219.7	17.753	.	.	.	.	.	.	.	.	.	.	.	.	266	
121	.	.	7.845	700.8	41.32	6.974	52.302	156.91	.	69.736	34.868	156.21	210.95	57.88	17.957	273	
122	1737.2	.	19.109	1980.4	110.02	23.162	173.717	521.15	289.528	231.622	115.811	457.45	445.87	98.44	40.534	280	
123	185.2	.	2.279	313.3	11.39	1.424	8.546	.	.	.	.	2.85	.	.	5.697	301	
124	700.5	.	7.705	280.2	19.15	9.340	70.047	210.14	116.745	.	.	46.698	218.55	70.05	32.46	16.111	329
125	4132.8	.	19.380	520.7	63.28	9.340	70.047	210.14	116.745	.	.	46.698	131.45	1407.94	158.31	41.328	336
126	840.6	840.6	7.565	476.3	25.22	11.208	84.056	252.17	140.094	112.075	.	56.038	140.09	140.09	25.22	28.019	371



## LAKE-HURON SITE=232340 2

OBS	DATE	YEAR	SIZE	PHFLD	CONDFLD	CONDLAB	PHLAB	NITRATE	AMMONIA	NITROGEN	TOTALP	TOC	SULFATE	CHLORIDE	SILICA	ALKA	ACIDS	MERCURY
127	810415	81	1800	.	.	22.0	4.82	0.58	0.70	0.94	0.003	1.00	3.78	0.39	0.10	.	5.40	0.1
128	810428	81	3350	4.7	.	33.0	4.16	0.62	0.27	0.37	0.002	1.00	2.31	0.28	0.10	.	12.00	0.1
129	810512	81	900	5.7	.	58.0	6.58	0.87	0.27	0.57	0.018	3.00	9.88	0.66	0.21	.	8.60	0.1
130	810526	81	900	4.8	.	31.0	4.15	0.54	0.59	0.71	0.007	1.00	3.60	0.46	0.10	.	9.50	0.1
131	810416	81	1250	4.5	.	29.0	4.26	0.48	0.56	0.67	0.001	0.90	3.01	0.20	0.10	.	8.60	0.1
132	810623	81	1150	4.5	.	30.0	4.19	0.50	0.47	0.44	0.001	1.20	2.71	0.10	0.10	.	14.00	0.1
133	810721	81	1200	4.1	.	86.0	3.71	1.04	1.31	1.41	0.030	2.90	10.77	0.30	0.10	.	.	0.1
134	810804	81	1700	4.3	.	8.4	4.54	0.11	0.04	0.04	0.002	0.30	1.01	0.10	0.10	.	4.50	0.1

OBS	CADMIUM	COPPER	IRON	LEAD	NICKEL	SILVER	CALCIUM	MG	SODIUM	POTASS	ARSENIC	ALUMINUM	BARIUM	BERYLIUM	COBALT	CHROMIUM	MOLY
127	1.00	3.00	60.00	80.92	15	1.5	0.67	0.14	0.18	0.09	.	45.00	2.50	.	.	.	.
128	1.00	3.00	60.00	44.67	15	1.5	0.18	0.02	0.02	0.05	.	45.00	11.36	.	.	-2.5	.
129	1.00	3.00	60.00	40.34	15	1.5	4.94	0.65	0.35	0.97	.	45.00	2.50	.	2.5	.	.
130	1.00	3.00	60.00	15.00	15	.	0.32	0.08	0.26	0.07	.	95.47	2.50	.	.	-2.5	.
131	.	3.00	60.00	45.00	15	.	0.29	0.04	0.23	0.08	0.14	.	.	.	.	-9.0	.
132	2.00	.	.	.	.	5.0	0.20	0.04	0.05	0.06	0.05	45.00	2.50	0.5	2.5	.	.
133	2.00	3.00	60.00	45.00	15	5.0	439.00	102.00	36.50	.	.	45.00	2.50	0.5	2.5	-9.0	.
134	2.00	3.00	60.00	45.00	15	5.0	225.00	38.20	30.00	.	.	45.00	2.50	0.5	2.5	-9.0	.

OBS	VANADIUM	YTTRIUM	TITANIUM	BORON	ZINC	MANGA	TIN	CA	MAG	NA	K	MEGPHF	MEGPHL	NO3LOAD	NH4LOAD	TKLOAD	TPLOAD	TOCLOAD
127	.	.	3.0	5.00	25.0	7.80	.	670	140.0	180.0	90	.	-4.82	16.251	19.613	26.338	0.08406	28.019
128	.	.	3.0	15.00	25.0	2.50	.	180	20.0	20.0	50	-4.7	-4.16	32.331	14.079	19.294	0.10429	52.146
129	.	.	3.0	.	25.0	2.50	.	4940	650.0	350.0	970	-5.7	-6.58	12.188	-3.783	7.985	0.25217	42.028
130	.	.	3.0	15.00	25.0	5.01	.	320	80.0	260.0	70	-4.8	-4.15	7.565	8.266	9.947	0.09807	14.009
131	.	.	.	16.00	.	2.50	.	290	40.0	250.0	80	-4.5	-4.26	9.340	10.896	13.037	0.01946	17.512
132	.	.	.	12.00	.	.	.	200	40.0	50.0	60	-4.5	-4.19	8.950	8.413	7.876	0.01790	21.481
133	.	.	.	.	.	2.50	.	439	102.0	36.5	.	-4.1	-3.71	19.426	24.470	26.338	0.56038	54.170
134	.	.	.	.	.	2.50	.	225	38.2	30.0	.	-4.3	-4.54	2.911	1.058	1.058	0.05292	7.939

OBS	SO4LOAD	CLLOAD	SILLOAD	ALKLOAD	NIONLOAD	MGLOAD	COLOAD	CULOAD	FELOAD	PBLOAD	NILOAD	AGLOAD	CRLOAD	MGLLOAD	HALOAD
127	105.91	10.927	2.8019	.	151.30	2.8019	28.019	84.06	1681.1	2267.3	420.28	42.03	18773	3922.6	5043.4
128	120.46	14.601	5.2146	.	625.75	5.2146	52.146	156.44	3128.8	2329.4	782.19	78.22	9386	1042.9	1042.9
129	138.41	9.246	2.9420	.	120.48	1.4009	14.009	42.03	840.6	565.1	210.14	21.01	69206	9106.1	4903.3
130	50.43	6.444	1.4009	.	133.09	1.4009	14.009	42.03	840.6	210.1	210.14	.	4483	1120.8	3642.4
131	58.57	3.891	1.9457	.	167.33	1.9457	.	58.37	1167.4	875.6	291.86	.	5643	778.3	4864.4
132	48.51	1.790	1.7901	.	250.61	1.7901	35.802	.	.	.	.	89.50	3580	716.0	895.0
133	201.17	5.604	1.8679	.	.	1.8679	37.358	56.04	1120.8	840.6	280.19	93.40	8200	1905.3	681.8
134	26.73	2.646	2.6462	.	119.08	2.6462	52.924	79.39	1587.7	1190.8	396.93	132.31	5954	1010.9	793.9

OBS	KLOAD	ASLOAD	ALLOAD	BALOAD	BELOAD	COLOAD	CRLOAD	MOLOAD	VLOAD	YLOAD	TILOAD	BLOAD	ZNLOAD	MNLOAD	SNLOAD	DATENUM
127	2521.7	.	1260.8	70.05	.	.	.	.	.	.	84.056	140.09	700.47	218.55	.	106
128	2607.3	.	2346.6	592.38	.	.	130.37	.	.	.	156.438	782.19	1303.65	130.37	.	119
129	13589.1	.	630.4	35.02	.	35.023	.	.	.	.	42.028	.	350.23	35.02	.	133
130	980.7	.	1337.5	35.02	.	.	35.02	.	.	.	42.028	210.14	350.23	70.19	.	147
131	1556.6	2.724	.	.	.	.	175.12	.	.	.	.	311.52	.	48.64	.	168
132	1074.1	0.895	805.5	44.75	8.9504	44.752	.	.	.	.	.	214.81	.	.	.	175
133	.	.	840.6	46.70	9.3396	46.698	168.11	.	.	.	.	.	.	46.70	.	203
134	.	.	1190.8	66.16	13.2311	66.155	238.16	.	.	.	.	.	.	66.16	.	217

OB	DATE	YEAR	SIZ	PH	COND	CON	PH	NT	AM	NT	OT	SUL	HL	SL	AA	AC	CD	CO	IR	LE	NS	SI	CA	ML	
135	810811	81	1800	4.2		44.0	3.83	0.64	0.42	0.62	0.001	1.60	4.23	0.1	0.1	13.80	0.1	3.00	3.00	60.00	45	15	5.0	327	50.3
136	810901	81	3660	4.2		62.0	3.79	0.63	0.56	0.63	0.004	2.60	6.47	0.2	0.1	9.00	0.1	0.03		9.10					
137	810908	81	2925	4.6	18.0	18.5	4.37			0.31	0.001	1.98	2.94	0.2	0.1	7.60	0.1			4.50					
138	810929	81	6880	4.7	6.5	8.0	3.08	0.08	0.05	0.05	0.002	1.63	1.32	0.2	0.1	4.75	0.1								
139	811006	81	1550	3.9	45.0	46.0	3.85	0.63	0.55	0.75	0.001	1.68	4.52	0.2	0.1	14.73	0.1	0.02		6.24					
140	811013	81	2320	4.3	20.0	26.5	4.07	0.40	0.32	0.34	0.002	1.95	2.71	0.1	0.1	8.00	0.1	0.16	3.36	19.80	45	9	5.0	393	56.0
141	811027	81	1080	4.3	50.0	25.5	4.13	0.50	0.13	0.12	0.001	2.11	2.10	0.3	0.1	10.00	0.1	0.20	1.50	23.00		7	0.5	900	88.0
142	811124	81	1500	6.7	0.0	30.5	4.41	0.51	0.15	0.39	0.009	1.54	5.60	3.0	0.1	4.50	0.1	0.20	3.00	22.40	45	9	5.0	4230	394.0
143	811201	81	2550	4.8	0.0	34.5	4.00	0.45	0.15	0.45	0.006	1.05	3.65	3.0	0.1	11.50	0.1	0.30	3.00	20.20	45	9	5.0	399	57.6
144	820105	82	1350	4.8		37.0	4.02	0.81	0.31	0.24	0.004	0.80	3.84	0.4	0.1	11.50	0.1	2.00	3.00	20.00	45	9	5.0	836	92.0

SITE

OB	SOD	POT	ARS	ALU	BAR	BER	COB	CRM	VAT	TYT	BOR	ZIN	MAG	YIN	CAN	AGN	NAK	NEG	NEG	NO3	NO4	TRM		
135	30.0		0.18	45.0	2.50	0.5	2.5	9.0					2.50		327	50.3	30.0	-4.2	-3.83	17.932	11.768	17.372		
136			0.22															-4.2	-3.79	35.892	31.904	35.892		
137			0.18															-4.6	-4.37			14.114		
138		0.16	0.71															140	-4.7	-5.08	8.568	-5.355	5.355	
139			0.37																-3.9	-3.85	15.200	13.270	18.095	
140	32.4		0.38	17.9	1.56	0.4	3.0	0.0	5.0	4	2.0	4.76	10.8	2.90	0.97	393	56.0		-4.3	-4.07	14.445	11.556	12.278	
141	3.1		0.16	33.0	2.00	0.1	1.1	0.4	4.9	0	1.3	3.00	20.0	4.30	1.20	500	88.0	3100.0	-4.3	-4.13	8.406	-2.185	2.017	
142	30.0		0.45	12.0	0.91	0.4	3.0	9.0	5.0		2.0	7.88	10.8	3.80	4.34	4230	394.0	30.0	-6.7	-6.41	11.908	-3.502	9.106	
143	146.0		0.71	27.5	2.81	0.4	3.0	9.0	5.0		2.0	8.29	10.6	5.77	1.69	399	57.6	146.0	-4.8	-4.00	17.862	-5.954	17.862	
144	46.0	0.05	0.37	12.0	0.80	0.4	3.0	9.0	5.0	4	2.0	5.00	5.0	3.10	1.00	836	92.0	46.0	50	-4.8	-4.02	17.021	-6.514	5.043

SITE

256.196 182.588 249.009

LAKE-MURON SITE=252360 2

OBS	T P L O A D	T O C L O A D	S O 4 L O A D	C L L O A D	S L K L O O A D	A I O N L O A D	H G L O A D	C D L O A D	C U L O A D	F E L O A D	P B L O A D	N I L O A D	A G L O A D	C A L O A D	M G L O A D
135	0.02802	44.830	119.52	2.802	2.8019	386.66	2.8019	84.056	84.06	1681.1	1260.8	420.28	140.09	9162	1409.3
136	0.22789	148.126	368.61	11.394	5.6972	512.74	5.6972	1.709	.	518.4	.	.	.	.	.
137	0.04553	90.150	133.86	9.106	4.5531	346.03	4.5531	.	.	204.9	.	.	.	.	.
138	0.21419	174.563	141.36	21.419	10.7094	508.70	10.7094	.	.	.	.	.	.	.	.
139	0.02413	40.534	109.06	4.825	2.4127	355.40	2.4127	0.483	.	150.6	.	.	.	.	.
140	0.07223	70.421	97.87	3.611	3.6113	288.90	3.6113	5.778	121.34	715.0	1625.1	325.02	180.57	14192	2022.3
141	0.01681	35.472	35.30	5.043	1.6811	168.11	1.6811	3.362	25.22	386.7	.	117.68	8.41	8406	1479.4
142	0.21014	35.957	130.75	70.047	2.3349	105.07	2.3349	4.670	70.05	523.0	1050.7	210.14	116.74	98766	9199.5
143	0.23816	41.678	144.88	119.080	3.9693	456.47	3.9693	11.908	119.08	801.8	1786.2	357.24	198.47	15838	2286.3
144	0.08406	16.811	80.69	8.406	2.1014	241.66	2.1014	42.028	63.04	420.3	945.6	189.13	105.07	17568	1933.3

SITE 2.35039 935.847 2111.10 310.884 60.4817 0 4937.40 58.9407 388.263 1001.13 15768.8 14947.4 4211.23 1205.82 289157 37933.1

OBS	N A L O A D	K L O A D	A S L O A D	A L L O A D	B A L O A D	B E L O A D	C O L O A D	C R L O A D	M L O A D	V L O A D	V L O A D	T L O A D	B L O A D	Z L O A D	M L O A D	S L O A D	B A T E N U M
135	840.6	.	5.043	1260.8	70.05	14.0096	70.047	252.17	.	.	.	.	.	.	70.05	.	224
136	.	.	12.534	.	.	.	.	.	.	.	.	.	.	.	.	.	245
137	.	.	8.195	.	.	.	.	.	.	.	.	.	.	.	.	.	252
138	.	17133.1	76.037	.	.	.	.	.	.	.	.	.	.	.	.	.	273
139	.	.	8.927	.	.	.	.	.	.	.	.	.	.	.	.	.	280
140	1170.1	.	13.723	646.4	56.34	14.4452	108.339	0.00	180.566	146.452	.	72.226	244.12	390.02	104.73	35.030	287
141	52115.0	.	2.690	554.8	33.62	1.6811	18.492	6.72	82.375	0.000	.	21.855	50.43	336.23	72.29	20.174	301
142	700.5	.	10.507	280.2	21.25	9.3396	70.047	210.14	116.745	.	.	46.698	183.99	252.17	88.73	101.335	329
143	5795.2	.	28.182	1091.6	111.54	15.8773	119.080	357.24	198.466	.	.	79.387	329.06	420.75	229.03	67.082	336
144	966.6	1050.7	7.775	252.2	16.81	8.4056	63.042	189.13	105.070	84.056	.	42.028	105.07	105.07	65.14	21.014	371

SITE 83455.1 40515.2 177.233 12498.2 1199.68 95.2795 641.677 1762.18 683.223 228.509 0 586.745 2571.23 4208.83 1245.58 244.634

LAKE-HURON SITE=233660 2

OBS	DATE	YEAR	SIZE	PHFLD	CONDFLD	CONDLAB	PHLAD	NITRATE	AMMONIA	NITROGEN	TOTALP	TOC	SULFATE	CHLORIDE	SILICA	ALKA	ACIDS	MERCURY
145	810331	81	1040	4.05	34.0	27.0	4.40	0.58	0.34	1.02	0.005	0.40	3.53	0.23	0.04	.	7.2	0.1
146	810331	81	78	4.40	55.0	.	.	.	.	.	.	.	.	.	.	.	.	.
147	810414	81	3129	3.90	35.0	33.0	4.20	0.46	0.39	0.47	0.005	5.70	3.30	0.60	0.10	.	11.0	0.1
148	810428	81	1800	3.85	41.0	41.0	4.10	0.66	0.40	0.42	0.001	1.00	3.76	0.38	0.10	.	13.0	0.1
149	810505	81	520	3.98	40.0	42.0	3.96	6.74	0.44	0.54	0.003	1.00	3.89	0.40	0.10	.	14.0	0.1
150	810512	81	2250	3.86	55.0	55.0	3.92	0.75	0.49	0.57	0.001	1.00	4.85	0.39	0.10	.	17.0	0.1
151	810519	81	1250	4.09	40.0	39.0	4.02	0.40	0.19	0.22	0.003	1.00	3.22	0.44	0.10	.	13.0	0.1
152	810602	81	1175	4.52	25.0	25.0	4.50	0.66	0.89	0.84	0.001	1.50	3.25	0.10	0.10	.	7.6	0.1

OBS	CADMIUM	COPPER	IRON	LEAD	NICKEL	SILVER	CALCIUM	MG	SODIUM	POTASS	ARSENIC	ALUMINUM	BARIUM	BERYLIUM	COBALT	CHROMIUM	MOLY
145	1.00	3.00	60.00	70.50	15.0	3.31	0.32	0.05	0.34	0.09	0.07	45.0	2.50	.	8.02	2.50	.
146	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
147	1.00	3.00	60.00	.	15.0	.	0.25	0.05	0.35	0.10	.	45.0	14.80	.	.	5.85	.
148	.	3.00	60.00	15.00	15.0	.	0.32	0.04	0.11	0.07	.	45.0	2.50	.	.	2.50	.
149	1.00	3.00	60.00	56.74	.	3.64	0.32	0.05	0.60	0.06	.	45.0	7.80	.	2.50	.	.
150	1.00	3.00	60.00	47.95	.	1.50	0.25	0.02	0.12	0.07	.	45.0	2.50	0.5	2.50	.	.
151	1.00	3.00	147.20	15.00	15.0	.	0.20	0.02	0.60	0.07	.	45.0	2.50	.	.	2.50	.
152	1.00	3.00	60.00	35.12	.	1.50	0.44	0.12	0.20	0.07	.	45.0	2.50	0.5	2.50	.	.

OBS	VANADIUM	YTRIUM	TITANIUM	BORON	ZINC	MANGA	TIN	CA	MAG	NA	K	NEGPH	NEGPHL	NO3LOAD	NH4LOAD	TKNLOAD	TPLOAD	TOCLOAD
145	.	.	3.00	5.00	25.00	2.50	.	320.0	50.0	340.0	90	-4.05	-4.40	9.3894	13.5985	16.5124	0.080943	6.475
146	.	.	.	.	.	.	.	.	.	.	.	.	-4.40	.	.	.	.	.
147	.	.	3.00	15.00	25.00	2.50	.	250.0	50.0	350.0	100	-3.90	-4.20	22.4048	18.9953	22.8918	0.243530	277.624
148	.	.	.	15.00	25.00	2.50	.	320.0	40.0	110.0	70	-3.85	-4.10	18.4924	11.2075	11.7679	0.028019	28.019
149	.	.	3.00	15.00	25.00	2.50	.	320.0	50.0	600.0	60	-3.98	-3.96	54.5557	3.5615	4.6947	0.024283	8.094
150	.	.	3.00	15.00	25.00	2.50	.	250.0	20.0	120.0	70	-3.86	-3.92	26.2676	17.1615	19.9634	0.035023	35.023
151	.	.	3.00	31.62	25.00	2.50	.	200.0	20.0	600.0	70	-4.09	-4.02	7.7830	3.6969	4.2806	0.058372	19.457
152	.	.	19.61	40.83	25.00	2.50	.	440.0	120.0	200.0	70	-4.52	-4.50	12.0714	16.2781	15.3636	0.018290	27.435

OBS	804LOAD	CLLOAD	SILOAD	ALKLOAD	HIONLOAD	MGLOAD	CDLOAD	CULOAD	FELOAD	PBLOAD	NILOAD	AGLOAD	CALOAD	MGLOAD	HALOAD
145	57.146	3.7234	0.64755	.	116.558	1.61886	16.189	48.566	971.32	1141.30	242.830	53.584	5180.4	809	5504.1
146	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
147	160.730	29.2236	4.87060	.	535.766	4.87060	48.706	146.118	2922.36	.	730.590	.	12176.5	2435	17047.1
148	105.351	10.6471	2.80188	.	364.244	2.80188	.	84.056	1681.13	420.28	420.282	.	8966.0	1121	3082.1
149	31.487	3.2377	0.80943	.	113.320	0.80943	8.094	24.283	485.86	459.27	.	29.463	2590.2	405	4856.6
150	169.864	13.6592	3.50235	.	595.399	3.50235	35.023	105.070	2101.41	1679.38	.	52.535	8755.9	700	4202.8
151	62.653	8.5613	1.94575	.	252.947	1.94575	19.457	58.372	2864.14	291.86	291.862	.	3891.5	389	11674.5
152	59.443	1.8290	1.82900	.	139.004	1.82900	18.290	54.870	1097.40	642.35	.	27.435	8047.6	2195	3658.0

OBS	KLOAD	ASLOAD	ALLOAD	BALOAD	BELOAD	COLOAD	CRLOAD	MOLOAD	VLOAD	YLOAD	TILOAD	BLOAD	INLOAD	MNLOAD	SNLOAD	PATENUM
145	1456.98	1.1332	728.49	40.472	.	129.833	40.472	.	.	.	48.566	80.943	404.72	40.472	.	91
146	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	91
147	4870.60	.	2191.77	720.849	.	.	294.930	.	.	.	146.118	730.590	1217.65	121.765	.	105
148	1961.32	.	1260.85	70.047	.	.	70.047	.	.	.	.	420.282	700.47	70.047	.	119
149	485.66	.	364.24	63.136	.	.	20.236	.	.	.	24.283	121.415	202.36	20.236	.	126
150	2451.64	.	1576.06	87.559	17.5117	87.559	.	.	.	.	105.070	525.352	875.59	87.559	.	133
151	1362.02	.	875.59	49.644	.	.	48.644	.	.	.	58.372	615.246	486.44	48.644	.	140
152	1280.30	.	823.05	45.725	9.1450	45.725	.	.	.	.	358.668	746.783	457.25	45.725	.	154

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OBS	DATE	YEAR	SIZE	PHFLD	CONDFLD	CONDLAB	PHLAB	NITRATE	AMMONIA	NITROGEN	TOTALP	TOC	SULFATE	CHLORIDE	SILICA	ALKA	ACIDS	MERCURY
153	810609	81	760	3.92	48.0	47.0	3.91	0.53	0.41	0.43	0.003	2.10	5.32	0.3	0.1	.	19.0	0.1
154	810616	81	710	3.98	44.0	42.0	3.90	0.68	0.32	0.42	0.001	2.10	3.55	0.1	0.1	.	16.0	0.1
155	810623	81	800	3.95	53.0	48.0	3.92	0.74	0.49	0.55	0.001	1.20	5.12	0.1	0.1	.	17.0	0.1
156	810706	81	280	3.77	68.0	.	.	.	.	.	.	.	.	.	.	.	.	.
157	810714	81	1060	4.70	12.8	14.0	4.68	0.27	0.31	0.29	0.002	1.50	1.72	0.2	0.1	.	6.7	0.1
158	810721	81	300	3.86	65.0	54.0	3.80	0.67	0.44	0.49	0.002	1.60	6.10	0.2	0.1	.	17.0	0.1
159	810728	81	2000	4.17	30.0	27.0	4.05	0.27	0.16	0.18	0.001	1.60	2.13	0.1	0.1	.	9.9	0.1
160	810804	81	860	4.05	27.0	26.0	4.05	0.22	0.28	0.40	0.001	2.30	2.01	0.1	0.1	.	9.5	0.1

OBS	CADMIUM	COPPER	IRON	LEAD	NICKEL	SILVER	CALCIUM	MG	SODIUM	POTASS	ARSENIC	ALUMINUM	BARIUM	BERYLIUM	COBALT	CHROMIUM	MOLY
153	1.00	3.00	60.00	15.00	15.0	.	0.44	0.08	0.28	0.12	.	45.0	2.50	.	.	.	.
154	.	.	.	.	.	.	0.36	0.06	0.21	0.05	.	.	.	.	.	.	.
155	.	.	.	.	.	.	0.41	0.11	0.21	0.11	.	.	.	.	.	.	.
156	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
157	2.06	3.00	60.00	45.00	15.0	5.00	201.00	27.00	30.00	.	.	45.0	2.50	0.5	2.50	9.0	.
158	2.00	3.00	60.00	45.00	15.0	5.00	189.00	26.90	30.00	.	.	45.0	2.50	0.5	2.50	9.0	.
159	2.00	3.00	60.00	45.00	15.0	5.00	66.40	9.10	30.00	.	.	45.0	2.50	0.5	2.50	9.0	.
160	2.00	3.00	60.00	45.00	15.0	5.00	49.80	4.10	30.00	.	.	45.0	2.50	0.5	2.50	9.0	.

OBS	VANADIUM	YTRIUM	TITANIUM	BORON	ZINC	MANGA	TIN	CA	MAG	NA	K	NEGPHF	NEGPHL	NO3LOAD	NH4LOAD	TKNLOAD	TPLOAD
153	.	.	28.47	5.00	25.00	5.17	.	440.0	80.0	280.0	120	-3.92	-3.91	6.270	4.850	5.087	0.03549
154	.	.	.	18.00	.	.	.	360.0	60.0	210.0	50	-3.98	-3.90	7.515	3.537	4.642	0.01105
155	.	.	.	20.00	.	.	.	610.0	110.0	210.0	110	-3.95	-3.92	9.215	6.102	6.849	0.01245
156	.	.	.	.	.	.	.	.	.	.	.	-3.77	.	.	.	.	.
157	.	.	.	.	2.50	.	.	201.0	27.0	30.0	.	-4.70	-4.68	4.455	5.115	4.785	0.03300
158	.	.	.	.	2.50	.	.	189.0	26.9	30.0	.	-3.86	-3.80	3.129	2.055	2.288	0.00934
159	.	.	.	.	2.50	.	.	66.4	9100.0	30.0	.	-4.17	-4.05	8.406	4.981	5.604	0.03113
160	.	.	.	.	2.50	.	.	49.8	4100.0	30.0	.	-4.05	-4.05	2.945	3.748	5.355	0.01339

OBS	TOCLOAD	SO4LOAD	CLLOAD	SILLOAD	ALKLOAD	NIONLOAD	MGLOAD	CDLOAD	CULOAD	FELOAD	PHLOAD	NILOAD	AGLOAD	CALOAD	MGLOAD	MALOAD
153	24.94	62.94	3.549	1.1830	.	224.77	1.1830	11.830	35.49	709.8	177.5	177.45	.	5205	946	3312.4
154	23.21	39.23	1.105	1.1052	.	176.83	1.1052	.	.	.	.	.	.	3979	663	2320.9
155	16.94	63.76	1.245	1.2453	.	211.70	1.2453	.	.	.	.	.	.	5106	1370	2615.1
156	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
157	24.75	28.38	3.300	1.6500	.	110.55	1.6500	33.990	49.50	990.0	742.5	247.50	82.50	3316	445	495.0
158	7.47	28.49	0.934	0.4670	.	79.39	0.4670	9.340	14.01	280.2	210.1	70.05	23.35	883	126	140.1
159	49.81	66.31	3.113	3.1132	.	308.21	3.1132	62.264	93.40	1867.9	1400.9	466.98	155.66	2067	283301	934.0
160	30.79	26.91	1.339	1.3387	.	127.17	1.3387	26.774	40.16	803.2	602.4	200.80	66.93	667	54886	401.6

OBS	KLOAD	ASLOAD	ALLOAD	BALOAD	BELOAD	COLOAD	CRLOAD	MOLOAD	VLOAD	YLOAD	TILOAD	BLOAD	ZNLOAD	MNLOAD	SNLOAD	DATENUM
153	1419.0	.	532.4	29.58	.	.	.	.	.	.	336.80	59.15	295.8	61.16	.	161
154	552.6	.	.	.	.	.	.	.	.	.	.	198.93	.	.	.	168
155	1369.8	.	.	.	.	.	.	.	.	.	.	249.06	.	.	.	175
156	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	188
157	.	.	742.5	41.25	8.250	41.25	148.50	.	.	.	.	.	.	41.25	.	196
158	.	.	210.1	11.67	2.335	11.67	42.03	.	.	.	.	.	.	11.67	.	203
159	.	.	1400.9	77.83	15.566	77.83	280.19	.	.	.	.	.	.	77.83	.	210
160	.	.	602.4	33.47	6.693	33.47	120.48	.	.	.	.	.	.	33.47	.	217

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OBS	DATE	YEAR	SIZE	PHFLD	CONDFLD	CONDLAB	PHLAB	NITRATE	AMMONIA	NITROGEN	TOTALP	TOC	SULFATE	CHLORIDE	SILICA	ALKA	ACIDS	MERCURY
161	810811	81	2750	4.50	23.0	22.0	4.26	0.53	0.38	0.51	0.001	1.20	2.32	0.1	0.1	.	0.4	0.1
162	810818	81	840	3.82	61.0	57.0	3.94	0.71	0.27	0.32	0.001	2.00	4.98	0.1	0.1	.	18.6	0.1
163	810901	81	1720	3.80	70.0	66.0	3.76	0.67	0.38	0.48	0.002	2.70	6.60	0.2	0.1	.	19.0	0.1
164	810908	81	2470	3.81	52.0	50.0	3.78	0.61	0.26	0.44	0.002	2.19	4.70	0.3	0.1	.	19.0	0.1
165	810922	81	2925	4.85	33.0	37.5	3.94	0.51	0.37	.	0.002	.	3.34	0.2	0.1	.	14.0	0.1
166	811004	81	6100	4.34	25.0	24.5	4.26	0.42	0.34	0.48	0.002	1.72	3.18	0.3	0.1	.	10.0	0.1
167	811020	81	410	4.26	25.0	27.0	4.09	0.42	0.24	0.24	0.003	1.31	2.96	0.2	0.1	.	10.0	0.1
168	811027	81	2050	3.97	42.0	44.0	3.89	0.77	0.49	0.56	0.003	2.88	3.73	0.3	0.1	.	14.5	0.1

OBS	CADMIUM	COPPER	IRON	LEAD	NICKEL	SILVER	CALCIUM	MG	SODIUM	POTASS	ARSENIC	ALUMINUM	BARIUM	BERYLIUM	COBALT	CHROMIUM	MOLY
161	3.00	3.00	60.00	45.00	15.0	5.00	626.0	123.00	30.0	.	0.17	45.0	2.50	0.5	2.50	9.0	.
162	3.00	3.00	60.00	45.00	15.0	5.00	348.0	60.20	30.0	.	0.20	45.0	2.50	0.5	2.50	9.0	.
163	.	.	9.90	.	.	.	.	.	.	.	0.02	.	.	.	.	.	.
164	.	.	9.60	.	.	.	.	.	.	.	0.16	.	.	.	.	.	.
165	0.84	.	7.24	.	.	.	.	.	.	.	0.52	.	.	.	.	.	.
166	1.32	4.87	8.20	45.00	9.0	5.00	963.0	38.90	.	.	0.39	13.8	3.14	0.4	3.00	9.0	.
167	2.00	8.04	24.10	45.00	9.0	6.03	534.0	120.00	58.5	.	0.21	41.9	5.60	0.4	3.00	9.0	5.0
168	0.21	1.10	31.00	.	7.0	3.40	320.0	41.00	0.7	.	0.35	31.0	2.30	0.2	2.30	0.7	4.4

OBS	VANADIUM	YTRIUM	TITANIUM	BORON	ZINC	MANGA	TIN	CA	MAG	NA	K	NEGPHF	NEGPLL	NO3LOAD	NH4LOAD	TKNLOAD	YLOAD
161	.	.	.	.	.	6.52	.	626.0	123.0	30.0	.	-4.50	-4.26	22.687	16.266	21.831	0.04281
162	.	.	.	.	.	2.50	.	348.0	60.2	30.0	.	-3.82	-3.94	9.284	3.530	4.184	0.01308
163	.	.	.	.	.	.	.	.	.	.	.	-3.80	-3.76	17.938	10.174	12.851	0.05355
164	.	.	.	.	.	.	.	.	.	.	.	-3.81	-3.78	23.453	9.996	16.917	0.07690
165	.	.	.	.	.	.	.	.	.	.	.	-4.85	-3.94	23.221	16.846	.	0.09106
166	4.00	.	0.2	5.00	80.90	3.59	1.13	963.0	38.9	.	.	-4.34	-4.26	39.890	32.284	45.577	0.18991
167	5.96	.	2.6	12.00	8.40	4.30	2.44	534.0	120.0	58.5	.	-4.26	-4.09	2.680	1.532	1.532	0.01915
168	2.20	.	0.4	8.70	26.00	2.90	0.70	320.0	41.0	700.0	.	-3.97	-3.89	24.571	15.636	17.870	0.09573

OBS	TOCLOAD	SO4LOAD	CLLOAD	SILOAD	ALKLOAD	NIONLOAD	HGLOAD	CDLOAD	CULOAD	FELOAD	PBLOAD	NILOAD	AGLOAD	CALOAD	HGLOAD	NALOAD
161	51.37	99.31	4.281	4.2806	.	17.12	4.2806	128.419	128.42	2568.4	1926.3	642.10	214.03	26797	5265	1284.2
162	26.15	65.12	1.308	1.3075	.	243.20	1.3075	39.226	39.23	784.5	588.4	196.13	65.38	4550	787	392.3
163	72.29	176.71	5.355	2.6774	.	508.70	2.6774	.	.	265.1	.	.	.	.	.	.
164	84.20	180.71	11.534	3.8448	.	730.51	3.8448	.	.	369.1	.	.	.	.	.	.
165	.	152.07	9.106	4.5531	.	637.43	4.5531	38.246	.	329.6	.	.	.	.	.	.
166	143.32	301.95	28.486	9.4953	.	949.53	9.4953	125.337	462.42	778.6	4272.9	854.57	474.76	91439	3694	.
167	8.36	18.89	1.276	0.6382	.	63.82	0.6382	12.764	51.31	153.8	287.2	57.44	38.48	3408	766	373.4
168	91.90	119.03	9.573	3.1910	.	462.70	3.1910	6.701	35.10	989.2	.	223.37	108.50	10211	1308	22337.2

OBS	KLOAD	ASLOAD	ALLOAD	BALOAD	BELOAD	COLOAD	CRLOAD	MOLOAD	VLOAD	YLOAD	TILOAD	BLOAD	ZNLOAD	MNLOAD	SMLOAD	DATENUM
161	.	7.277	1926.3	107.02	21.403	107.02	385.26	.	.	.	.	.	.	279.10	.	224
162	.	2.615	588.4	32.69	6.538	32.69	117.68	.	.	.	.	.	.	32.69	.	231
163	.	0.535	.	.	.	.	.	.	.	.	.	.	.	.	.	245
164	.	0.152	.	.	.	.	.	.	.	.	.	.	.	.	.	252
165	.	25.676	.	.	.	.	.	.	.	.	.	.	.	.	.	266
166	.	37.032	1310.3	298.15	37.981	284.86	854.57	.	379.810	.	18.99	474.76	7681.7	340.88	107.296	280
167	.	1.340	267.4	35.74	2.553	19.15	57.44	31.910	38.037	.	16.59	76.58	53.6	27.44	15.572	294
168	.	11.169	989.2	73.39	6.382	73.39	22.34	140.405	70.203	.	19.15	277.62	829.7	92.54	22.337	301

LAKE=HURON SITE=233660 2

QBS	DATE	YEAR	SIZE	PHFLD	CONDFLD	CONDLAD	PHLAB	NITRATE	AMMONIA	NITROGEN	TOTALP	TOC	SULFATE	CHLORIDE	SILICA	ALKA	ACIDS	MERCURY
169	811103	81	1330	4.50	13.4	15.5	4.21	0.18	0.09	.	0.001	0.55	1.21	0.1	0.1	.	8.5	0.1
170	811124	81	1230	4.07	35.0	40.5	3.89	0.64	0.46	0.61	0.002	1.54	3.95	5.0	0.1	.	14.0	0.1
171	811201	81	640	4.27	22.0	24.0	4.05	0.27	0.15	0.11	0.002	0.87	2.03	0.3	0.1	.	11.0	0.1
172	811208	81	310	4.71	25.0	26.0	4.10	0.66	0.46	0.59	0.008	1.73	1.89	0.5	0.1	.	10.5	0.1
173	811222	81	390	4.43	20.0	20.0	4.47	0.34	0.15	0.14	0.007	0.64	0.71	2.5	0.1	.	6.0	0.1
174	811229	81	1500	4.10	31.0	13.5	4.39	0.27	0.12	0.03	0.001	0.40	0.66	0.2	0.1	.	5.0	0.1
175	820105	82	770	3.98	35.0	30.5	4.06	0.47	0.15	0.06	0.001	0.54	2.10	0.2	0.1	.	11.5	0.1

QBS	CADMIUM	COPPER	IRON	LEAD	NICKEL	SILVER	CALCIUM	MG	SODIUM	POTASS	ARSENIC	ALUMINUM	BARIUM	BERYLIUM	COBALT	CHROMIUM	MOLY
169	0.21	3.07	3.46	1.22	35.8	5	32.9	4.00	.	.	0.16	35.8	1.22	0.4	5.02	9	5
170	1.45	3.60	15.40	45.00	9.0	5	347.0	51.80	151.0	.	0.66	21.2	2.59	0.4	3.00	9	5
171	0.26	3.00	17.60	45.00	9.0	5	257.0	38.40	46.8	.	0.34	12.0	2.60	0.4	3.00	9	5
172	0.45	3.00	38.60	45.00	9.0	5	505.0	89.30	60.1	.	0.37	41.7	2.64	0.4	3.00	9	5
173	0.88	3.00	36.20	45.00	9.0	5	338.0	57.10	1500.0	0.10	0.16	28.2	3.64	0.4	3.00	9	5
174	0.14	3.00	5.11	45.00	9.0	5	127.0	6.57	59.1	0.30	0.16	12.0	0.79	0.4	3.00	9	5
175	2.00	3.00	8.00	45.00	9.0	5	102.0	14.00	30.0	0.02	0.40	12.0	0.70	0.4	3.00	9	5

QBS	VANADIUM	YTTRIUM	TITANIUM	BORON	ZINC	MANGA	TIN	CA	MAG	NA	K	NEGPHF	NEGPHL	NO3LOAD	NH4LOAD	TKNLOAD	TPLOAD
169	5.15	.	2	5.00	3.97	0.80	0.61	32.9	4000.0	.	.	-4.50	-4.21	3.727	1.863	.	0.02070
170	.	.	2	9.47	13.90	4.10	1.12	347.0	51.8	151.0	.	-4.07	-3.89	12.254	8.807	11.679	0.03829
171	4.00	.	2	7.27	6.25	2.32	0.66	257.0	38.4	46.8	.	-4.27	-4.05	2.690	1.494	1.096	0.01992
172	4.00	.	2	7.69	12.00	4.13	1.62	505.0	89.3	60.1	.	-4.71	-4.10	3.185	2.220	2.847	0.03860
173	4.00	.	2	5.00	150.00	3.30	1.14	338.0	57.1	1500.0	100	-4.43	-4.47	2.064	0.911	0.850	0.04250
174	4.00	.	2	5.00	8.77	1.32	0.50	127.0	6570.0	59.1	300	-4.10	-4.39	6.304	2.802	0.700	0.02335
175	4.00	.	2	5.00	5.00	1.00	0.00	102.0	14.0	30.0	20	-3.98	-4.04	5.633	1.798	0.719	0.01199

QBS	TOCLOAD	SO4LOAD	CLLOAD	SILLOAD	ALKLOAD	NIONLOAD	MGLOAD	COLOAD	CULOAD	FELOAD	PBLOAD	NILOAD	AGLOAD	CALOAD	MGLOAD	MALOAD
169	11.39	25.05	2.070	2.0703	.	175.97	2.0703	4.348	104.96	75.8	25.3	741.16	103.51	681	82811	.
170	20.49	75.63	95.731	1.9146	.	268.05	1.9146	27.762	68.93	294.9	861.6	172.32	95.73	6644	992	2891.1
171	8.67	20.22	2.989	0.9962	.	109.58	0.9962	2.590	29.89	175.3	448.3	89.66	49.81	2560	383	466.2
172	8.35	9.12	2.413	0.4825	.	50.67	0.4825	2.171	14.48	186.3	217.1	43.43	24.13	2437	431	290.0
173	3.89	4.31	13.963	0.6071	.	36.42	0.6071	5.342	18.21	219.8	273.2	54.64	30.35	2052	347	9106.1
174	9.34	15.41	4.670	2.3349	.	116.74	2.3349	3.269	70.05	119.3	1050.7	210.14	116.74	2965	153403	1379.9
175	6.47	25.17	2.397	1.1986	.	137.84	1.1986	23.972	35.96	95.9	539.4	107.87	59.93	1223	168	359.6

QBS	KLOAD	ASLOAD	ALLOAD	BALOAD	BELOAD	COLOAD	CRLOAD	MOLOAD	VLOAD	YLOAD	TILOAD	BLOAD	INLOAD	MNLOAD	SNLOAD	DATENUM
169	.	3.312	741.2	25.26	8.281	103.93	186.33	103.514	106.619	.	41.41	103.51	82.2	16.56	12.629	308
170	.	12.636	405.9	49.59	7.658	57.44	172.32	95.731	.	.	38.29	181.31	266.1	78.50	21.444	329
171	.	3.387	119.5	25.90	3.985	29.89	89.66	49.811	39.849	.	19.92	72.43	62.3	23.11	6.575	336
172	.	1.785	201.2	12.74	1.930	14.48	43.43	24.127	19.302	.	9.65	37.11	57.9	19.93	7.817	343
173	607.1	0.971	171.2	22.10	2.428	18.21	54.64	30.354	24.283	.	12.14	30.35	910.6	20.03	6.921	357
174	7004.7	3.736	280.2	18.45	9.340	70.05	210.14	116.745	93.396	.	46.70	116.74	204.8	30.82	11.674	364
175	239.7	4.794	143.8	8.39	4.794	35.96	107.87	59.929	47.943	.	23.97	59.93	59.9	11.99	0.000	371

O B S  
 D Y S P C C N N I N C S M C A H C V T  
 A E I F H D O O I M T T S H L S E A C A L E H A Y I  
 T A Z L L P N N P T M R O T S U L O I A R D O S P R U B R C R N T T  
 E R E D D B B E A N P C E E A S S Y M R I L C K D A C I I L O O S M A Y O O A T A B M  
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O B S  
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 H G L O A D

SITE 1.41184 1153.12 2251.37 280.618 46.101 0 7864.15 47.0723 710.105 1812.84 24180.9 18258.2 6241.17 1872.82 225798 600146

O B S  
 M A L L O A D  
 K L O A D  
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 T I L L O A D  
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 Z N L L O A D  
 M N L L O A D  
 S W L L O A D  
 D A T E N U M

SITE 99124.3 25062 121.552 18453.1 1979.64 172.775 1294.62 3336.96 652.527 819.442 0 1324.7 5178.11 14849 1633.42 212.266



	T K N L O S	T P L O A D	T O C L O A D	S O L O A D	C L L O A D	S I L O A D	A L L O A D	H I O N L O A D	H G L O A D	C D L O A D	C U L O A D	F E L O A D	P B L O A D	N I L O A D	A G L O A D
176	7.098	0.04732	23.660	62.94	7.808	2.3660	236.60	2.3660	23.660	70.981	1419.62	.	354.90	.	
177	4.125	0.00778	19.691	52.61	2.568	0.7783	132.31	0.7783	.	.	.	.	.	.	
178	20.942	0.10133	54.045	103.02	13.511	3.3778	320.89	4.0534	67.556	.	.	.	.	168.891	
179	2.584	0.02584	23.256	12.92	2.584	1.2920	98.19	1.2920	25.840	38.759	775.19	581.39	193.80	64.599	
180	29.280	0.15410	92.462	218.31	10.274	5.1368	832.16	5.1368	102.736	154.103	3082.07	2311.55	770.52	256.839	
181	17.954	0.02459	41.810	91.49	2.459	2.4594	295.13	2.4594	49.189	73.783	1475.66	1106.74	368.91	122.971	
182	8.367	0.03347	50.200	.	.	.	.	.	.	.	.	.	.	.	
183	7.808	0.06164	71.915	118.15	4.109	2.0547	351.36	2.0547	61.641	61.641	1232.83	924.62	308.21	115.475	
184	66.576	0.07316	80.476	383.36	14.632	7.3160	1024.24	7.3160	.	.	.	.	.	.	
185	0.901	0.09013	45.064	115.36	18.025	9.0127	664.97	.	.	.	.	.	.	.	
186	26.182	0.09028	68.615	126.40	9.028	9.0283	600.38	9.0283	16.251	.	52.36	.	.	.	
187	.	0.10274	.	114.72	6.849	3.4245	308.21	3.4245	5.479	.	294.51	.	.	.	
188	14.514	0.06911	119.366	.	.	.	.	.	.	.	.	.	.	.	
189	6.946	0.16346	65.377	66.60	16.346	4.0861	380.00	4.0861	.	.	.	.	.	.	
SITE	213.227	1.04495	756.132	1465.89	108.193	50.3327	0	5264.44	41.9955	352.352	399.268	8332.23	4924.30	1996.34	728.775

	C A L O A S	N G L O A D	M L O A D	K L O A D	A L O A D	A L O A D	B L O A D	B L O A D	C L O A D	C L O A D	M O V I B D D D D	T V I B L L L L	Z M L O A D	M L O A D	S M L O A D	A M L O A D	
176	4732.1	473	1183.0	1419.62	.	1066.71	59.151	.	.	.	.	.	118.302	591.508	59.151	133	
177	6304.2	623	1167.4	856.13	.	.	.	.	.	.	.	.	140.094	.	.	147	
178	13950.4	2510	5978.7	.	.	1520.02	84.446	16.8891	84.446	.	.	.	.	.	.	168	
179	3320.4	463	387.6	.	.	581.39	32.299	6.4599	32.299	116.278	.	.	.	.	32.299	175	
180	17259.6	2810	1541.0	.	.	2311.55	128.419	25.6839	128.419	462.310	.	.	.	.	128.419	182	
181	7648.8	1134	737.8	.	.	1106.74	61.486	12.2971	61.486	221.349	.	.	.	.	61.486	203	
182	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	224
183	1177.3	139720	416.4	.	.	3.2875	924.62	51.368	10.2736	51.368	184.924	.	.	.	51.368	231	
184	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	245
185	.	.	.	1802.54	14.4203	.	.	.	.	.	.	.	.	.	.	.	252
186	.	.	.	.	60.4895	.	.	.	.	.	.	.	.	.	.	.	266
187	.	.	.	.	17.1226	.	.	.	.	.	.	.	.	.	.	.	281
188	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	343
189	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	371
SITE	54392.8	147732	11612.1	4078.29	95.3200	7509.04	417.169	71.6036	358.019	984.861	0	0	0	258.396	591.508	332.723	0

LAKE-HURON SITE=234800 1

OBS	DATE	YEAR	SIZE	PHFLD	CONDFLD	CONDLAB	PHLAB	NITRATE	AMMONIA	NITROGEN	TOTALP	TDC	SULFATE	CHLORIDE	SILICA	ALKA	ACIDS	MERCURY
190	810324	81	130	5.70	50.0	30.0	6.90	0.36	0.44	0.55	0.017	0.20	2.87	1.81	0.08	.	1.80	.
191	810331	81	800	6.95	45.0	26.0	4.60	0.63	0.80	1.11	0.003	0.10	3.66	0.41	0.03	.	6.30	0.10
192	810407	81	310	4.60	35.0	17.0	5.30	0.40	0.44	0.94	0.019	1.50	2.34	0.42	0.04	.	3.60	0.10
193	810414	81	2625	4.15	50.0	26.0	4.30	0.44	0.33	0.41	0.027	0.10	3.00	0.50	0.10	.	7.20	0.00
194	810421	81	290	3.86	88.0	41.0	4.10	0.67	0.37	0.56	0.024	3.00	4.40	0.70	0.10	.	13.00	0.10
195	810428	81	900	4.07	50.0	18.0	4.38	0.33	0.25	0.90	0.003	1.00	1.72	0.27	0.10	.	5.10	0.10
196	810505	81	1050	3.87	65.0	54.0	3.96	1.17	0.75	0.90	0.001	1.00	4.12	0.37	0.10	.	15.00	0.10
197	810512	81	4950	4.10	50.0	36.0	3.97	0.57	0.50	0.67	0.002	1.00	2.91	0.38	0.10	.	12.00	0.10

OBS	CADMIUM	COPPER	IRON	LEAD	NICKEL	SILVER	CALCIUM	MG	SODIUM	POTASS	ARSENIC	ALUMINUM	BARIUM	BERYLIUM	COBALT	CHROMIUM	MOLY
190	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
191	8.00	9.27	40.00	7.41	15.0	1.50	0.580	0.14	0.33	0.13	0.11	45.0	2.50	.	6.01	7.66	.
192	.	2.56	40.00	10.60	.	.	0.838	0.18	0.59	0.38	0.04	133.0	5.20	.	5.73	.	.
193	0.08	3.00	40.00	31.90	15.0	1.50	0.460	0.06	0.10	0.27	.	45.0	2.50	.	2.50	15.50	.
194	1.00	8.30	40.00	.	.	.	0.500	0.12	0.27	0.09	.	45.0	8.79	.	.	2.50	.
195	1.00	3.00	40.00	75.00	15.0	1.50	0.200	0.02	0.02	0.06	.	45.0	2.50	.	2.50	.	.
196	1.00	3.00	40.00	15.00	15.0	1.50	0.290	0.04	0.08	0.05	.	45.0	2.50	.	.	.	.
197	1.00	3.00	40.00	66.77	15.0	3.23	0.200	0.02	0.28	0.07	0.33	45.0	2.50	0.5	2.50	2.50	.

OBS	VANADIUM	YTTRIUM	TITANIUM	BORON	ZINC	MANGA	TIN	CA	MAG	NA	K	MEGPHF	MEGPHL	NO3LOAD	NH4LOAD	TKNLOAD	TPLOAD	TCLOAD
190	.	.	.	.	.	.	.	.	.	.	.	-5.70	-6.90	0.7285	0.8904	1.1130	0.03440	0.405
191	.	.	3.0	15.0	25.0	5.44	.	580	140.0	330	130	-6.95	-4.60	7.8453	9.9622	13.8226	0.03736	1.245
192	.	.	3.0	.	25.0	10.50	.	838	180.0	590	380	-4.60	-5.30	1.9302	2.1232	4.5359	0.09168	7.238
193	.	.	3.0	6.0	25.0	2.50	.	440	60.0	100	270	-4.15	-4.30	18.7959	13.4840	16.7529	1.10324	4.086
194	.	.	.	15.0	25.0	2.50	.	500	120.0	270	90	-3.86	-4.10	3.0245	1.6702	2.5279	0.10834	13.542
195	.	.	3.0	15.0	25.0	2.50	.	200	20.0	20	60	-4.07	-4.38	4.6231	3.5023	12.6085	0.04205	14.009
196	.	.	3.0	15.0	25.0	2.50	.	290	40.0	80	50	-3.87	-3.96	19.1228	12.2582	14.7099	0.01634	16.344
197	.	.	3.0	.	25.0	2.50	.	200	20.0	280	70	-4.10	-3.97	43.9195	38.5258	51.6246	0.15410	77.052

OBS	SO4LOAD	CLLOAD	SILOAD	ALKLOAD	HIONLOAD	HELOAD	CDLOAD	CULOAD	FELOAD	PRELOAD	NILOAD	AGLOAD	CALOAD	MGLOAD	MALOAD
190	5.808	3.6627	0.14189	.	3.64	.	.	.	.	.	.	.	.	.	.
191	45.577	5.1056	0.37358	.	78.45	1.24528	12.4528	115.437	747.17	92.28	186.79	18.679	7222.6	1743.4	4109.4
192	11.292	2.0267	0.19302	.	17.37	0.48255	.	12.353	289.53	51.15	.	.	4043.7	868.6	2847.0
193	122.582	20.4304	4.08607	.	294.20	0.00000	3.2689	122.582	2451.64	1303.46	612.91	61.291	17978.7	2451.6	4086.1
194	19.862	3.1599	0.45141	.	58.68	0.45141	4.5141	37.467	270.85	.	.	.	2257.1	541.7	1218.8
195	24.096	3.7825	1.40094	.	71.45	1.40094	14.0094	42.028	840.56	1050.70	210.14	21.014	2801.9	280.2	280.2
196	67.339	6.0474	1.63443	.	245.16	1.63443	16.3443	49.033	980.66	245.16	245.16	24.516	4739.8	653.8	1307.5
197	224.220	29.2796	7.70517	.	924.62	7.70517	77.0517	231.155	4623.10	5144.74	1155.78	248.877	15410.3	1541.0	21574.5

OBS	KLOAD	ASLOAD	ALLOAD	BALOAD	BELOAD	COLOAD	CRLOAD	MOLOAD	VLOAD	YLOAD	TILOAD	BLOAD	ZNLOAD	MNLOAD	SNLOAD	DATENUM
190	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	84
191	1618.9	1.3698	560.38	31.132	.	74.841	95.388	.	.	.	37.358	186.79	311.32	67.743	.	91
192	1833.7	0.1930	641.79	25.092	.	27.650	.	.	.	.	14.476	.	120.64	50.667	.	98
193	11032.4	.	1838.73	102.152	.	102.152	653.342	.	.	.	122.582	245.16	1021.52	102.152	.	105
194	406.3	.	203.14	39.679	.	.	11.285	.	.	.	.	67.71	112.85	11.285	.	112
195	840.6	.	630.42	35.023	.	35.023	.	.	.	.	42.028	210.14	350.23	35.023	.	119
196	817.2	.	735.49	40.861	.	.	.	.	.	.	49.033	245.16	408.61	40.861	.	126
197	5393.6	25.4271	3467.33	192.629	38.5258	192.629	192.629	.	.	.	231.155	.	1926.29	192.629	.	133

LAKE HURON SITE#234800 1

OBS	DATE	YEAR	SIZE	PHFLD	CONDFLD	CONDLAB	PHLAB	NITRATE	AMMONIA	NITROGEN	TOTALP	TOC	SULFATE	CHLORIDE	SILICA	ALKA	ACIDS	MERCURY
198	810519	81	270	4.27	60.0	33.0	4.52	0.93	0.33	0.71	0.093	1.00	5.43	0.45	0.04	.	12.00	0.10
199	810526	81	770	3.85	95.0	60.0	3.88	0.84	0.72	0.83	0.003	1.00	6.31	0.66	0.10	.	19.00	0.10
200	810609	81	1400	4.27	46.0	31.5	4.17	0.55	0.55	0.55	0.001	1.60	3.75	0.20	0.10	.	.	0.10
201	810616	81	300	5.15	55.0	35.0	5.99	0.75	0.22	0.28	0.001	2.40	5.98	1.73	0.28	.	3.80	0.12
202	810623	81	2650	5.01	30.0	28.0	5.62	0.50	0.60	0.65	0.001	0.80	5.00	1.15	0.21	.	5.70	0.10
203	810707	81	490	4.13	45.0	.	4.23	0.47	0.43	0.46	0.003	2.00	4.05	0.30	0.10	.	8.60	0.10
204	810721	81	1850	4.30	4.0	42.0	4.07	0.70	0.73	0.79	0.005	1.20	6.92	0.52	0.10	.	11.00	0.12
205	810728	81	420	3.82	73.0	68.0	3.73	0.88	0.59	0.87	0.002	2.20	6.34	0.20	0.10	.	19.00	0.10

OBS	CADMIUM	COPPER	IRON	LEAD	NICKEL	SILVER	CALCIUM	MG	SODIUM	POTASS	ARSENIC	ALUMINUM	BARIUM	BERYLIUM	COBALT	CHROMIUM	MOLY
198	1.00	3.0	217.20	.	15.0	.	1.40	0.52	0.17	0.26	0.66	204.1	8.39	.	2.5	.	.
199	0.17	3.0	60.00	41.34	15.0	.	0.46	0.10	0.23	0.08	.	45.0	2.50	.	.	11.36	.
200	.	3.0	60.00	15.00	.	.	0.50	0.12	0.12	0.06	0.24	45.0	41.06	.	.	.	.
201	2.00	3.0	60.00	45.00	15.0	5.0	2.43	0.72	0.98	0.15	.	45.0	2.50	0.5	2.5	9.00	.
202	2.00	.	.	.	.	5.0	1.44	0.49	0.70	0.11	0.16	45.0	2.50	0.5	2.5	.	.
203	2.00	3.0	60.00	45.00	15.0	5.0	358.00	76.50	48.00	.	.	45.0	2.50	0.5	2.5	9.00	.
204	2.00	3.0	60.00	45.00	15.0	5.0	810.00	275.00	185.00	.	.	45.0	2.50	0.5	2.5	9.00	.
205	2.00	3.0	60.00	45.00	15.0	5.0	407.00	80.50	110.00	.	.	45.0	6.80	0.5	2.5	9.00	.

OBS	VANADIUM	YTRIUM	TITANIUM	BORON	ZINC	MANGA	TIN	CA	MAG	NA	K	NEGPHF	NEGPHL	NO3LOAD	NH4LOAD	TKNLOAD	TPLOAD	TOCLOAD
198	.	.	3.00	.	25.00	20.48	.	1400	520.0	170	260	-4.27	-4.52	3.91	1.39	2.98	0.3909	4.20
199	.	.	3.00	15.00	25.00	6.23	.	460	100.0	230	80	-3.85	-3.88	10.07	8.63	9.95	0.0360	11.99
200	.	.	28.10	5.00	25.00	2.50	.	500	120.0	120	60	-4.27	-4.17	11.99	11.99	11.99	0.0218	34.87
201	.	.	.	.	.	2.50	.	2450	720.0	980	150	-5.15	-5.99	3.50	1.03	1.31	0.0047	11.21
202	.	.	.	30.00	.	.	.	1440	490.0	700	110	-5.01	-5.62	20.62	24.75	26.81	0.0412	33.00
203	.	.	.	.	.	2.50	.	358	76.5	48	.	-4.13	-4.23	3.58	3.28	3.51	0.0229	15.25
204	.	.	.	.	.	5.65	.	810	275.0	185	.	-4.30	-4.07	20.16	21.02	22.75	0.1440	34.56
205	.	.	.	.	.	2.50	.	407	80.5	110	.	-3.82	-3.73	5.75	3.86	5.69	0.0131	14.38

OBS	SO4LOAD	CLLOAD	SILOAD	ALKLOAD	HIONLOAD	HGLOAD	COLOAD	CULOAD	FELOAD	PBLOAD	NILOAD	AGLOAD	CALOAD	MGLOAD	NALOAD	KLOAD
198	22.8	1.89	0.168	.	50.4	0.420	4.20	12.61	913	.	63.0	.	5884	2185	714	1093
199	75.6	7.91	1.199	.	227.7	1.199	2.04	35.96	719	495.5	179.8	.	5513	1199	2757	959
200	81.7	4.36	2.179	.	.	2.179	.	65.38	1308	326.9	.	.	10896	2615	2615	1308
201	27.9	8.08	1.308	.	17.7	0.560	9.34	14.01	280	210.1	70.0	23.35	11441	3362	4576	700
202	206.2	47.44	8.662	.	235.1	4.125	82.50	.	.	.	.	206.25	59400	20212	28875	4537
203	30.9	2.29	0.763	.	65.6	0.763	15.25	22.88	458	343.2	114.4	38.14	2731	583	366	.
204	199.3	14.97	2.880	.	316.8	3.456	57.59	86.39	1728	1295.9	432.0	143.99	23326	7919	5327	.
205	41.4	1.31	0.654	.	126.2	0.654	13.08	19.61	392	294.2	98.1	32.69	2661	526	719	.

OBS	ASLOAD	ALLOAD	BALOAD	BELOAD	COLOAD	CRLOAD	MOLOAD	VLOAD	YLOAD	TILOAD	BLOAD	INLOAD	MNLOAD	SNLOAD	DATENUM
198	2.774	857.8	35.26	.	10.51	.	.	.	.	12.61	.	105.1	84.07	.	140
199	.	539.4	29.96	.	.	136.2	.	.	.	35.96	179.8	299.6	74.67	.	147
200	5.230	980.7	894.80	.	.	.	.	.	.	612.37	109.0	544.8	54.48	.	161
201	.	210.1	11.67	2.335	11.67	42.0	.	.	.	.	.	.	11.67	.	168
202	6.400	1856.2	103.12	20.625	103.12	.	.	.	.	1237.5	.	.	.	.	175
203	.	343.2	19.07	3.814	19.07	68.6	.	.	.	.	.	.	19.07	.	189
204	.	1295.9	71.99	14.399	71.99	259.2	.	.	.	.	.	.	162.70	.	203
205	.	294.2	44.46	3.269	16.34	58.8	.	.	.	.	.	.	16.34	.	210

LAKE=MURON SITE=234800 1

DATE	YEAR	SIZ	PL	COND	CON	NIT	AM	NT	TO	SUL	HL	SI	AL	AC	HC	CA	CO	PI	LE	NI	SI	CA	MG		
81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81		
206	810811	81	1500	6.14	56.0	41.0	4.27	0.68	0.40	0.49	0.001	2.10	3.43	0.1	0.1	13.80	0.1	3.00	3.0	60.00	45	15.0	5.0	313	48.8
207	810818	81	1500	3.82	63.0	67.0	3.78	0.87	0.66	0.74	0.024	.	6.36	0.1	0.1	22.80	0.1	3.00	3.0	60.00	45	15.0	5.0	287	50.4
208	810901	81	3230	3.85	100.0	106.0	3.59	1.19	0.62	0.71	0.004	2.80	9.42	0.3	0.1	28.00	0.1	0.06	.	11.00	.	.	.	.	.
209	810908	81	5975	3.97	40.0	43.0	3.83	0.51	0.30	0.34	0.001	2.19	4.12	0.2	0.1	16.20	0.1	.	.	7.60	.	.	.	.	.
210	810922	81	3200	4.32	17.5	18.0	4.20	0.24	0.28	0.17	0.001	1.44	1.72	0.2	0.1	15.20	0.1	.	.	.	.	.	.	.	.
211	810929	81	1325	4.05	35.0	35.5	3.89	0.50	0.17	0.36	0.001	1.45	2.89	0.2	0.1	12.35	0.1	0.03	.	3.24	.	.	.	.	.
212	811006	81	2900	4.18	25.0	27.5	4.11	0.39	0.26	0.36	0.001	0.80	2.36	0.2	0.1	11.00	0.1	0.14	3.0	7.10	45	10.5	5.0	247	28.7
213	811020	81	1175	4.02	30.0	31.0	4.05	0.53	0.08	0.10	0.030	1.74	2.59	0.3	0.1	11.00	0.1	0.05	3.0	2.55	45	9.0	5.0	386	163.0
214	811027	81	800	4.45	20.0	16.5	4.38	0.38	0.12	0.19	0.033	3.14	1.73	0.3	0.1	14.00	0.1	0.08	1.4	10.00	.	7.0	1.1	320	290.0
215	811110	81	1150	3.98	28.0	39.5	3.65	0.57	0.18	.	0.001	0.76	2.61	0.3	0.1	13.00	0.1	0.07	3.0	6.50	45	9.0	5.0	171	40.0
216	811124	81	1525	4.04	.	38.0	3.72	0.64	0.40	0.41	0.003	1.54	3.30	2.0	0.1	19.50	0.1	2.00	.	9.60	.	.	5.0	220	33.4
217	811215	81	1080	4.05	.	29.0	4.09	0.46	0.28	0.28	0.003	1.07	2.34	0.3	0.1	10.00	0.1	0.15	1.3	17.00	.	8.2	4.6	310	49.0
218	811222	81	270	4.59	.	9.3	4.68	0.26	0.04	0.19	0.004	0.40	0.61	0.2	0.1	4.00	0.1	0.13	3.8	32.40	45	9.0	.	.	.
219	811229	81	610	3.99	.	26.0	4.03	0.61	0.15	0.09	0.003	0.40	1.00	0.4	0.1	8.00	0.1	0.09	3.0	7.43	45	9.0	5.0	218	22.3
220	820105	82	910	5.20	.	35.0	4.12	0.53	0.21	0.28	0.025	1.04	2.29	0.2	0.1	12.20	0.1	0.13	0.7	7.00	.	6.6	1.3	120	17.0

SITE LAKE

SOB	POYS	ARS	ALUM	BAR	BER	COB	CR	VA	TY	TI	BO	ZI	MA	TI	MA	NA	NE	NE	NO	NO			
81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81		
206	30.0	.	0.27	45.0	2.50	0.5	2.5	9.0	.	.	.	.	2.50	.	313	48.8	30	-4.14	-4.27	15.88	9.34		
207	30.0	.	0.26	45.0	2.50	0.5	2.5	9.0	.	.	.	.	2.50	.	287	50.4	30	-3.82	-3.78	20.31	15.41		
208	.	.	0.35	.	.	.	.	.	.	.	.	.	.	.	.	.	.	-3.85	-3.59	59.83	31.17		
209	.	.	0.16	.	.	.	.	.	.	.	.	.	.	.	.	.	.	-3.97	-3.83	47.43	27.90		
210	.	0.02	0.18	.	.	.	.	.	.	.	.	.	.	.	.	.	20	-4.32	-4.20	11.95	13.95		
211	.	.	0.30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	-4.05	-3.89	10.31	3.51		
212	.	.	0.34	12.0	1.17	0.4	3.0	9.0	4.00	2.00	5.00	5.30	1.84	0.57	247	28.7	.	-4.18	-4.11	17.61	11.74		
213	30.0	.	0.18	15.4	1.27	0.4	3.0	9.0	5.0	4.00	2.00	10.00	4.70	2.68	0.91	386	163.0	30	-4.02	-4.05	9.69	1.46	
214	6.3	.	0.20	10.0	0.90	0.2	0.8	0.5	5.0	2.40	0.10	2.30	12.00	1.50	0.40	320	290.0	6300	-4.45	-4.38	4.73	1.49	
215	67.0	.	0.16	12.0	0.70	0.6	3.0	0.9	5.0	4.00	2.00	4.20	4.00	1.60	0.50	171	40.0	67	-3.98	-3.85	10.20	3.22	
216	30.0	.	0.66	.	1.19	0.4	3.0	.	.	.	.	6.01	.	0.50	220	33.4	30	-4.04	-3.72	15.19	9.50		
217	99.0	.	0.50	22.0	1.20	0.2	2.2	3.4	2.0	4.20	0.30	3.00	10.00	3.40	1.00	310	49.0	99	-4.05	-4.09	7.73	4.71	
218	.	0.05	0.16	.	.	.	9.0	5.0	5.19	2.19	.	3.52	2.35	.	.	.	50	-4.59	-4.68	1.09	0.17		
219	150.0	0.02	0.16	12.0	0.70	0.4	3.0	9.0	5.0	4.00	2.00	5.00	3.66	1.44	0.50	218	22.3	150	20	-3.99	-4.03	5.79	1.42
220	120.0	0.06	0.26	180.0	0.60	0.1	3.0	2.7	0.4	0.20	1.80	4.20	5.20	1.10	0.50	120	17.0	120	60	-5.20	-4.12	7.51	2.97

SITE LAKE

424.85 296.32  
1566.23 1142.97

	T K N L O A S	T P L O A D	T O C L O A D	S O L O A D	C L L O A D	S L I K L L O A D	H I O N L O A D	H G L O A D	C D L O A D	C U L O A D	F E L O A D	P B L O A D	N I L O A D	A G L O A D	C A L O A D	M G L O A D
206	11.44	0.0233	49.03	80.1	2.33	2.335	322.2	2.335	70.05	70.05	1401	1050.7	350.2	116.74	7308	1139
207	17.28	0.5604		148.5	2.33	2.335	532.4	2.335	70.05	70.05	1401	1050.7	350.2	116.74	6701	1177
208	35.70	0.2011	140.78	473.6	15.08	5.028	1407.8	5.028	3.02		553					
209	31.62	0.0930	203.69	383.2	18.60	9.301	1506.7	9.301			707					
210	8.47	0.0498	71.73	85.7	9.96	4.981	757.1	4.981								
211	7.42	0.0206	29.91	59.6	4.12	2.062	254.7	2.062	0.62		67					
212	16.25	0.0451	36.11	106.5	9.03	4.514	496.6	4.514	6.32	135.42	321	2031.4	474.0	225.71	11150	1296
213	1.83	0.5687	31.82	47.4	5.49	1.829	201.2	1.829	0.91	56.87	47	823.1	164.6	91.45	7060	2981
214	2.37	0.4109	39.10	21.5	3.74	1.245	174.3	1.245	1.00	17.43	125		87.2	13.70	3985	3611
215		0.0179	13.60	46.7	5.37	1.790	232.7	1.790	1.25	53.70	116	805.5	161.1	89.50	3061	716
216	9.73	0.0712	36.56	78.3	47.48	2.374	462.9	2.374	47.48		228			118.69	5222	793
217	4.71	0.0504	17.99	39.3	5.04	1.681	168.1	1.681	2.52	21.85	286		137.9	77.33	5211	824
218	0.80	0.0168	1.68	2.6	0.84	0.420	16.8	0.420	0.55	15.97	136	189.1	37.8			
219	0.85	0.0285	3.80	9.5	3.80	0.950	76.0	0.950	0.85	28.49	71	427.3	85.5	47.48	2070	212
220	3.97	0.3541	14.73	32.4	2.83	1.417	172.8	1.417	1.84	9.92	99		93.5	18.41	1700	241

SITE	355.12	4.7540	983.91	2821.8	297.80	76.080	0	9513.5	68.537	518.10	1344.65	21557	17231.1	5310.1	1734.55	229775	59673
LAKE	1352.91	10.6242	4682.02	10905.4	1296.14	346.815	0	36220.9	306.779	2592.44	6067.58	100484	70864.5	23039.4	7163.24	917339	863711

	N A L O A S	K L O A D	A S L O A D	A L L O A D	B A L O A D	B E L O A D	C O L O A D	C R L O A D	H O L O A D	V L O A D	V L O A D	T I L O A D	B L O A D	Z N L O A D	M L O A D	S L O A D	D A T E M U M
206	700		6.304	1050.7	58.37	11.674	58.37	210.1							58.37		224
207	700		6.071	1050.7	58.37	11.674	58.37	210.1							58.37		231
208			17.597														245
209			14.881														252
210		996	8.966														266
211			6.187														273
212			15.348	541.7	52.82	18.057	135.42	406.3		180.57		90.28	225.7	239.2	83.06	25.731	280
213	549		3.292	281.7	23.23	7.316	54.97	164.6	91.45	73.16		36.58	182.9	86.0	49.02	14.815	294
214	78453		2.491	124.5	11.21	2.491	9.96	6.2	62.26	29.89		1.25	28.6	149.4	18.68	4.981	301
215	1199		2.864	214.8	12.53	7.160	53.70	16.1	89.50	71.60		35.80	164.7	71.6	28.64	8.950	315
216	712		15.667		28.25	9.495	71.21						142.7			11.869	329
217	1004		8.406	369.8	20.17	3.362	36.98	57.2	33.62	70.61		5.04	50.4	168.1	57.16	16.811	350
218		210	0.672					37.8	21.01	21.81		9.20		14.8	9.88		357
219	1624	190	1.519	113.9	6.65	3.798	23.49	85.5	47.48	37.98		18.99	47.5	34.8	13.67	4.748	364
220	1700	850	3.683	2549.7	9.50	1.417	42.50	38.2	5.67	2.83		25.50	59.5	73.7	15.58	7.083	371

SITE	168476	32786	155.543	20752.4	1957.00	159.411	1214.89	2729.7	351.00	489.45	0	1380.21	3383.2	6038.6	1317.81	94.988
LAKE	425036	126333	676.800	73182.0	6612.44	640.619	4507.44	12373.9	2349.96	1949.85	0	4189.61	15611.7	32076.9	5984.04	701.532

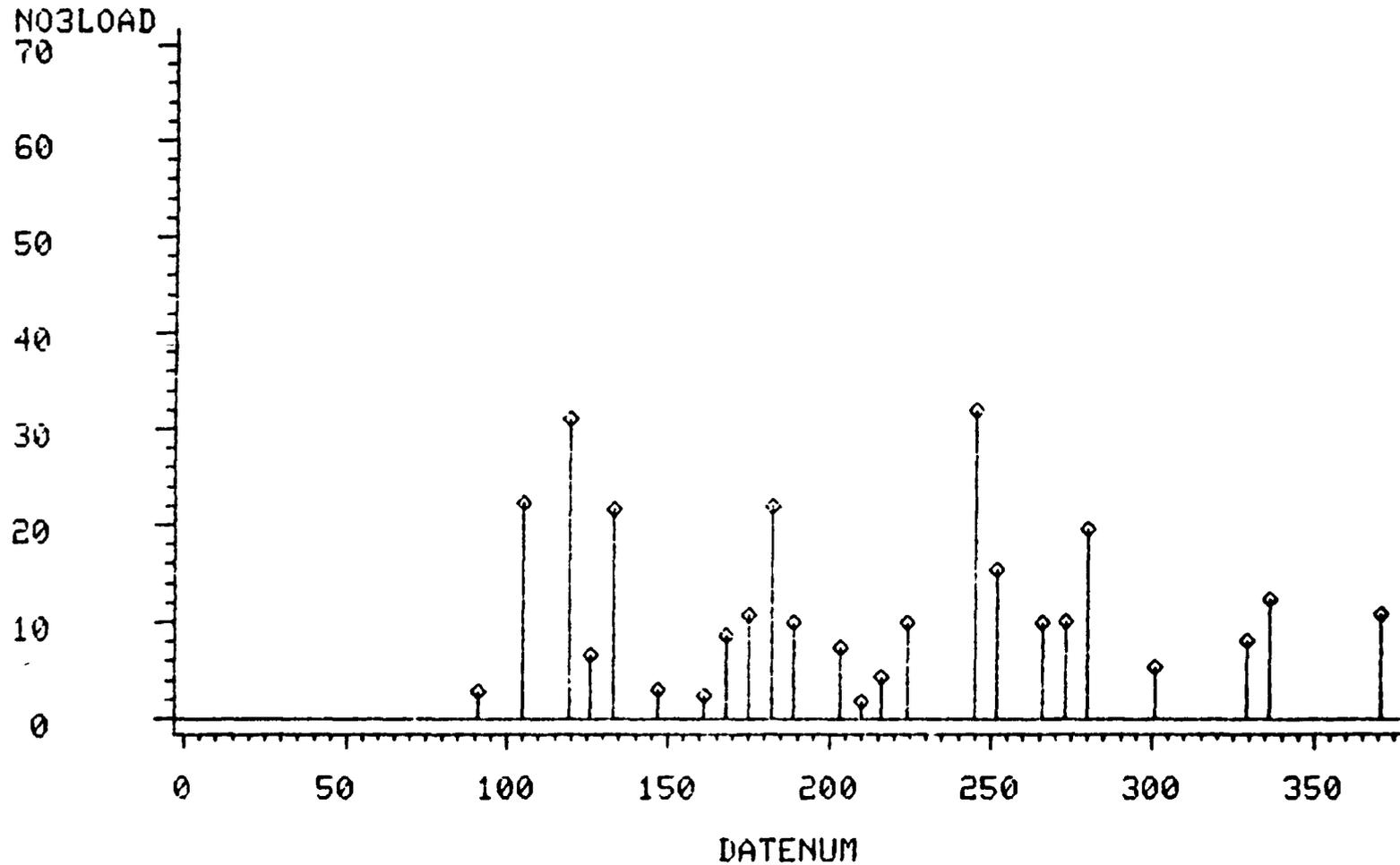
Table 3

Atmospheric Loadings to Lake Huron  
April-December 1981

Parameter Load	Sites				
	Bay City	Mount Clemens	Port Austin	Port Sanilac	Tawas Point
<b>Nutrients (mg/m<sup>2</sup>)</b>					
NO <sub>3</sub>	289	392	256	425	204
NH <sub>3</sub>	241	241	183	296	182
TKN	267	269	249	355	213
Total P	1.06	1.41	2.35	4.75	1.04
TOC	853	1153	936	984	756
SO <sub>4</sub>	2255	2251	2111	2882	1466
Cl	299	281	311	298	108
S <sub>1</sub>	94	66	60	76	50
<b>Metals (ug/M<sup>2</sup>)</b>					
Hg	70	67	59	69	42
Cd	624	710	388	518	352
Cu	1510	1813	1001	1345	399
Fe	30646	24180	15769	21557	8332
Pb	15504	18258	14947	17231	4924
Ni	5281	6241	4211	5310	1996
Ag	1621	1873	1206	1735	729
Ca	118216	225798	289157	229775	54393
Mg	18227	600146	37933	59673	147732
Na	62366	99124	83455	168476	11612
K	23892	25062	40515	32786	4078
As	127	122	177	156	95
Al	18969	18453	12498	20752	7509
Ba	1059	1980	1200	1957	417
Be	142	173	95	159	72
Co	998	1295	642	1215	358
Cr	3560	3337	1762	2730	985
Mo	663	653	683	351	---
V	413	819	229	488	---
Ti	898	1325	587	1380	---
B	4221	5178	2571	3383	258
Zn	6389	14849	4209	6039	592
Mn	1455	1633	1246	1318	333
Sn	150	212	245	95	---

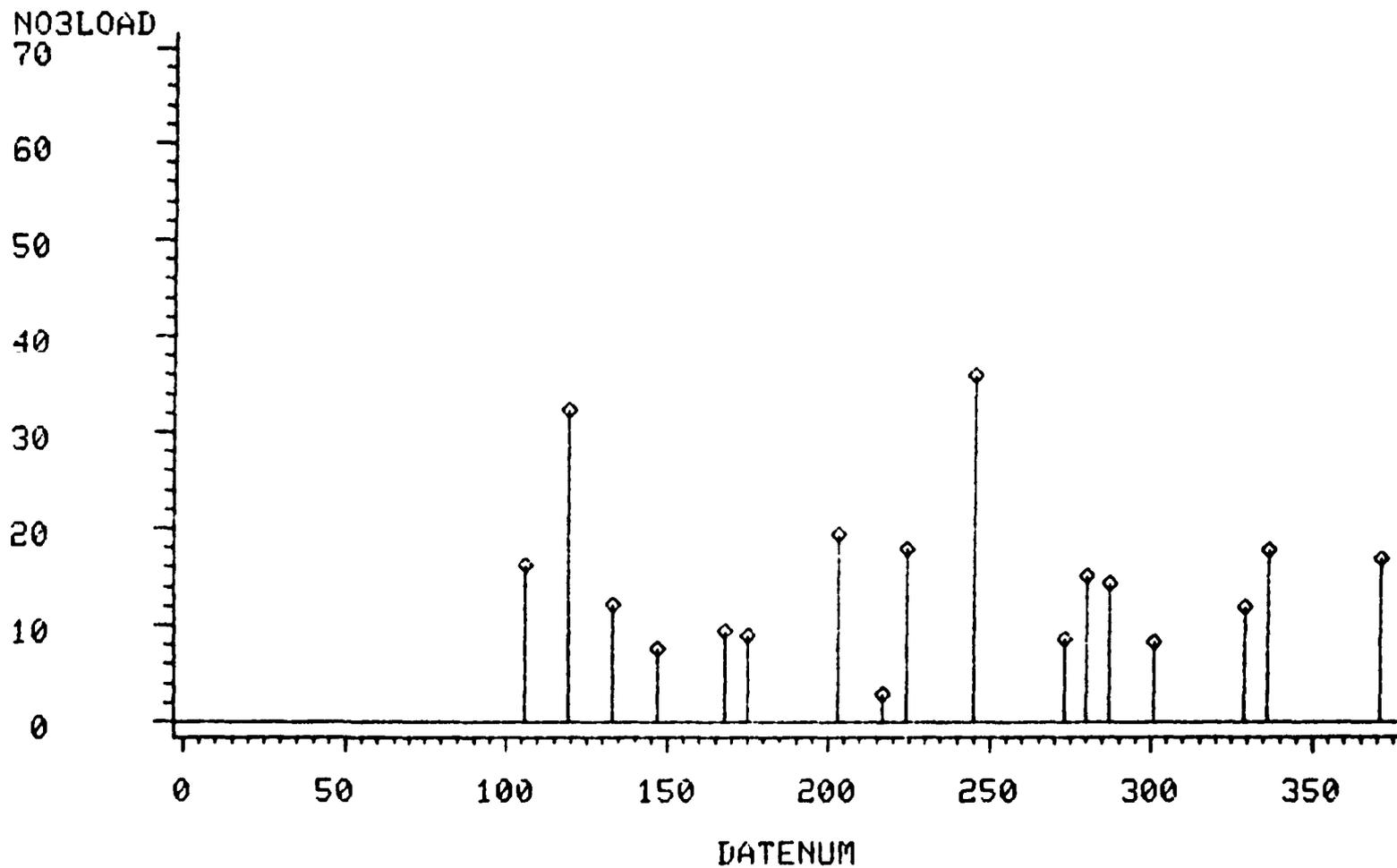
# GREAT LAKES ATMOSPHERIC DEPOSITION (GLAD) PROGRAM

WET SAMPLES  
1981 NITRATE LOAD (MG/M\*\*2)  
SITE=23 420 2



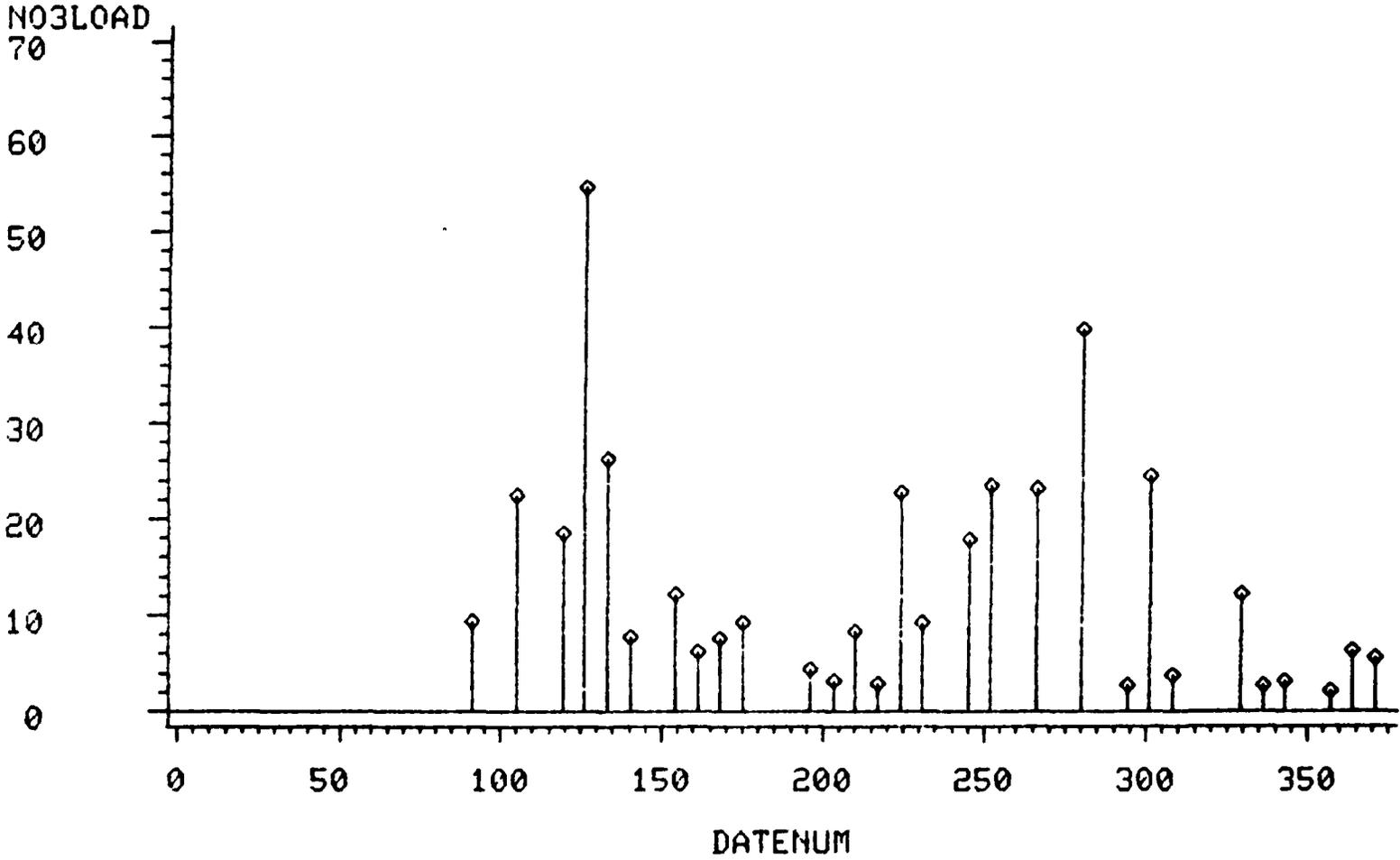
# GREAT LAKES ATMOSPHERIC DEPOSITION (GLAD) PROGRAM

WET SAMPLES  
1981 NITRATE LOAD (MG/M\*\*2)  
SITE=232340 2



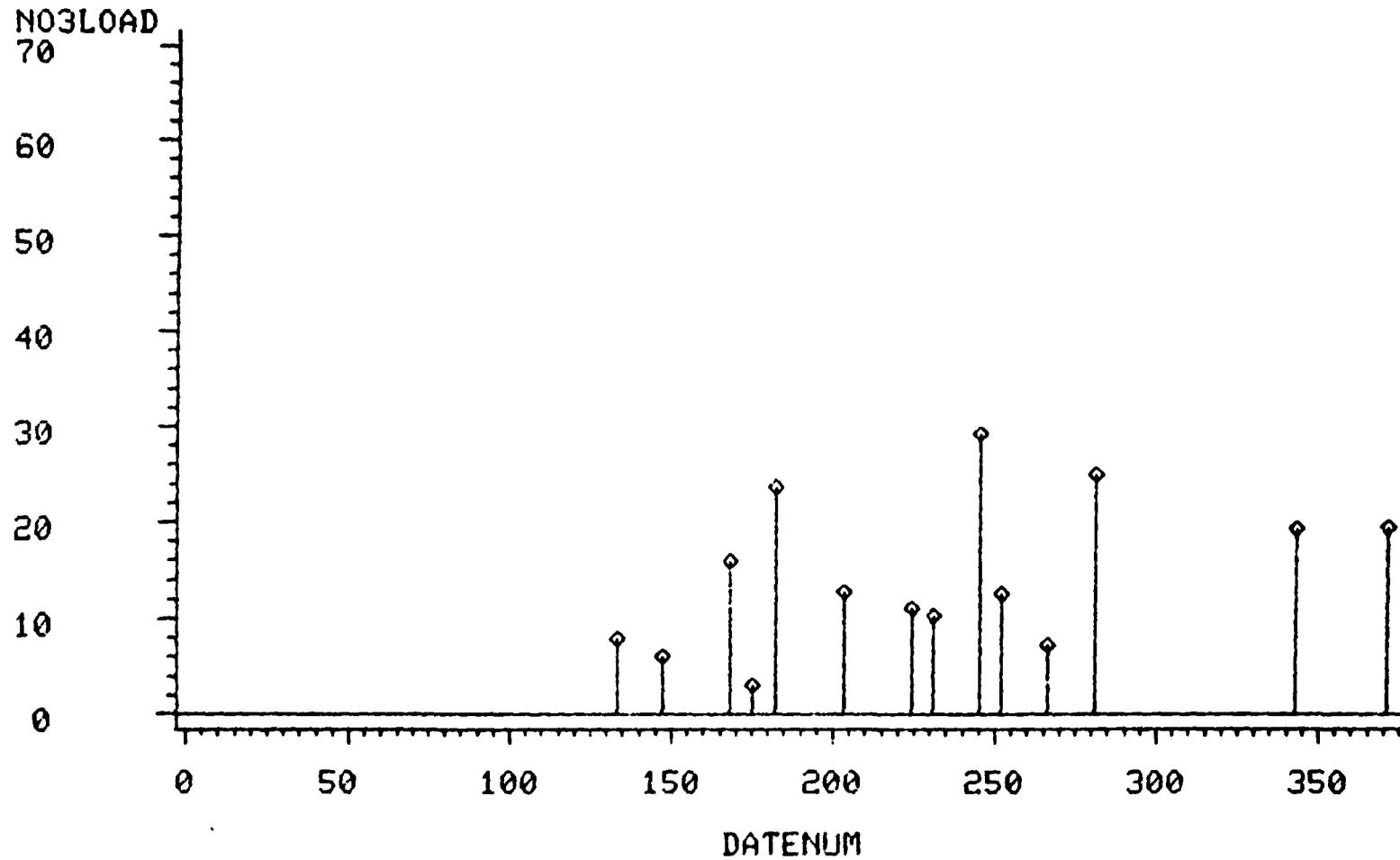
# GREAT LAKES ATMOSPHERIC DEPOSITION (GLAD) PROGRAM

WET SAMPLES  
1981 NITRATE LOAD (MG/M\*\*2)  
SITE=233660 2



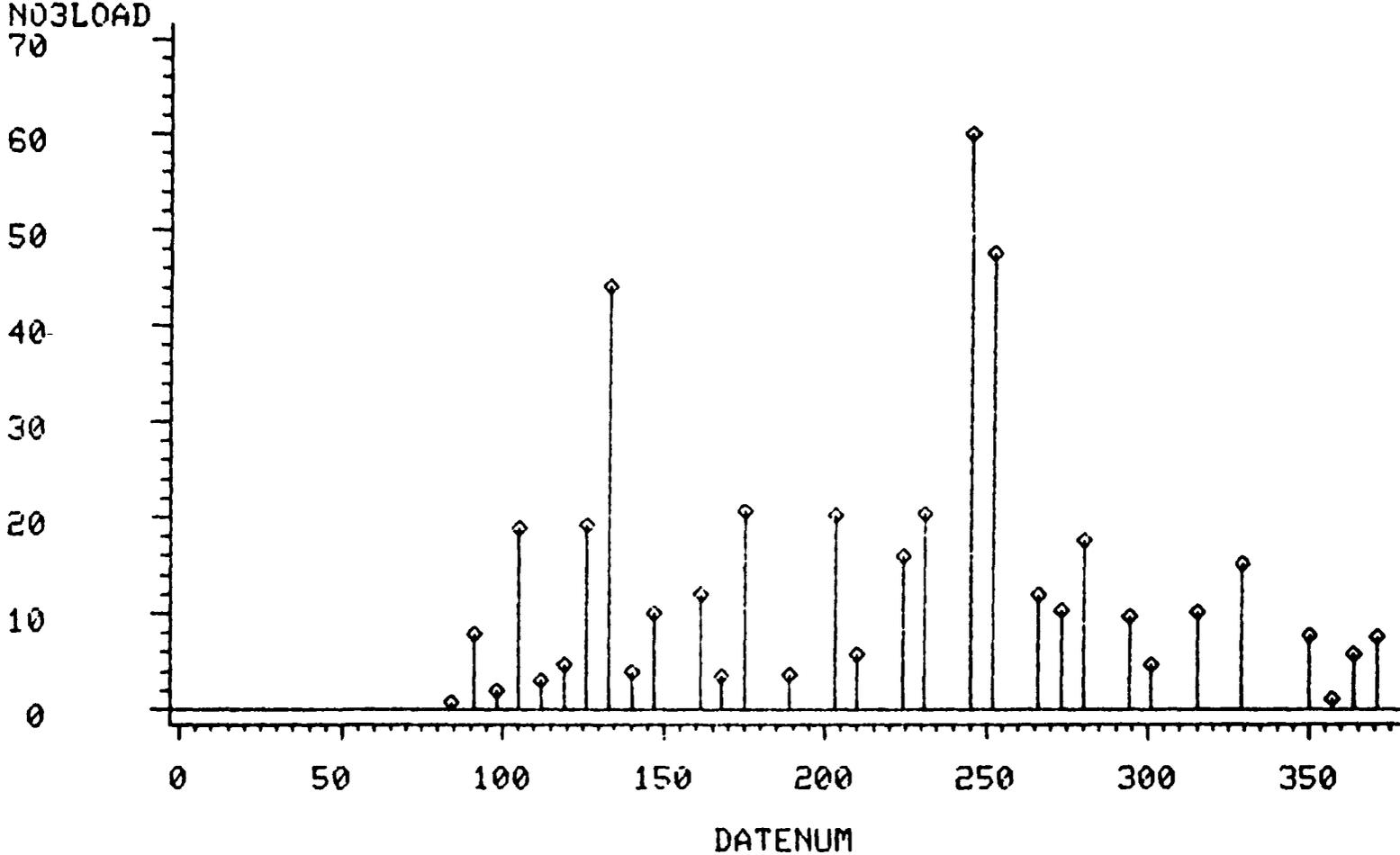
# GREAT LAKES ATMOSPHERIC DEPOSITION (GLAD) PROGRAM

WET SAMPLES  
1981 NITRATE LOAD (MG/M\*\*2)  
SITE=234110 2



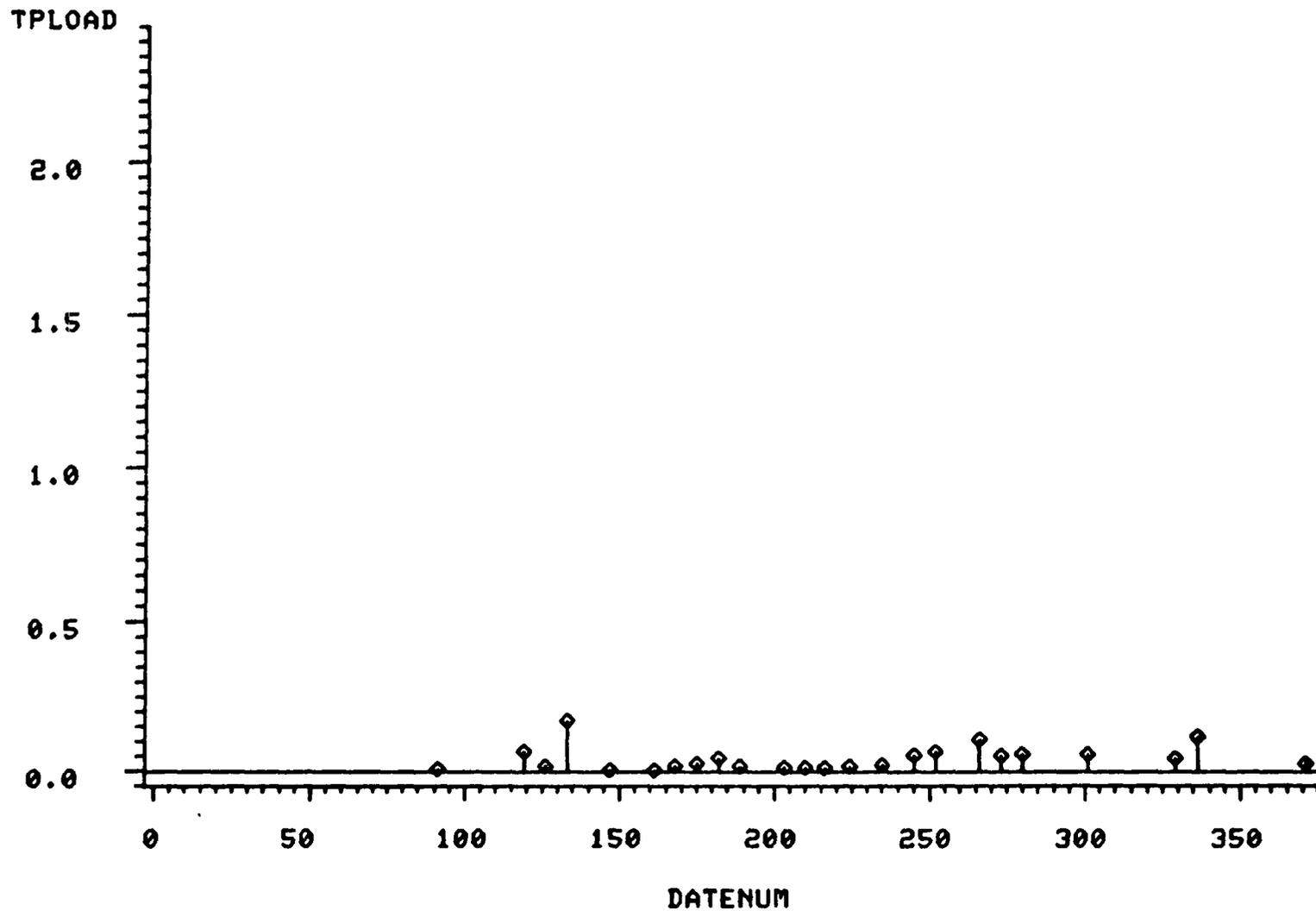
# GREAT LAKES ATMOSPHERIC DEPOSITION (GLAD) PROGRAM

WET SAMPLES  
1981 NITRATE LOAD (MG./M\*\*2)  
SITE=234800 1



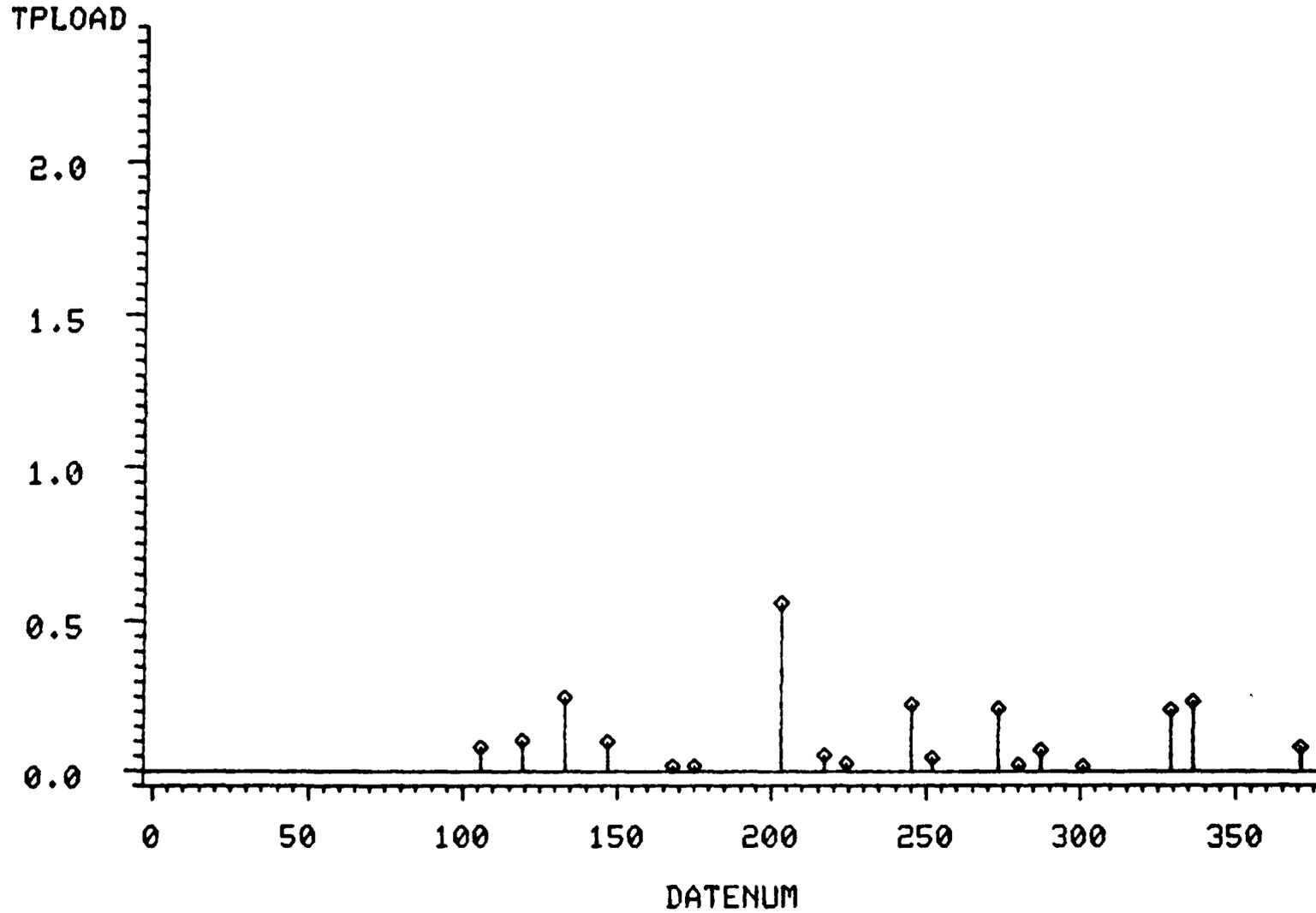
# GREAT LAKES ATMOSPHERIC DEPOSITION (GLAD) PROGRAM

WET SAMPLES  
1981 TOTAL PHOSPHORUS LOAD (MG/M\*\*2)  
SITE=23 420 2



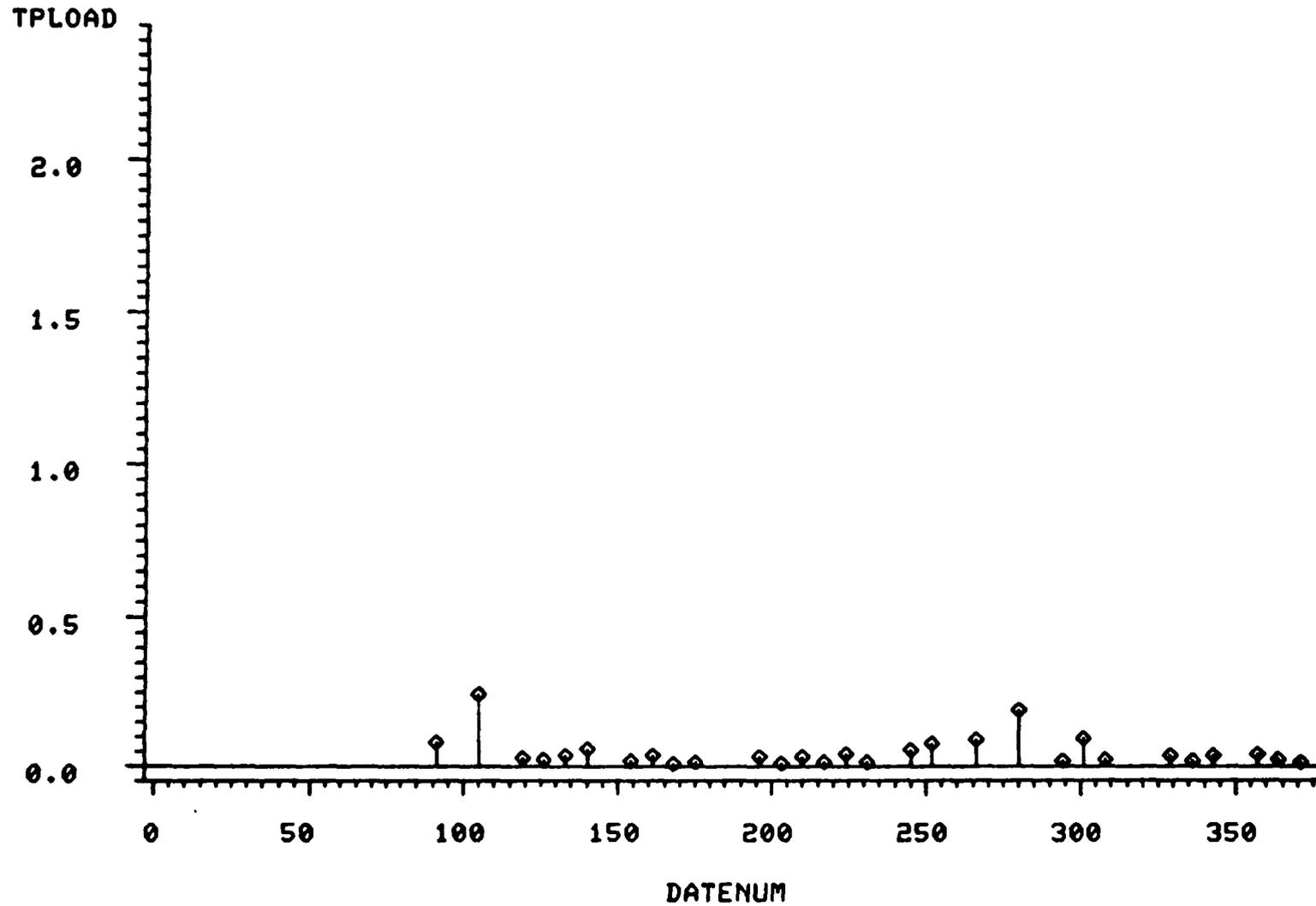
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WET SAMPLES  
1981 TOTAL PHOSPHORUS LOAD (MG/M\*\*2)  
SITE=232340 2



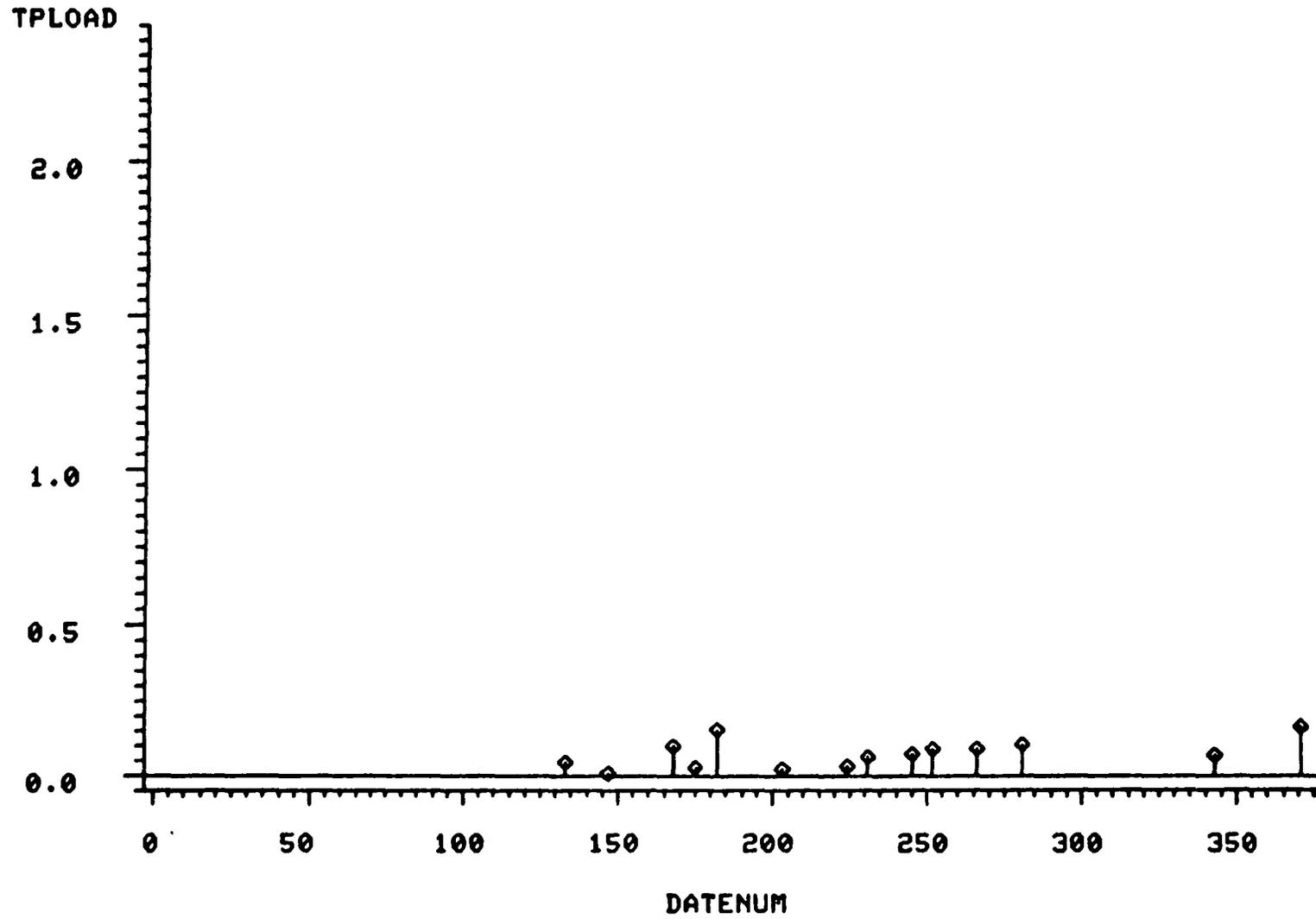
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WET SAMPLES  
1981 TOTAL PHOSPHORUS LOAD (MG/M\*\*2)  
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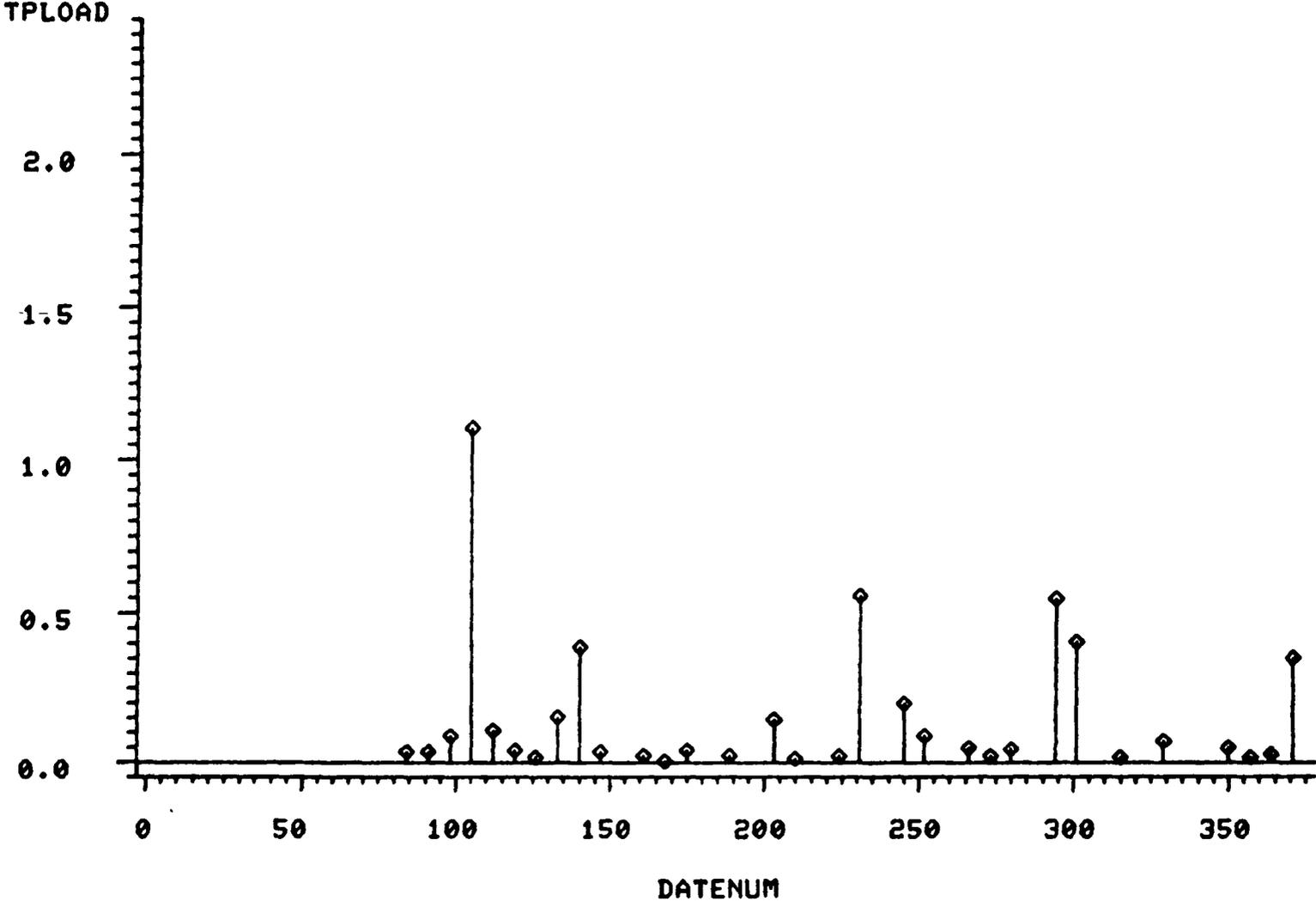
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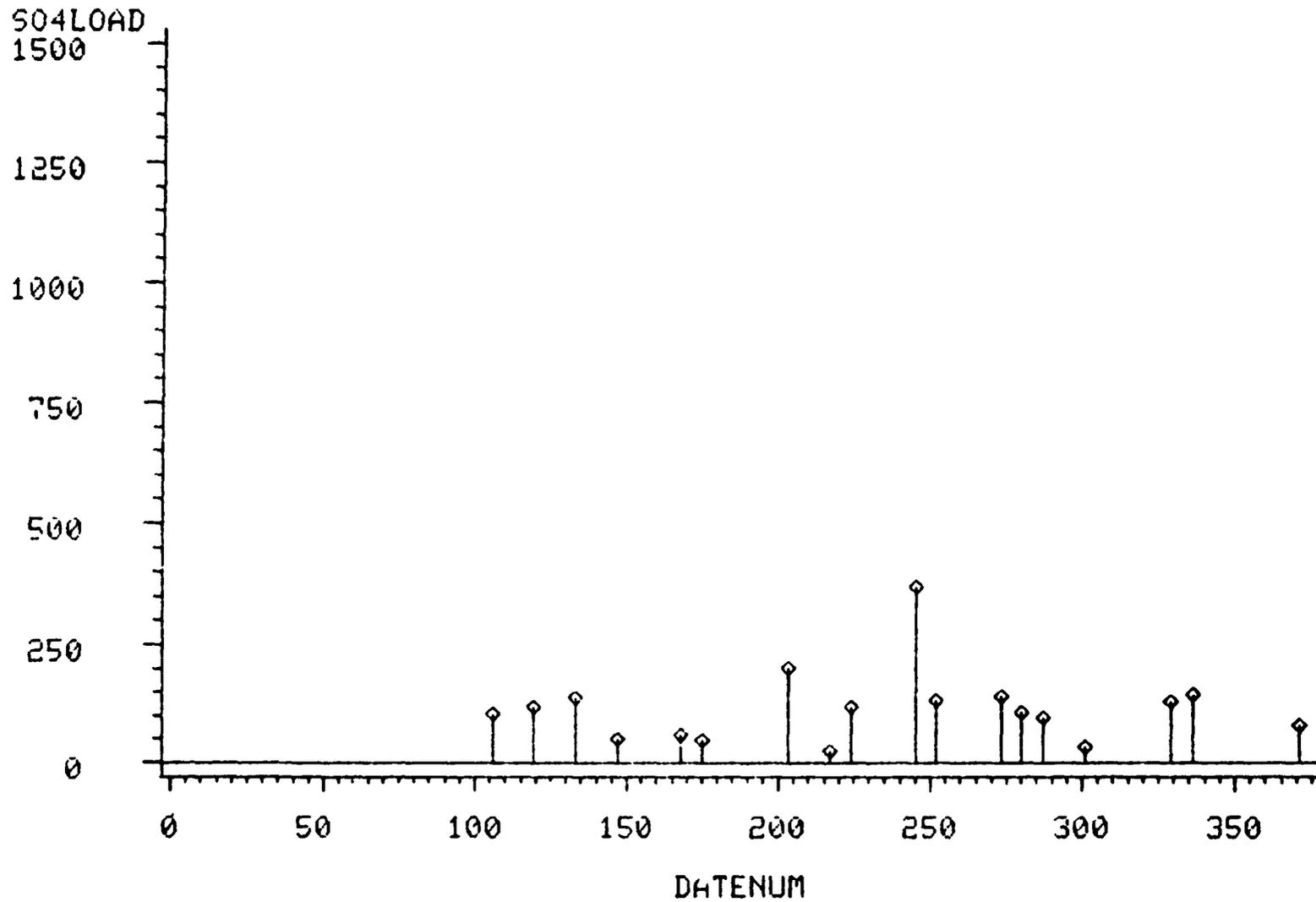
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WET SAMPLES  
1981 TOTAL PHOSPHORUS LOAD (MG/M\*\*2)  
SITE-234800 1



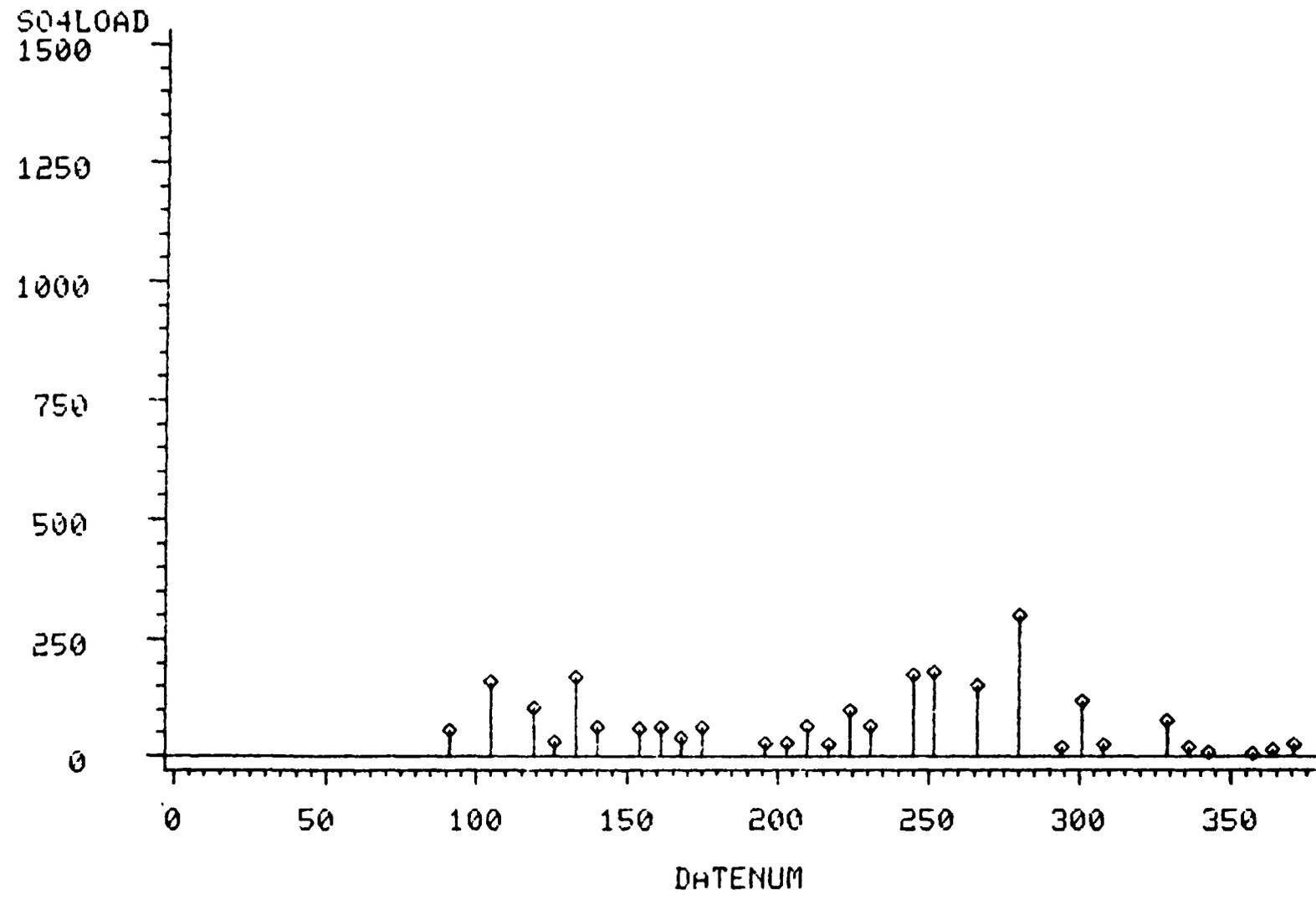
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WET SAMPLES  
1981 SULFATE LOAD (MG./M\*\*2)  
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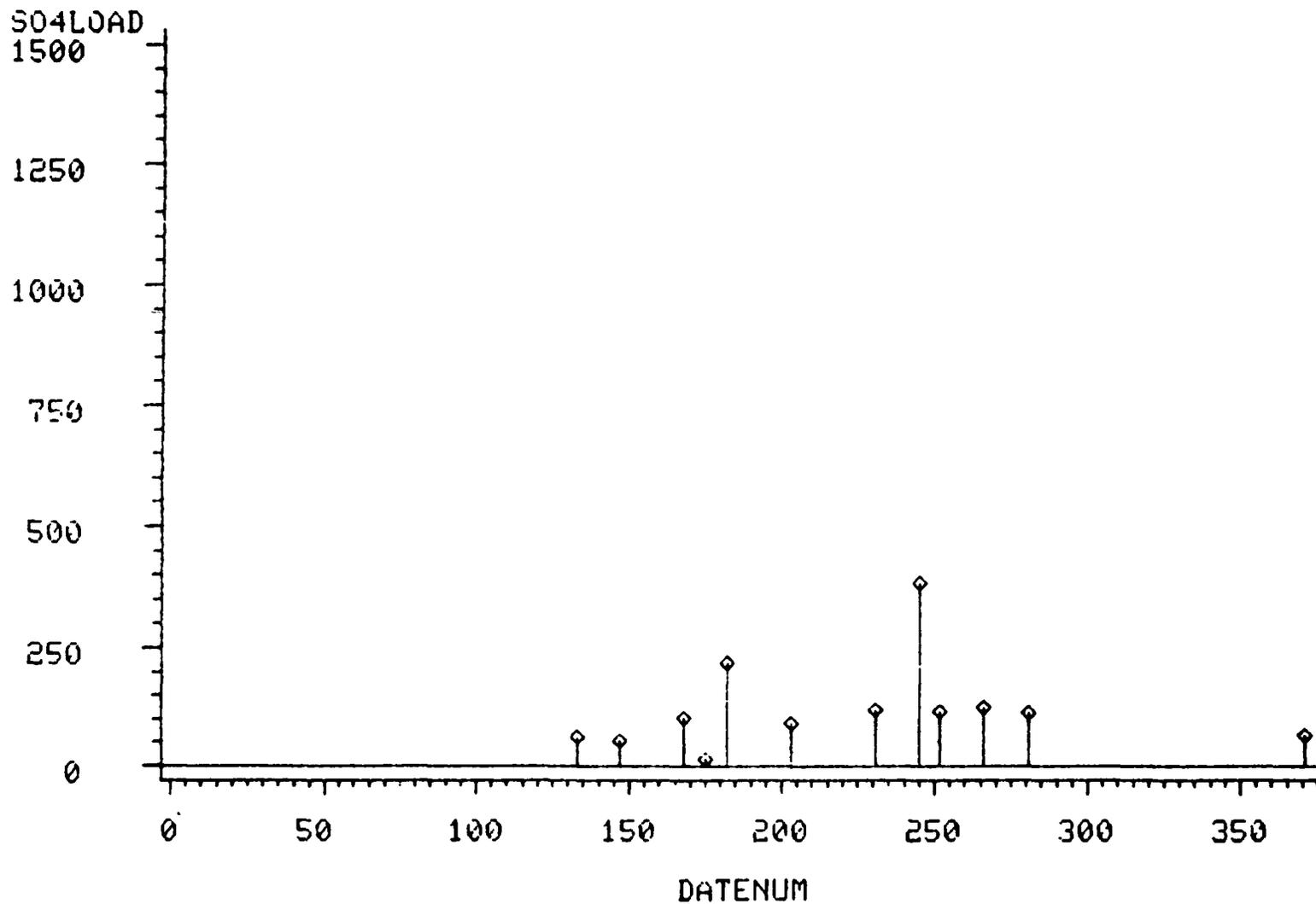
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1981 SULFATE LOAD (MG/M\*\*2)  
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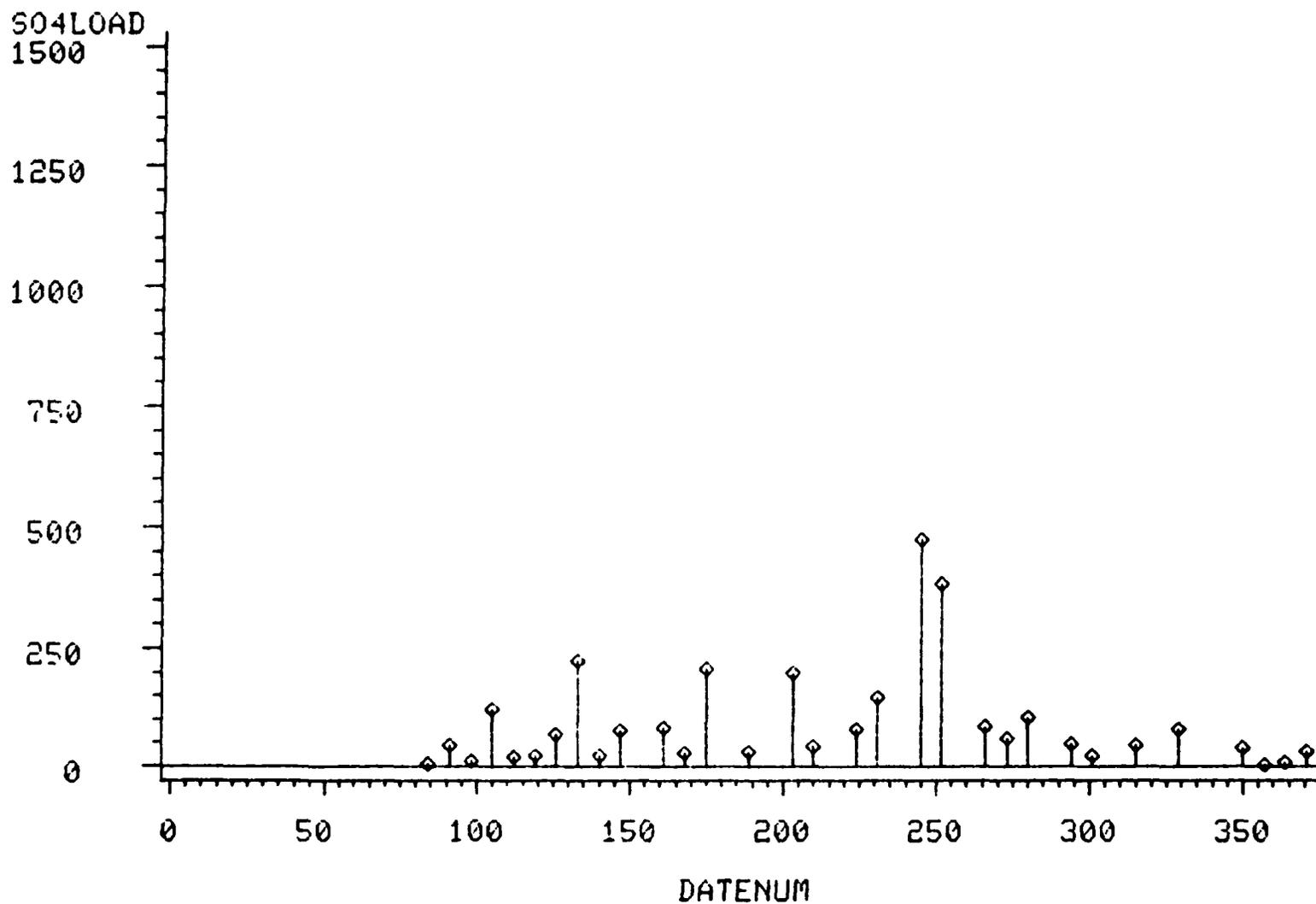
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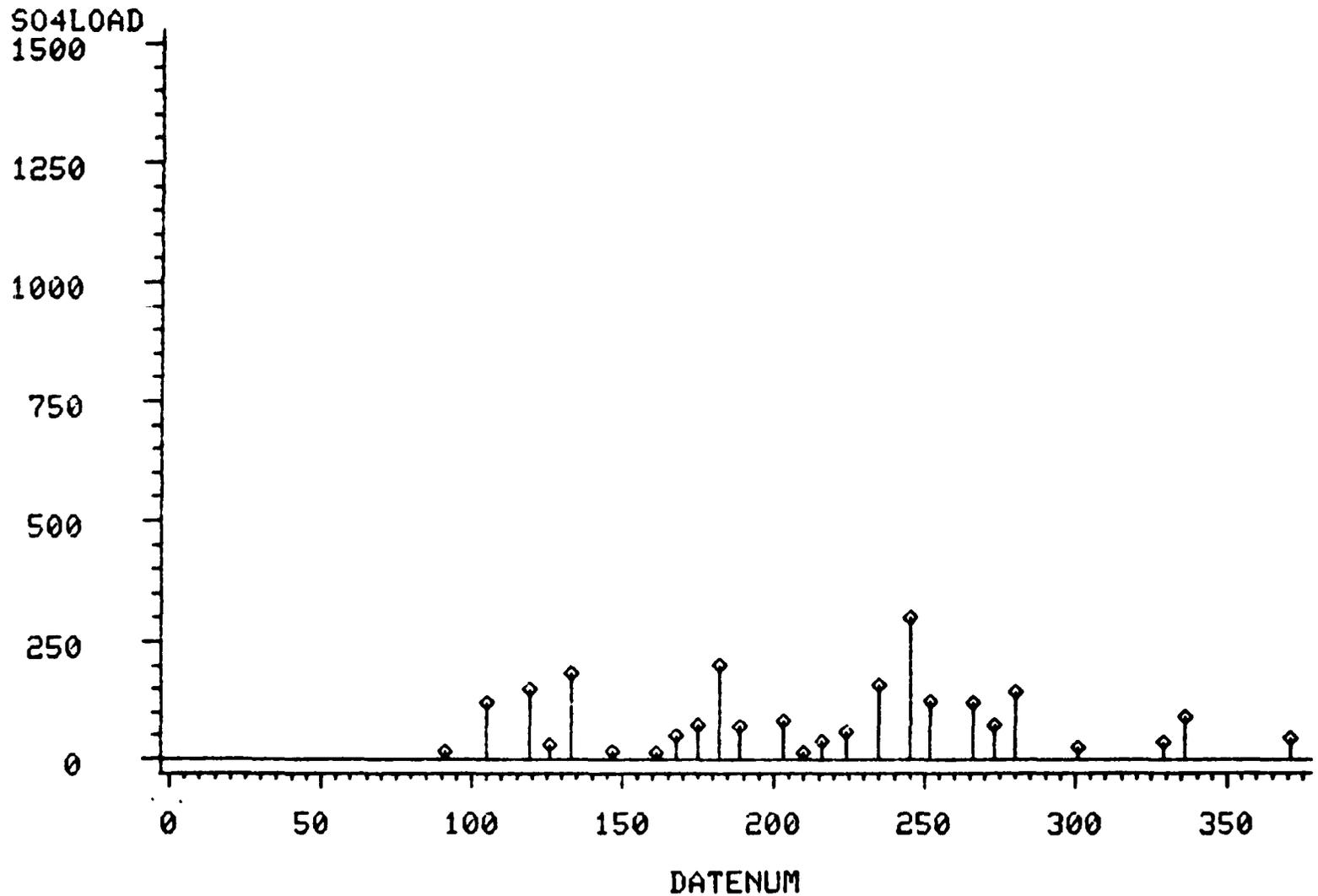
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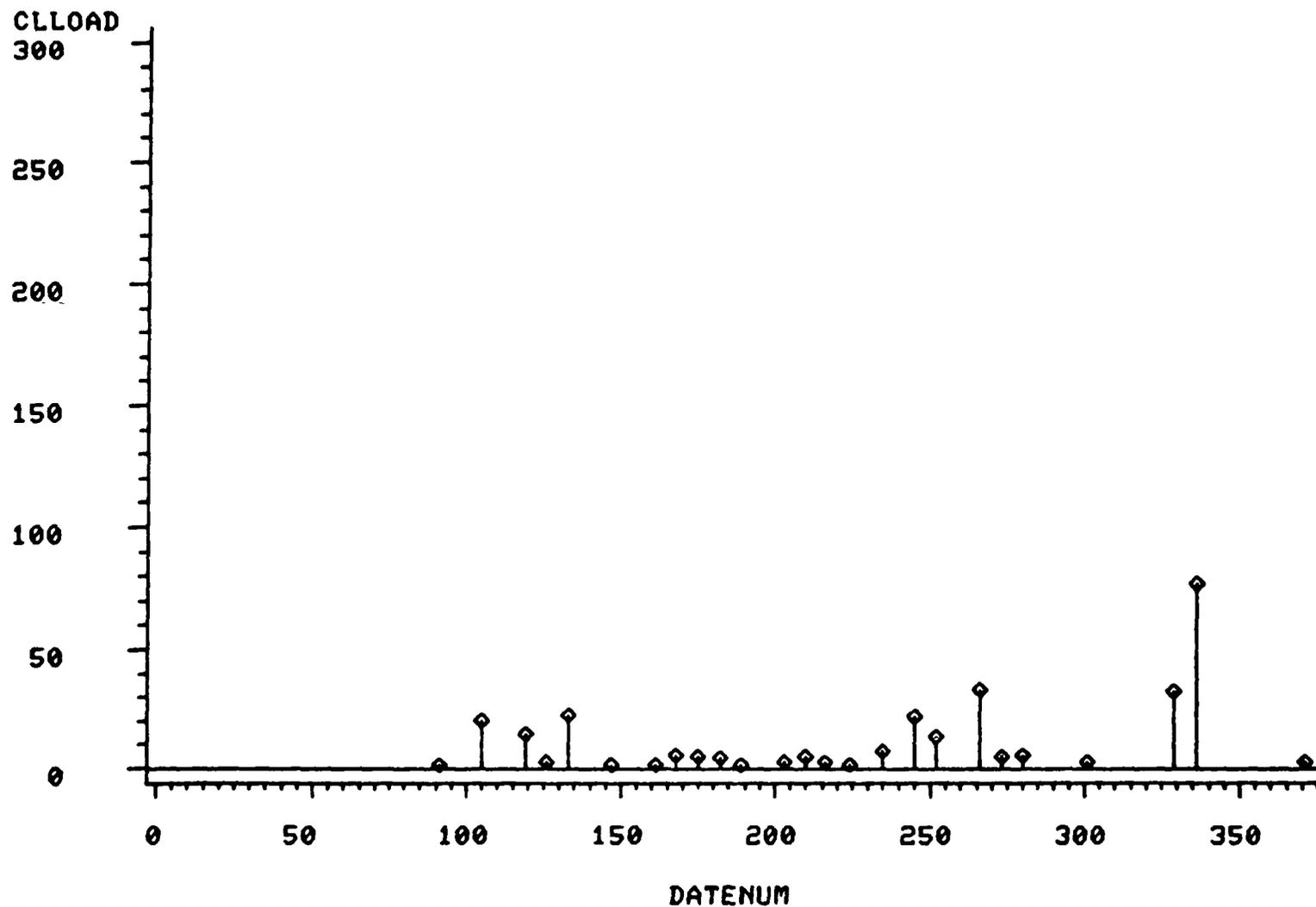
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1981 SULFATE LOAD (MG/M\*\*2)  
SITE=23 420 2



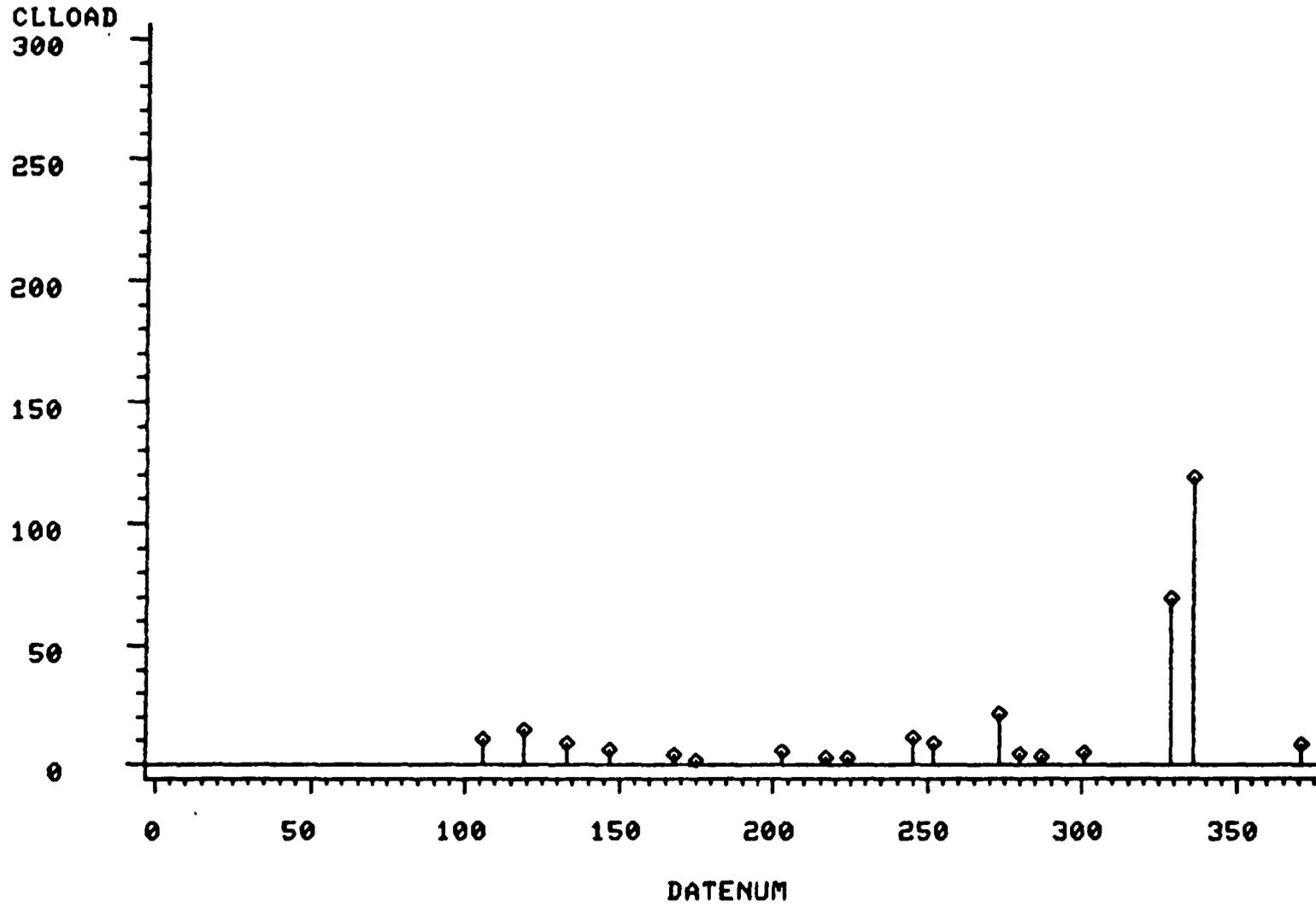
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WET SAMPLES  
1981 CHLORIDE LOAD (MG/M\*\*2)  
SITE-23 420 2



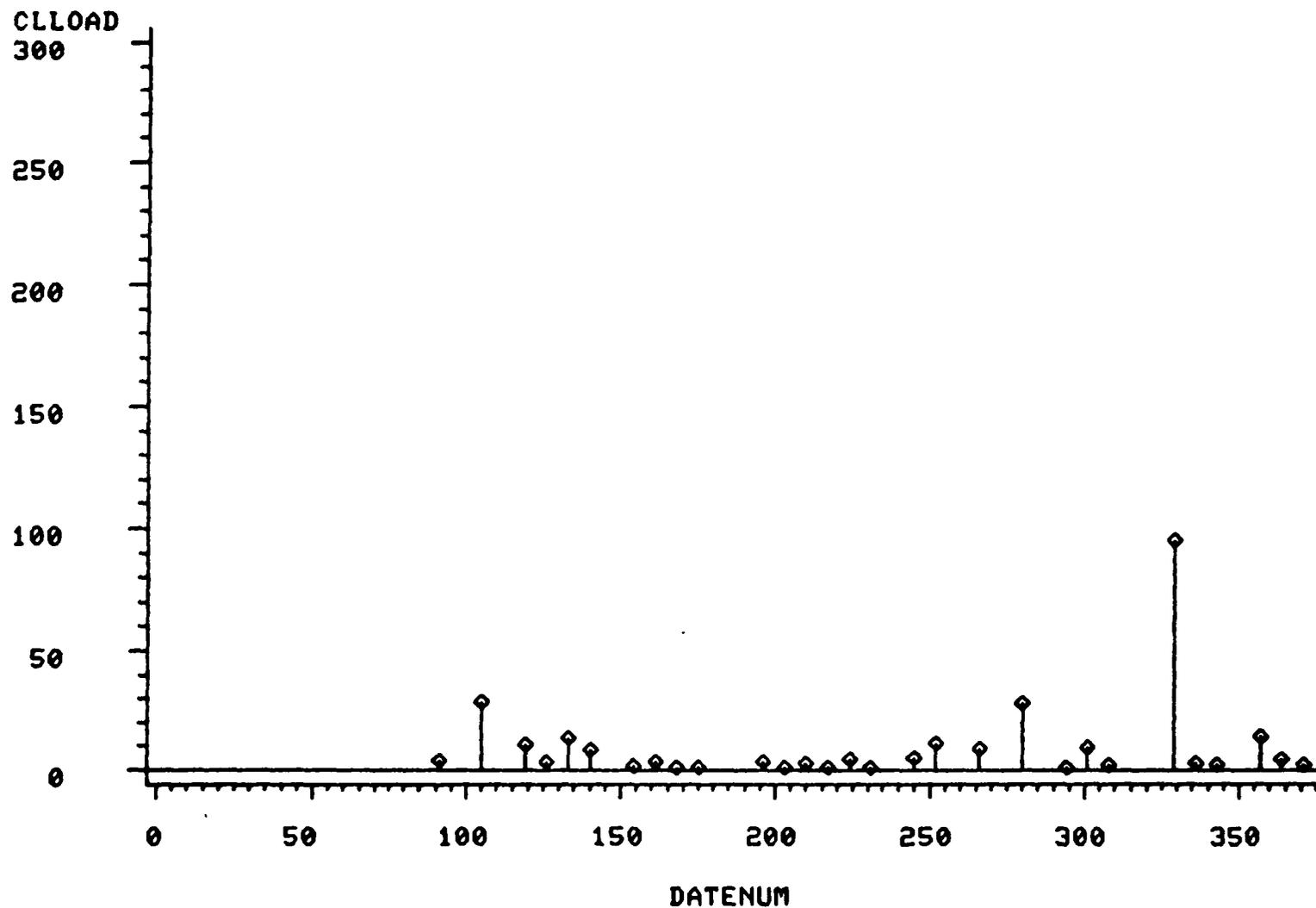
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1981 CHLORIDE LOAD (MG/M\*\*2)  
SITE=232340 2



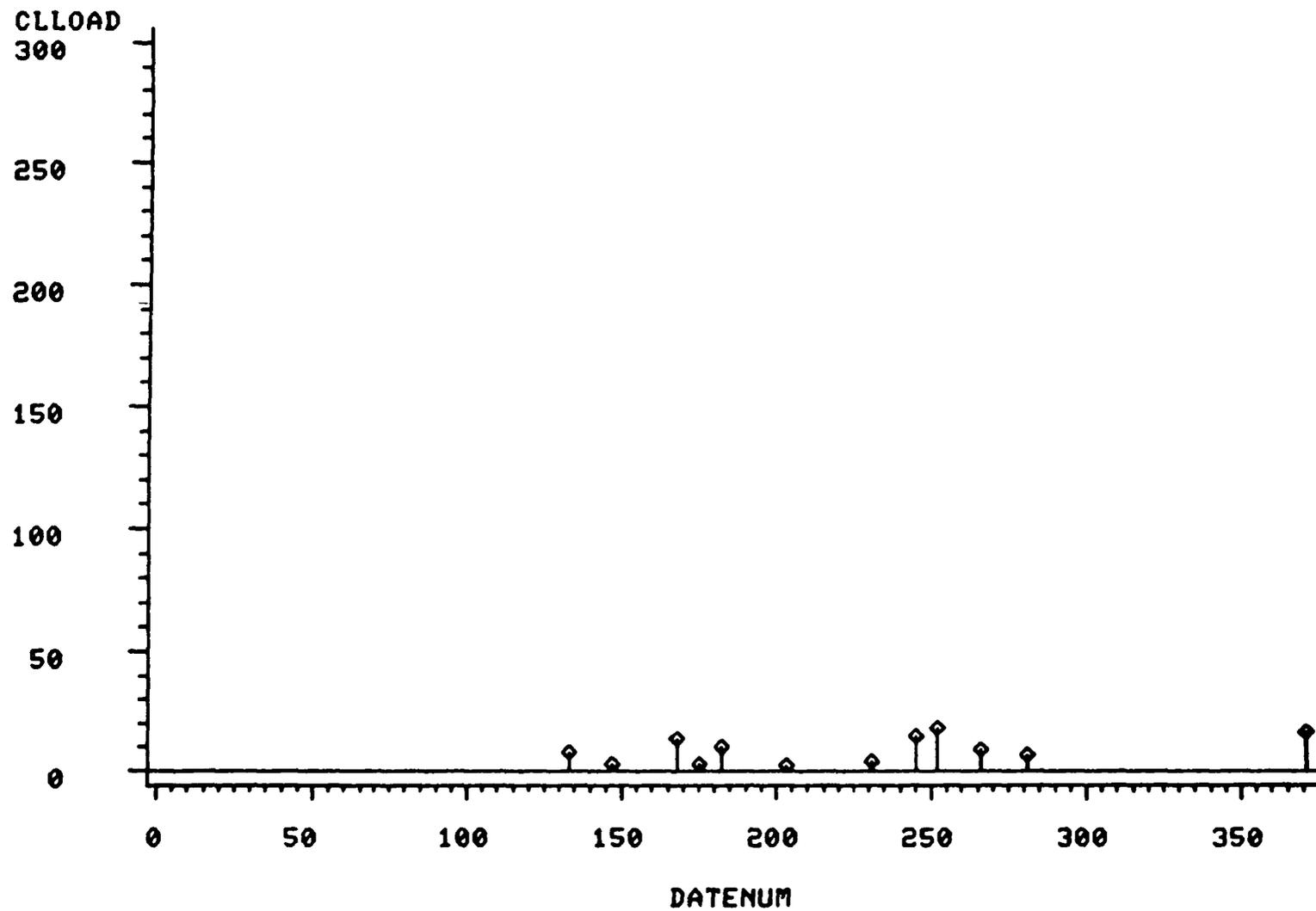
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WET SAMPLES  
1981 CHLORIDE LOAD (MG/M\*\*2)  
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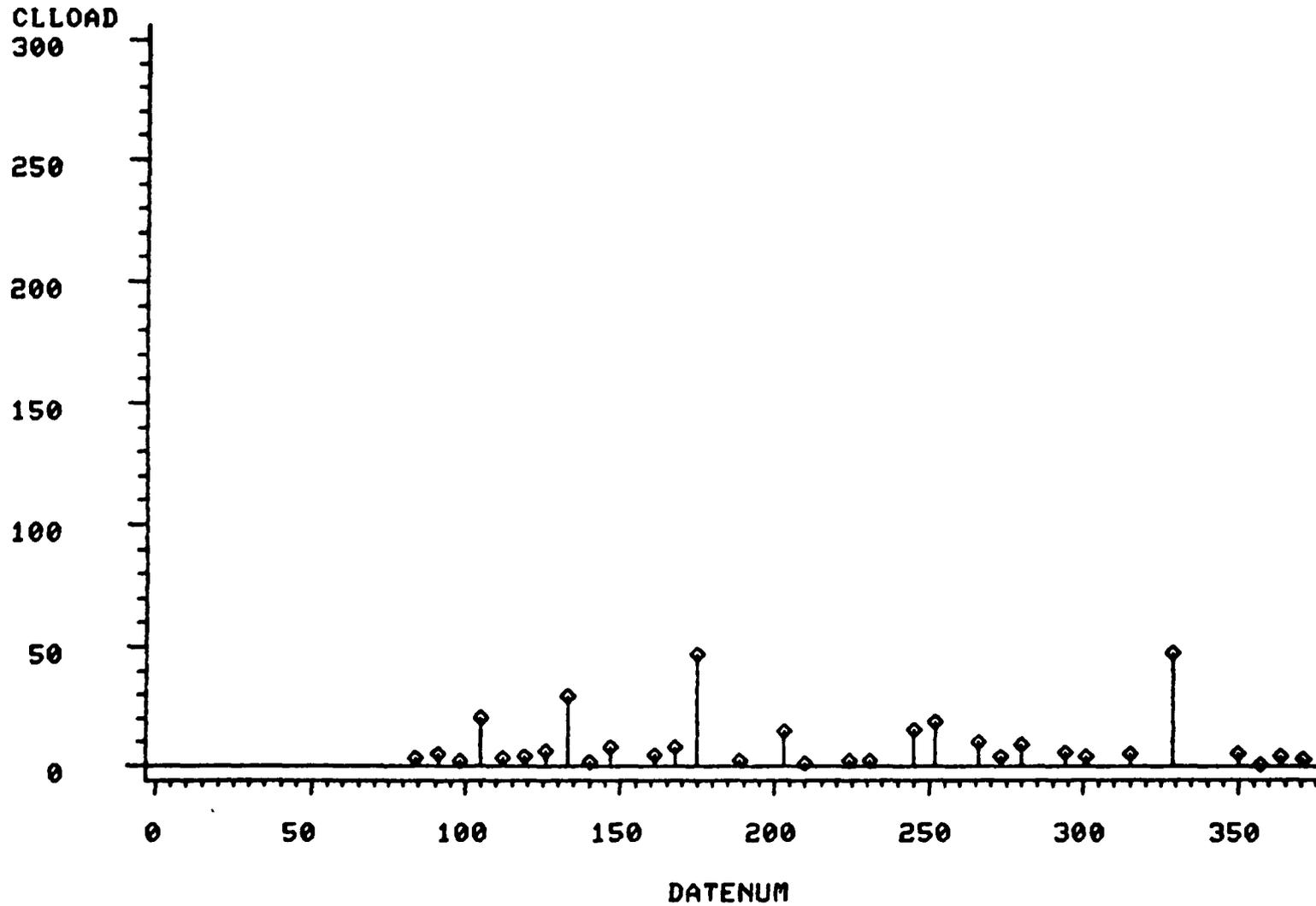
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1981 CHLORIDE LOAD (MG/M\*\*2)  
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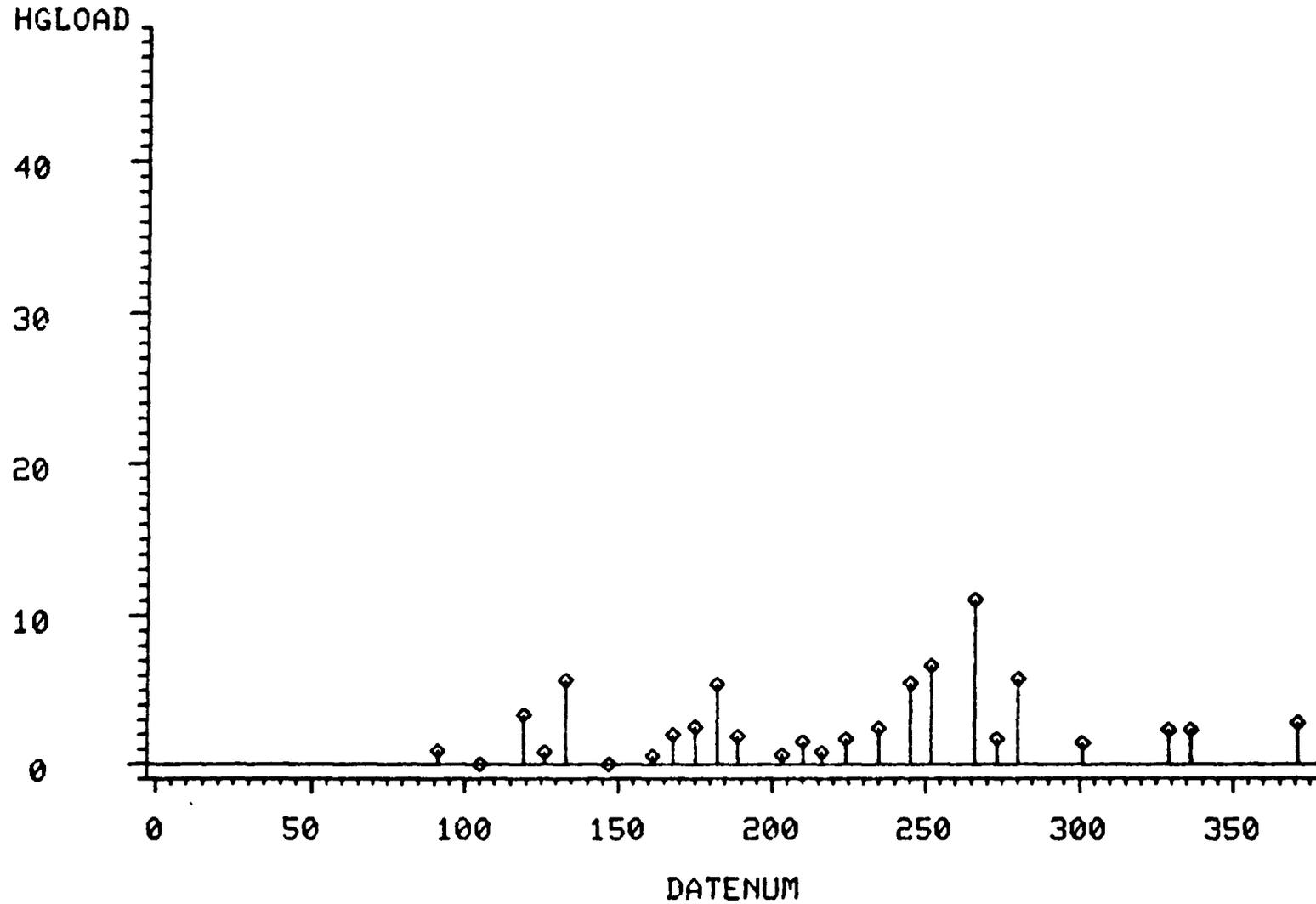
# GREAT LAKES ATMOSPHERIC DEPOSITION (GLAD) PROGRAM

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1981 CHLORIDE LOAD (MG/M\*\*2)  
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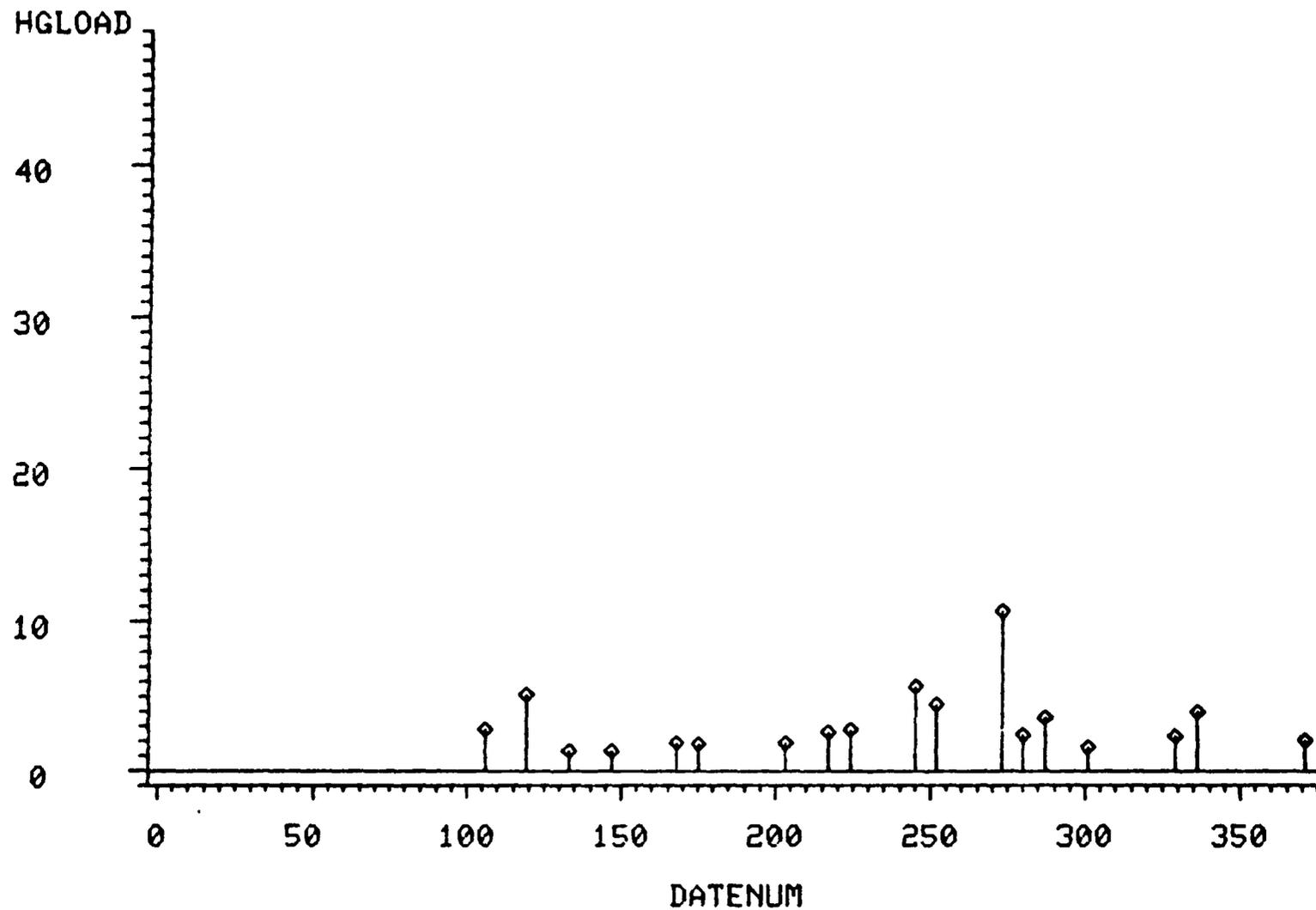
# GREAT LAKES ATMOSPHERIC DEPOSITION (GLAD) PROGRAM

WET SAMPLES  
1981 MERCURY LOAD (UG/M\*\*2)  
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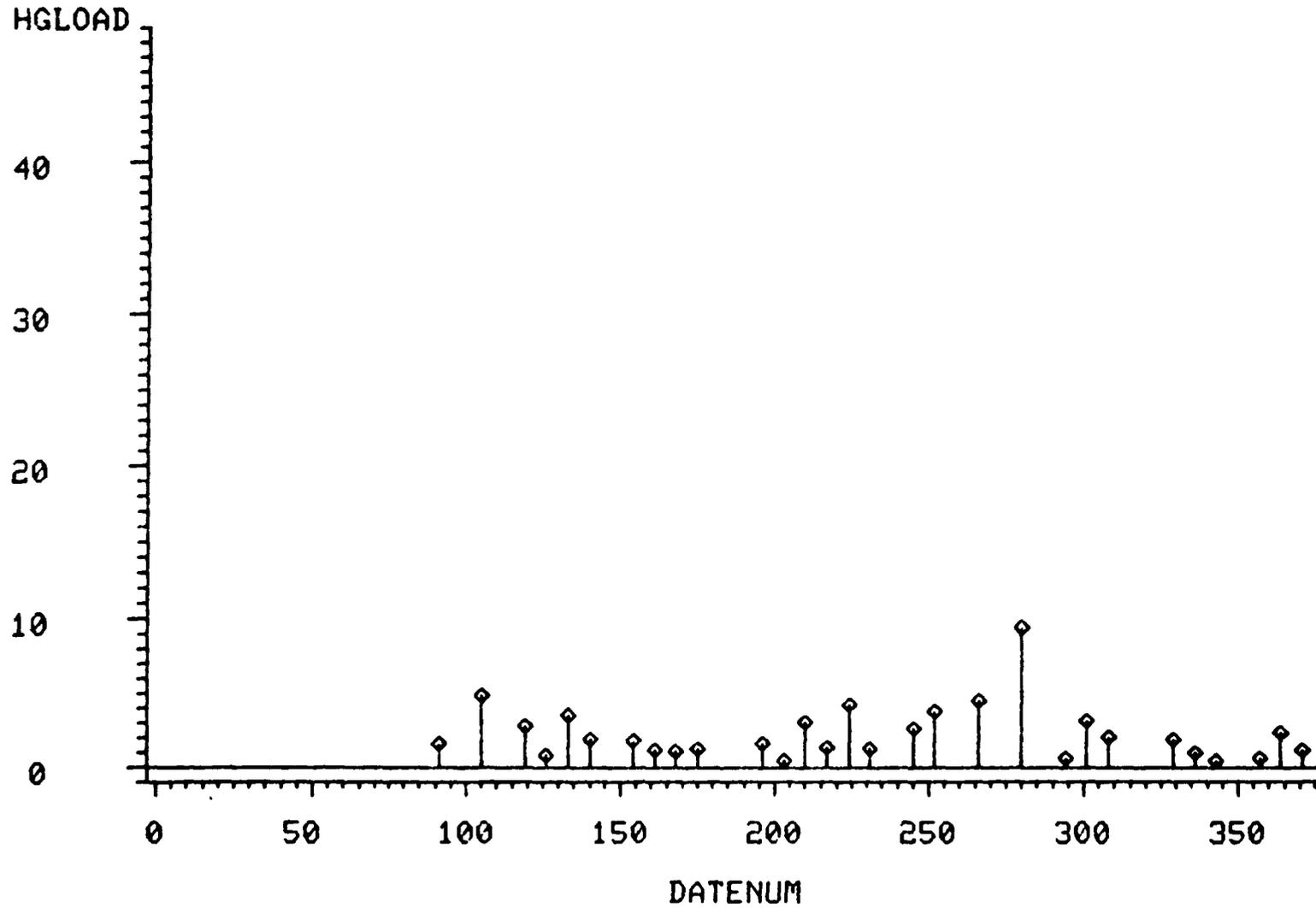
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1981 MERCURY LOAD (UG/M\*\*2)  
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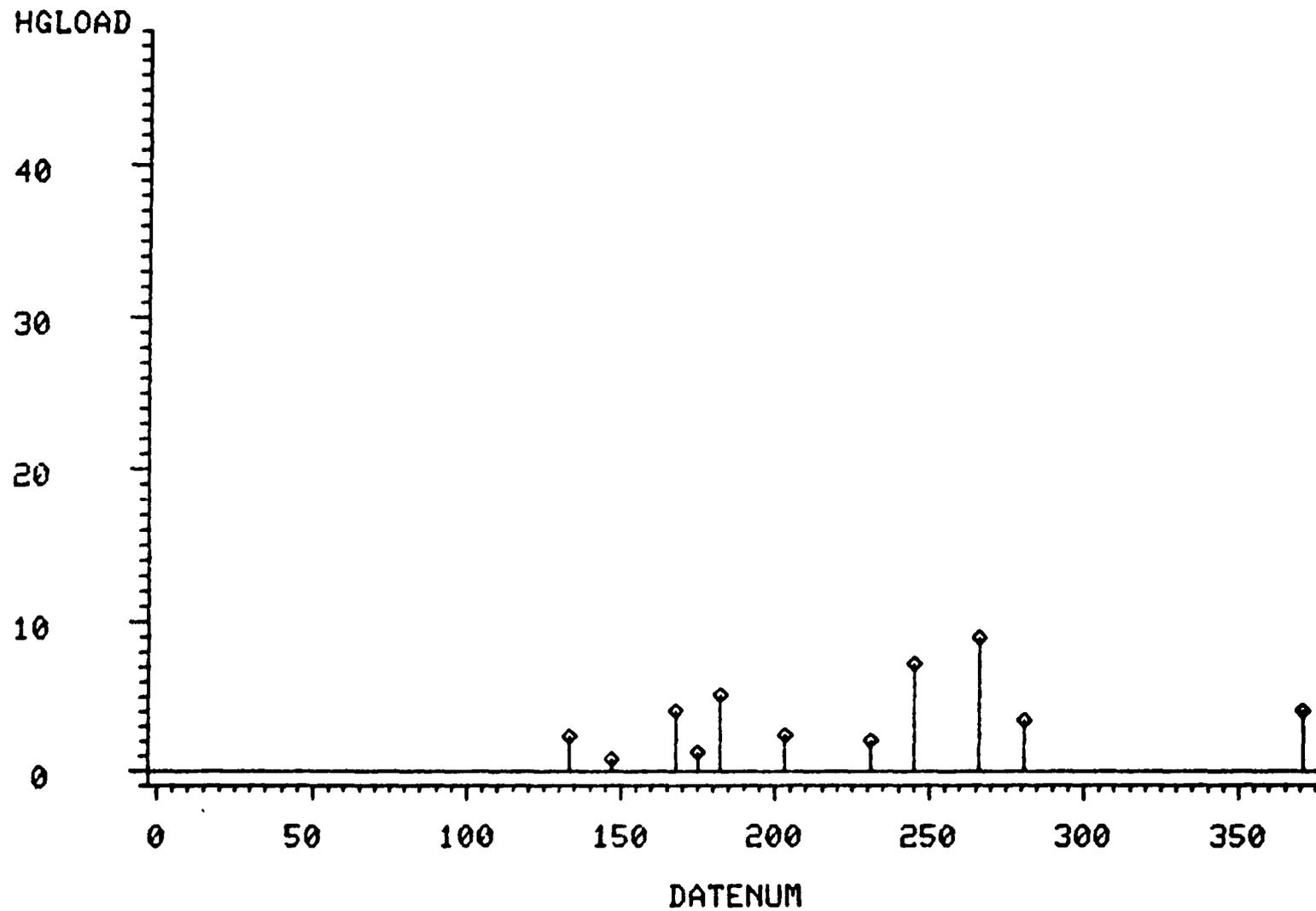
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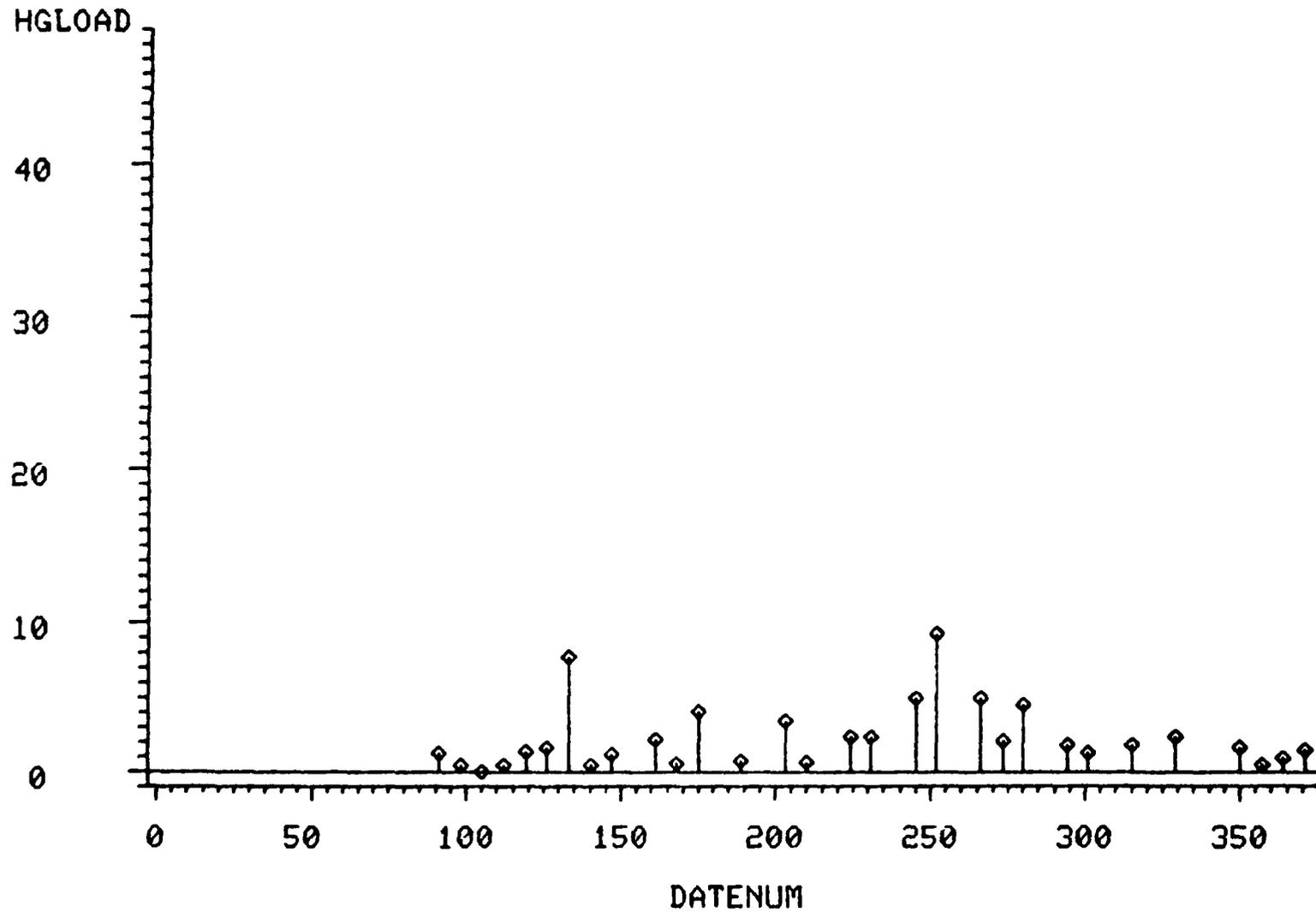
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1981 MERCURY LOAD (UG/M\*\*2)  
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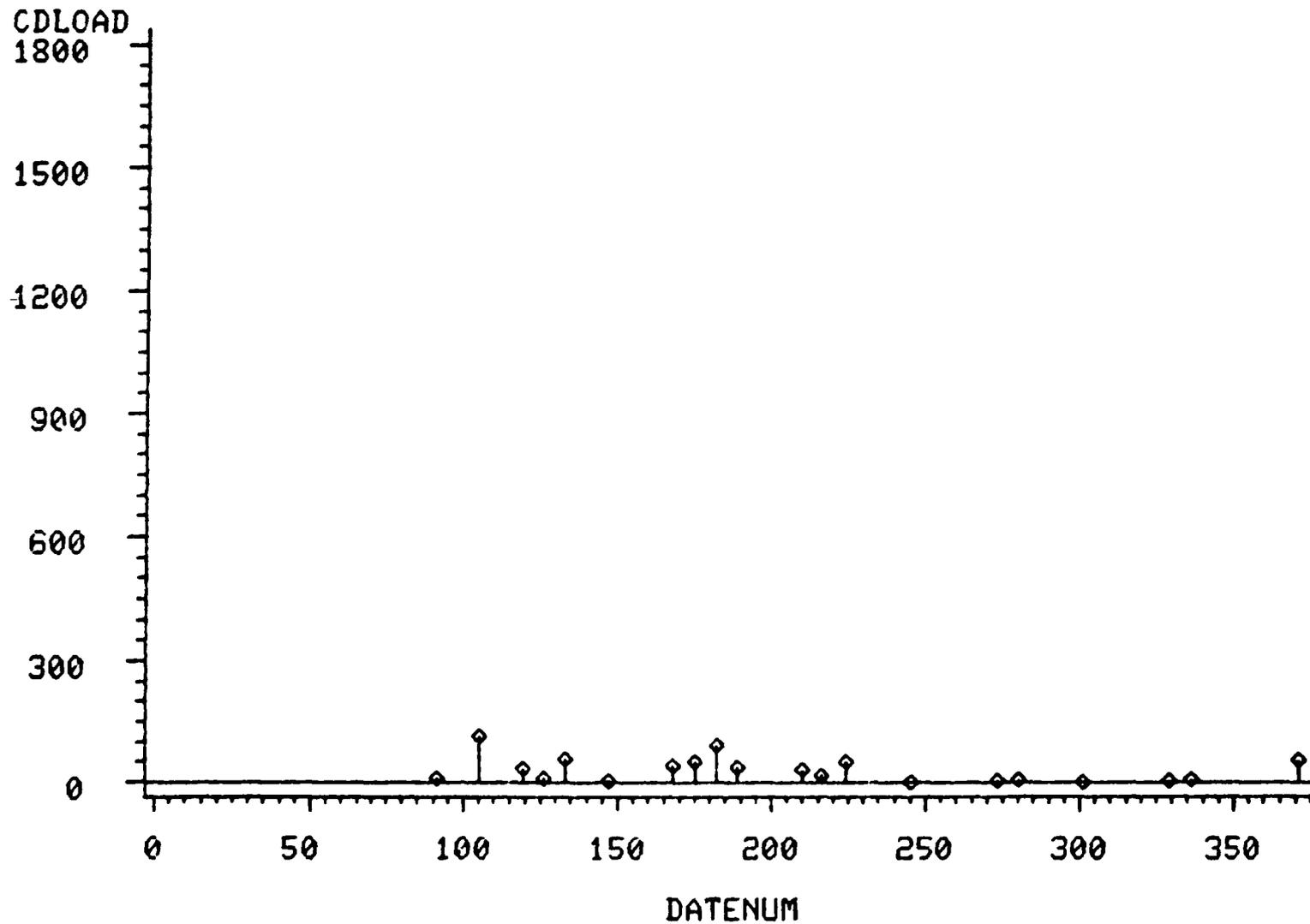
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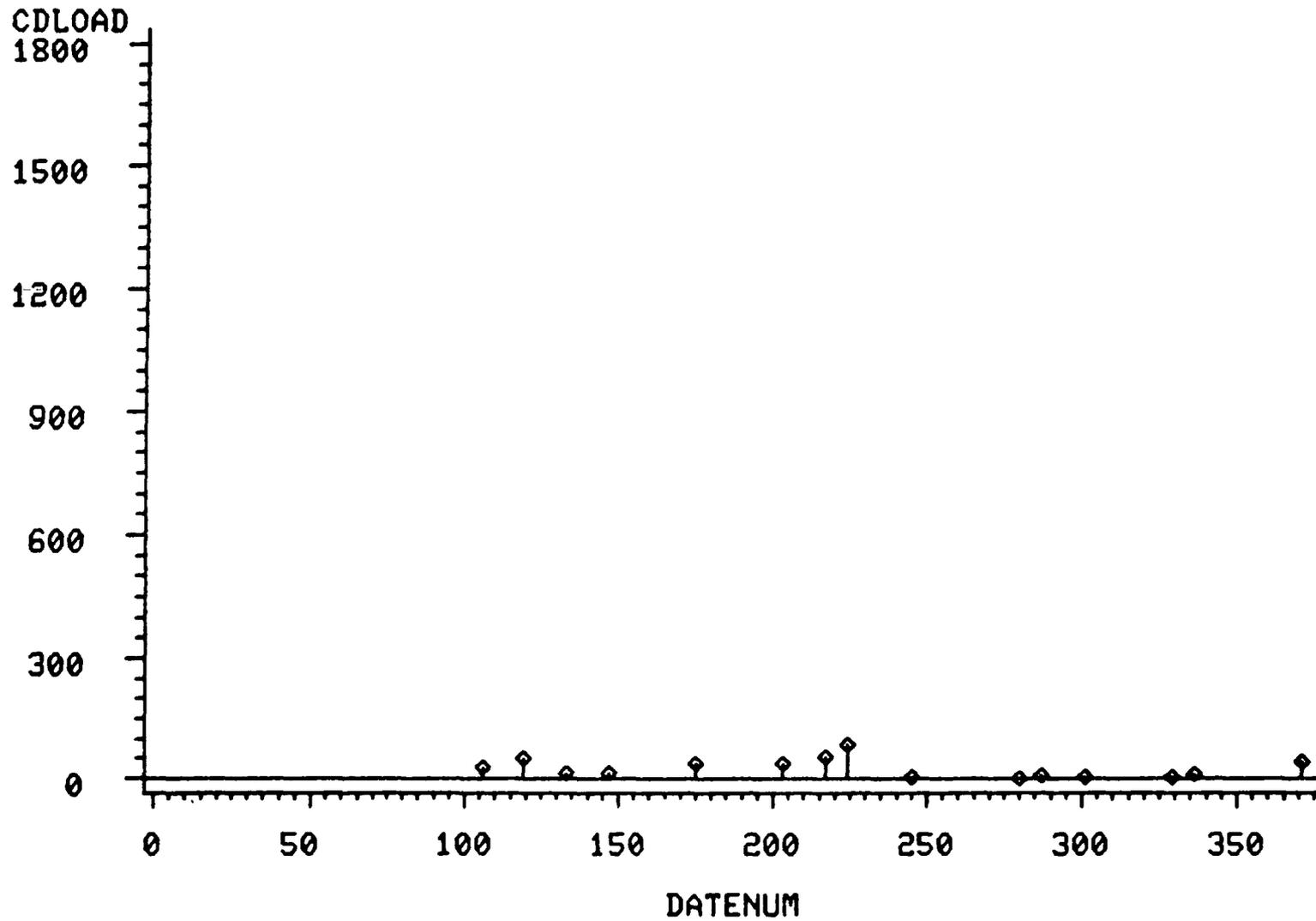
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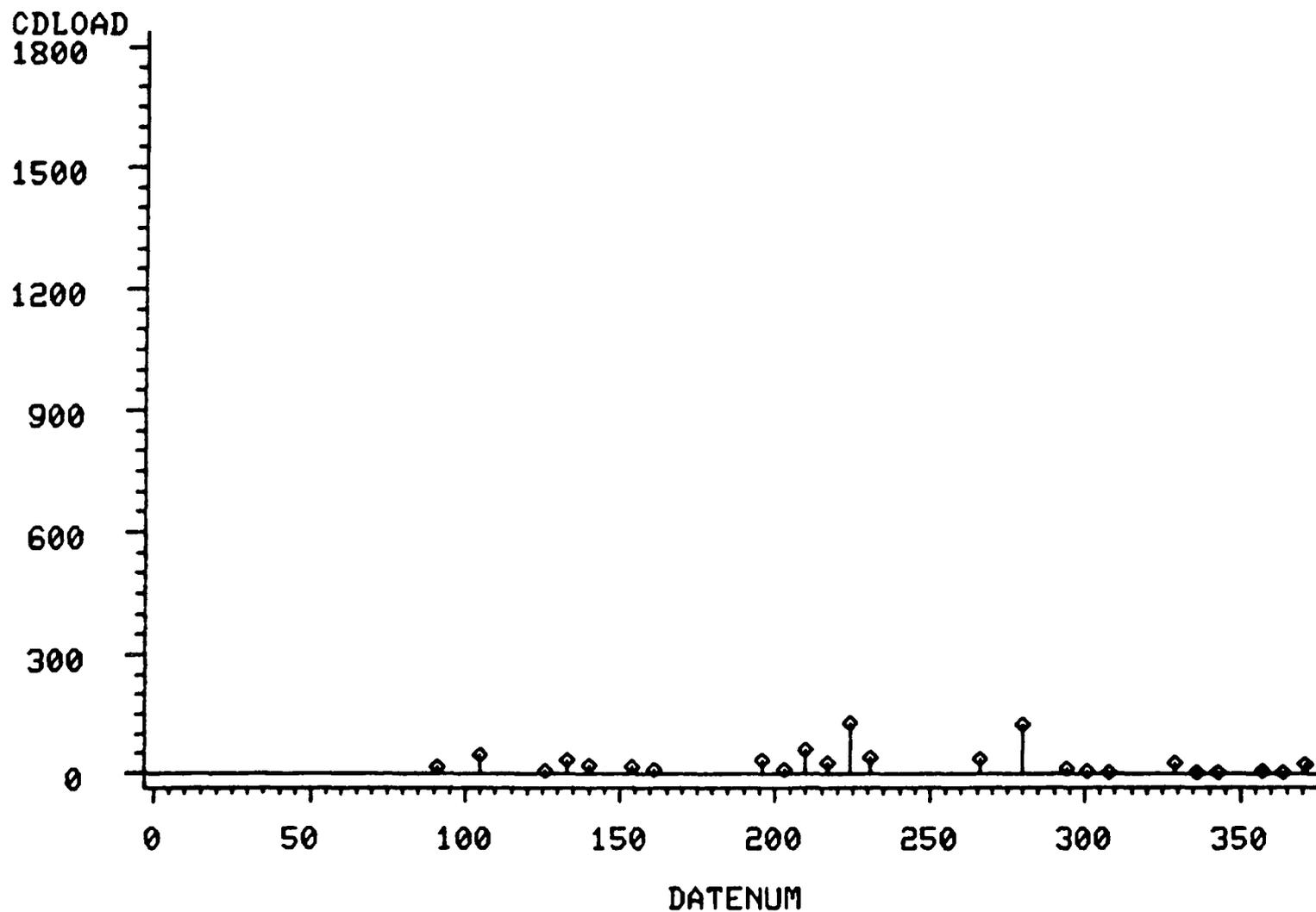
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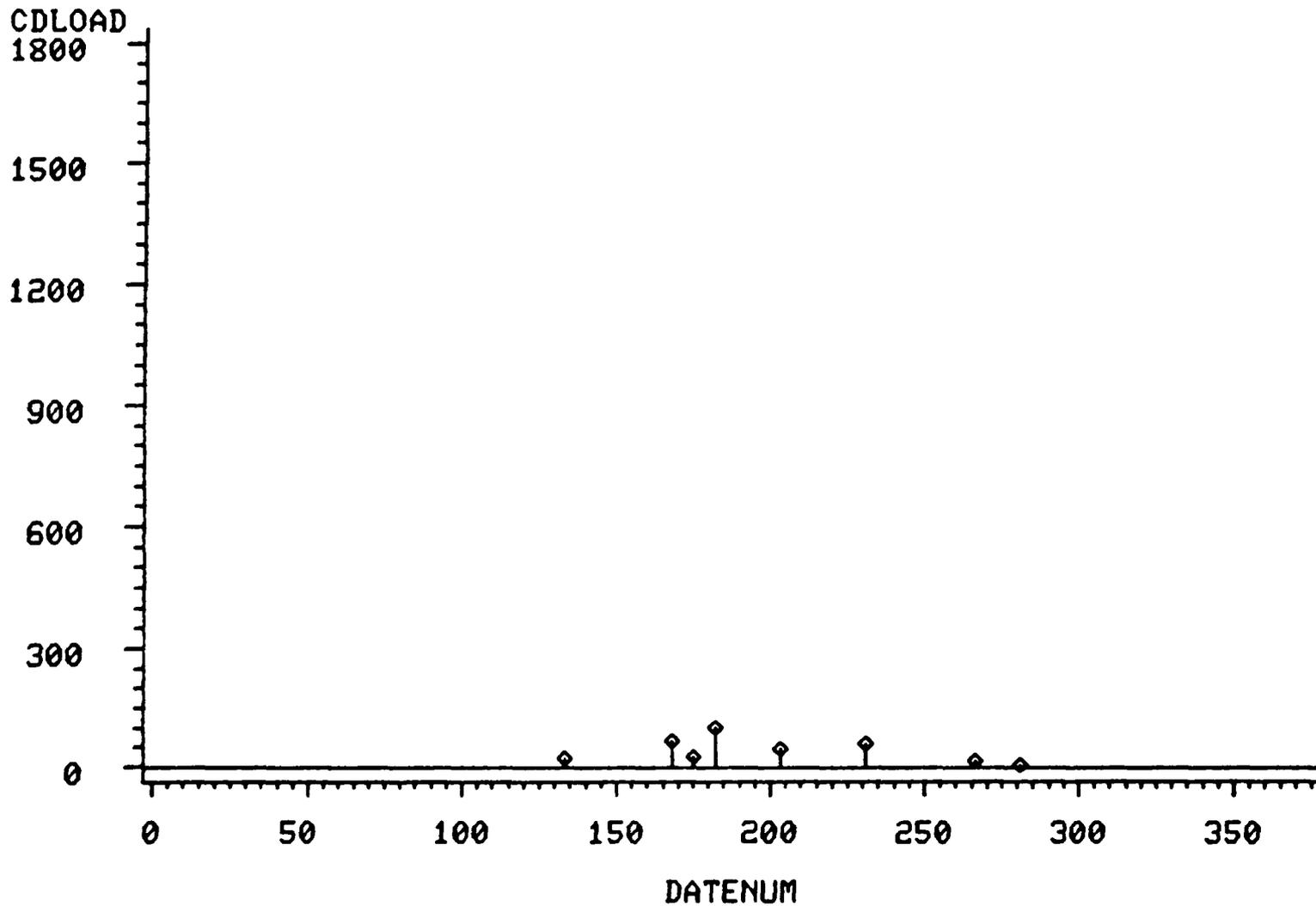
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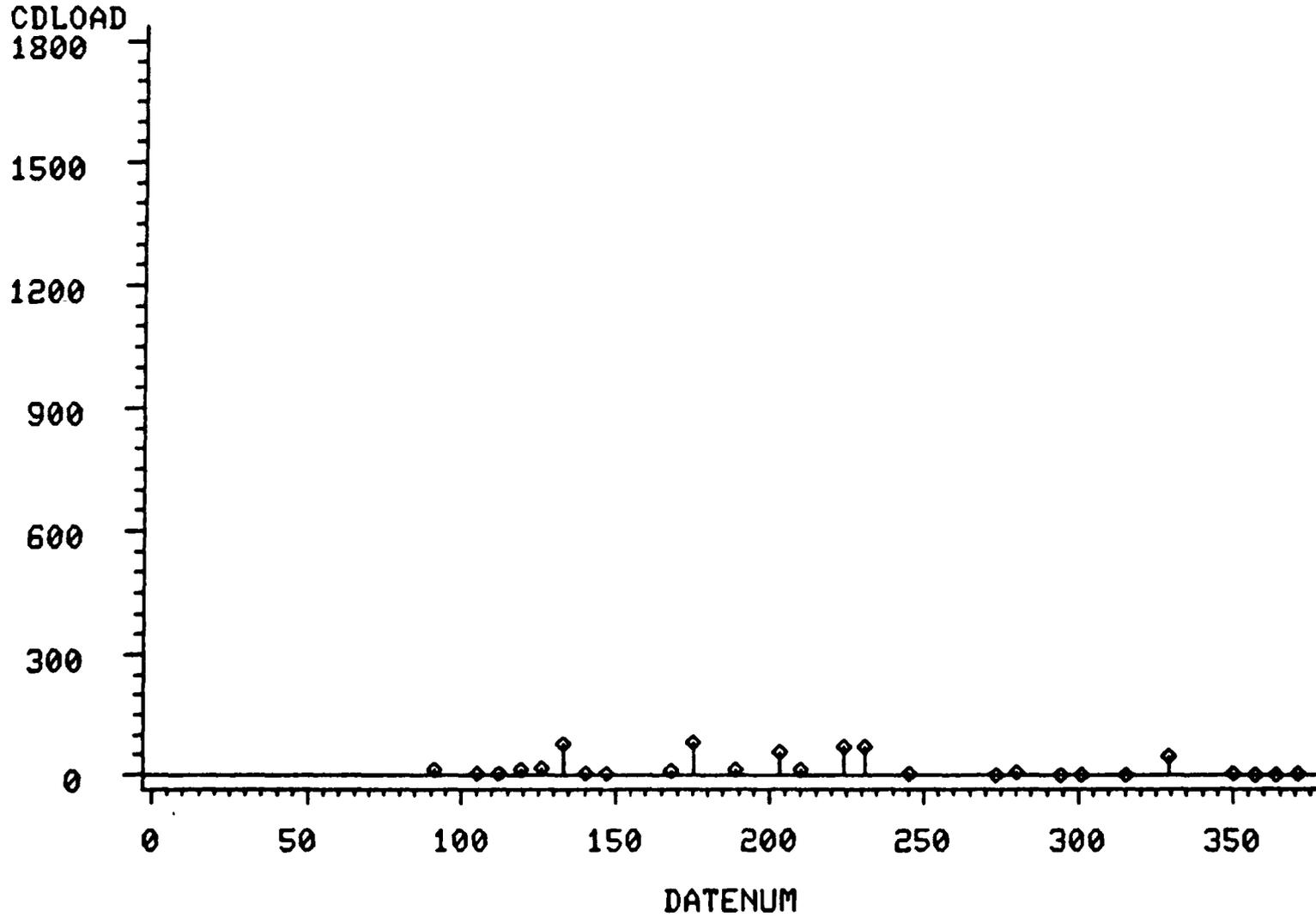
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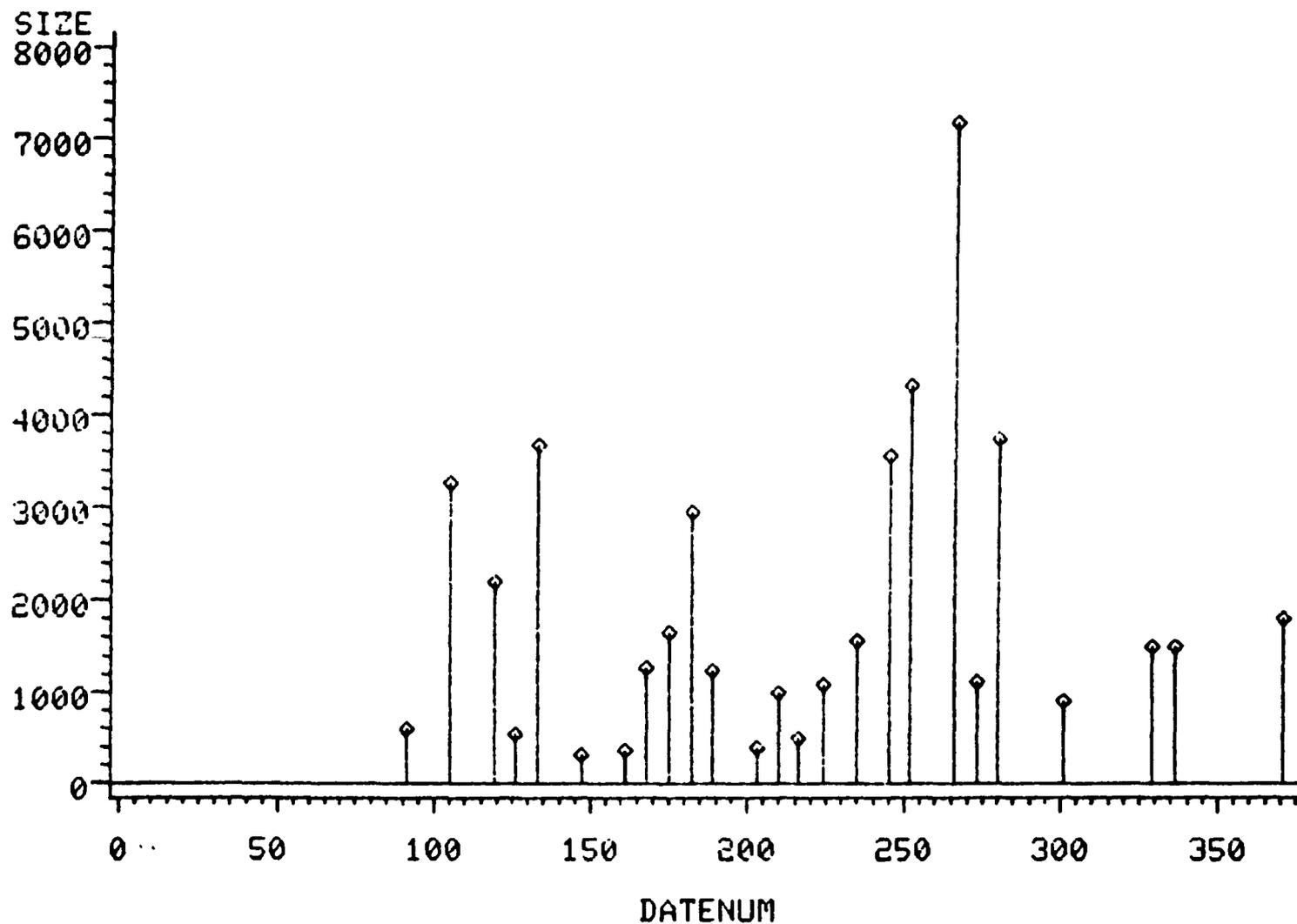
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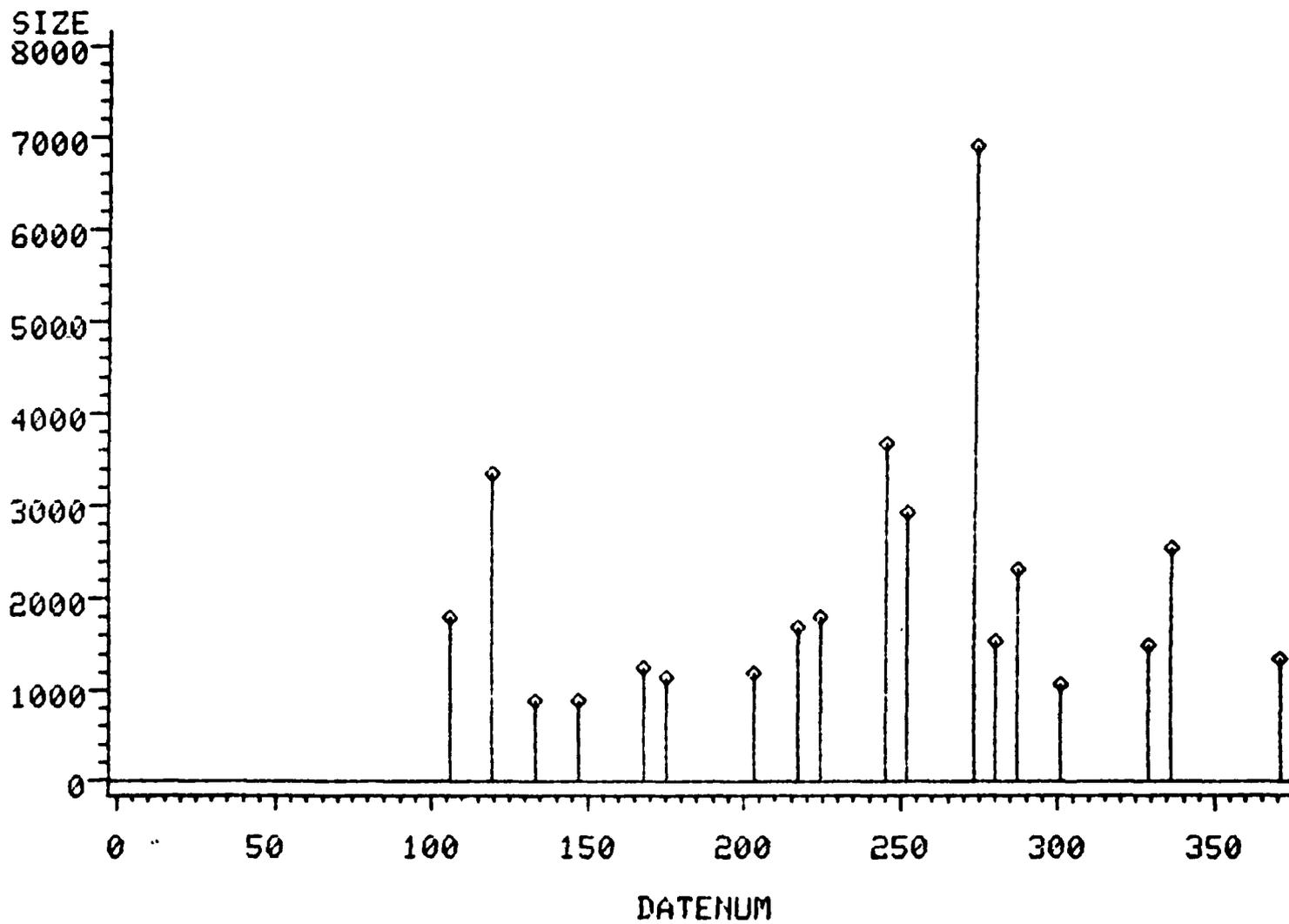
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1981 PRECIPITATION (ML)  
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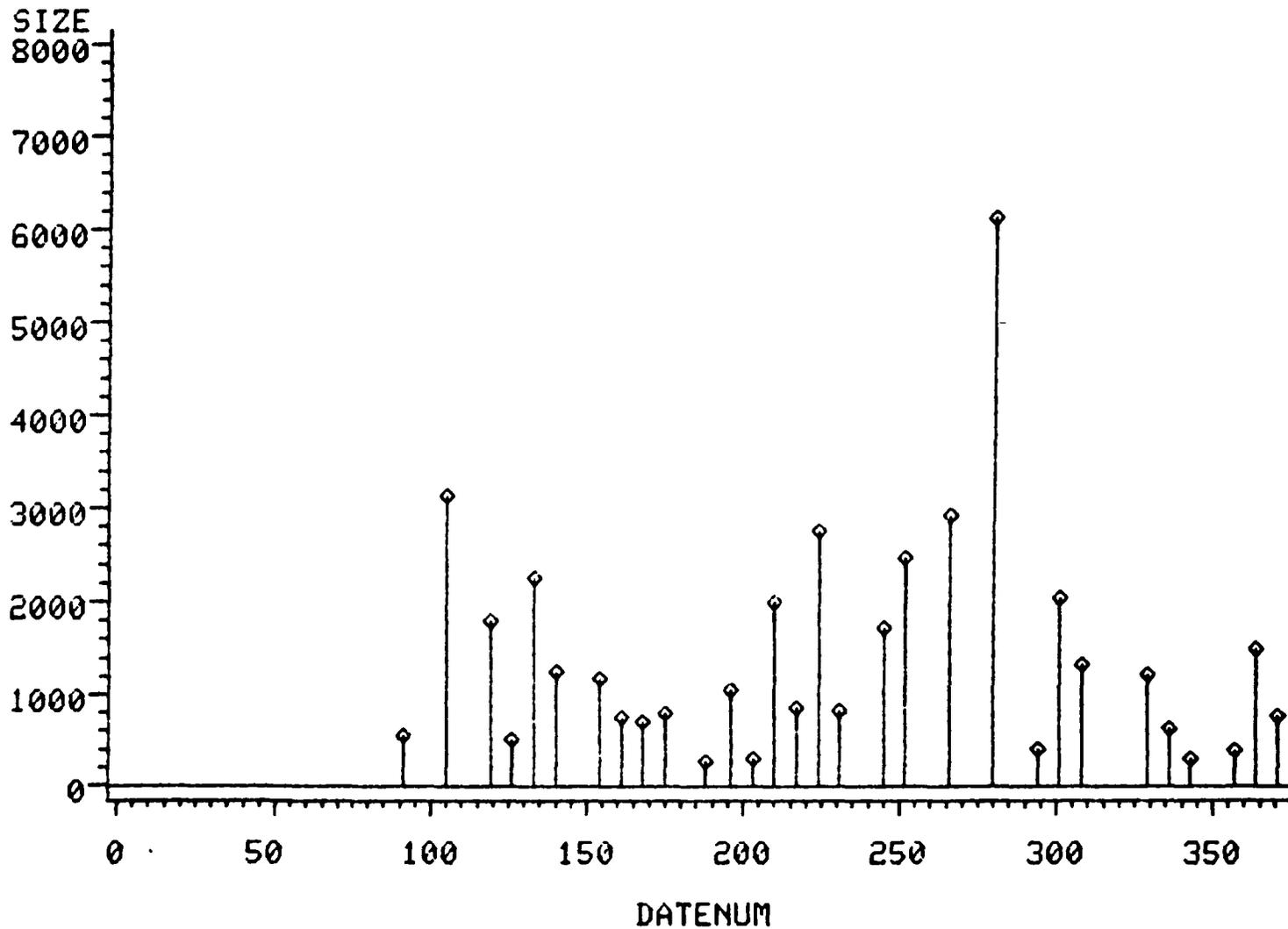
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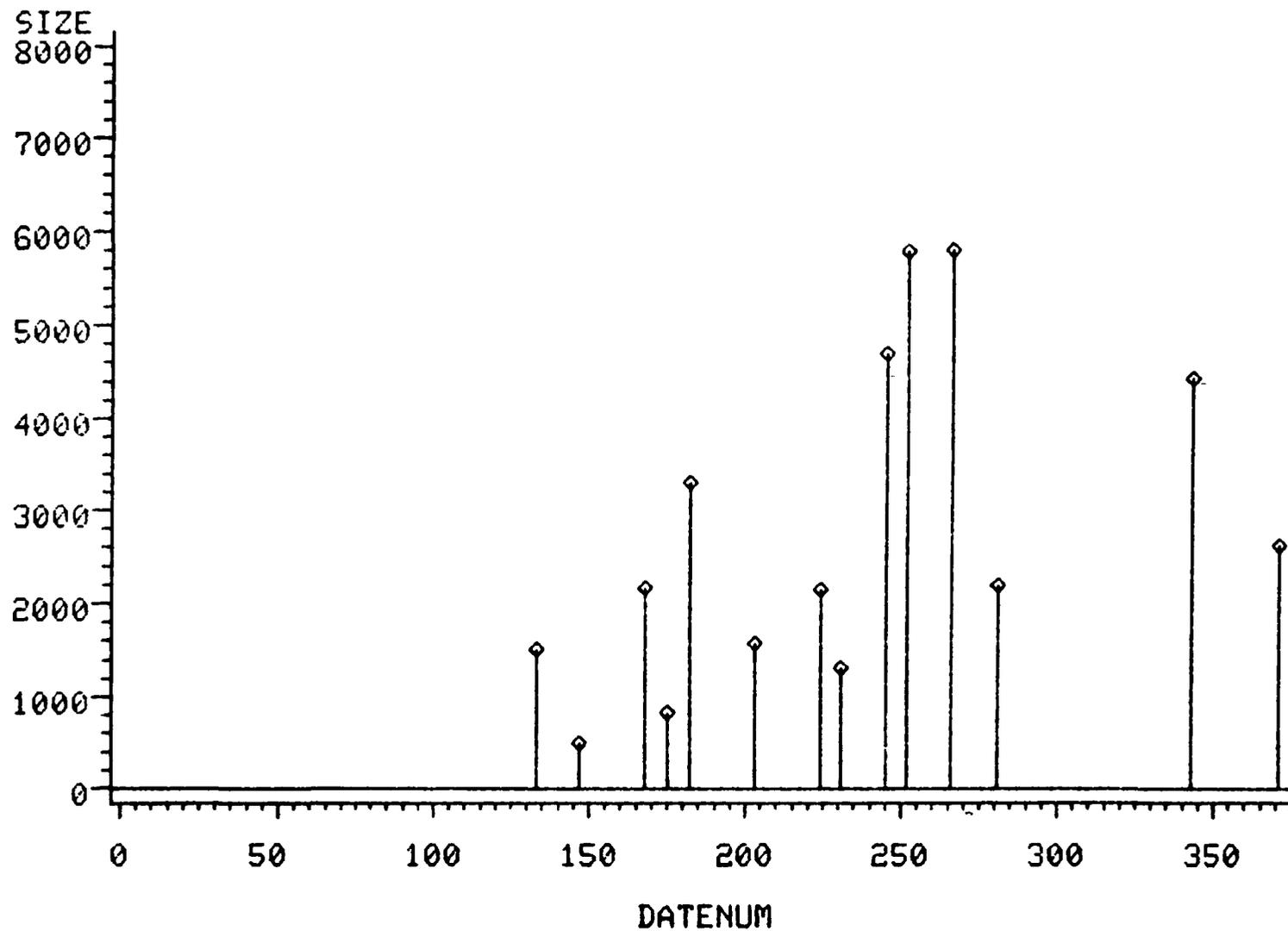
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1981 PRECIPITATION (ML)  
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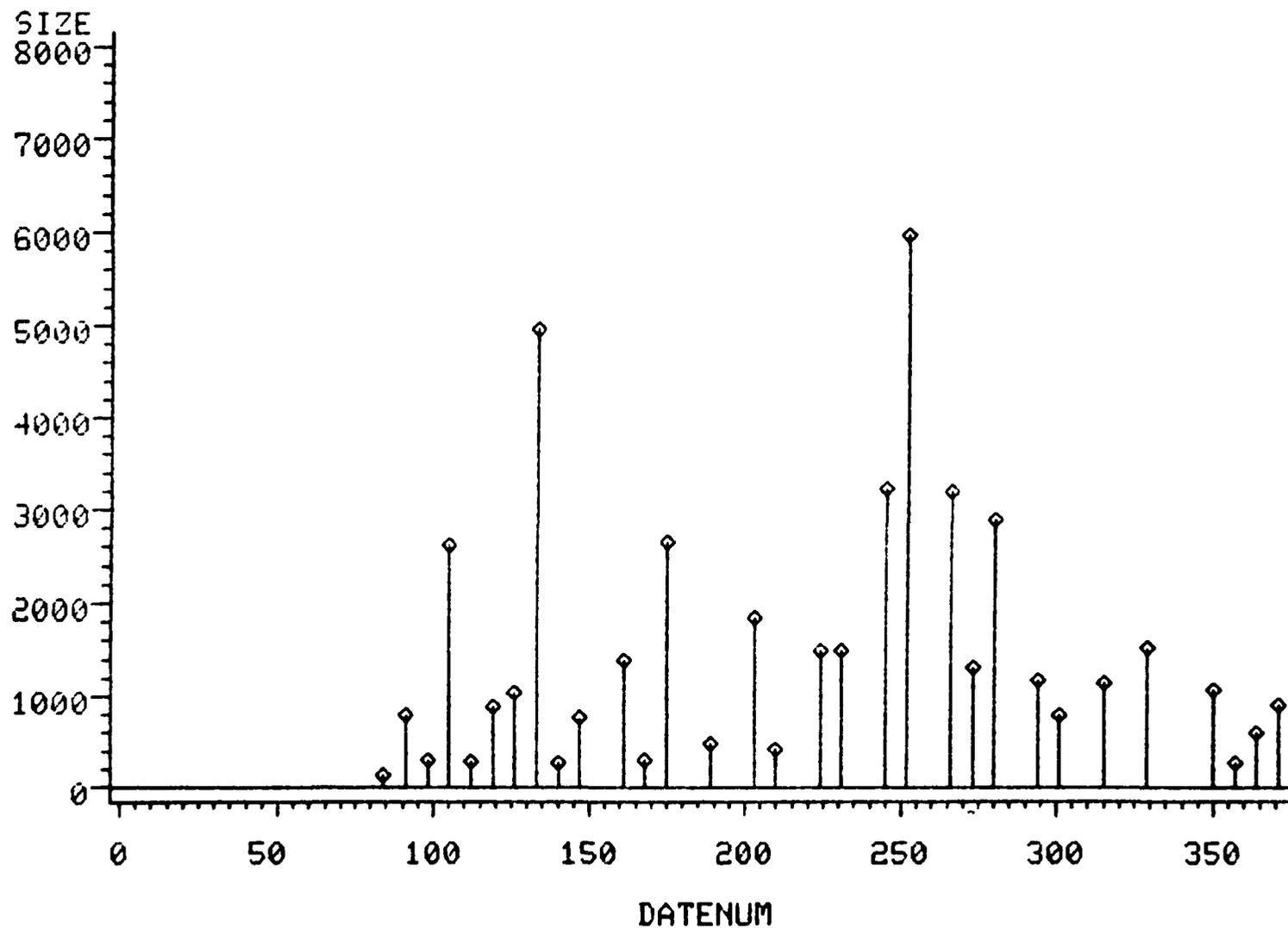
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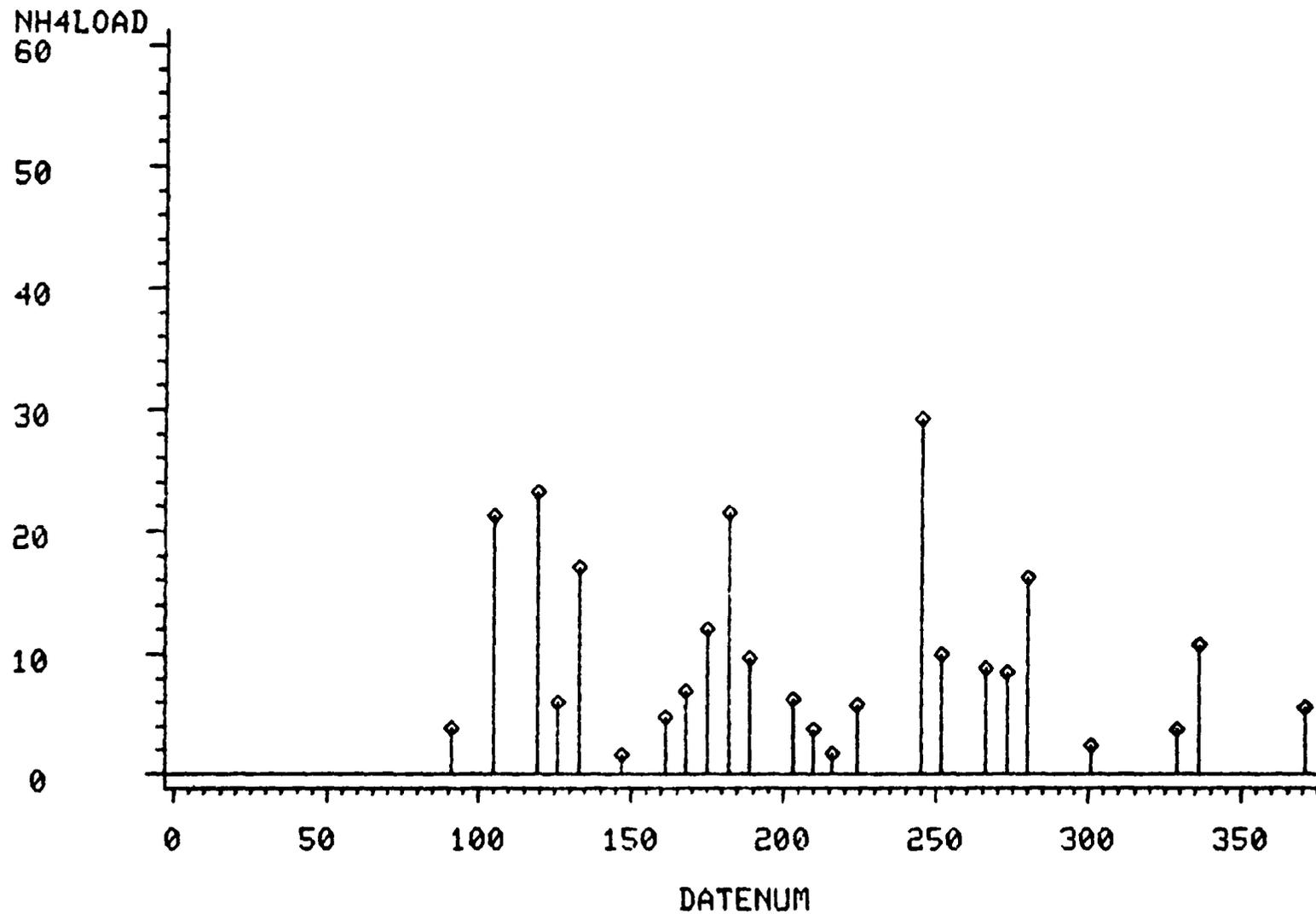
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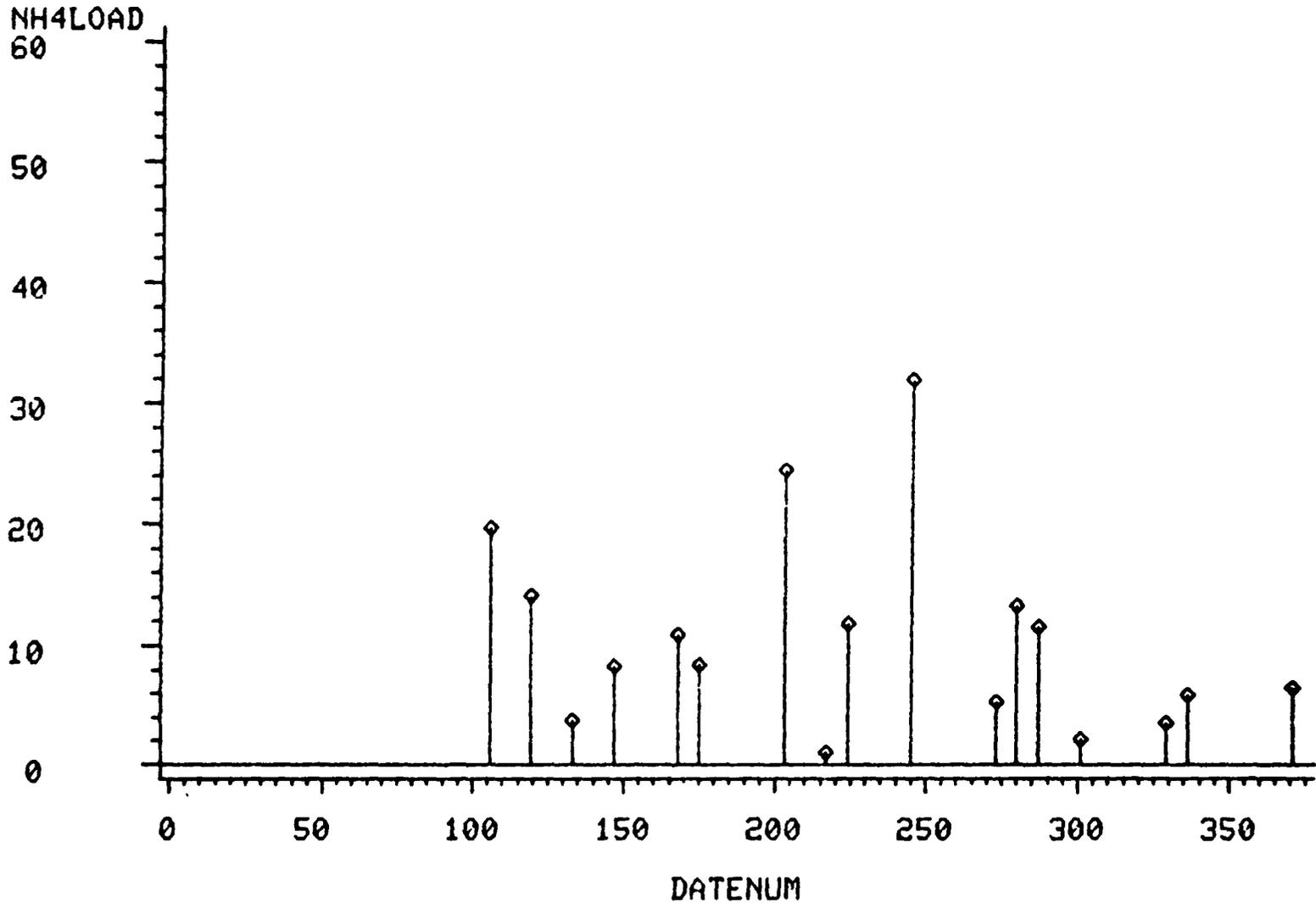
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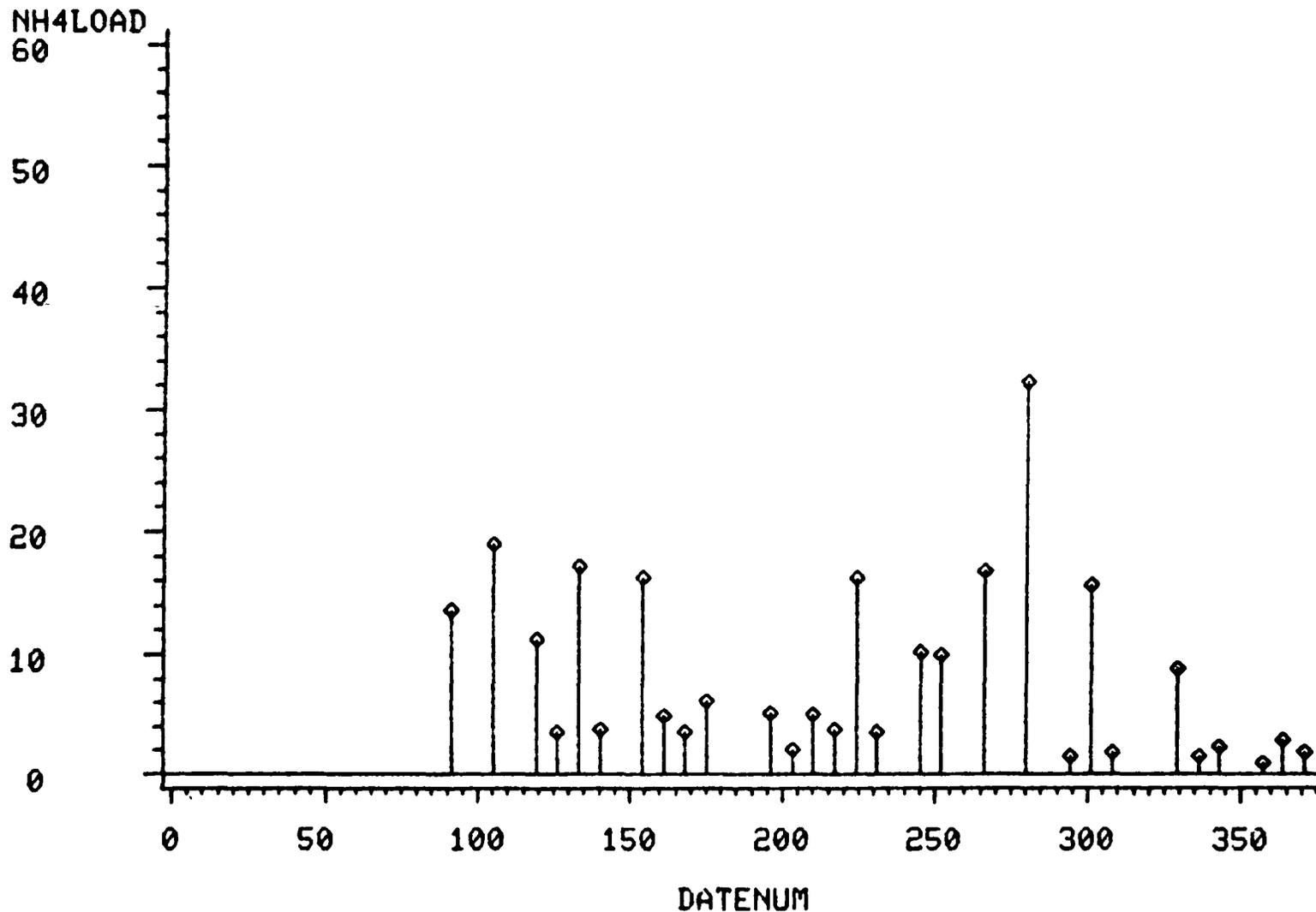
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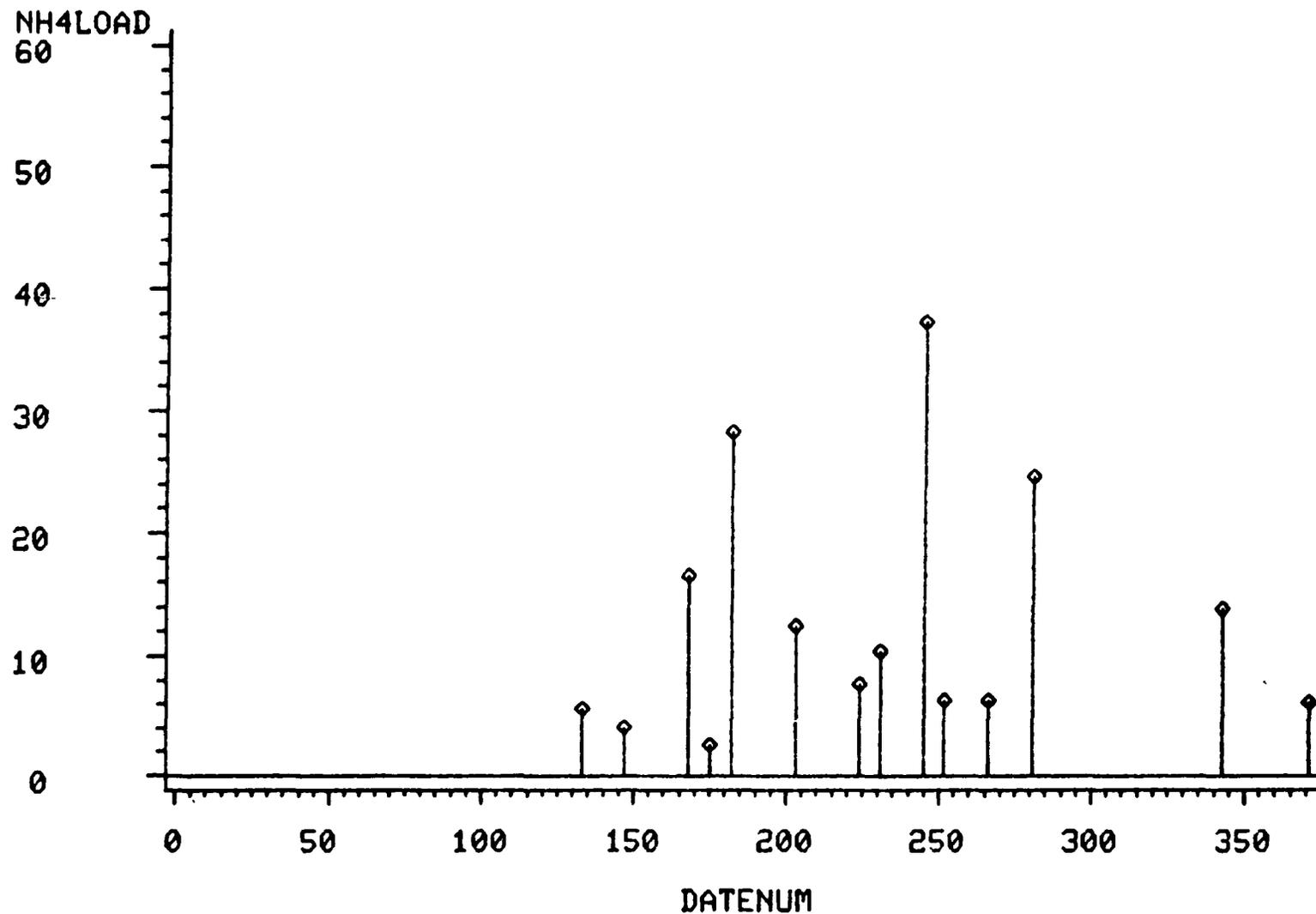
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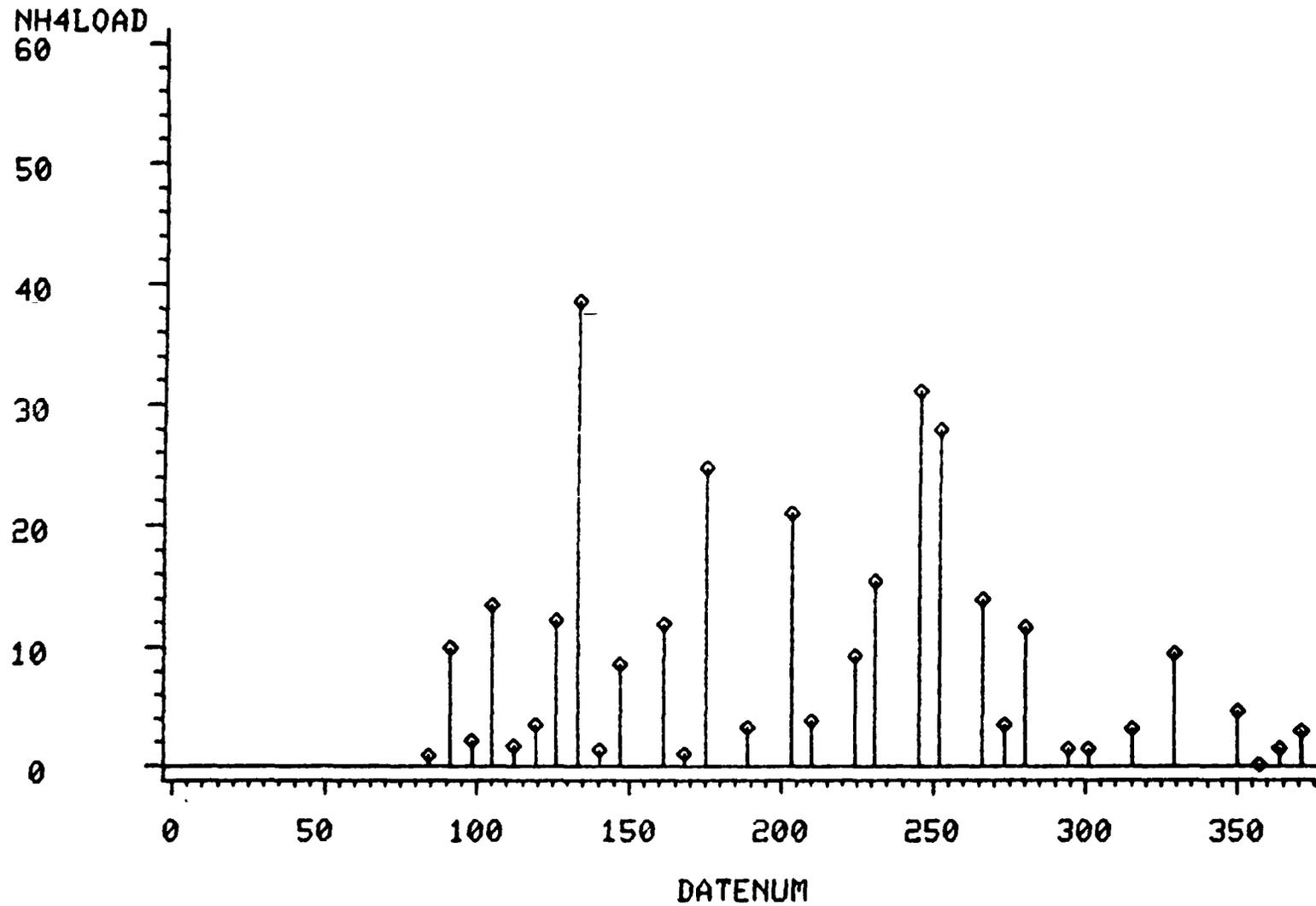
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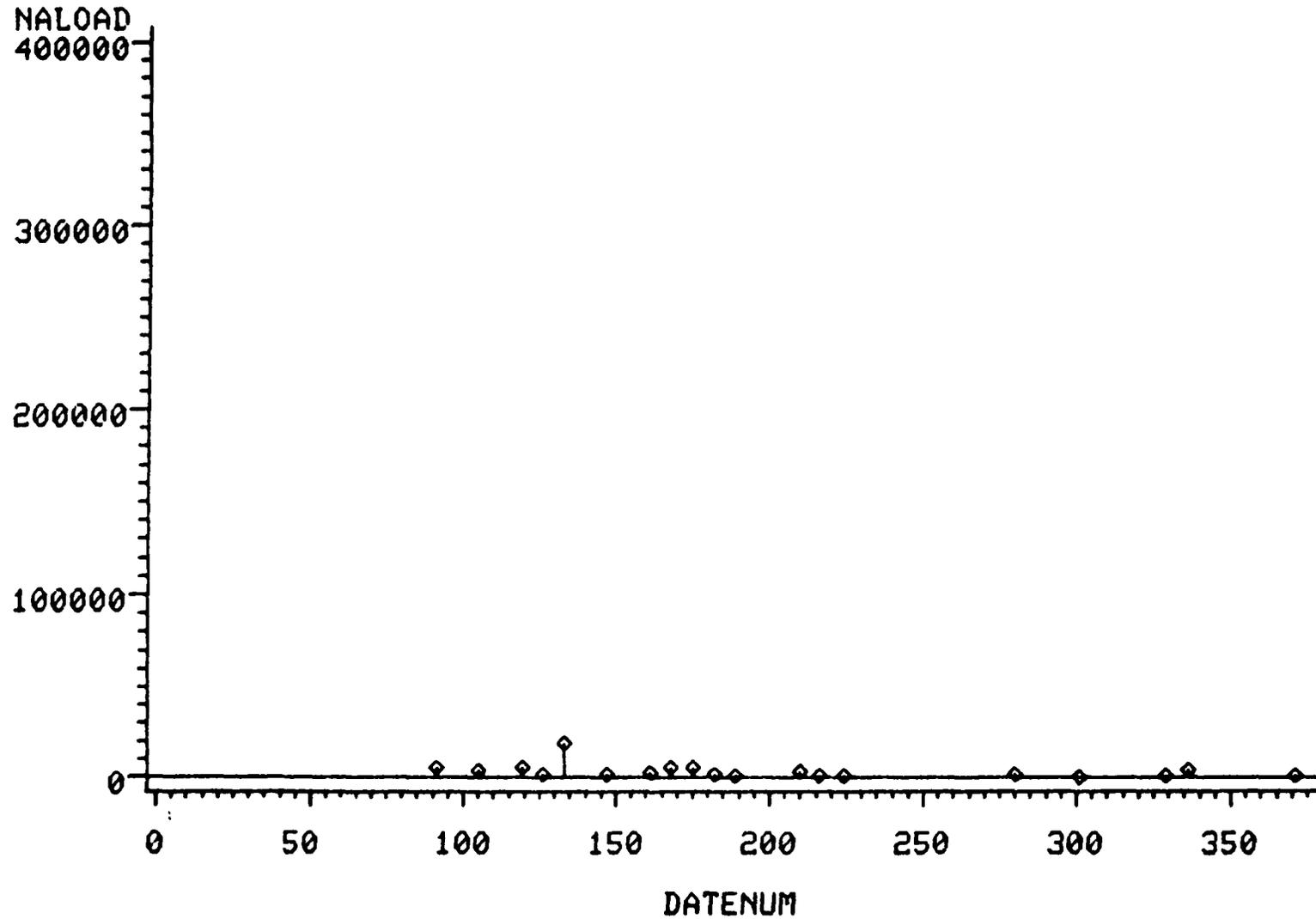
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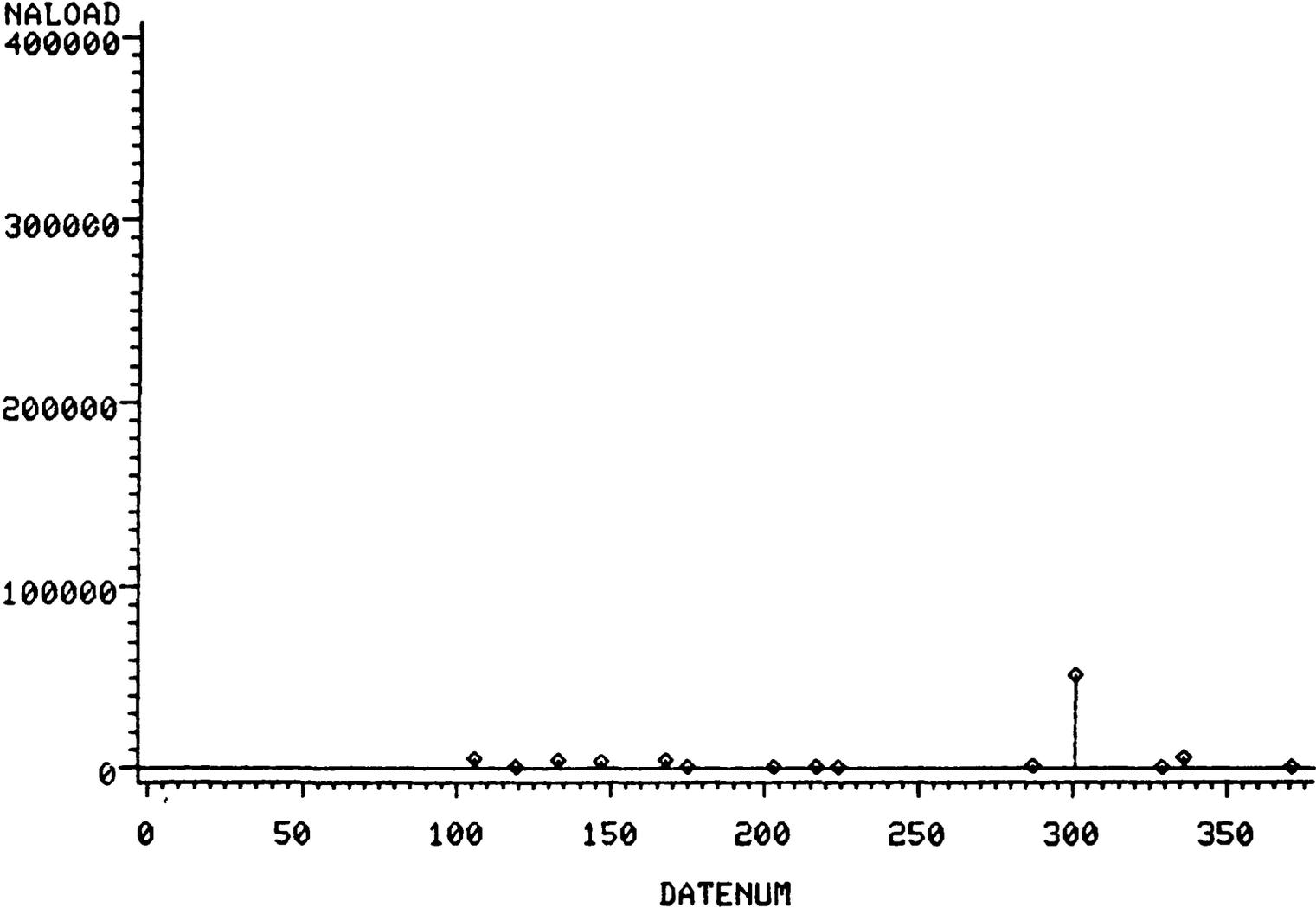
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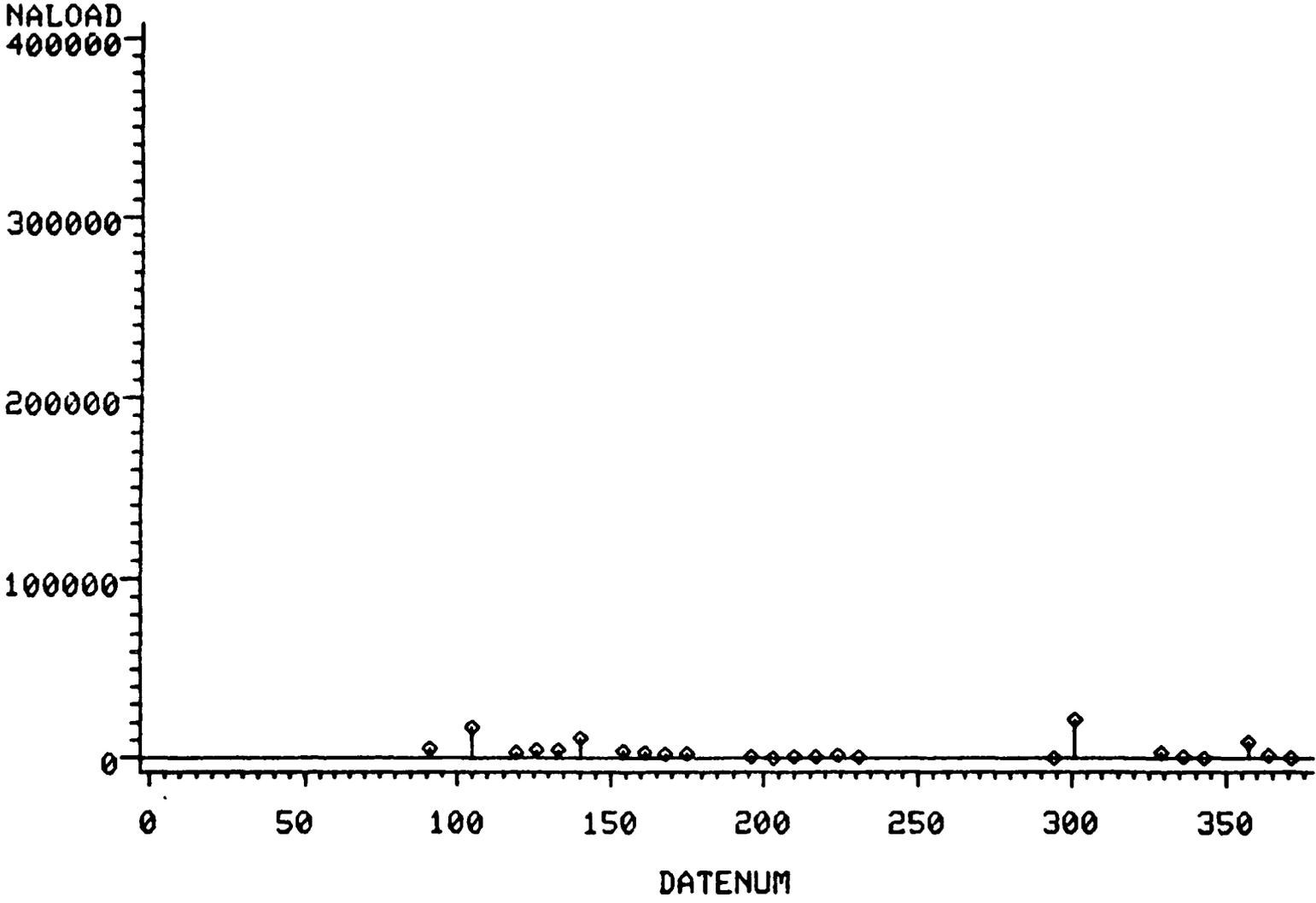
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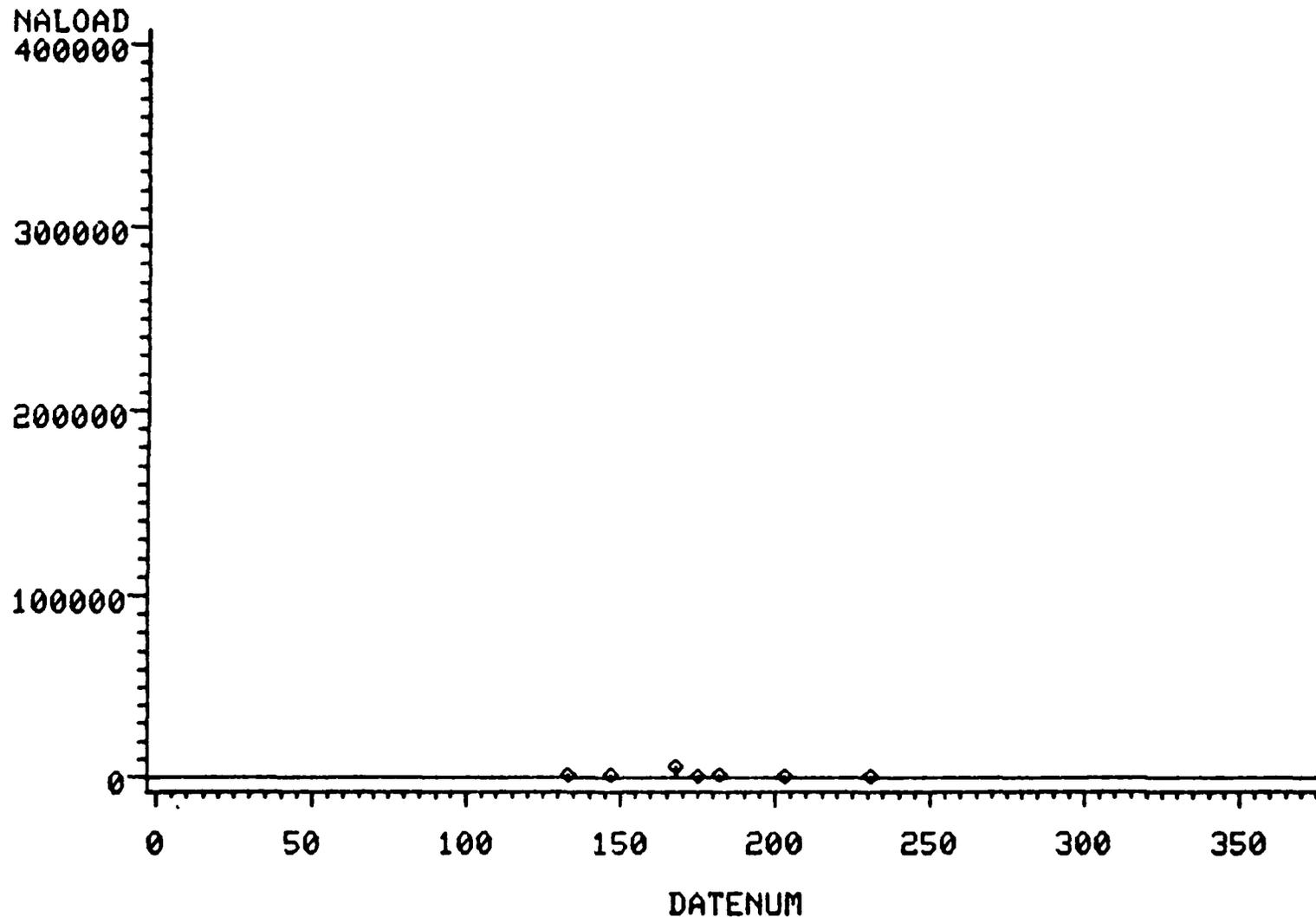
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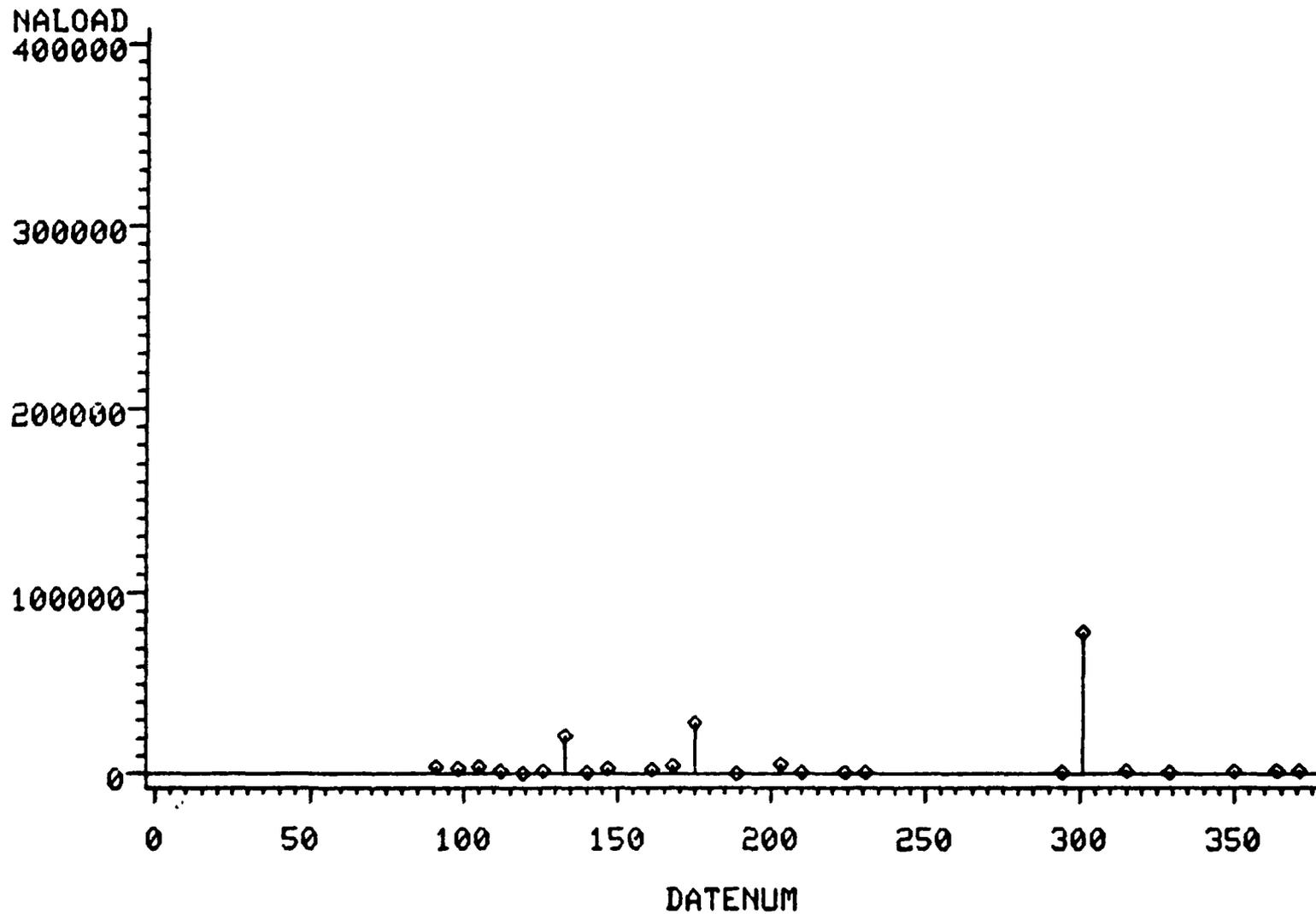
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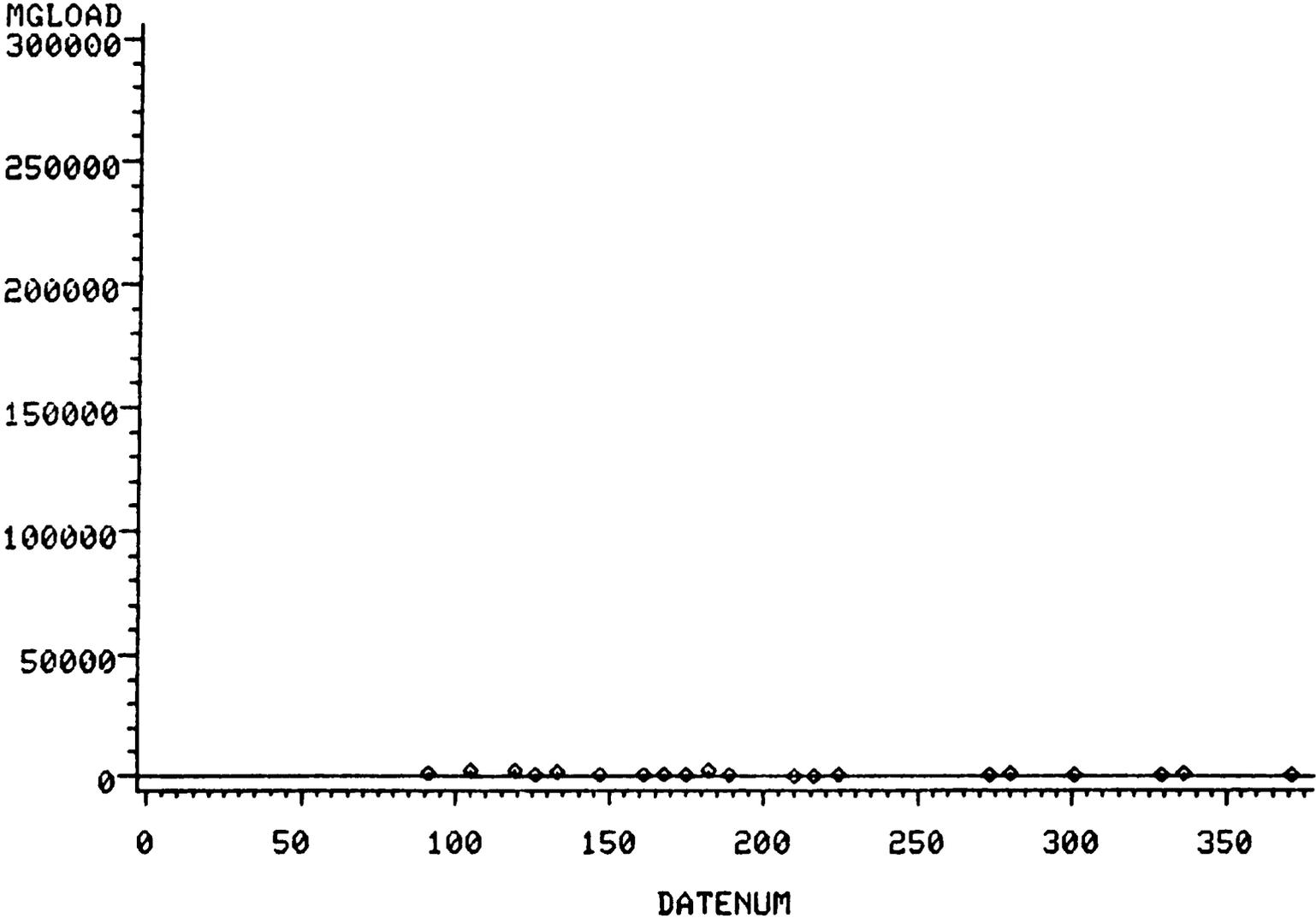
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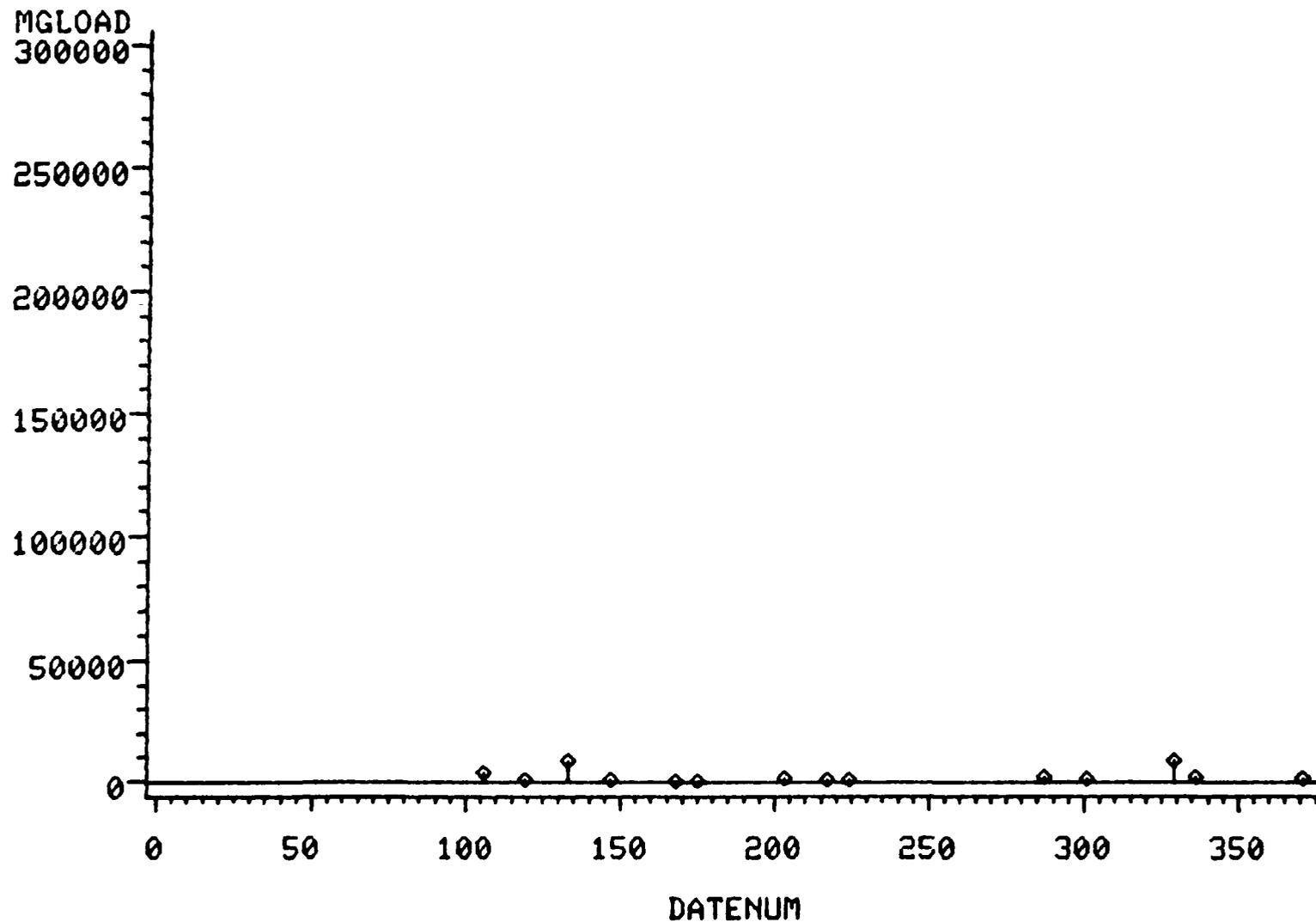
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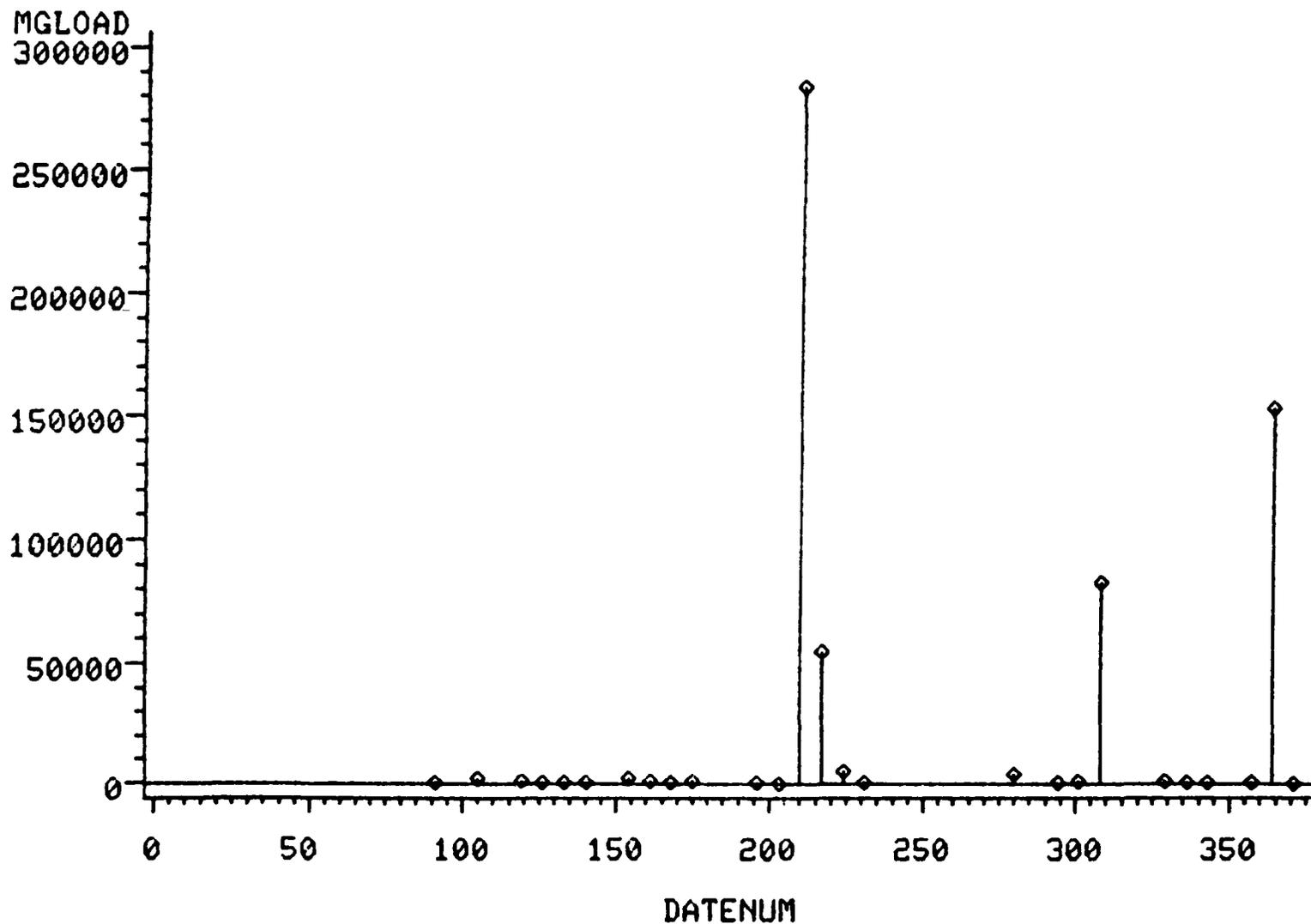
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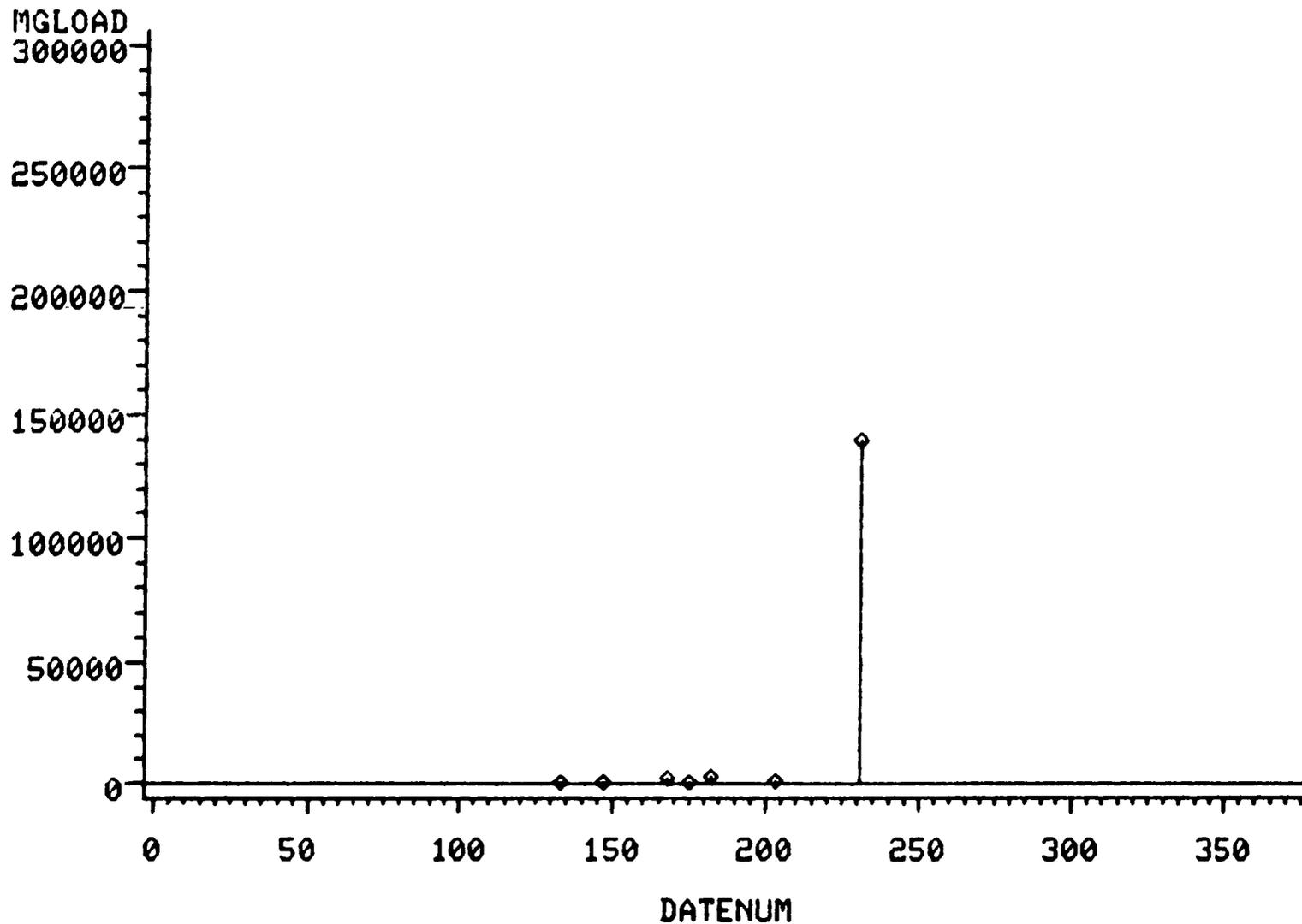
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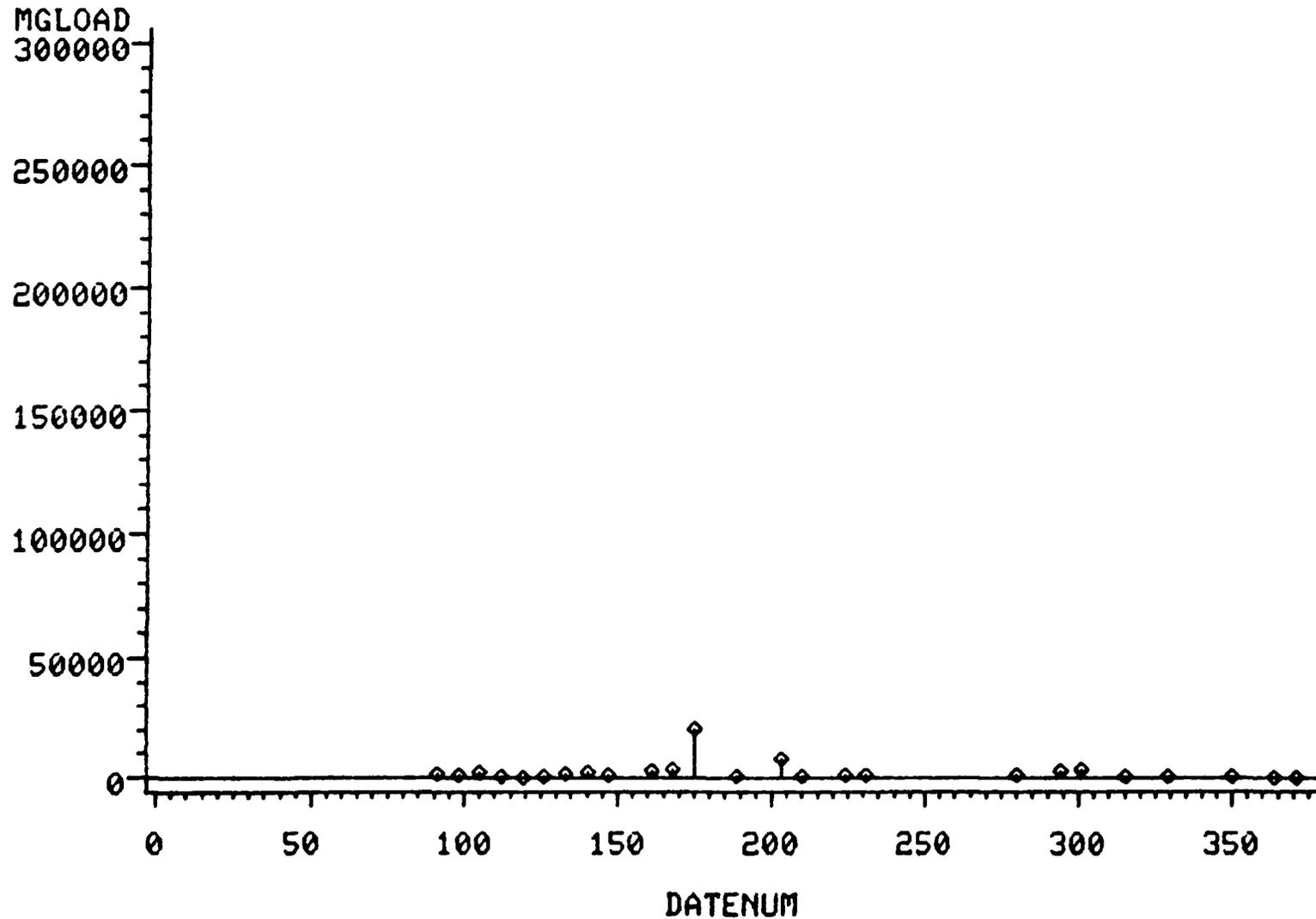
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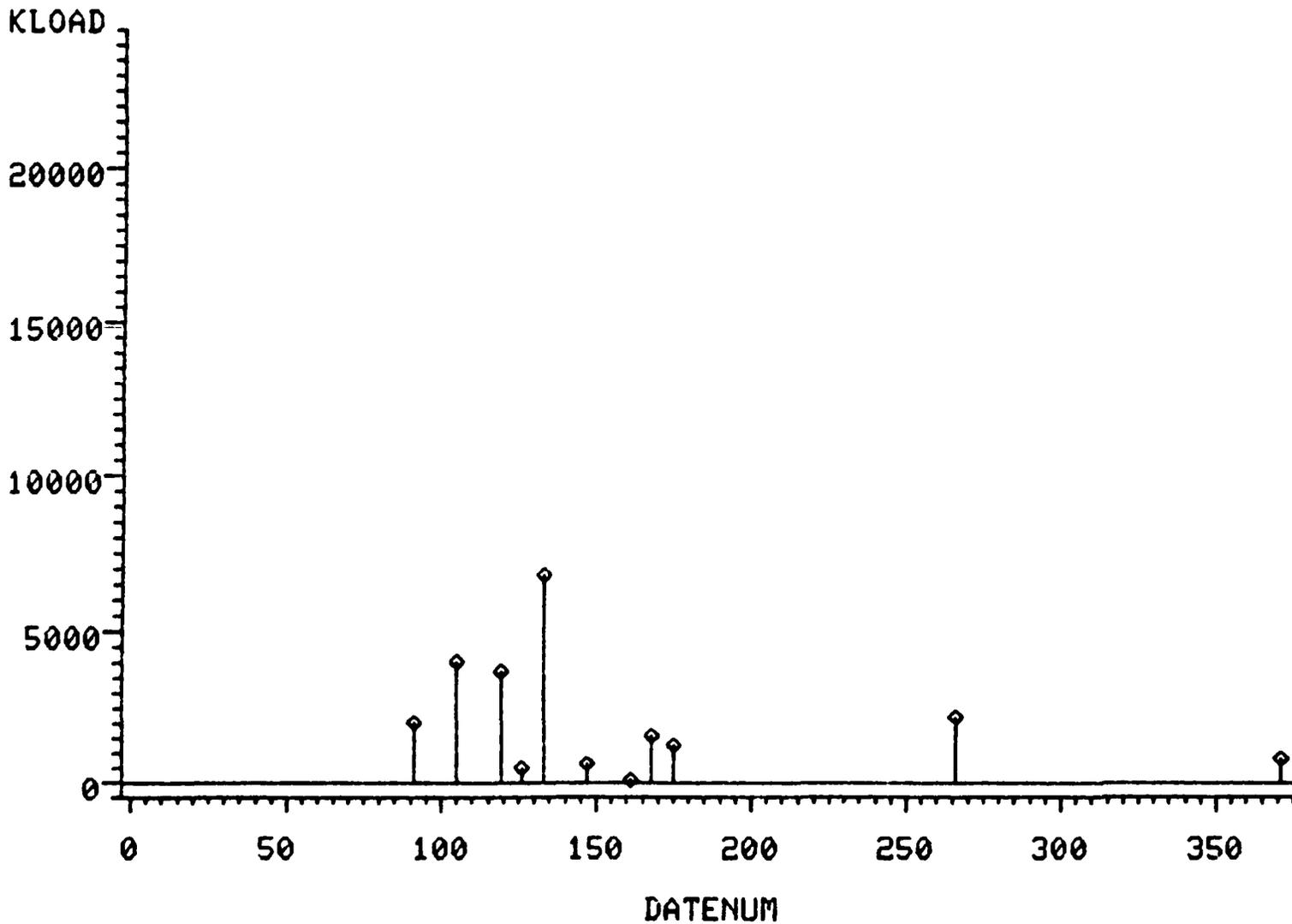
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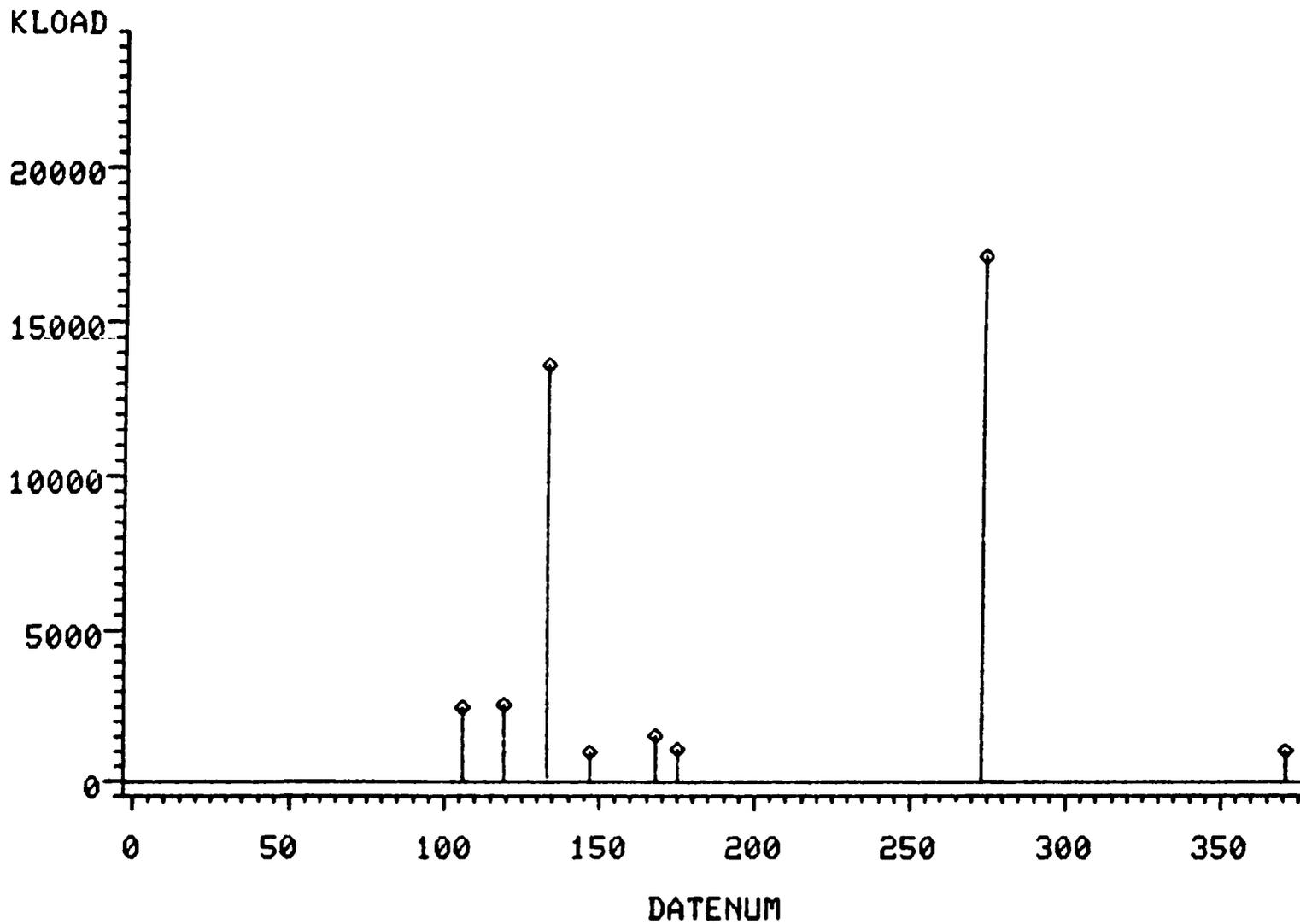
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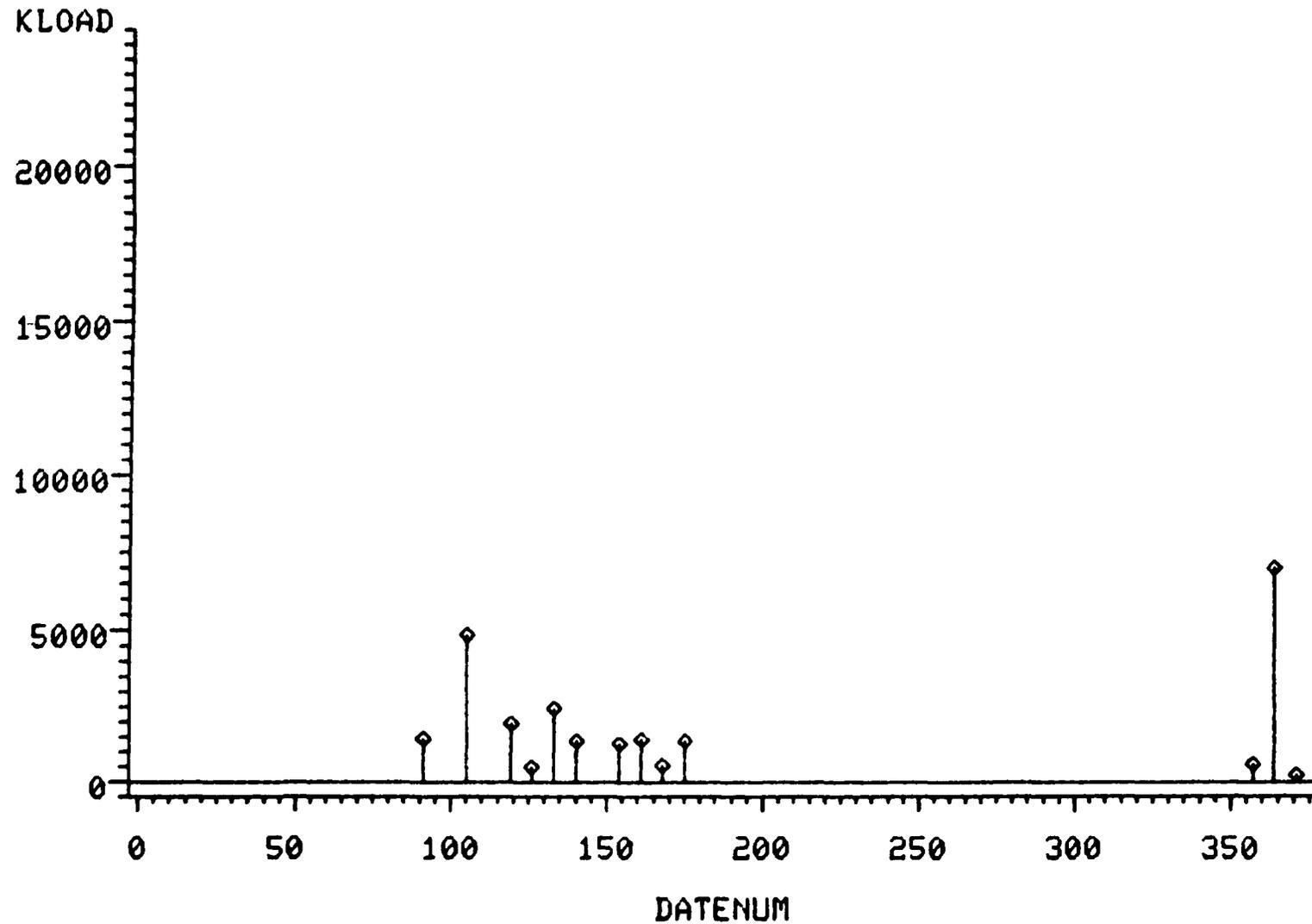
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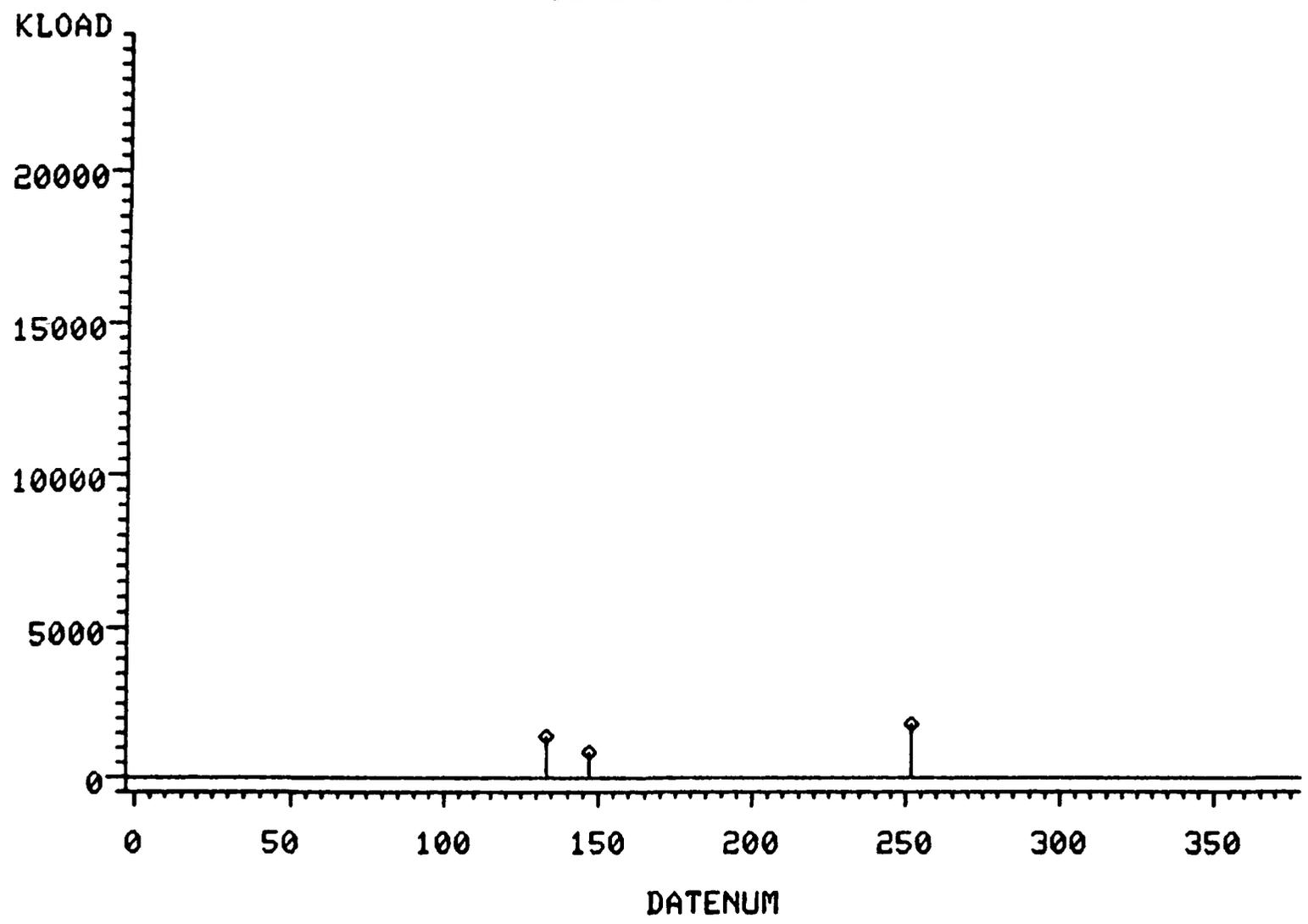
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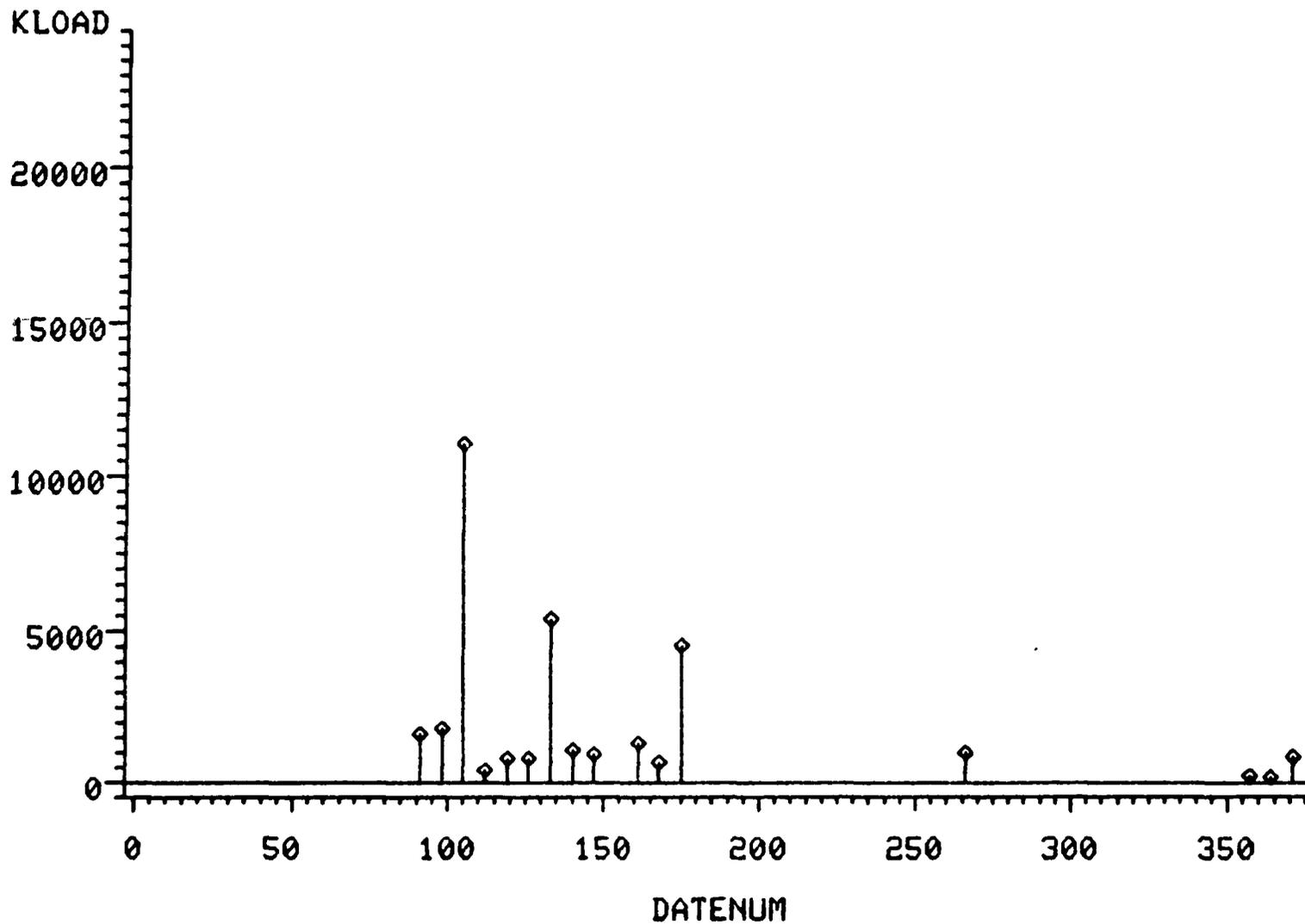
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1981 POTASSIUM LOAD (MG/M\*\*2)  
SITE=234110 2



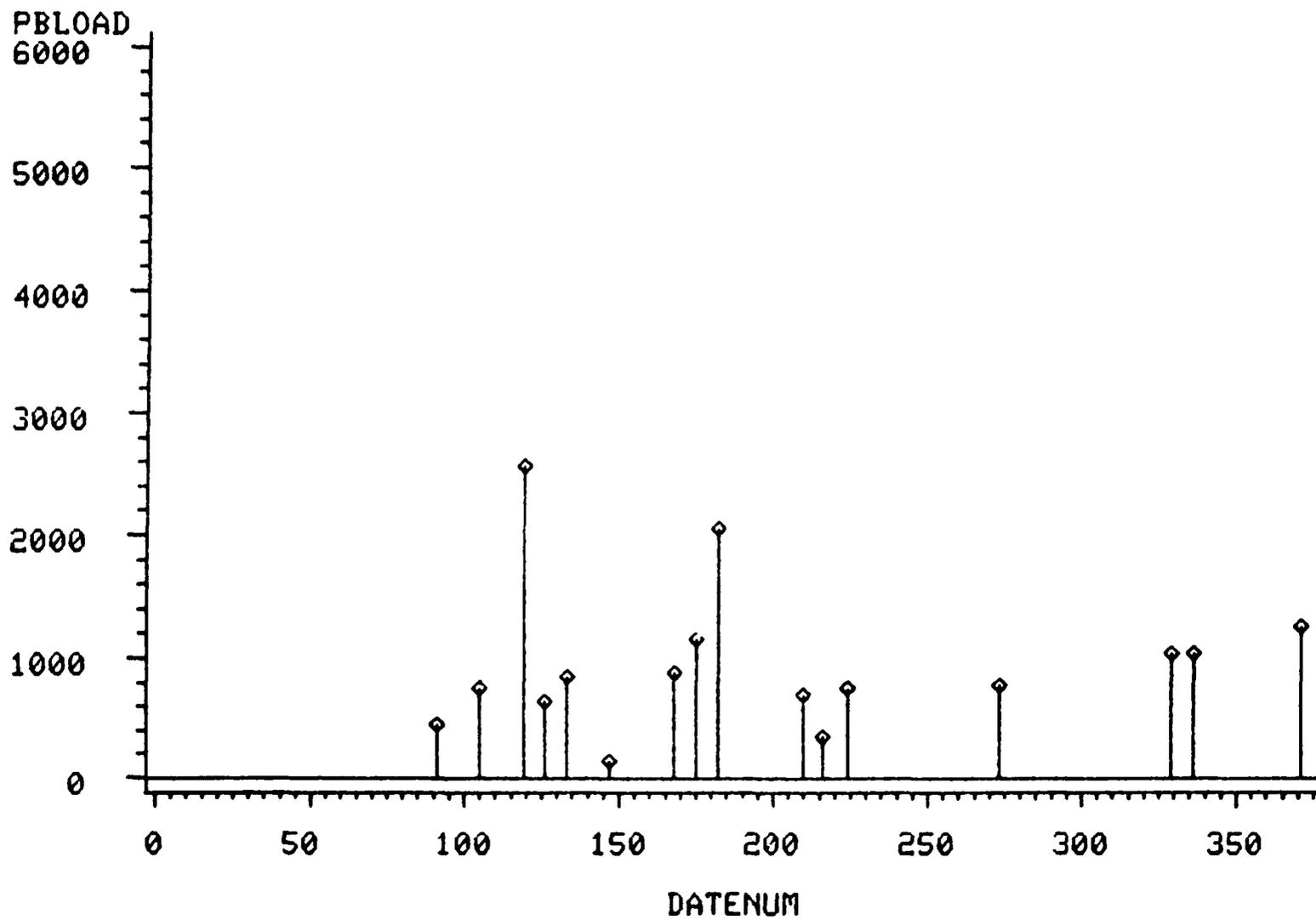
# GREAT LAKES ATMOSPHERIC DEPOSITION (GLAD) PROGRAM

WET SAMPLES  
1981 POTASSIUM LOAD (MG/M\*\*2)  
SITE=234800 1



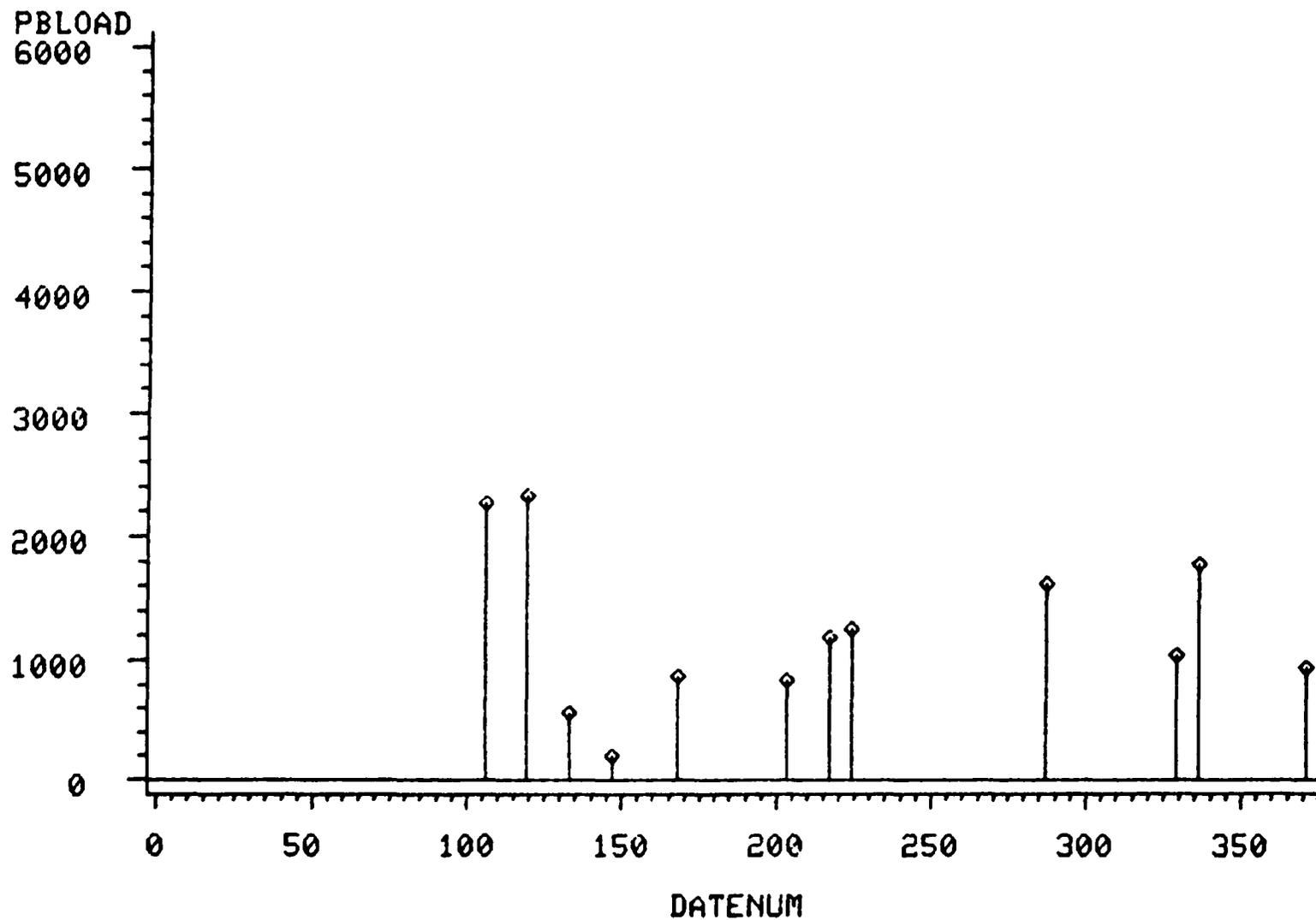
# GREAT LAKES ATMOSPHERIC DEPOSITION (GLAD) PROGRAM

WET SAMPLES  
1981 LEAD LOAD (MG/M\*\*2)  
SITE=23 420 2



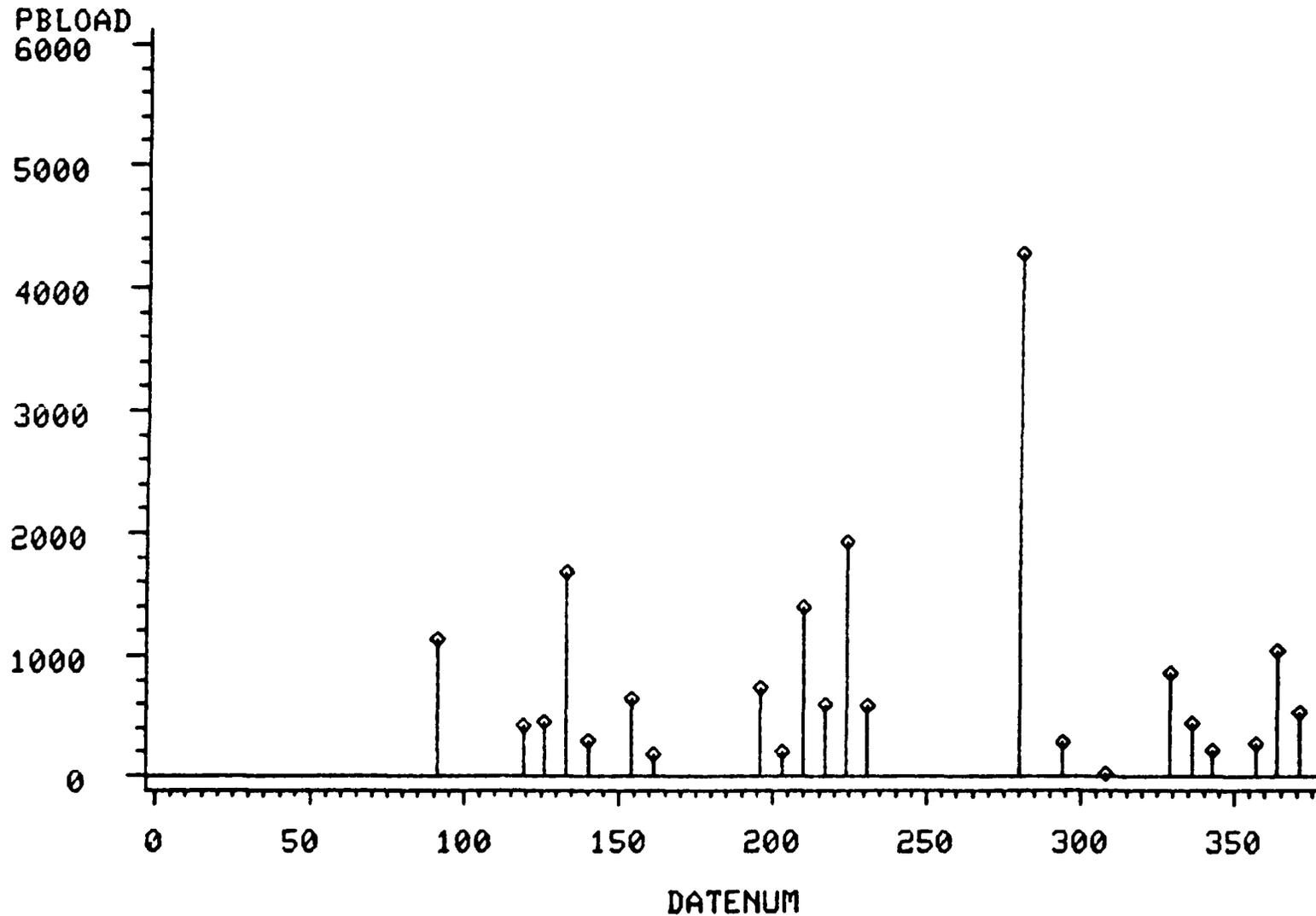
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WET SAMPLES  
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SITE=232340 2



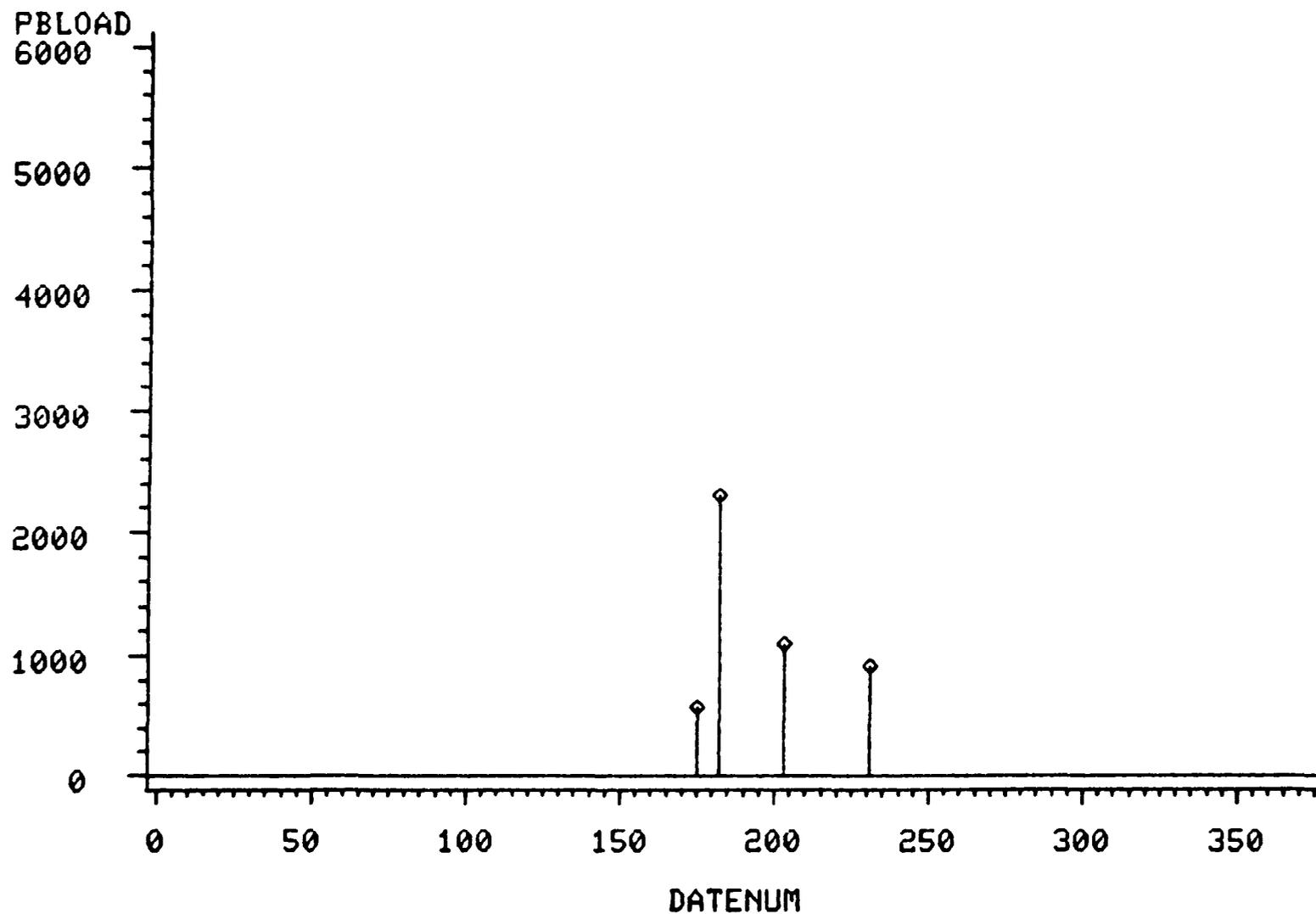
# GREAT LAKES ATMOSPHERIC DEPOSITION (GLAD) PROGRAM

WET SAMPLES  
1981 LEAD LOAD (MG/M\*\*2)  
SITE=233660 2



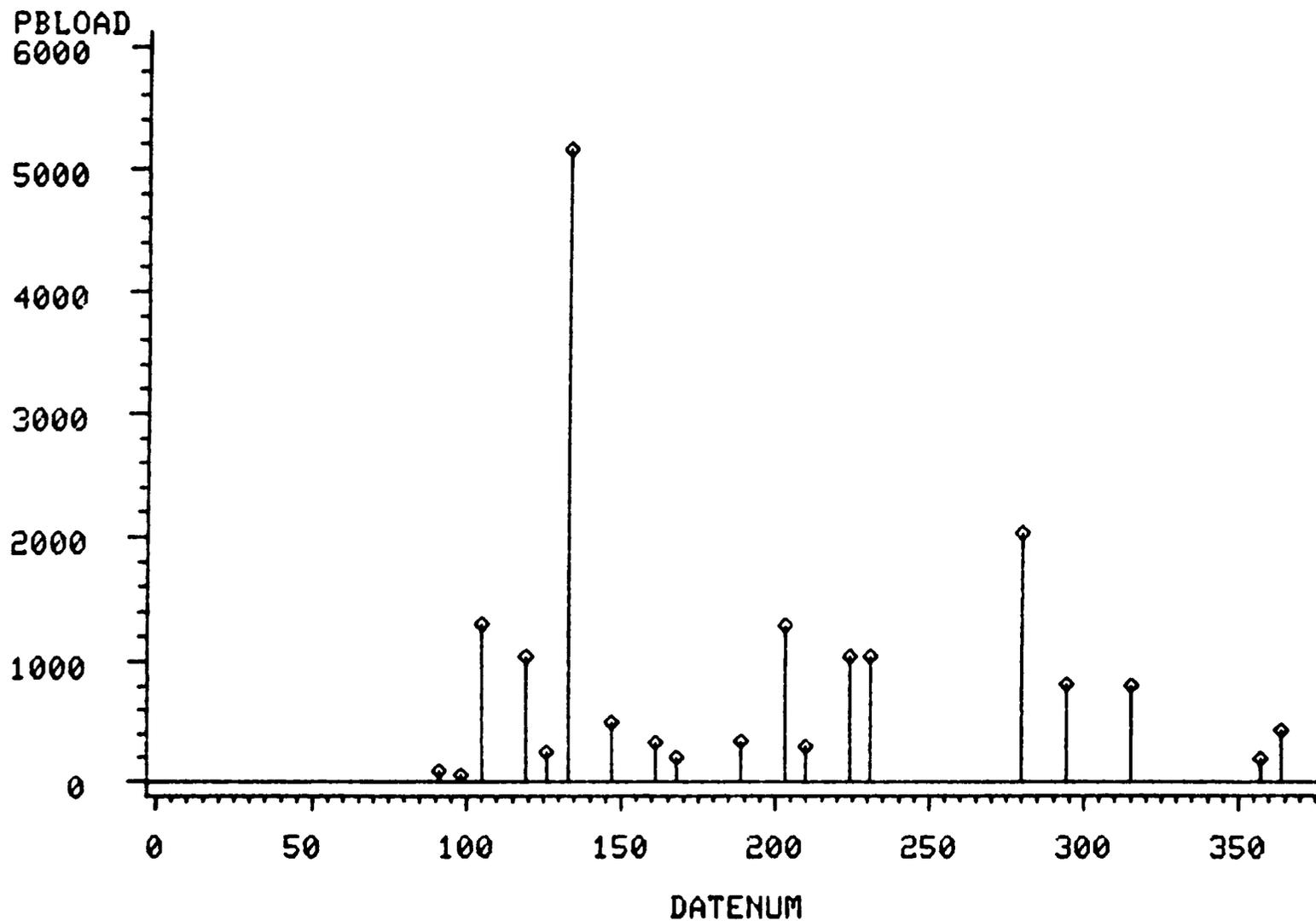
# GREAT LAKES ATMOSPHERIC DEPOSITION (GLAD) PROGRAM

WET SAMPLES  
1981 LEAD LOAD (MG/M\*\*2)  
SITE=234110 2



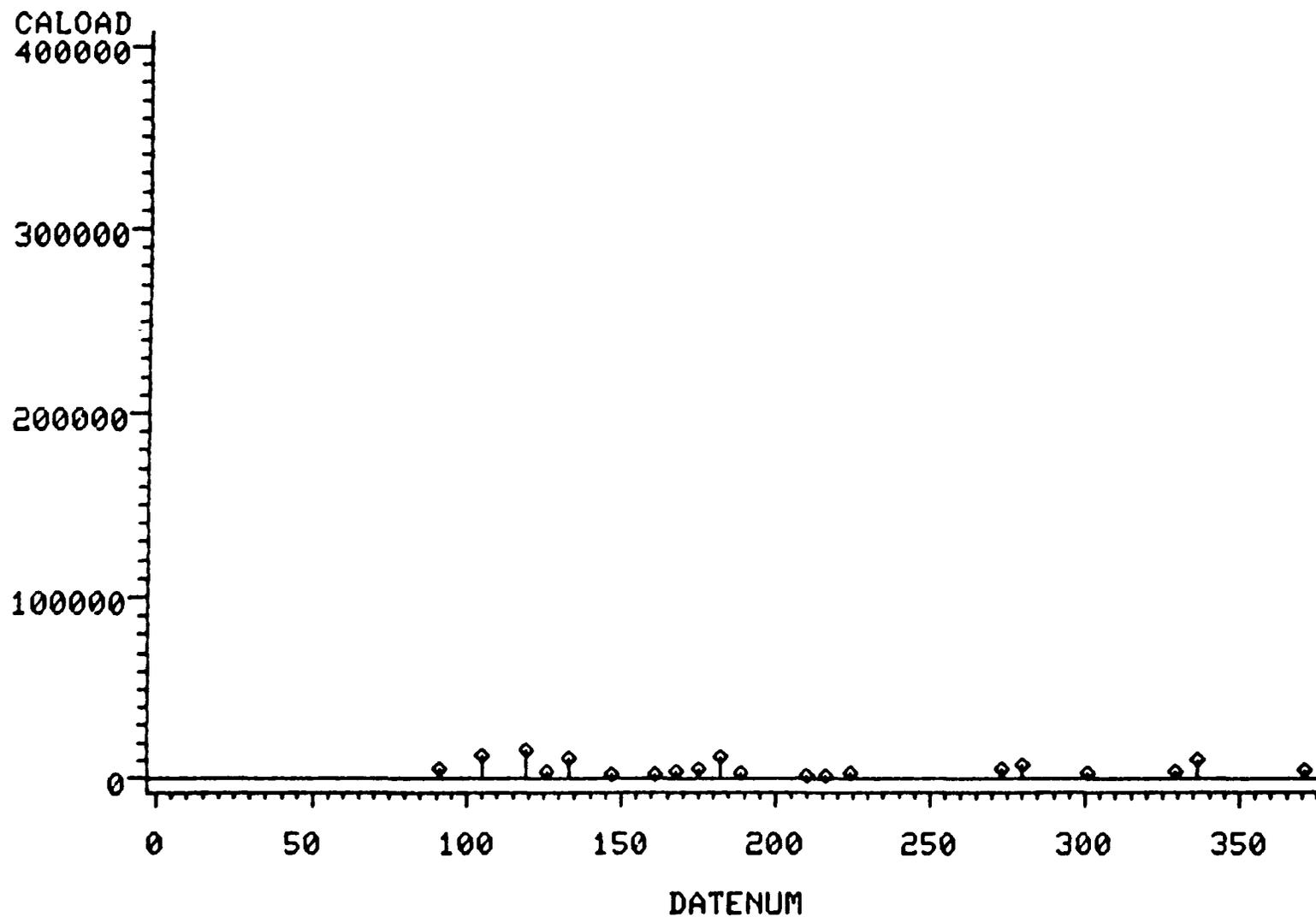
# GREAT LAKES ATMOSPHERIC DEPOSITION (GLAD) PROGRAM

WET SAMPLES  
1981 LEAD LOAD (MG/M\*\*2)  
SITE=234800 1



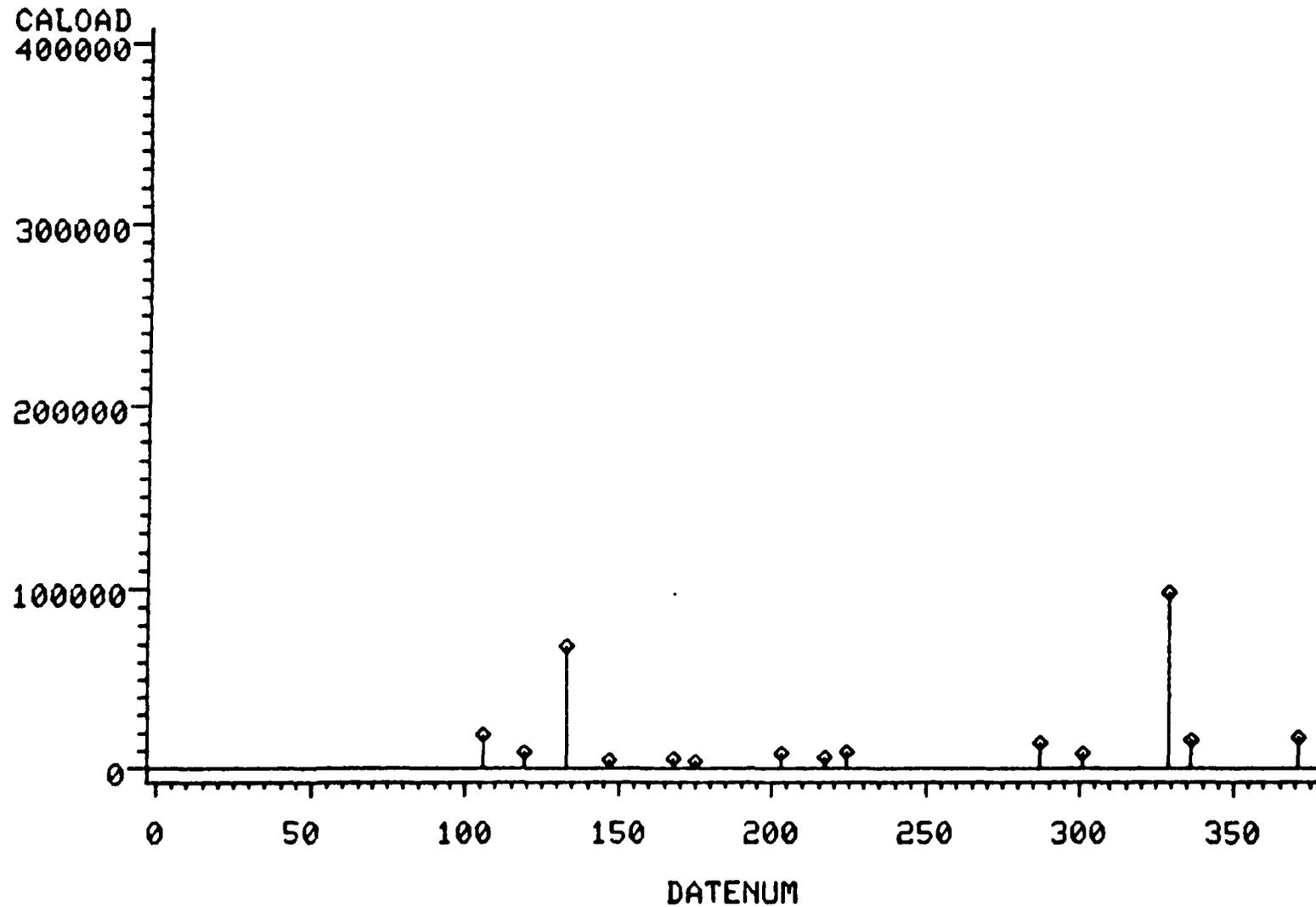
# GREAT LAKES ATMOSPHERIC DEPOSITION (GLAD) PROGRAM

WET SAMPLES  
1981 CALCIUM LOAD (MG/M\*\*2)  
SITE=23 420 2



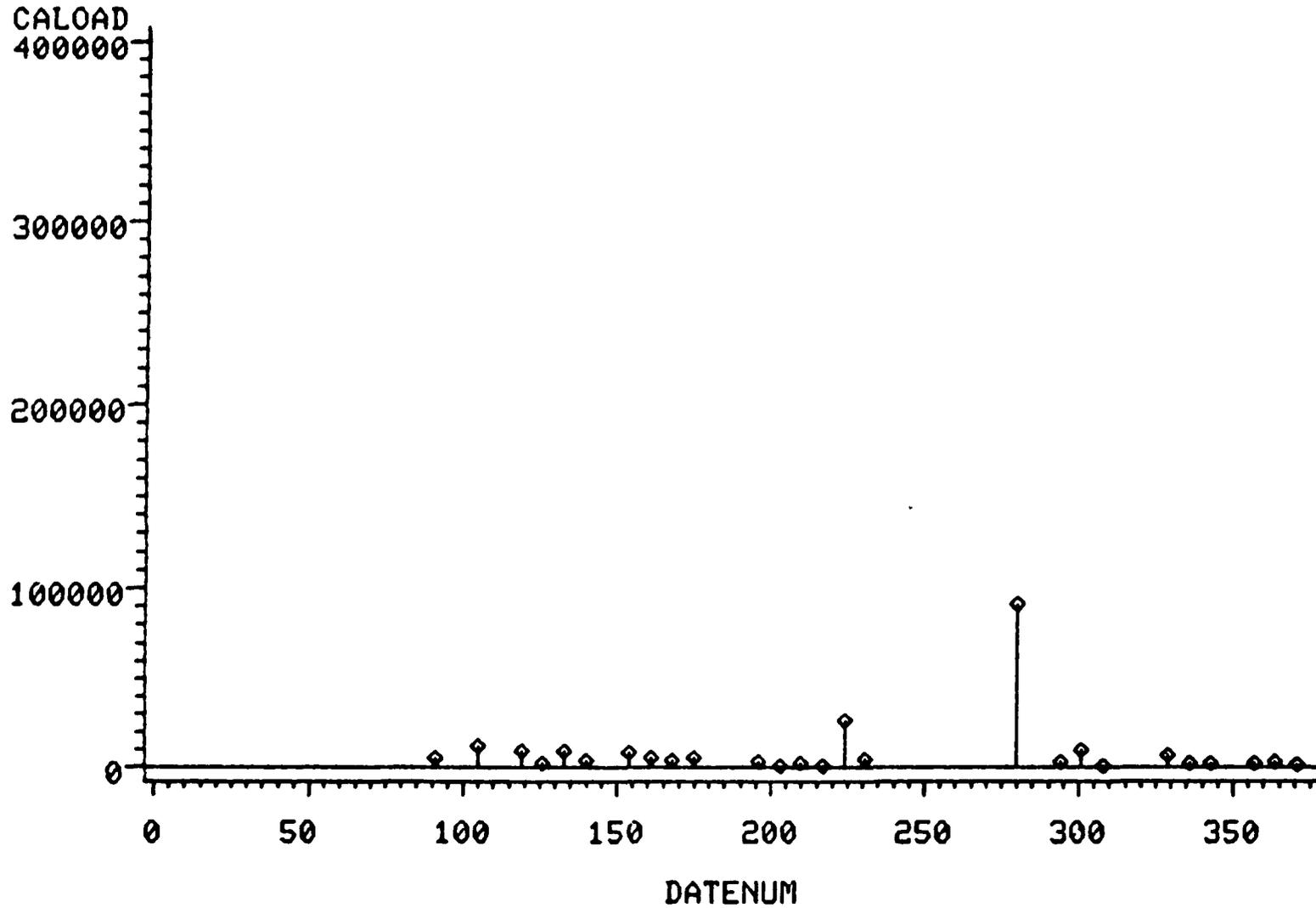
# GREAT LAKES ATMOSPHERIC DEPOSITION (GLAD) PROGRAM

WET SAMPLES  
1981 CALCIUM LOAD (MG/M\*\*2)  
SITE=232340 2



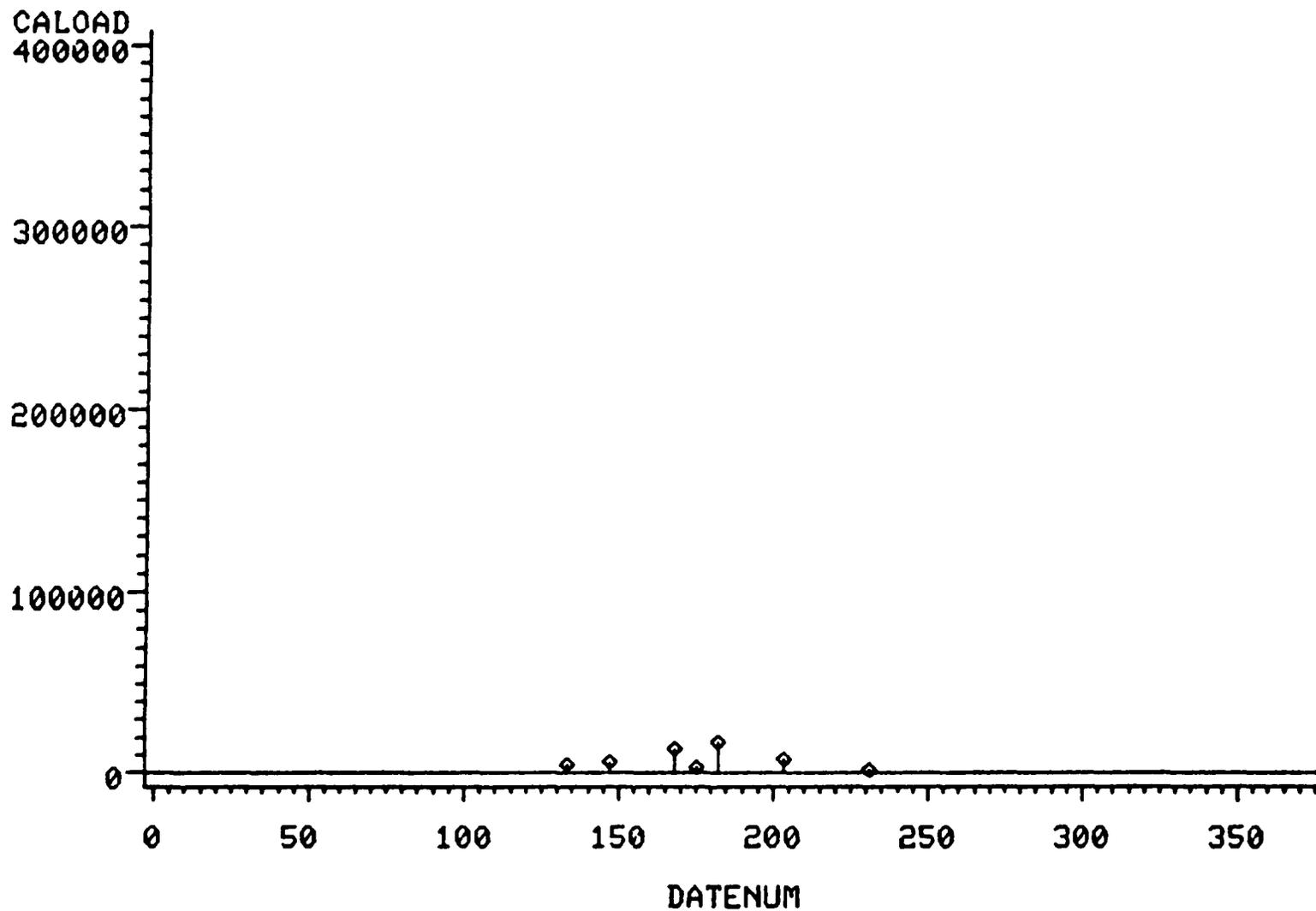
# GREAT LAKES ATMOSPHERIC DEPOSITION (GLAD) PROGRAM

WET SAMPLES  
1981 CALCIUM LOAD (MG/M\*\*2)  
SITE=233660 2



# GREAT LAKES ATMOSPHERIC DEPOSITION (GLAD) PROGRAM

WET SAMPLES  
1981 CALCIUM LOAD (MG/M\*\*2)  
SITE=234110 2



# GREAT LAKES ATMOSPHERIC DEPOSITION (GLAD) PROGRAM

WET SAMPLES  
1981 CALCIUM LOAD (MG/M\*\*2)  
SITE=234800 1

