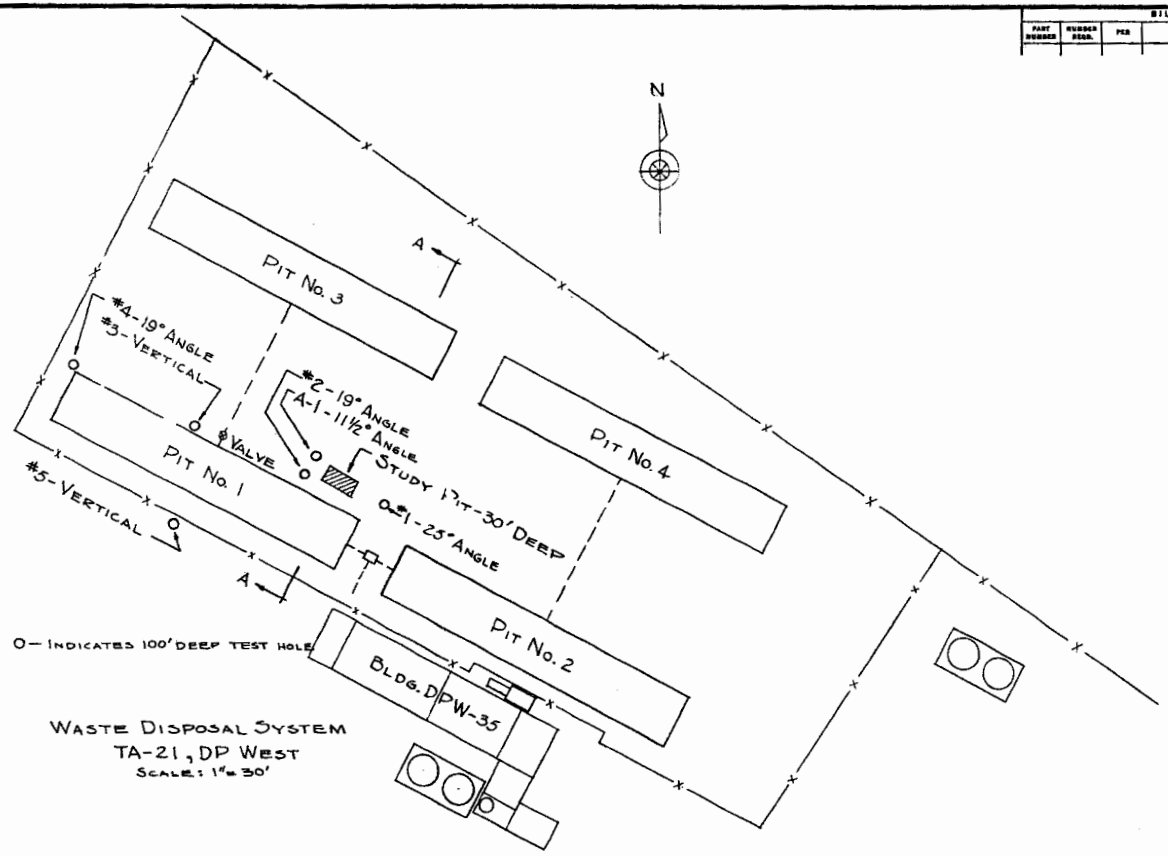
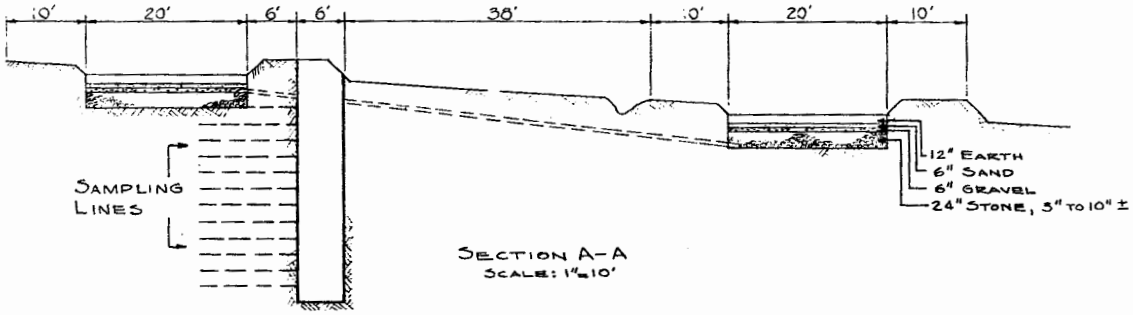
0579
~~General~~ TA 21



WASTE DISPOSAL SYSTEM
TA-21, DP WEST
SCALE: 1"=30'



SECTION A-A
SCALE: 1"=10'

DP WEST DEEP PIT TUFF PERMEABILITY STUDY

BILL OF MATERIAL

PART NUMBER	NUMBER REQD.	PER	DESCRIPTION

REV. LET.	CHANGED ITEM WAS	DATE	CHANGED BY	CHECKED BY

REVISIONS

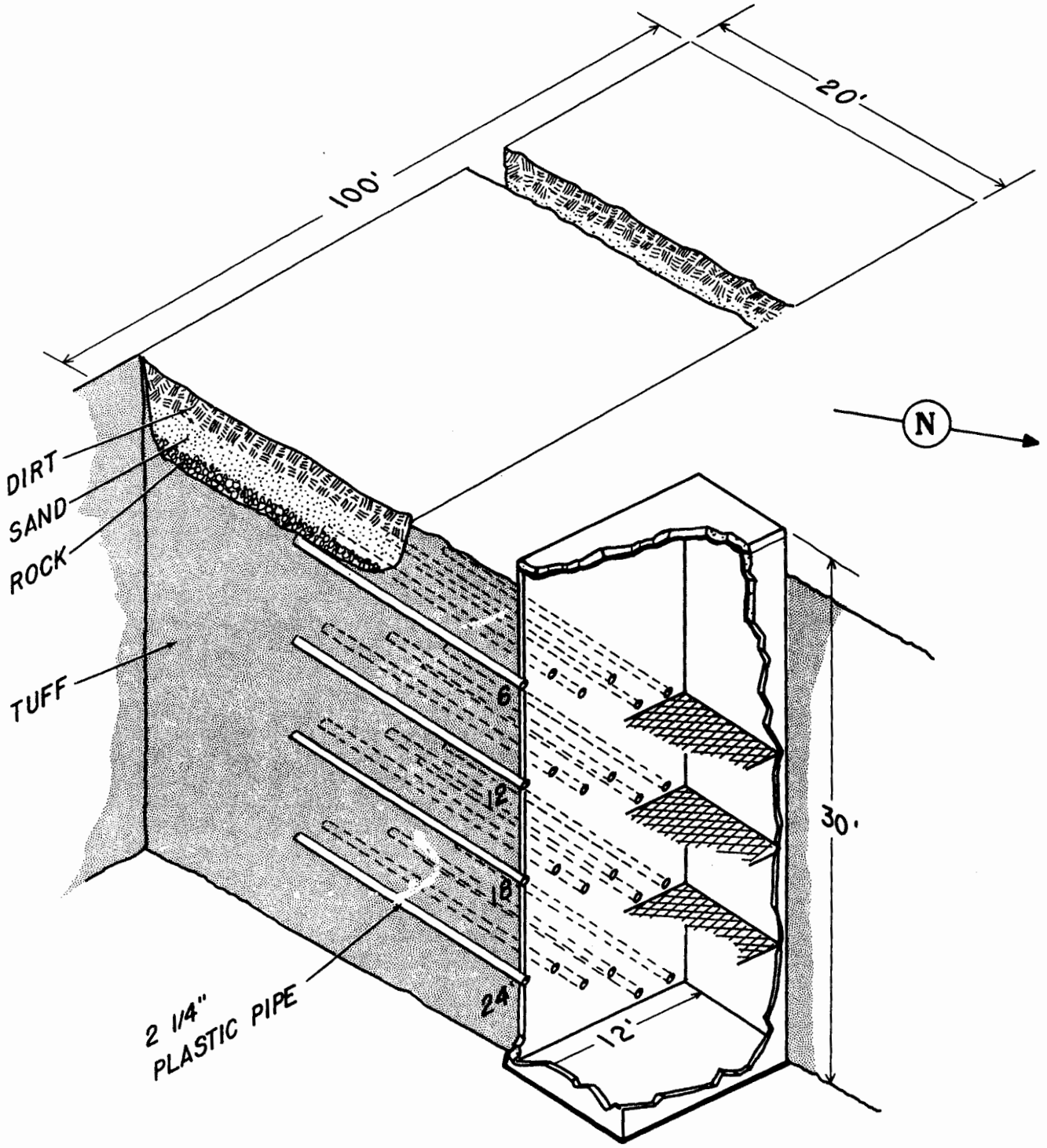
TOLERANCES - UNLESS OTHERWISE NOTED
FRACTIONAL: DECIMAL: ANGULAR:

	SIGNATURE	DATE	GROUP NO. & REPRESENTATIVE	DATE
ORIGINATED				
DRAWN				
CHECKED				
PROJ. ENG.			TOT. SHTS.	SCALE
APPROVED				

TITLE:

DRAWING NO. | SHEET SIZE AND NO. C | PART NO.

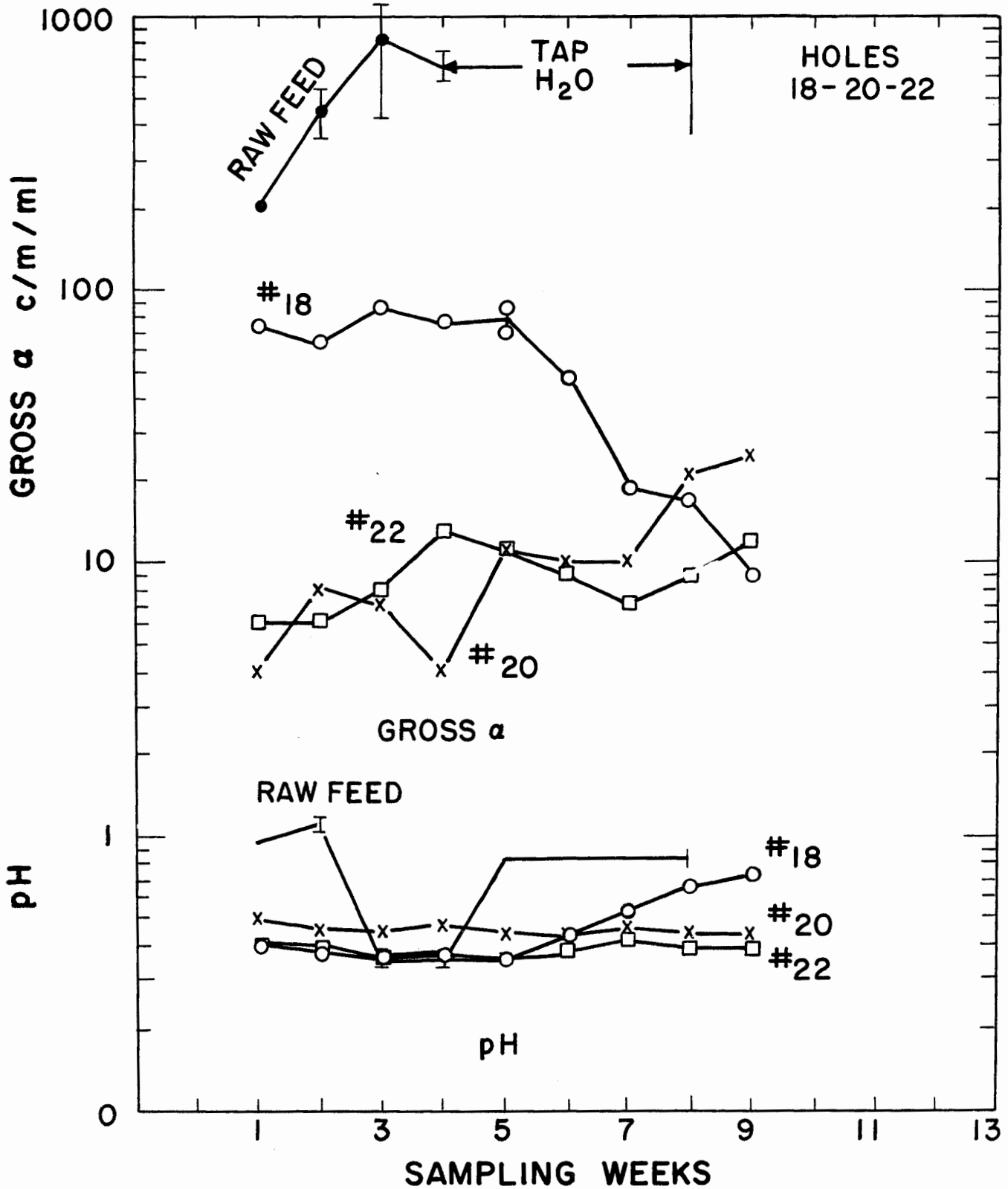
9987



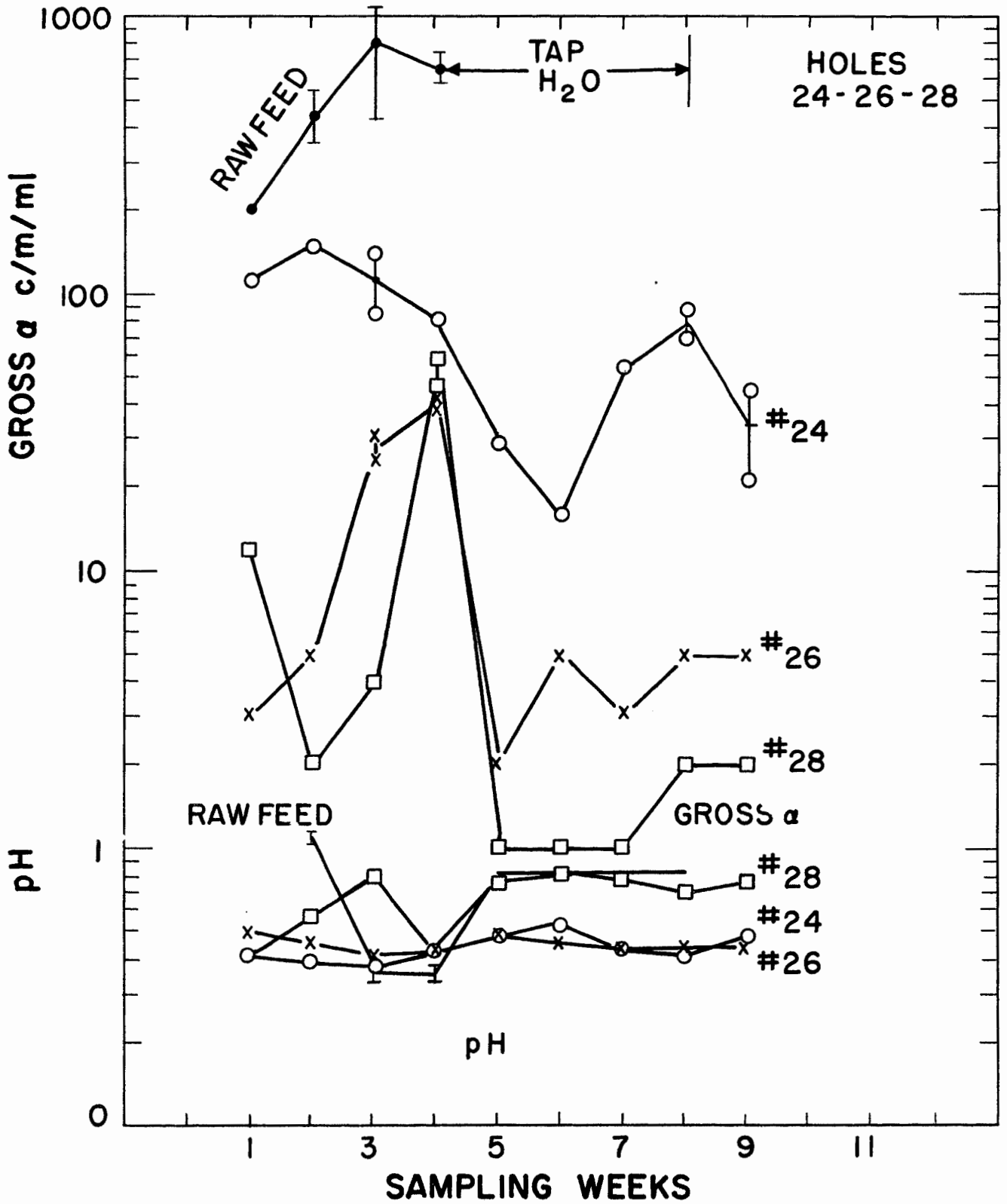
DP WEST DEEP PIT
TUFF PERMEABILITY STUDY

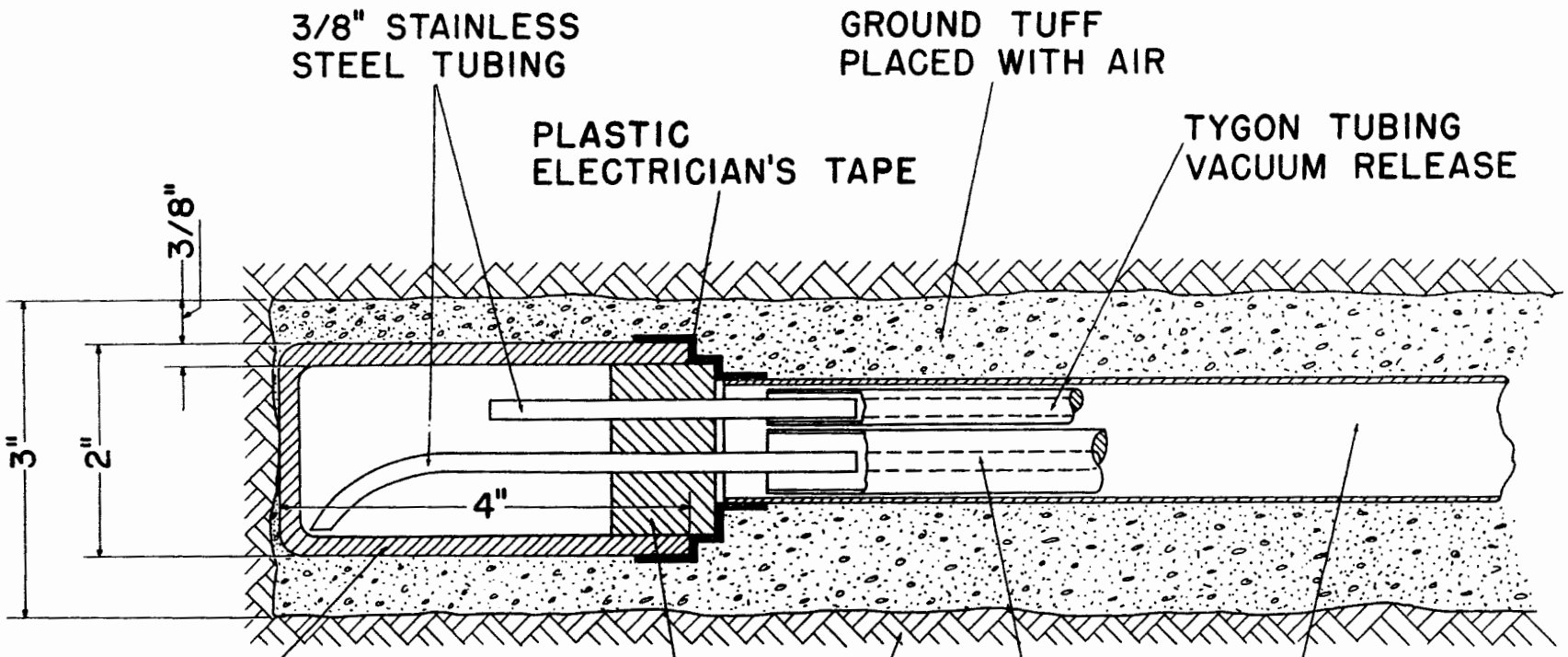
F: W: T:	WASTE WATER TOTAL	Unfiltered Gross α c/m/ml	Filtered Gross α c/m/ml	Millipore filter Gross β c/m/ml	pH Volt. Filt.	Phen. Alk.	Tot. Alk.	Total Hardness	Ca	Mg	Cl^-	NO_3^-	$SO_4^=$	Unfiltered Total Solids	Filtered Total Solids	Volt. Vol. Solids 400c	Volt. Vol. Solids 600c	F.R. Vol. Solids 400c	F.R. Vol. Solids 600c	F^-	Na	K	Surface Tension Dynes/cm	CaO
Avg. F	Weekly Raw Comp.	565	584		6.9	45	186	170	57	7	70	139	36	5454	17,036	396	1368	316	10,546	200	197	7245	54.5	73
Avg. F	Comp. #6		48		11.0	714	1351	161	32	20	102	146	44		11,808				2685	230	942	2927	42.3	322
Avg. W			6		8.6	22	261	190	52	14	17	9	18		3868			2012	3619	76	138	118	52.7	50
Avg. T			24		9.7	329	759	177	43	17	66	70	29		7838			2012	3168	144	494	1366	48.1	171
Avg. F	Comp. #8		14		4.3	0	0	359	49	57	61	305	227		4467			1856	2359	33	801	112	52.3	353
Avg. W			14		6.4	0	175	510	64	84	77	356	272		6286			1912	4048	36	1127	84	51.0	705
Avg. T			14		5.5	0	97	443	57	72	70	333	252		5477			1769	3297	34	982	96	51.6	548
Avg. F	Comp. #10		28		4.3	0	0	1820	74	393	73	350	288		8417			752	2351	48	1878	271	52.2	273
Avg. W			10		7.0	0	223	420	88	48	63	292	140		5992			2569	6218	52	790	104	51.8	392
Avg. T			18		5.8	0	124	1042	82	201	67	318	206		7070			2266	4500	50	1273	156	52.0	339
Avg. F	Comp. #12		9		7.2							290			7504				2940	220				
Avg. W			6		8.9	440	1720	325	70	36	180	363	140		9768			1988	2772	280				
Avg. T			7		9.0	440	1720	325	70	36	180	345	140		8636			1988	2856	265				
Avg. F	Com. #14		165	148	3.7	0	0	4161	344	793	1112	436	355		34,622			8548	17,175	233	3620	1005	53.2	67
Avg. W			126	108	4.0	0	0	4190	256	852	838	406	413		32,340			7131	16,478	228	3825	1203	53.2	219
Avg. T			143	122	3.8	0	0	4177	295	826	960	419	387		33,386			7367	16,758	230	3734	1115	53.2	152
Avg. F	Comp. #16		11		7.2	35	390	994	80	191	60	310	47		5156			552	1769	153	1005	709	51.5	136
Avg. W			6		8.8	7	855	310	80	33	102	208	73		7822			1491	2916	280	1099	2518	46.1	461
Avg. T			8		8.1	56	648	614	80	99	83	253	61		6637			1335	2406	223	1057	1714	48.5	271
Avg. F	Comp. #18		79	70	3.8	0	0	7325	625	1395	1126	446	603		52,232			14,036	24,017	245	5900	1631	56.0	76
Avg. W			36		5.4	0	84	3290	284	619	610	432	343		34,616			12,814	24,030	220	3274	1488	54.2	208
Avg. T			55		4.7	0	47	5106	436	964	1017	438	460		42,445			13,068	24,357	231	4441	1581	54.8	158
Avg. F	Comp. #20		6		4.7	0	15	2948	254	555	202	410	96		13,999			2808	5789	123	1610	477	53.2	52
Avg. W			15		4.4	0	0	3580	346	653	132	419	167		20,013			5213	9647	228	2216	920	56.9	99
Avg. T			11		4.5	0	7	3299	304	609	158	415	141		17,340			4812	7732	181	1989	747	55.5	81
Avg. F	Comp. #22		8		3.9	0	0	6168	431	1186	370	464	543		40,793			11,152	18,541	245	4794	896	52.1	358
Avg. W			10		3.9	0	0	5510	436	1061	212	470	341		34,127			11,097	18,770	230	3682	895	57.1	308
Avg. T			9		3.9	0	0	5802	436	1116	282	467	431		37,063			11,106	18,680	264	4176	895	54.9	327
Avg. F	Comp. #24		127	107	4.0	0	0	3103	244	598	160	468	399		20,958			3968	8565	173	3729	675	54.3	242
Avg. W			47		4.7	0	13	3300	252	641	159	451	310		20,951			5553	9813	188	2645	898	53.3	470
Avg. T			83		4.4	0	7	3212	248	622	160	459	350		20,956			5289	9269	181	3127	799	53.7	368
Avg. F	Comp. #26		20		4.5	0	0	4775	346	939	204	463	342		31,430			7120	15,268	240	3472	628	52.0	291
Avg. W			4		4.5	0	2	4610	408	862	167	455	219		24,748			7691	14,086	208	2642	704	57.5	201
Avg. T			11		4.5	0	1	4683	380	896	181	459	266		27,718			7596	14,612	222	2953	675	56.0	227
Avg. F	Comp. #28		19		5.5	8	150	5470	239	1170	169	457	271		22,344			7464	10,608	175	3083	371	55.1	302
Avg. W			1		7.7	2	137	900	112	149	65	330	115		8036			2388	5761	76	1008	1260	55.7	85
Avg. T			9		6.7	4	143	2931	168	602	111	386	184		14,375			3234	7583	120	2391	851	55.3	258

DP West Deep Pit
Permeability Study
Gross α vs pH



DP West Deep Pit
Permeability Study
Gross α and pH vs Time



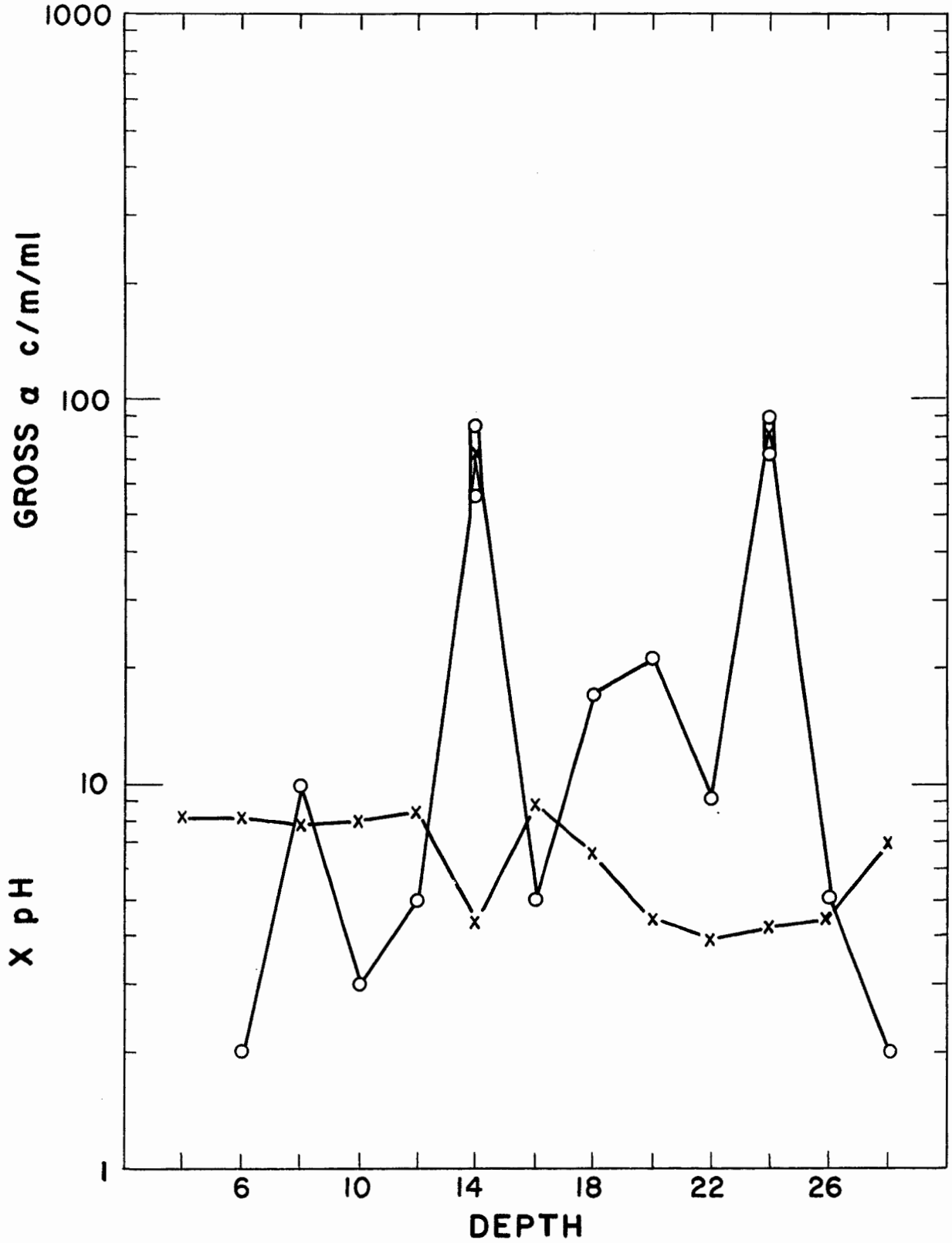


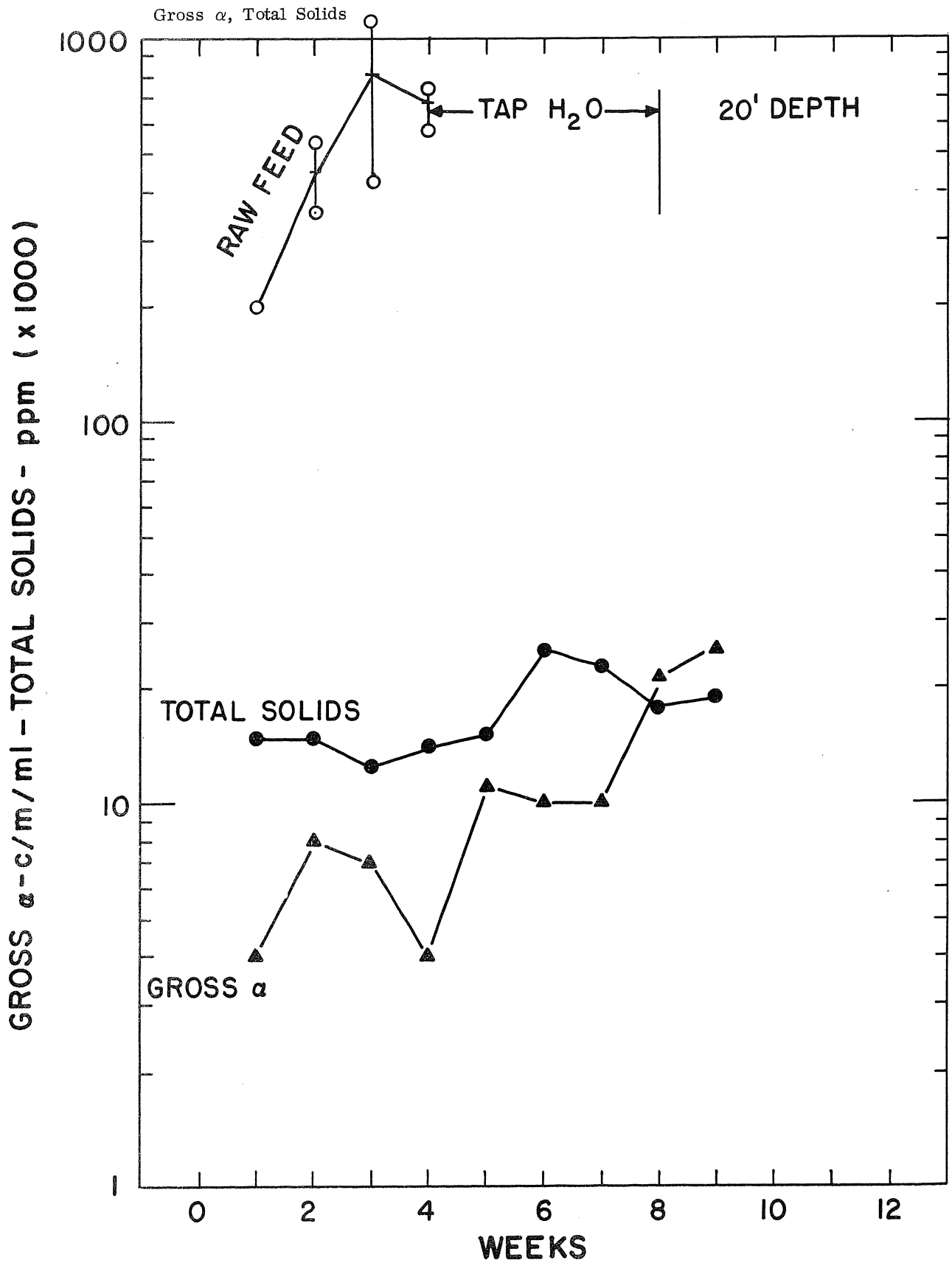
VACUUM CUP SYSTEM

LOS ALAMOS TAP WATER

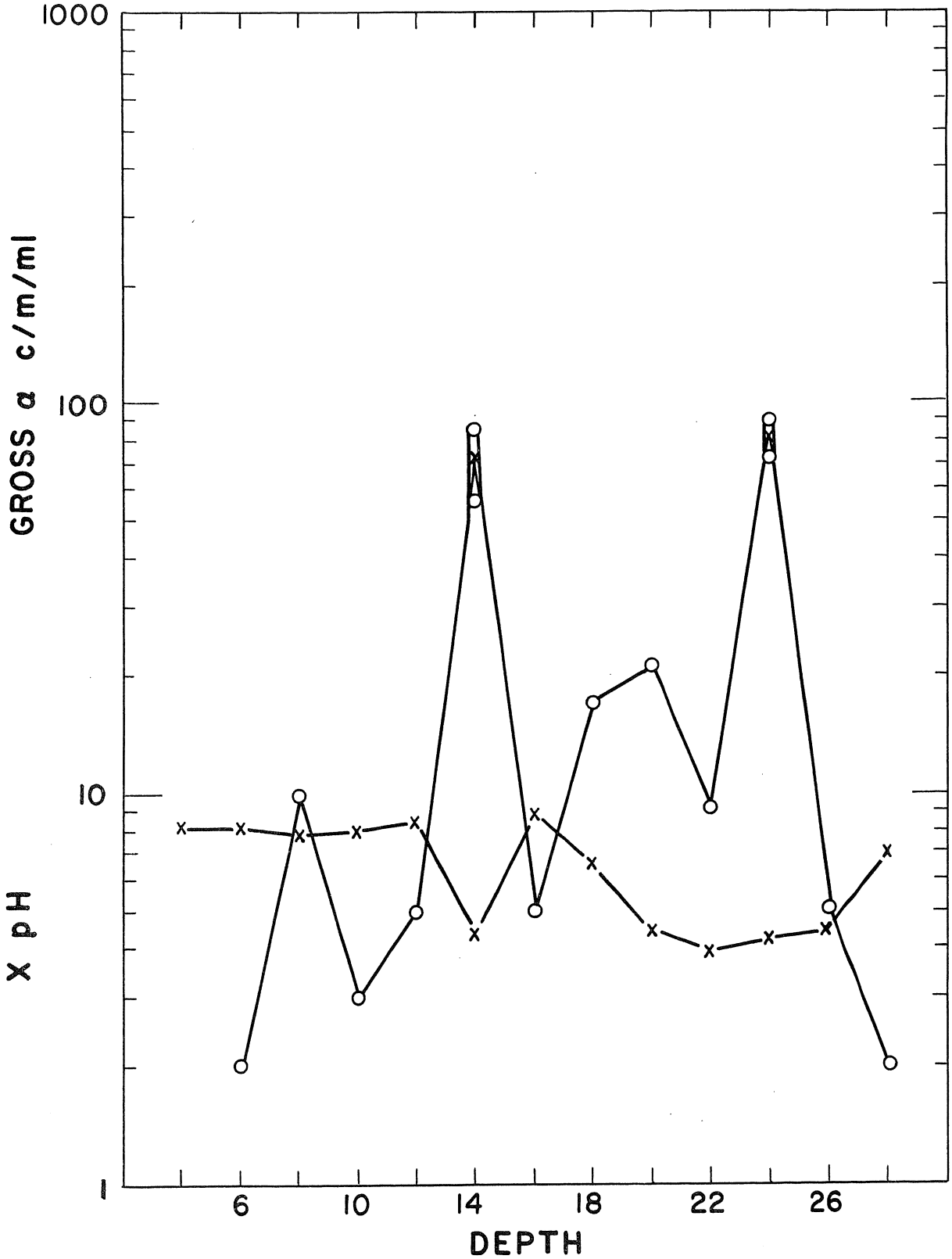
pH	8.1	$SO_4^{=}$	2.6
Conductivity (gr./gal.)	8.4	Cl^-	5.2
Phenol. Alk.	0	F^-	0.6
Total Alk.	101	NO_3^-N	1.0
HCO_3^-	101	NO_3^-	4.3
Total Hardness	32	SiO_2	62
Ca	9.6	Total Solids	182
Mg	1.8		

DP West Deep Pit
Permeability Study
Gross α and pH vs Depth
Eighth Week

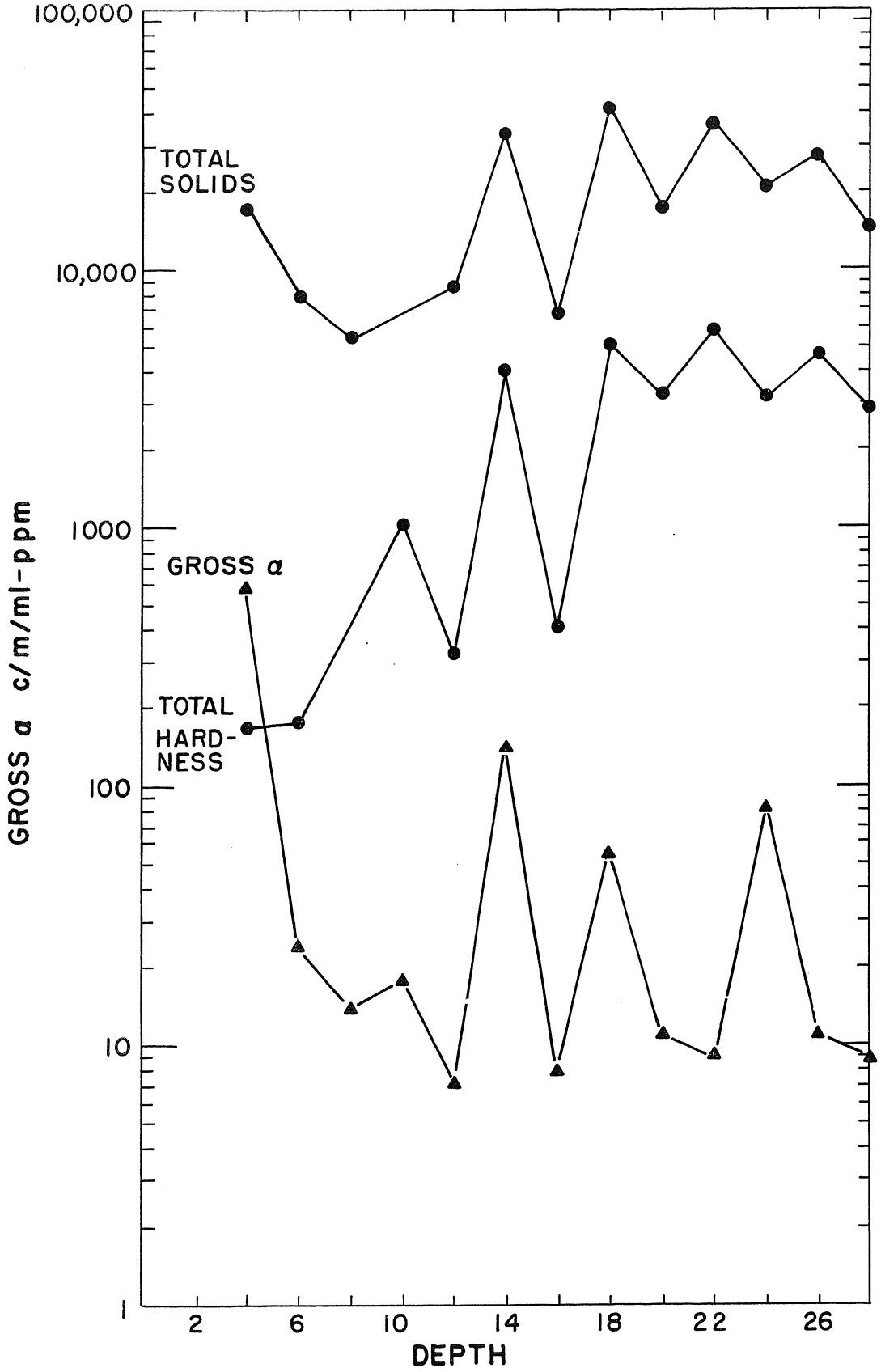



Gross α, Total Solids
1000
100
10
1
GROSS α-c/m/ml - TOTAL SOLIDS - ppm (x 1000)
RAW FEED
TAP H2O
20' DEPTH
TOTAL SOLIDS
GROSS α
0
2
4
6
8
10
12
WEEKS

DP West Deep Pit
Permeability Study
Gross α and pH vs Depth
Eighth Week



Average Gross α, Total Solids,
Total Hardness (All 9 Samples)



ANALYSIS OF WASTE APPLIED
TO SEEPAGE PIT

	Avg.	Max.	Min.
pH	5.7*	10.2	3.0
Cond. G.P.G. NaCl	40	75	28
Na	140	175	75
P. Alk. as $CaCO_3$	77	375	0
M.O. Alk. as $CaCO_3$	23	80	0
Chloride	26	40	18
Ca as Ca	7	17	0
Mg as Mg	3	8	0
Tot. Hard. as $CaCO_3$	30	76	0
NH_3 - N	10	20	7
NO_3 - N	75	125	55
Fluoride as F	160	225	100
Pu (c/m/ml)	60	600	20

*Median

Flow Rate from 3,000 to 12,000 GPD

ANALYSIS OF CITRATE WASTE

Di-ammonium citrate	50,000	ppm
Magnesium	800	"
Calcium	160	"
Aluminium	160	"
Iron	10	"
Fluoride	200	"
Nitrate Nitrogen	1,680	"
pH	1	
Pu (c/m/ml)	7,000	

10,450 gallons from June 1951 to July 1952