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C. Moench and Sons
Co.

MOENCH

COMPANY

MOENCH, FISHER & GAENSSEN, GOWANDA, N.Y.

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ANNUAL GROUNDWATER QUALITY MONITORING
REPORT.
FOR CALENDAR YEAR 2005
AT PALMER STREET LANDFILL.

MOENCH COMPANY
GOWANDA, NEW YORK 14070

Jeffrey Smith
Site Manager

MOENCH COMPANY

PALMER STREET LANDFILL

2005 ANNUAL GROUNDWATER MONITORING REPORT.....

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1.0 INTRODUCTION

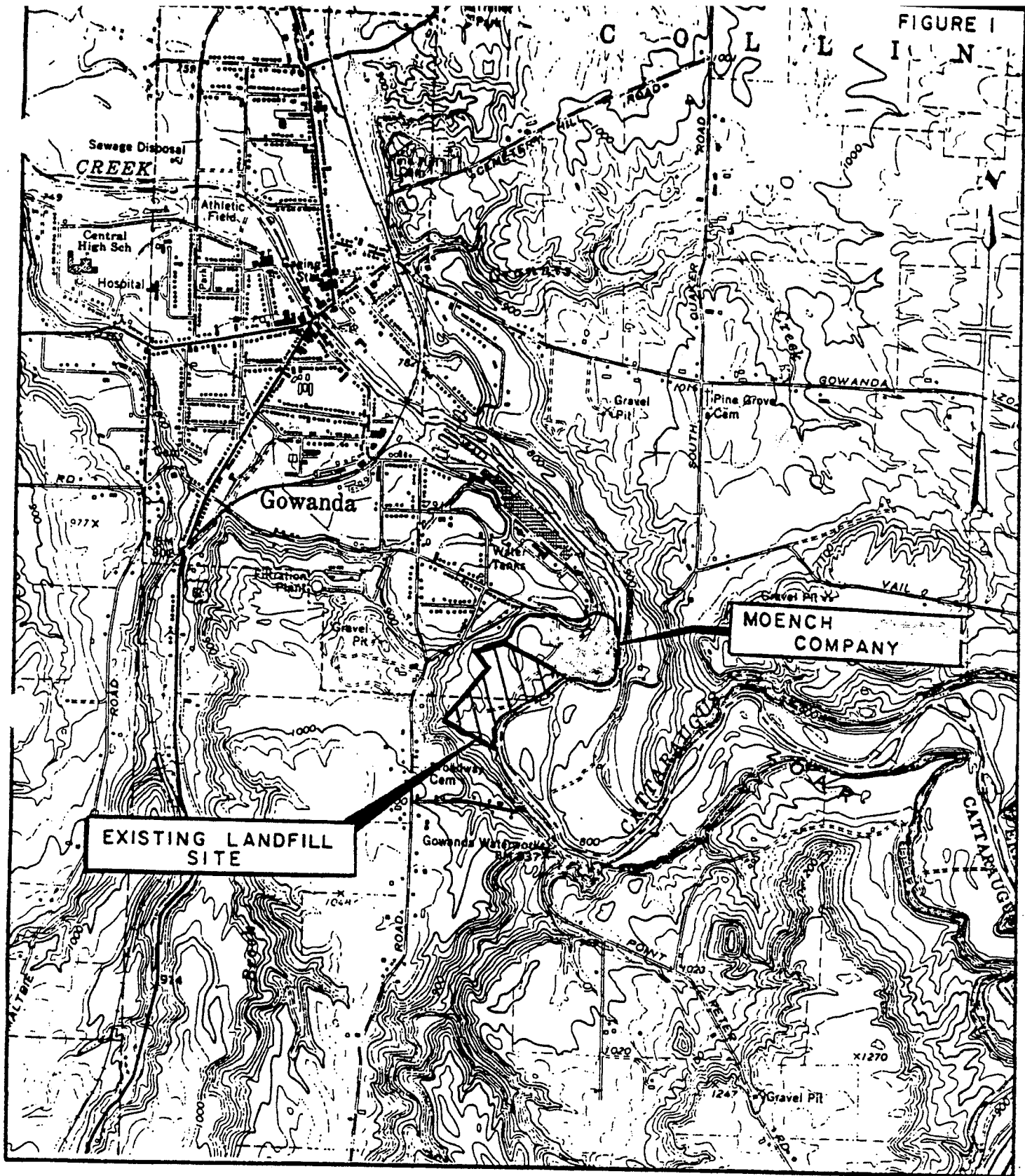
1.1 BACKGROUND

THE MOENCH COMPANY, A DIVISION OF BROWN SHOE COMPANY, INC. IS LOCATED NEAR THE SOUTHEAST CORNER OF THE VILLAGE OF GOWANDA, CATTARAUGUS COUNTY, NEW YORK, 14070. (FIGURE 1). THE PALMER STREET LANDFILL, WHICH WAS OPERATED BY MOENCH TANNING FROM 1900 THROUGH JULY 1983, LIES IMMEDIATELY SOUTHWEST OF THE FORMER SITE COMPLEX ON AN APPROXIMATELY 25-ACRE PARCEL OF LAND. A VARIETY OF WASTE GENERATED BY MOENCH TANNING WERE DISPOSED OF AT THE PALMER STREET LANDFILL SITE. THESE WASTES INCLUDED SOLE LEATHER EXTRACT, RENDERING WASTE, SPRAY BOOTH CLEAN UP WASTE, WASTE FINISH, WASTE HAIR/LEATHER SCRAPS, WASTEWATER TREATMENT PLANT SLUDGE, AND OCCASIONAL CONSTRUCTION DEBRIS.

MOENCH TANNING HAS CLOSED THE PALMER STREET LANDFILL. ACCORDINGLY, THE CLOSURE/POST-CLOSURE PLAN (REFERENCE 1), IS BEING PERFORMED. THE LONG-TERM POST CLOSURE MONITORING PROGRAM HAS BEEN APPROVED & IMPLEMENTED. (JULY 1993, REVISED MARCH 1994.

1.2 PUPOSE AND SCOPE

SAMPLES ASSOCIATED WITH TWO ROUNDS OF WATER QUALITY MONITORING, FOR THE 2005 CALENDAR YEAR, WERE COLLECTED IN MARCH & AUGUST OF 2005, FOR THE LANDFILL. THE PURPOSE OF THIS REPORT IS TO PROVIDE A SUMMARY OF THE DATA GENERATED FOR THE PALMER STREET LANDFILL DURING 2005...



{ FIGURE 1 }

NOTE:
TOPOGRAPHY TAKEN FROM 1963 GOWANDA, N.Y.
U.S.G.S. QUADRANGLE 7.5 MIN. SERIES
SCALE: 1" = 2000'

SITE LOCATION MAP
PALMER STREET LANDFILL
GOWANDA, N.Y.

MOENCH CO.

6-94



2.0 MONITORING SYSTEM

SEVEN (7) GROUNDWATER MONITORING WELLS AT THE PALMER STREET LANDFILL ARE MONITORED IN ACCORDANCE WITH THE LONG TERM POST CLOSURE MONITORING PLAN APPROVED FOR THE SITE.

THESE WELLS ARE DESIGNATED AS FOLLOWS:

UPGRADIANT UPPER BEDROCK	DOWN GRADIANT UPPER BEDROCK	UPPER BEDROCK PIEZOMETER P-6D
MW-1D	MW-3DR	LOWER OVERBURDEN
MW-7D	MW-4D	PIEZOMETER P-6B
MW-8D (ANNUAL)	MW-6D	

IN ADDITION TO THE WELLS, NYSDEC ALSO REQUIRES THE MONITORING OF TWO (2) BANK SEEPS DESIGNATED AS BS-1 AND BS-3, RESPECTIVELY. THE ABILITY TO OBTAIN SAMPLES FROM THESE BANKSEEPS VARIES DUE WET/DRY WEATHER CONDITIONS. CREEK SAMPLES ARE USUALLY OBTAINED IN THEIR PLACE.

A BANK SEEP SAMPLE WAS AVAILABLE FOR THE APRIL SAMPLE, BUT NOT FOR THE AUGUST SAMPLE.

TO AID IN THE EVALUATION OF COVER PERFORMANCE, LEVELS FROM FIVE (5) INFILTROMETERS, ARE ALSO MEASURED. LOCATIONS OF MONITORING POINTS ARE SHOWN ON FIGURE 2.

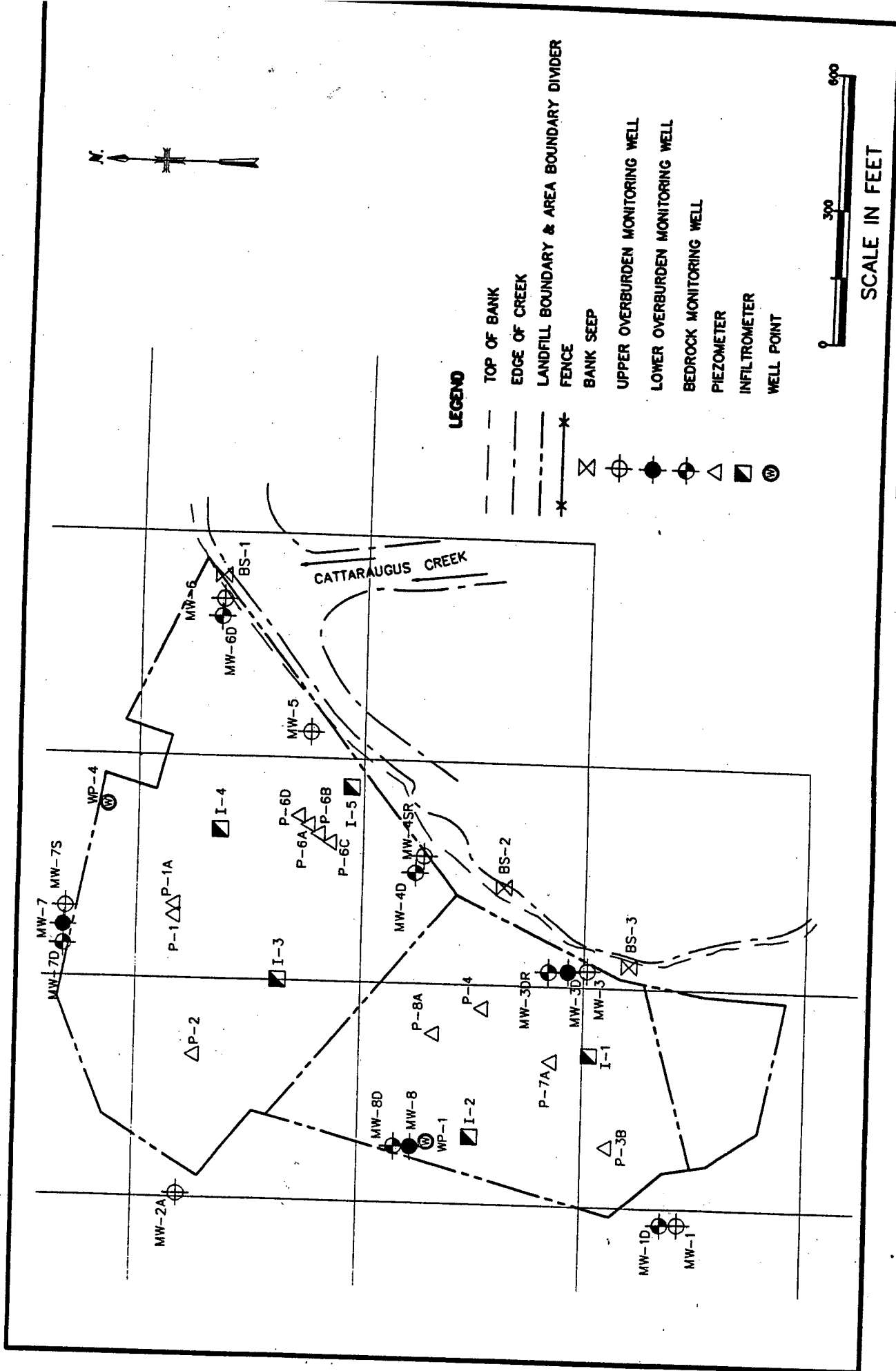


FIGURE #2

3.0 MONITORING METHODS

3.1 GROUNDWATER MONITORING:

SAMPLES COLLECTED DURING THE TWO MONITORING EVENTS, FOR THE LANDFILL, WERE COLLECTED BY MOENCH COMPANY PERSONNEL, IN 2005. THE ANALYTICAL WORK WAS PERFORMED BY SEVERN TRENT LABORATORY, BUFFALO, NEW YORK. THE ANALYSIS WAS PERFORMED IN ACCORDANCE WITH THE SAMPLING PLAN/QUALITY ASSURANCE PLAN FOR THE PALMER ST. LANDFILL. (REFERENCE 3).

LABORATORY ANALYSES WERE PERFORMED IN ACCORDANCE WITH THE USEPA SW-846, 3RD EDITION (REFERENCE 4). THE MONITORING PARAMETERS ARE LISTED IN TABLE 1. SAMPLES WERE COLLECTED FROM EACH OF THE TEN(10) MONITORING LOCATIONS IDENTIFIED IN SECTION 2.0.

PRIOR TO SAMPLING, STATIC WATER LEVEL ELEVATIONS WERE MEASURED IN THE MONITORING WELLS AND THE WELLS WERE PURGED (SEE TABLE 4). GROUNDWATER ELEVATIONS WERE ALSO MEASURED IN THE PIEZOMETERS, INFILTROMETERS, AND WELLS ON-SITE.

FIELD SAMPLES WERE COLLECTED AND MEASURED FOR THE FIELD PARAMETERS IDENTIFIED IN TABLE 1. THE FIELD MEASUREMENTS ARE SUMMARIZED IN TABLE 7.

3.2 INFILTROMETER MONITORING

FIVE INFILTROMETERS HAVE BEEN INSTALLED BENEATH THE LANDFILL CAP TO AID IN THE ASSESSMENT OF PERFORMANCE OF THE CAP. DURING EACH SEMIANNUAL EVENT, WATER LEVELS IN THE INFILTROMETER ARE MEASURED AND THE AMOUNT OF WATER INFILTRATING IS CALCULATED.

THE CALCULATED INFILTRATION RATES ARE PRESENTED ON TABLE 2 & 3. CALCULATED INFILTRATION RATES ARE USUALLY WITHIN THE DESIGNED INFILTRATION RATE OF 1×10^{-7} CM/SEC, EXCEPT ARE NOTED ON THE TABLE. A SCHEMATIC SHOWING THE DESIGN AND DIMENSIONS OF THE INFILTROMETERS IS PRESENTED IN ATTACHMENT A.

TABLE 1

**MOENCH COMPANY
PALMER STREET LANDFILL**

ROUTINE GROUNDWATER QUALITY MONITORING PARAMETERS

Soluble Arsenic
Soluble Chromium
Soluble Lead
Volatile Organics⁽²⁾⁽³⁾
pH⁽¹⁾
Conductivity⁽¹⁾
Turbidity⁽¹⁾ -visual only
Groundwater Elevation⁽¹⁾
Temperature⁽¹⁾

All samples collected for analysis of soluble metals will be pressure-filtered in the field immediately upon sample collection.

NOTES:

1. All field parameters (i.e., pH, specific conductance, temperature and turbidity) will be measured in the field. No analysis of these parameters will be required by the laboratory.
2. Volatile organic compounds will be those compounds determined by SW-846, Method 8260.

ANNUAL 2005

TABLE 4

PALMER STREET LANDFILL SUMMARY OF GROUNDWATER ELEVATIONS⁽¹⁾

Location	Dates of Measurement	
	3-28-05	8-8-05 (DRY summer)
MW-1	822.05	820.80
MW-1D	817.84	819.20
MW-2A	808.05	806.20
MW-3	794.63	794.29
MW-3D	800.51	801.05
MW-3DR	803.39	803.42
MW-4SR	793.27	793.35
MW-4D	796.68	795.43
MW-5	DRY	DRY
MW-6	785.58	783.23
MW-6D	783.65	781.66
MW-7S	794.43	791.17
MW-7	795.10	795.42
MW-7D	795.94	795.67
MW-8D	809.21	809.49
P-1	795.50	794.27
P-1A	796.51	796.41
P-2	801.27	799.04
P-3B	818.99	817.97
P-4	797.99	797.99
P-6A	791.99	791.52
P-6B	791.67	790.75
P-6C	792.45	791.97
P-6D	792.45	791.88
P-7A	796.42	796.07
P-8A	DRY	DRY
WP-1	RUSTED SHUT	RUSTED SHUT
WP-4	" "	" "

Notes:

- (1) Measured in feet; distance above sea level.
 - Well locked; unable to open.
 - ** Wells added to program prior to November 1993 event.
- MW = Monitoring Well P = Piezometer WP = Well Point

TABLE 2

MOENCH COMPANY
PALMER STREET LANDFILL
3/28/05 MONITORING EVENT

INFILTROMETER MEASUREMENTS

Infiltrometer	Static Water Level (ft)	Static Water Level (ft)	Δ Depth (ft)	# Days Between Readings (#)	Infiltration Rate		Approx. Total Rainfall This Period (ft)	Infiltration (%)
					gal/day.ft ²	(cm/sec)		
I-1 (A)	4.03	8/16/04 4.62	.59	221	.0014	$.66 \times 10^{-7}$	2.73	3.0
I-2	7.55	7.53	NEG	"	—	—	"	—
I-3	6.66	7.07	.41	"	.0009	$.42 \times 10^{-7}$	"	2.4
I-4	7.38	7.53	.15	"	.0003	$.14 \times 10^{-7}$	"	.9
I-5	6.65	6.52	NEG.	"	—	—	"	—

Note:

** Negative ΔD precludes calculation of meaningful data.

(A) FREQUENTLY FLOODED.

TABLE 3

MOENCH COMPANY
PALMER STREET LANDFILL
8/8/05 MONITORING EVENT

INFILTROMETER MEASUREMENTS

Infiltrometer	Static Water Level ① (ft) 8/8/05	Static Water Level (ft) 3/28/05	Δ Depth (ft)	# Days Between Readings (#)	Infiltration Rate		Approx. Total Rainfall This Period (ft)	Infiltration (%)
					gal/day.ft ²	(cm/sec)		
I-1	6.38	4.03	** NEG.	—	—	—	—	—
I-2	7.57	7.55	** "	—	—	—	—	—
I-3	7.32	6.66	** "	—	—	—	—	—
I-4	7.35	7.38	.03	133	.0001	5.0×10^{-9}	1.33	.2%
I-5	7.20	6.52	* NEG.	—	—	—	—	—

Note:

** Negative ΔD precludes calculation of meaningful data.

① VERY DRY SUMMER

② USUALLY FLOODED.

4.0 GROUNDWATER QUALITY MONITORING RESULTS

4.1 EVALUATION OF GROUNDWATER ELEVATION DATA:

GROUNDWATER ELEVATION MEASUREMENTS WERE TAKEN AT EACH OF THE ACCESSIBLE ONSITE MONITORING WELLS, PIEZOMETERS AND WELL POINTS DURING THE ANNUAL 2005, MONITORING EVENTS. THE DATA IS SUMMARIZED ON TABLE #4.

PLOTS OF THE GROUNDWATER ELEVATIONS MEASURED IN THE MONITORING WELLS WITH RESPECT TO TIME, ARE PRESENTED IN FIGURE 3, 4, & 5, FOR THE "SHALLOW OVERBURDEN, DEEP OVERBURDEN AND BEDROCK WELLS, RESPECTIVELY. AS SHOWN IN FIGURES 3, AND 4, OVERBURDEN GROUNDWATER ELEVATIONS WERE GENERALLY CONSISTENT THROUGHOUT THE MONITORING PERIOD. WATER LEVELS HAVE STABILIZED, AFTER THREE YEARS OF INCREASE('92-'94). THIS OCCURRED DUE TO CESSATION OF VILLAGE AND TANNERY PUMPING OF THE DEEP AQUIFERS. SOME SLIGHT SEASONAL FLUCTUATION STILL OCCURS.

4.2 THE GROUNDWATER AND SURFACE WATER QUALITY RESULTS FOR THE TWO MONITORINGS EVENTS AT THE PALMER STREET LANDFILL, ARE PRESENTED IN TABLES #5 THROUGH #7.

IT SHOULD BE NOTED THAT THESE TABLES INCLUDES ONLY THOSE PARAMETERS WHICH WERE DETECTED ABOVE ANALYTICAL DETECTION LIMITS AT A MINIMUM OF ONE LOCATION. COMPARISON OF THE MONITORING DATA TO THE NYSDEC CLASS "GA" GROUNDWATER QUALITY STANDARDS/GUIDANCE VALUES IS ALSO PRESENTED IN THE TABLES.

BOTH THE SOIL AND WASTE AT THE PALMER STREET LANDFILL CONTAIN METALS-OF-INTEREST AS A COMPONENT OF THE SOIL OR WASTE PARTICLES (REFERENCE 5). THEREFORE, THE SEDIMENT (OR TURBIDITY) CONTENT OF ANY GROUNDWATER OR SURFACE WATER QUALITY SAMPLES WILL DIRECTLY IMPACT THE TOTAL METAL CONCENTRATION OF THE SAMPLES. THE TURBIDITY CONTENT OF THE GROUNDWATER SAMPLES COLLECTED AT THE SITE IS EXTREMELY VARIABLE AND RELATIVELY HIGH BECAUSE THE SOIL AND WASTE FILL BOTH CONTAIN HIGH PERCENTAGES OF FINE-GRAINED PARTICLES. AS NYSDEC HAS PREVIOUSLY AGREED, IN ORDER TO AVOID MIS-INTERPRETATION OF WATER QUALITY DATA, "TOTAL" METALS WILL NO LONGER ANALYZED FOR GROUNDWATER QUALITY STANDARDS OR EVALUATION OF GROUNDWATER QUALITY. IMPACTS WILL BE BASED ON SOLUBLE METALS CONCENTRATION.

ALSO TOTAL NOR SOLUABLE BARIUM WILL NO LONGER BE SAMPLED FOR IN THE AGREEMENT WITH NYSDEC, AS THE ELEMENT IS NATURALLY HIGH IN CONCENTRATION IN NATIVE SOIL. 2005 ANNUAL SUMMARIES AS FOLLOWS:

-THERE WERE NO DETECTIONS OF METALS(As, Cr, Pb), ABOVE THE CLASS "GA" STANDARD, IN EITHER OF THE SAMPLING EVENTS.

-ACETONE WAS DETECTED AT ALMOST ALL OF THE MONITORING POINTS, EXCEPT MW-7D AND BS-3. IT WAS DETECTED IN MW-1D, WHICH IS UPGRADIENT). THIS IS A GUIDANCE VALUE PARAMETER. THIS OCCURED IN BOTH SAMPLES. THIS WILL CONTINUE TO BE OBSERVED. THIS COULD BE A RESULT OF OLDER BENTONITE PELLETS. NO OTHER VOCs WERE DETECTED AT ANY OTHER OF THE REGULAR MONITORING POINTS.

SUPPLIMENTAL SAMPLING:

SUPPLIMENTAL SAMPLES WERE OBTAINED FROM P1 AND MW-3, IN THE MARCH MONITORING EVENT, BUT COULD NOT BE OBTAINED IN THE AUGUST EVENT DUE TO DRY WEATHER. THESE ARE OBTAINED DUE TO DETECTIONS FROM THE 2003 "COVER SYSTEM EVALUATION", AND TO BE OBSERVED TO AID IN RECONFIGURING THE SEMI-ANNUAL " GROUNDWATER MONITORING". THREE SUBSEQUENT ATTEMPTS WERE MADE, AFTER THE AUGUST EVENT, TO OBTAIN SAMPLES, BUT THERE WAS NO WATER VOLUME AVAILABLE IN THE WELLS. AN ATTEMPT WILL BE MADE AGAIN IN MARCH '06 TO OBTAIN SAMPLES. MOENCH WILL BE EXTREMELY CAREFUL NOT TO CAUSE TURBIDITY IN THE SAMPLE.

ACETONE DETECTION IS BELIEVED TO BE CAUSED BY A COATING ON THE BENTONITE PELLETS, USED IN CONSTRUCTIONS OF THE WELLS, INSTALLED IN THE 1980'S. MOENCH HAS FORWARDED ARTICLES BY WASTE MANAGEMENT INC., PERTAINING TO THIS PROBLEM. WE HAVE PURCHASED A DEEP WELL PURGE PUMP TO PURGE THE WELLS BELOW THE BENTONITE SEAL. SAMPLES WILL BE TAKEN ABOVE AND BELOW THE BENTONITE SEAL TO DETERMINE THE AFFECT ON ACETONE CONCENTRATION IN THE SAMPLES. THIS WILL BE DONE WHEN THE WEATHER ALLOWS ACCESS TO THE WELL SITES.

TABLE 5

**MOENCH & COMPANY
PALMER STREET LANDFILL**

3/31-4/12/05
PALMER STREET LANDFILL
MONITORING EVENT⁽¹⁾

17

SUMMARY OF ANALYTICAL RESULTS

[illegible]

TABLE 5 (Continued)

MOENCH COMPANY

PALMER STREET LANDFILL

MONITORING EVENT⁽¹⁾

TEMPORARY - 22 WAO 111

SUMMARY OF ANALYTICAL RESULTS

[illegible]

NOTES:

(1) Only those parameters found at a concentration above laboratory detection limits at a minimum of one location are shown.

(1) Only those parameters found at a concentration above laboratory detection limits at a minimum of 6

(2) NYSDEC Class "GA" Ground Water Quality Standards, 6NYCRR Part 703, Revised October 1993.

(2) MIDDEC Class OA Ground Water Quality Standards, 6NYC

(3) Trip blanks were analyzed for only volatile organic compounds.

(4) MW-8D sampled only once annually (Reference 6).

J Estimated value due to limitations identified in the quality control review.

(8) LIKELY LAB CONTAMINATION.

100-102

MOENCH COMPANY
PALMER STREET LANDFILL
8/16-8/15/05 MONITORING EVENT⁽¹⁾

[illegible]

TABLE 6 (Continued)

MOENCH COMPANY

PALMER STREET LANDFILL

8/10-8/15/05

SUMMARY OF ANALYTICAL RESULTS

[illegible]

NOTES:

(1) Only those parameters found at a concentration above laboratory detection limits at a minimum of one location are shown.

(2) NVNDEC Class "C" is C₁₀H₈ (Naphthalene) and C₁₂H₁₀ (Decalin).

(2) NYSDEC Class "GA" Ground Water Quality Standards, 6NYCRR Part 703, Revised October 1993.

(3) Trip blanks were analyzed for only volatile organic compounds.

(4) MW-8D sampled only once annually (Reference 6).

J Estimated value due to limitations identified in the quality control review.

(8) LIKELY LAB CONTAMINATION.

TABLE 7

MOENCH COMPANY
PALMER STREET LANDFILL
3/31-4/12/05 MONITORING EVENT

SUMMARY OF FIELD MEASUREMENTS

Location	Sampling Date	Sampling Time	Temp. (°C)	pH (units)	Conductance ⁽¹⁾ (umhos/cm)	Turbidity (NTU)	Sample Appearance	Sample Odor
(2) MW-1D*	4/7/05	1400	13.1	7.63	(A)	NA	CLEAR	NO
MW-3DR***	4/7/05	1000	12.1	8.02	(A)	"	IRON	NO
MW-4D	3/31/05	1030	14.1	8.10	(A)	"	SL. TURBID	NO
MW-6D	3/31/05	820	14.5	7.88	970	"	CLEAR	NO
MW-7D***	4/12/05	945	13.0	8.03	(A)	"	CLEAR	NO
MW-8D***	ANNUAL							
P-6B	3/31/05	930	12.1	7.79	600	"	CLEAR	NO
P-6D	3/31/05	915	12.9	7.95	480	"	SL. TURBID	NO
BS-1	3/31/05	845	14.0	7.03	1500	"	RED-IRON	NO
BS-3	4/7/05	910	10.8	7.37	(A)	"	V. TURBID	NO
				6.5-8.5				

NOTES:

- (1) Conductivity readings corrected to 25°C.
 (2) MW-1 is hydraulically upgradient shallow overburden well.
 (3) MW-7D is apparent hydraulically upgradient bedrock well.

* Shallow Overburden Well
 *** Bedrock Well

** Deep Overburden Well
 BS Bank Seep

{ CLASS "EA" }
 STD

(A) CONDUCTIVITY BROKE. BOUGHT NEW ONE AFTER SAMPLING.

- SHORT TERM MEASUREMENT -

LOCATION	DATE	TIME	°C	pH	CONDUCT.	TURBID	APPEAR	ODOR
MW-3	4/7/05	900	11.3	7.10	(A)	-	IRON	NO
P-1	4/12/05	930	13.7	8.43	(A)	-	TURBID	ORGANIC PUNGENT

TABLE 7

MOENCH COMPANY
PALMER STREET LANDFILL
8/10 - 8/15/05 MONITORING EVENT

SUMMARY OF FIELD MEASUREMENTS

Location	Sampling Date	Sampling Time	Temp. (°C)	pH (units)	Conductance ⁽¹⁾ (umhos/cm)	Turbidity (NTU)	Sample Appearance	Sample Odor
(2) MW-1D*	8/11/05	1100	14.8	7.36	720	NA	CLEAR	NO
MW-3DR***	8/11/05	915	14.7	7.73	500	—	SLIGHT TUR	NO
MW-4D	8/11/05	820	17.6	7.73	560	—	SLIGHT TUR	NO
MW-6D	8/16/05	905	16.5	7.78	1050	—	CLEAR	NO
MW-7D***	8/15/05	1030	15.0	7.66	700	—	CLEAR	NO
MW-8D***	8/15/05	855	14.1	7.71	460	—	CLEAR	NO
P-6B	8/10/05	1130	20.1	7.61	490	—	SLIGHT TUR	NO
P-6D	8/10/05	1033	14.1	7.54	560	—	CLEAR	NO
BS-1(4)	8/10/05	1010	27.0	7.90	360	—	CLEAR	NO
BS-3(4)	8/11/05	1025	21.8	7.57	580	—	CLEAR	NO

NOTES:

(1) Conductivity readings corrected to 25°C.

(2) MW-1 is hydraulically upgradient shallow overburden well.

(3) MW-7D is apparent hydraulically upgradient bedrock well.

* Shallow Overburden Well

*** Bedrock Well

** Deep Overburden Well

BS Bank Seep

(4) NO BANK SEEP; TOO DRY TOOK CREEK SAMPLE. (BS1)

BS3 - RUN OFF

* CONTINGENT SAMPLE

MW-3	8/11/05	1015	—	—	—	—	—	—
P-1	8/15/05	1005	—	—	—	—	—	—

OK'd AGAIN 8/15 - NO VOLUME

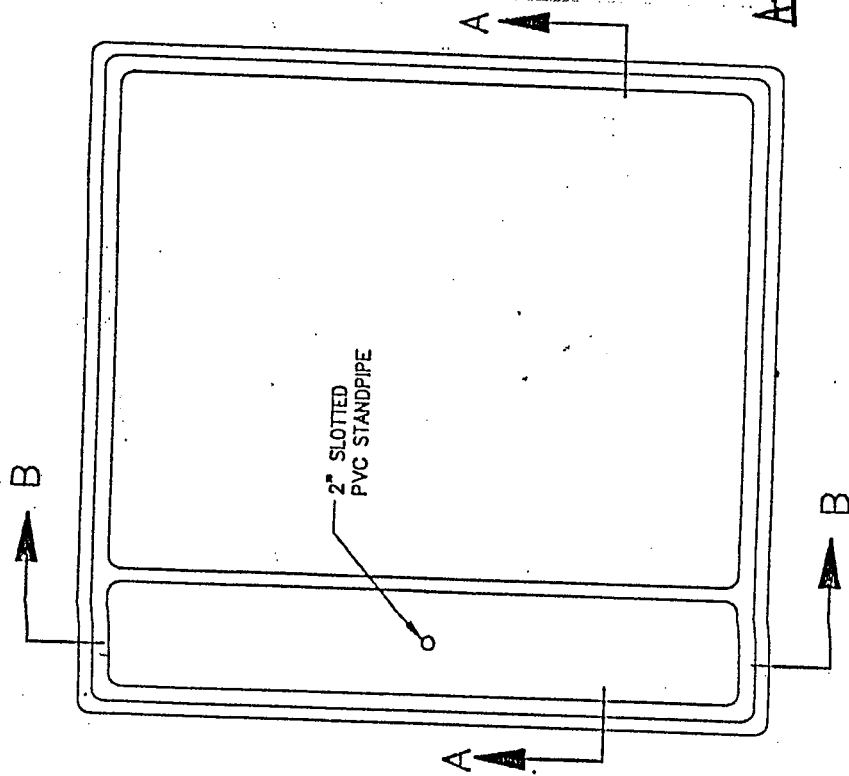
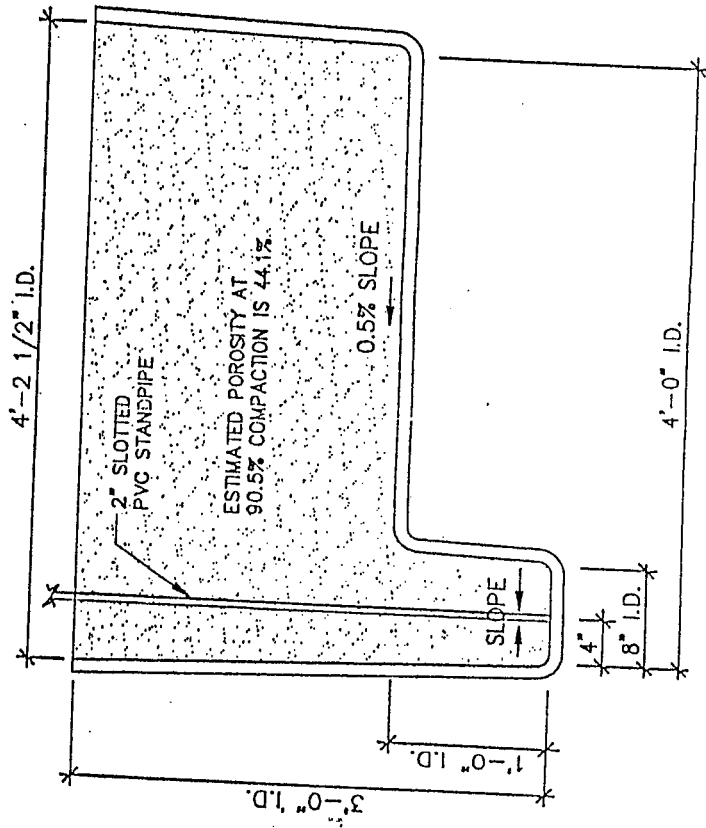
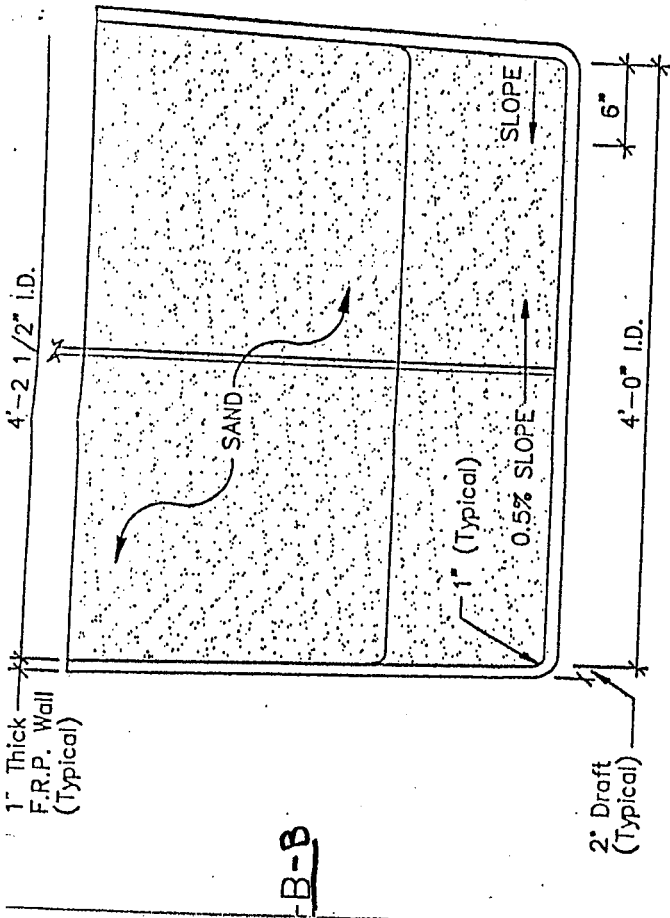
(DRY NO SAMPLE VOLUME)
" " " "

ATTACHMENT A

INFILTROMETER DESIGN

**PALMER STREET LANDFILL
GROUNDWATER MONITORING REPORT...**

March & August 2005 SAMPLING EVENT..



TYPICAL INFILTRATER BY HEY'S ENTERPRISES
AS INSTALLED AT PALMER STREET LANDFILL

INFILTRATER

ATTACHMENT B

GROUNDWATER ELEVATION DATA & GRAPHS

MONITORING EVENTS March & August 2005

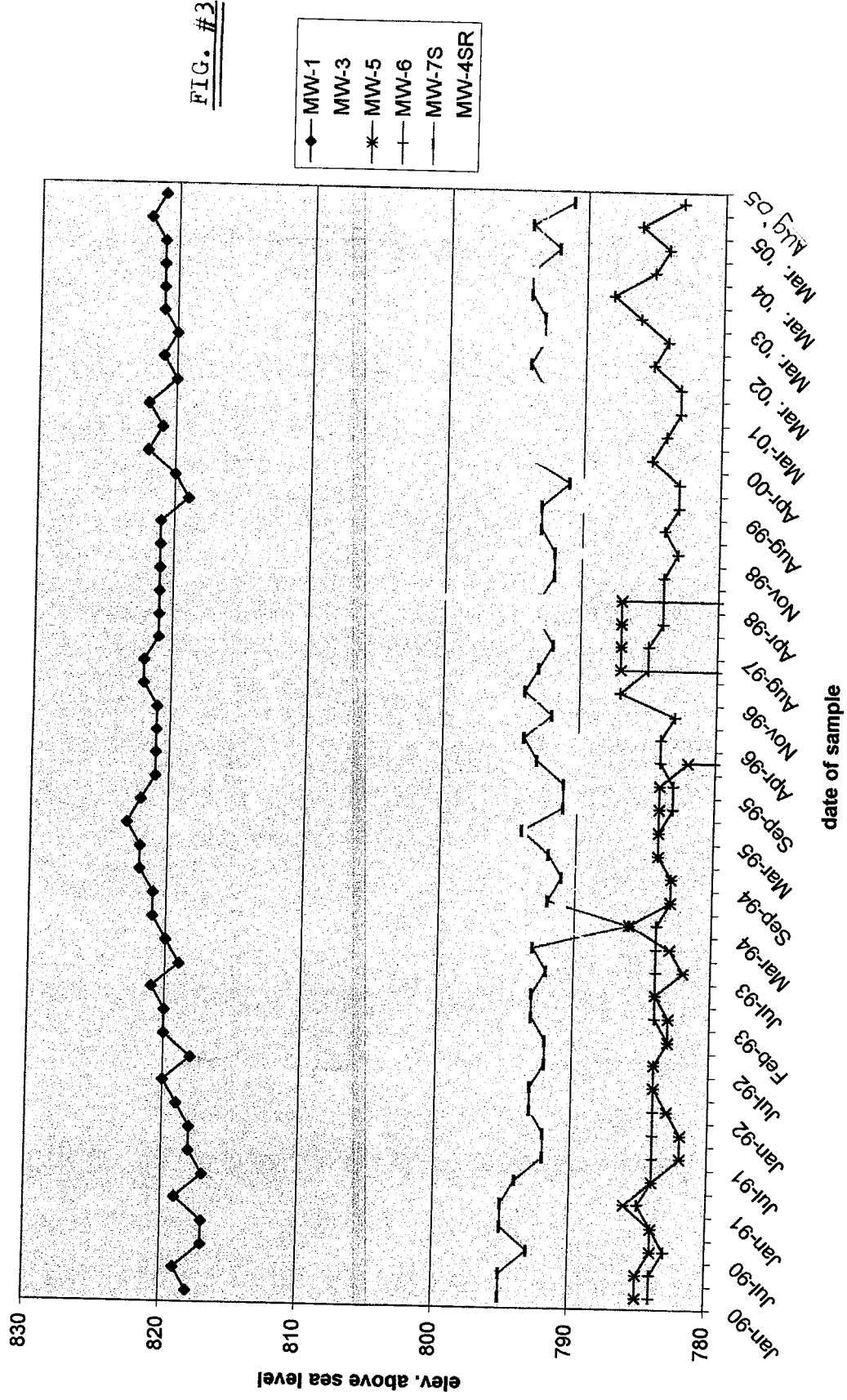
		PALMER STREET LANDFILL															
FIGURE #3		MOENCH COMPANY															
		GROUNDWATER ELEVATION vs TIME (FEET ABOVE SEA LEVEL)															
		SHALLOW OVERBURDEN MONITOR WELLS															

Fig. #3														
					</									

MW-1	Jun-94 821	Sep-94 822	Dec-94 822	Mar-95 823	Jun-95 822	Sep-95 821	Dec-95 821	Apr-96 821	Aug-96 821	Nov-96 822	Apr-97 822	Aug-97 821	Nov-97 821	Apr-98 821	Aug-98 821	Nov-98 821	Apr-99 821
MW-3		794	794	794	793	793	794	796	799	798	794	794	794	800	794	794	794
MW-5		783	783	784	784	784	782	DRY	DRY	DRY	787	787	787	787	DRY	DRY	DRY
MW-6		783	783	784	783	783	784	784	783	787	785	785	784	784	784	783	784
MW-7S		792	791	792	794	791	793	794	792	794	793	792	793	793	792	792	793
MW-4SR		791	789	791	790	790	790	790	796	791	792	791	793	793	791	790	791

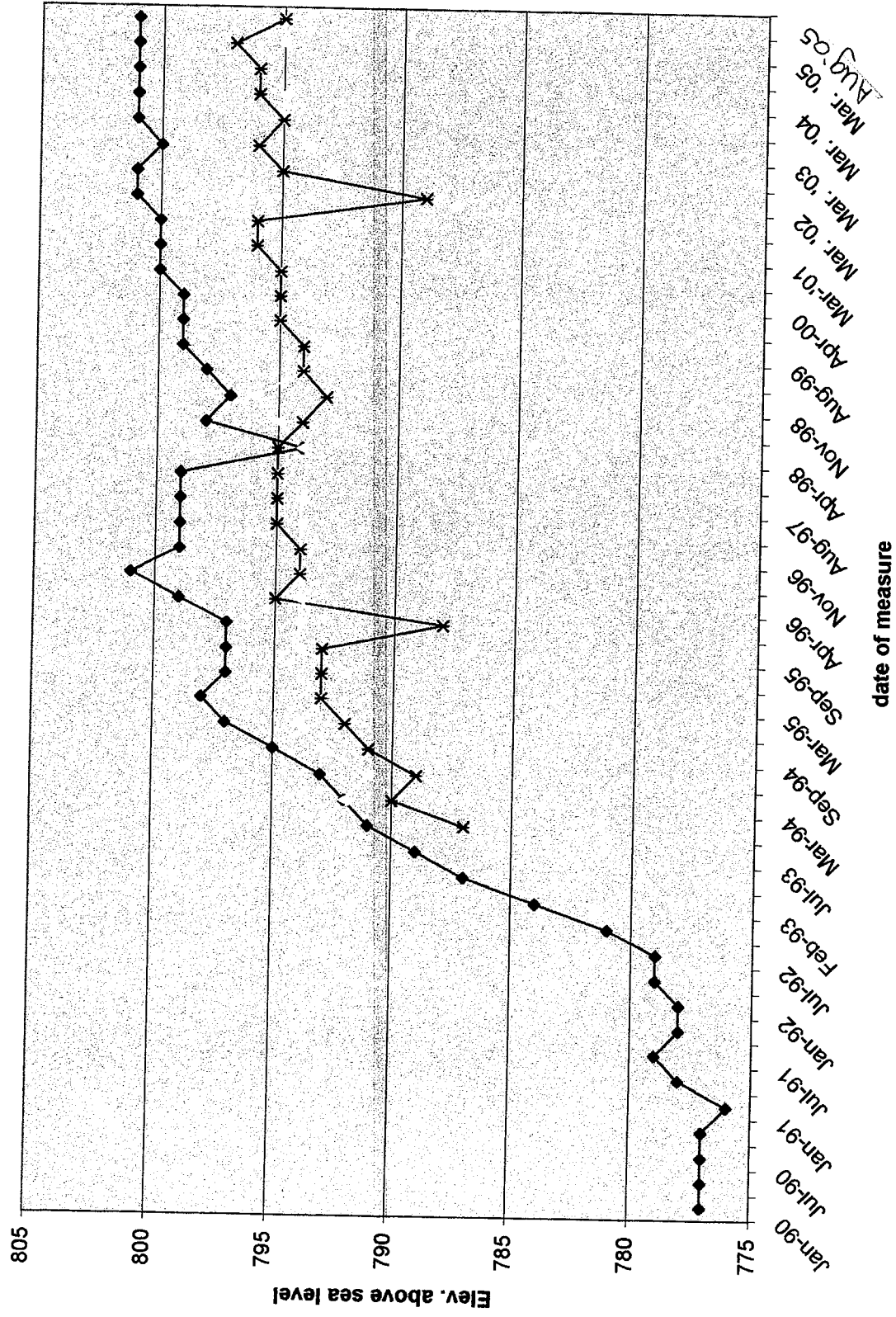
Pirgweiv

Palmer St. I/fill; Shallow GW elev.



[illegible][illegible]

Palmer St. L/fill; Deep overburden elev.



◆ MW-3D
 — MW-7
 * MW-4D

Fig. 4

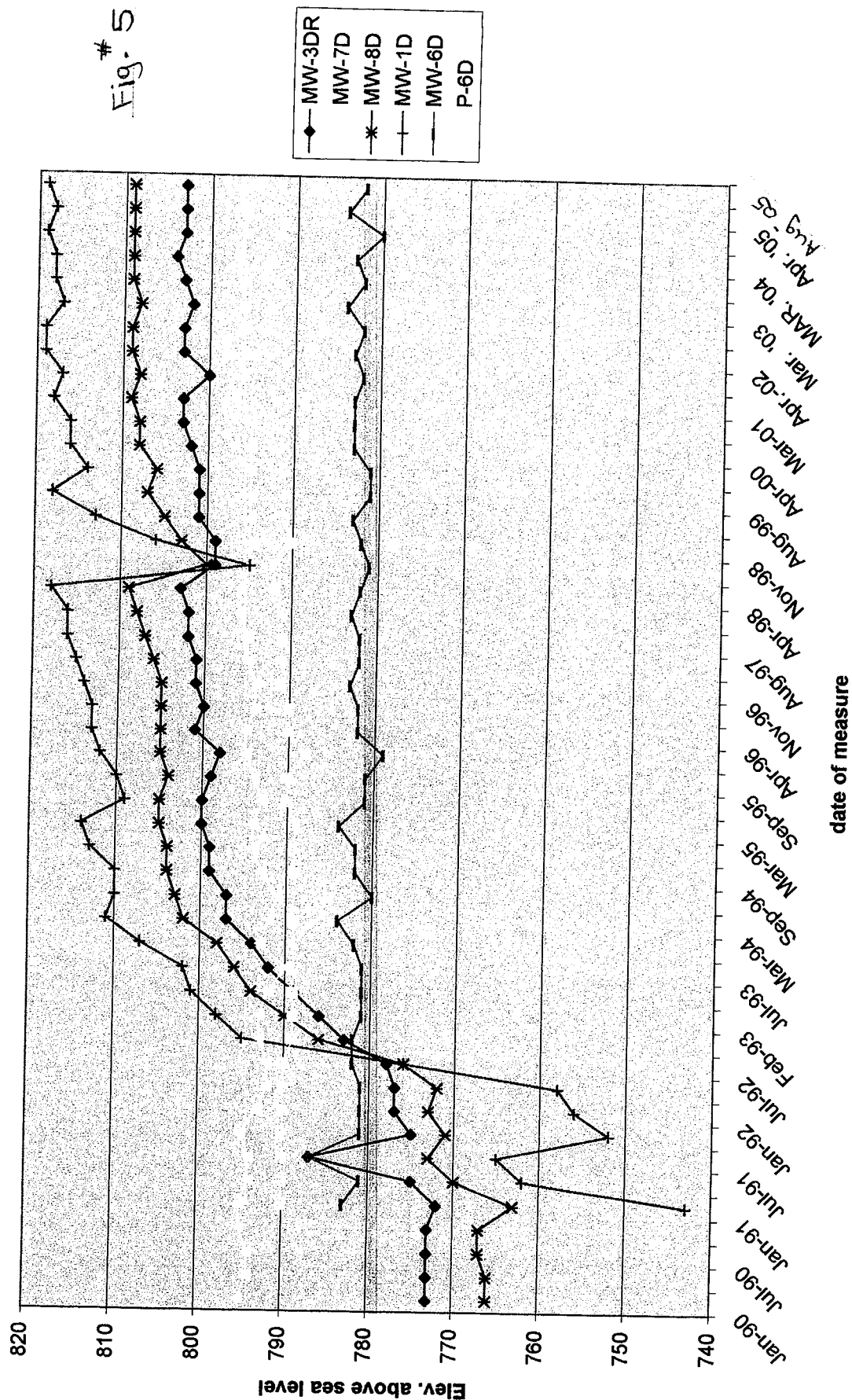
						PALMER STREET LANDFILL															
						MOENCH COMPANY															
						GROUNDWATER ELEVATION vs TIME															
				(FIG.#5)		BEDROCK MONITOR WELLS & PIEZOMETERS															

	Jun-94	Sep-94	Dec-94	Mar-95	Jun-95	Sep-95	Dec-95	Apr-96	Aug-96	Nov-96	Apr-97	Aug-97	Nov-97	Apr-98	Aug-98	Nov-98	Apr-99
MW-3DR	797	799	799	800	800	799	798	801	800	801	801	802	802	803	799	799	801
MW-7D	791	793	794	794	793	794	795	795	794	794	795	795	796	796	795	795	795
MW-8D	803	804	804	805	805	804	805	805	805	805	806	807	808	809	800	803	805
MW-1D	810	810	813	814	809	810	812	813	813	814	815	816	816	818	795	806	813
MW-6D	780	782	782	784	781	781	779	782	782	783	782	782	783	782	781	782	783
P-6D	785	789	789	789	790	790	788	790	790	791	791	791	791	782	792	790	791

Fig. 5

	Aug-99	Nov-99	Apr-00	Sep-00	Mar-01	Aug-01	Apr-02	Aug-02	Mar-03	Aug-03	Mar-04	Aug-04	Apr-05	Aug-05
MW-3DR	801	801	802	803	803	800	803	803	803	803	804	803	803	803
MW-7D	795	795	795	795	797	796	796	796	796	796	797	796	796	796
MW-8D	807	806	808	808	809	808	809	809	808	809	809	809	809	809
MW-1D	818	814	816	816	818	817	819	819	817	818	818	819	818	819
MW-6D	781	781	783	783	783	782	783	783	784	782	783	780	784	782
P-6D	791	791	792	792	792	792	793	793	793	792	793	792	782	792

Palmer St. I/fill; Bedrock GW Elev.



5.0 GROUNDWATER FLOW

A WATER TABLE ISOPOTENTIAL MAP, BEDROCK ISOPOTENTIAL MAP AND A BEDROCK WATER LEVEL HYDROGRAPH HAVE BEEN PREPARED FOR THE PALMER STREET LANDFILL AND ARE PRESENTED IN FIGURES 3,4 AND 5, RESPECTIVELY. GROUNDWATER ELEVATIONS MEASURED THROUGH 2005 WERE USED IN PREPARING THE WATER TABLE AND BEDROCK ISO-POTENTIAL MAP INDICATED THAT THE SHALLOW GROUNDWATER FLOW IS PRIMARILY TO THE EAST TOWARD CATTARAUGUS CREEK. THE BEDROCK ISOPOTENTIAL MAP AND THE BEDROCK WATER LEVEL HYDROGRAPH ILLUSTRATE A "LEVELING OFF" AFTER THREE YEARS ('92-'94) OF RISING LEVELS AT WELLS MW-1D, MW-3DR AND MW-8D. MW-1D AND MW-8D, WHICH WERE FORMERLY DOWNGRAIENT WELLS ARE NOW UPGRADIENT OF THE LAND-FILL.

PALMER STREET LANDFILL
 WATER TABLE ISOPOTENTIAL MAP
 3/28/05 MONITORING EVENT

JULY 1992

MOENCH & COMPANY

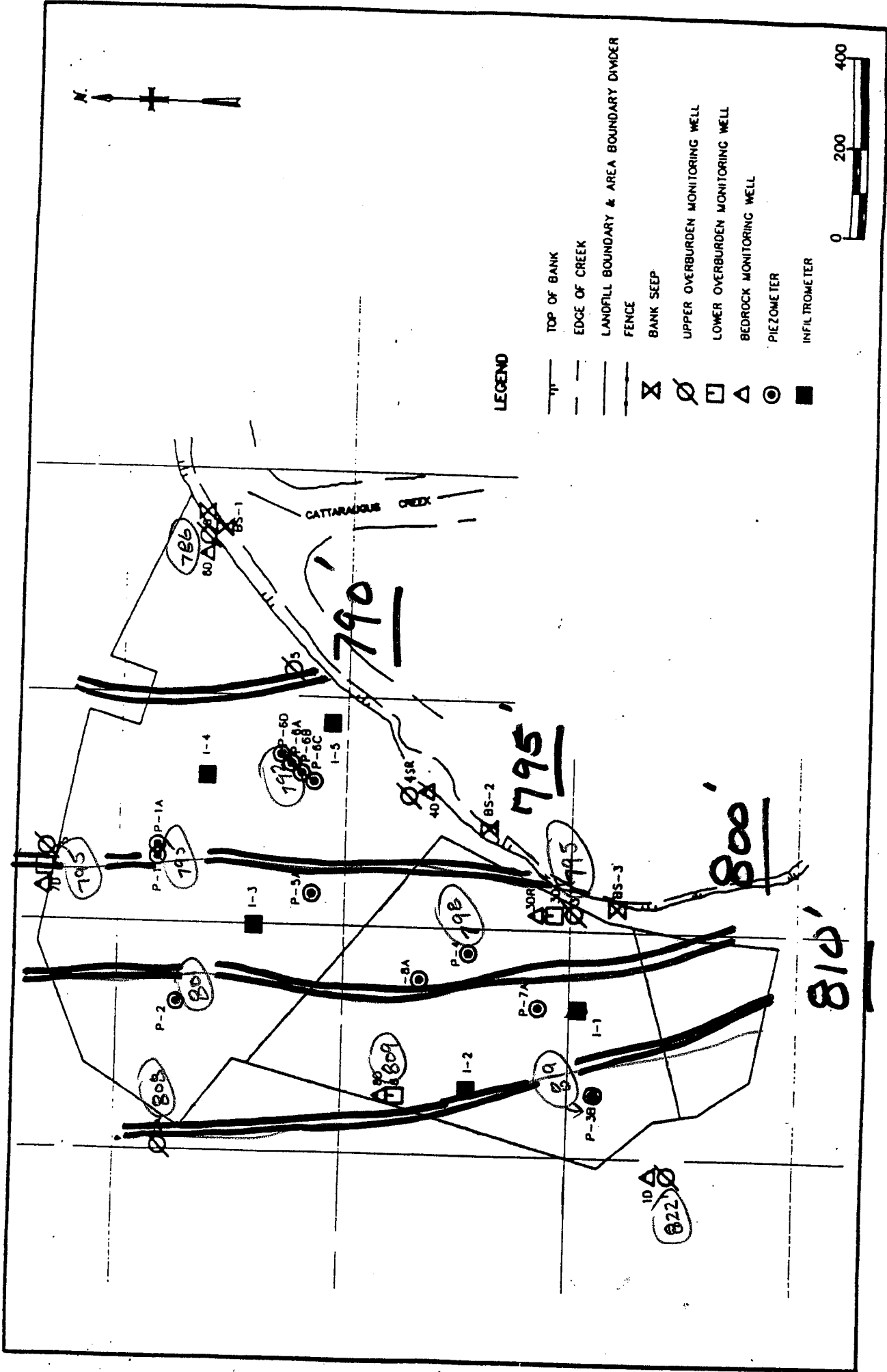


 FIG. 8

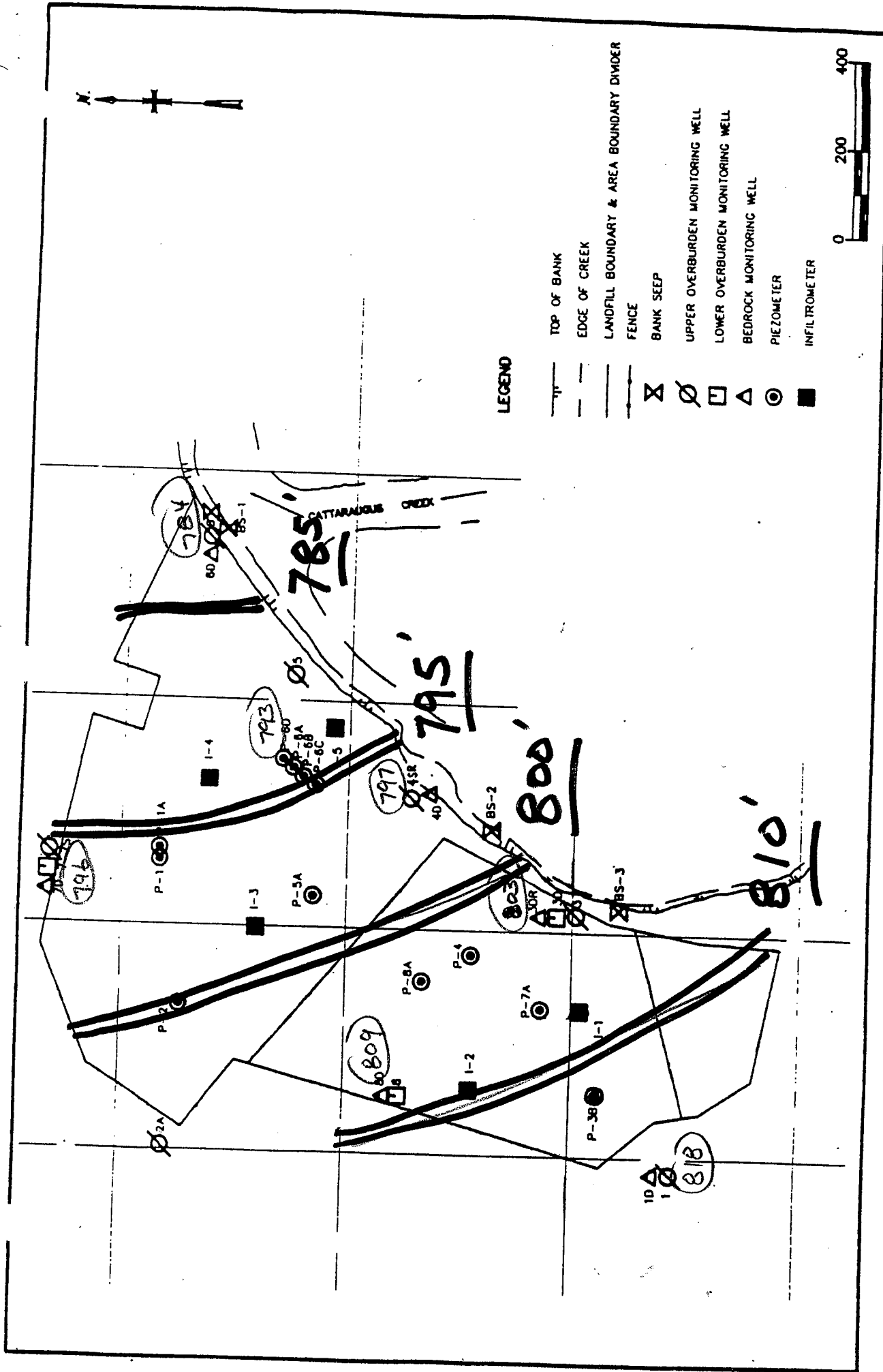


FIG. # 9

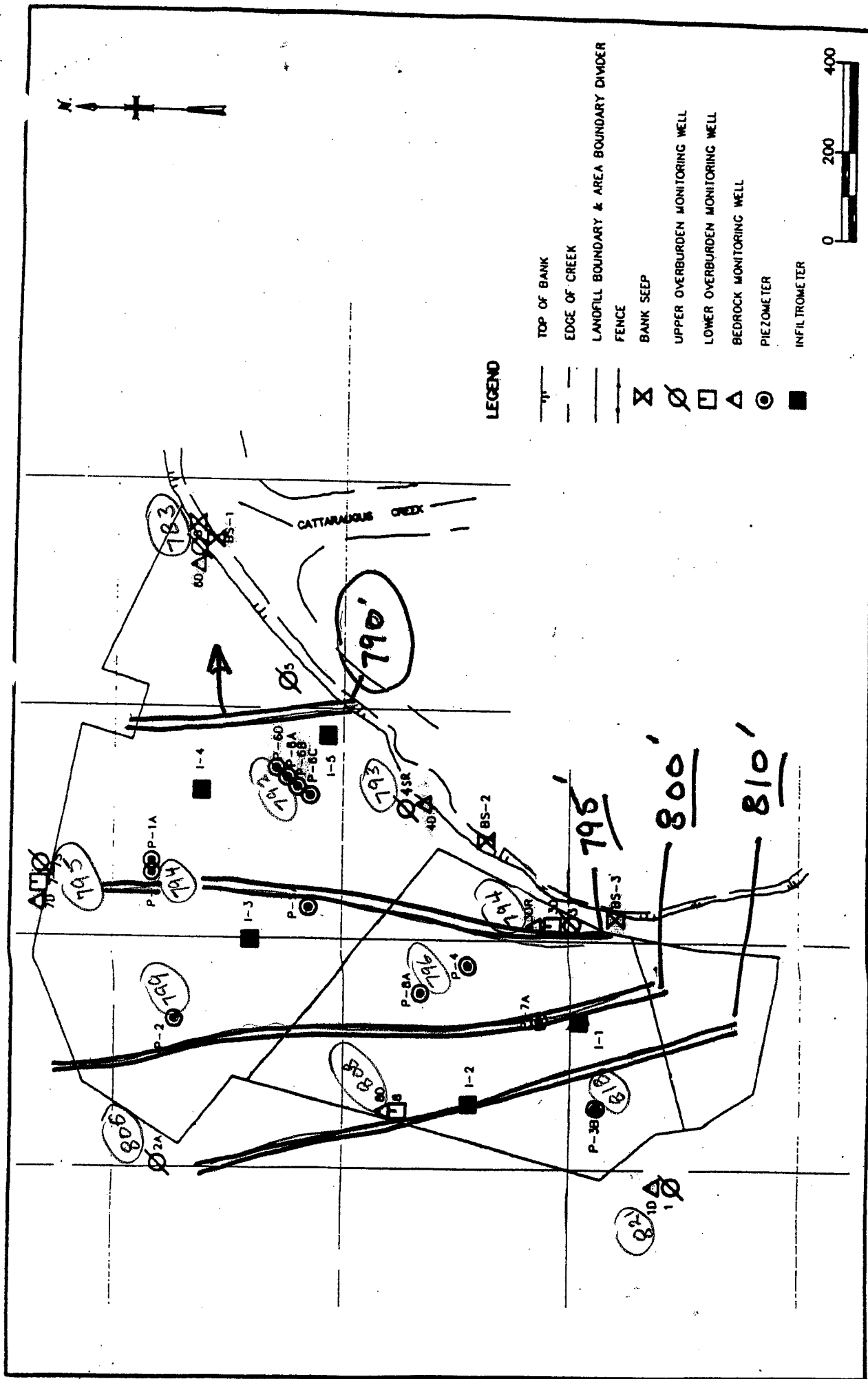
FIGURE

PALMER STREET LANDFILL

WATERTABLE ISOPOTENTIAL MAP
AUG. 8, 2005 MONITORING EVENT

MOENCH T S COMPANY JULY 1992

FIG. 10



FIGURE

PALMER STREET LANDFILL

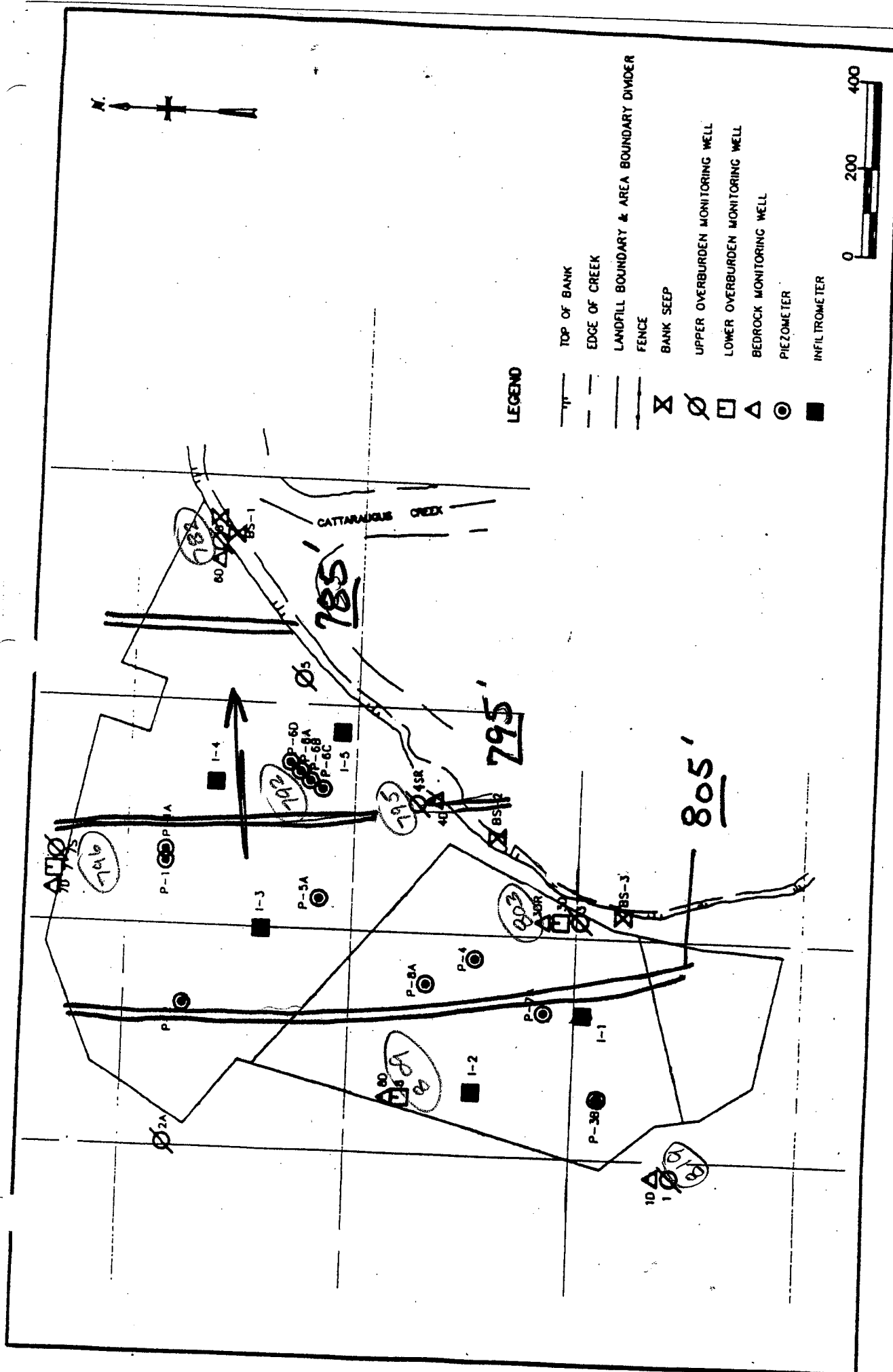
BEDROCK ISOPOTENTIAL MAP

AUG. 8, 2005 MONITORING EVENT

MOENCH TANNING COMPANY

JULY 1992

FIG. 11



ATTACHMENT B1

PALMER ST. LANDFILL

FIELD MEASUREMENT TRENDS

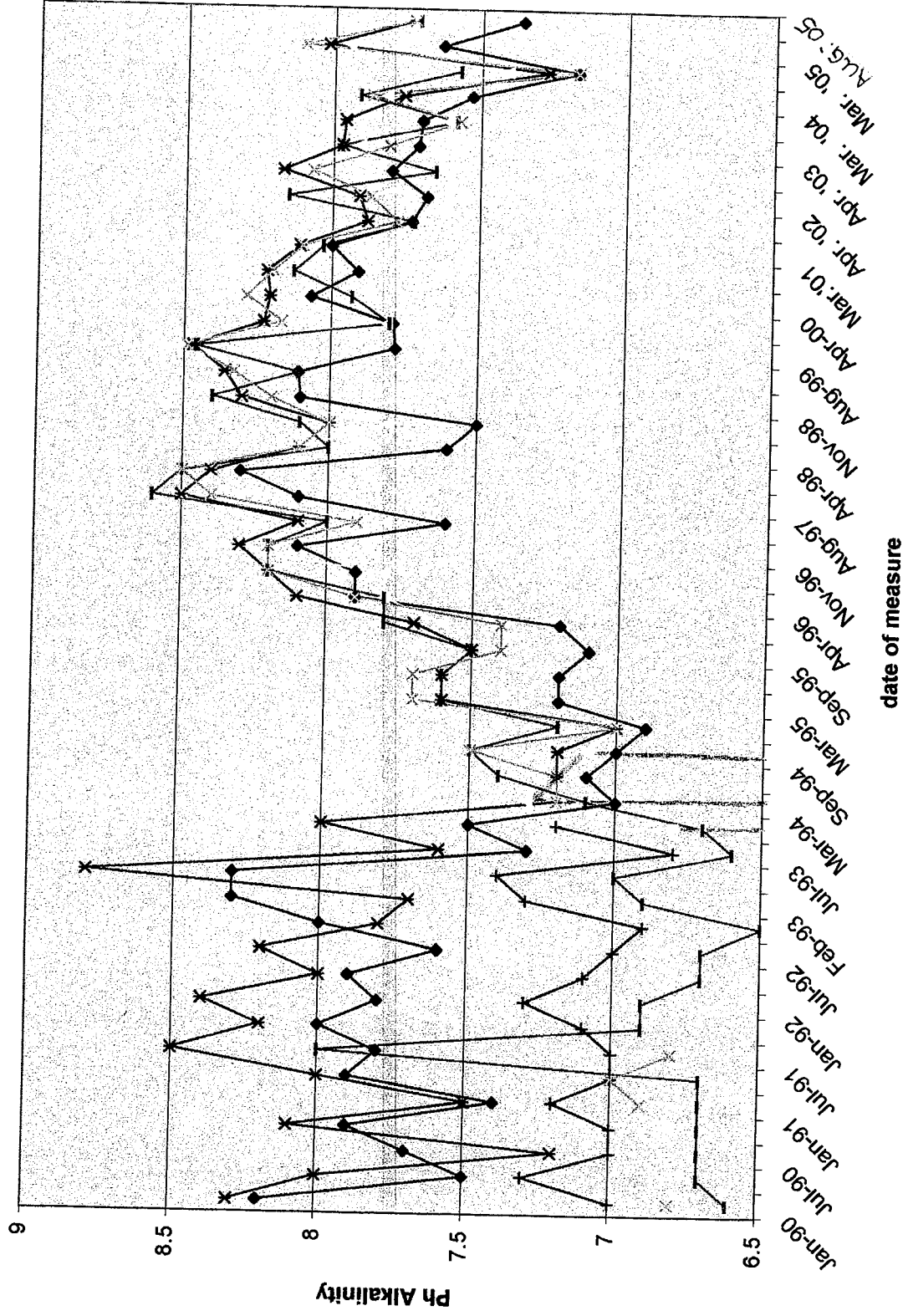
MONITORING EVENTS March 2005

August 2005

PLMRGW4

[illegible]

Palmer St. L/fill: Ph vs. time



PLMRSPH

		PALMER ST. LF. MOENCH COMPANY PH vs TIME MONITOR POINTS & BANK SEEPS												FIG.#6													
		Jan-90	Apr-90	Jul-90	Oct-90	Jan-91	May-91	Jul-91	Oct-91	Jan-92	May-92	Jul-92	Oct-92	Feb-93	May-93	Jul-93	Nov-93	Mar-94	Jun-94	Sep-94	Dec-94	Mar-95	Jun-95	Sep-95	Dec-95		
P-6B		7.7	7.8	7.9	8	7.5	7.8	7.8	7.8	7.8	8.2	8.2	7.9	7.8	8.3	7.8	8.3	7.1	7.1	7.1	7	7.1	7.1	7.2	7.2		
MW-7D	10	9.2	9	9	9.5	9	9.3	9.1	8.6	8.8	8.7	8.8	8.6	8.8	8.6	8.1											
BS-1	7.1	7.3	6.7	6.9	7.4	7				8.5	7.7	7.6	7.8	8.1	7.5		8.1	7.7	7.1	7.1	7.1	7.2	7.1	7.1	7.1		
BS-3	7	7.3	7.1	7.3	7.1	7.3			7.9	7.8	7.2	7.1	7.4	7.1	7.8		7.9	7.3	6.6	6.8	6.9	6.7	7.3	6.9	7.3		

FIG # 6

PLMRSPH

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PLMRSPH

Palmer St. L/fill; Ph vs. time

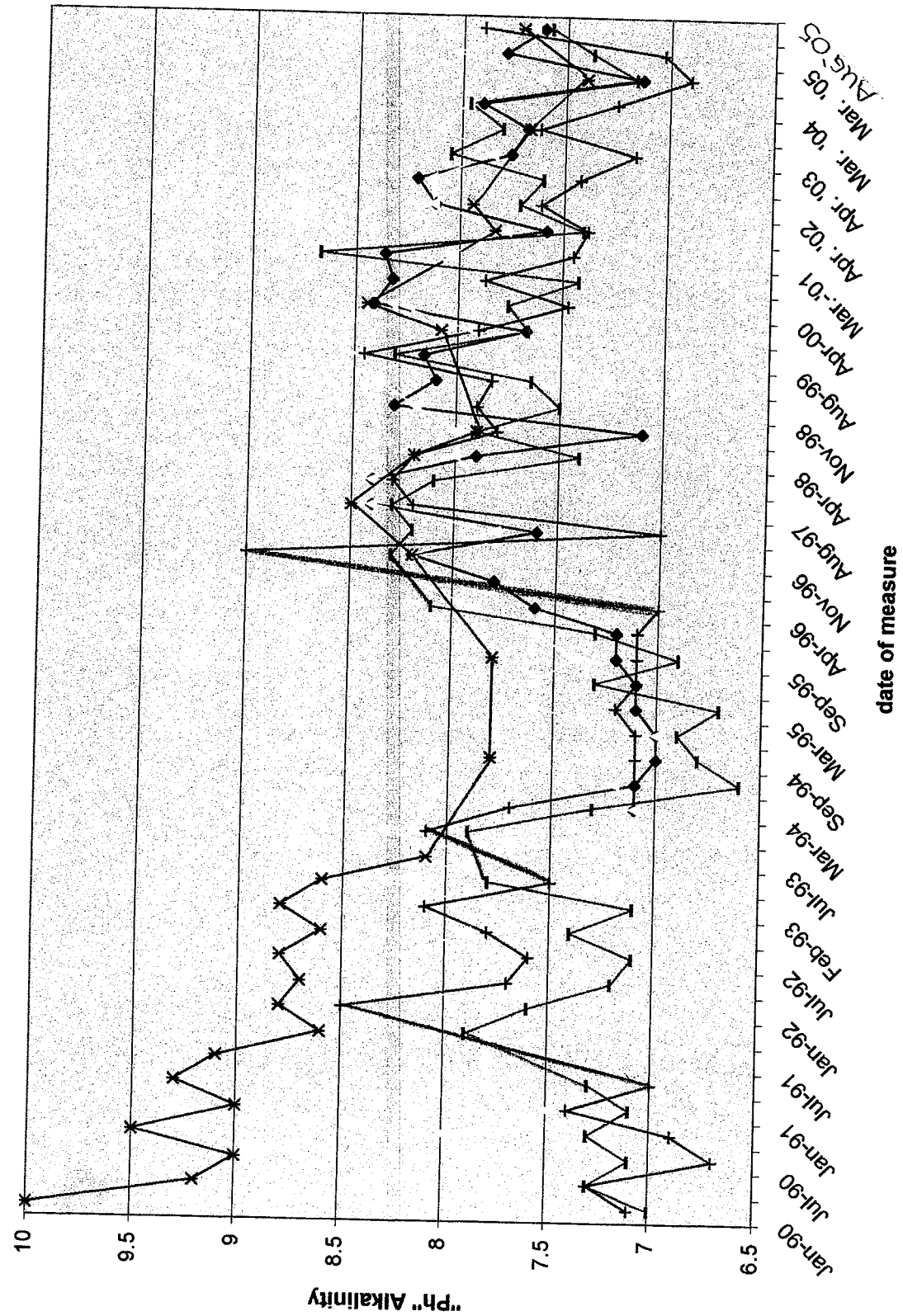


FIG 7.

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FIG 7

PALMER & ST L/F: MOENCH CO. SPECIFIC CONDUCTIVITY vs TIME MONITOR WELLS & BANK SEEPS											
FIGURE#7											
	Jan-90	Apr-90	Jul-90	Oct-90	Jan-91	May-91	Jul-91	Oct-91	Jan-92	May-92	Jul-92
MW-1D	0.6	0.8	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
P-6B	START94										
MW-3DR	0.6	0.8	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6
MW-5	3.8	2.7	1.5	1.7	1.9	5	3	4.2	5.8	4.2	4.1
MW-6D	5.3	5.4	4.9	3.1	3.5	3.6	3.2	4.9	4.1	3.3	2.8
MW-4D											

	Jun-94	Sep-94	Dec-94	Mar-95	Jun-95	Sep-95	Dec-95	Apr-96	Aug-96	Nov-96	Apr-97	Aug-97	Nov-97	Apr-98	Aug-98	Nov-98	Apr-99
MW-1D	1	0.8	0.9	0.8	0.8	0.8	0.8	1	0.8	0.9	0.9	0.9	1	0.7	0.6	1.1	0.62
P-6B	0.6	0.6	0.9	0.4	0.7	0.6	0.6	0.4	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5
MW-3DR	0.6	0.4	0.8	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.5	0.7	0.5	0.5	0.6	0.53
MW-5																	
MW-6D	0.9	1.1	1.1	1	0.9	0.9	0.9	1	1.1	1	1.2	1	1.9	1.2	0.9	1.1	0.9
MW-4D	0.8	0.7	0.8	0.7	0.7	0.9	0.7	0.8	0.7	0.9	0.8	0.7	0.8	0.7	0.8	0.7	0.7

	Aug-99	Nov-99	Apr-00	Sep-00	Mar-01	Aug-01	Apr-02	Aug-02	Apr-03	Aug-03	Mar-04	Aug-04	Mar-05	Aug-05
MW-1D	0.9	0.9	0.8	0.81	0.79	0.68	0.82	0.71	0.8	0.74	0.74	0.81 meter brk	0.72	0.72
P-6B	0.5	0.7	0.6	0.44	0.48	0.48	0.44	0.69	0.5	0.56	0.44	0.71	0.6	0.49
MW-3DR	0.6	0.6	0.4	0.42	0.41	0.57	0.5	0.49	0.52	0.54	0.46	0.48 meter brk	0.5	0.5
MW-5														
MW-6D	0.8	1	1.25	1.1	1.1	0.77	1.1	0.8	0.85	1	1	0.95	0.97	1.05
MW-4D	0.6	0.6	0.8	0.57	0.63	0.58	0.61	0.6	0.56	0.62	0.58	0.64 meter brk	0.56	0.56

Palmer St. L/fill; Specific Conductivity

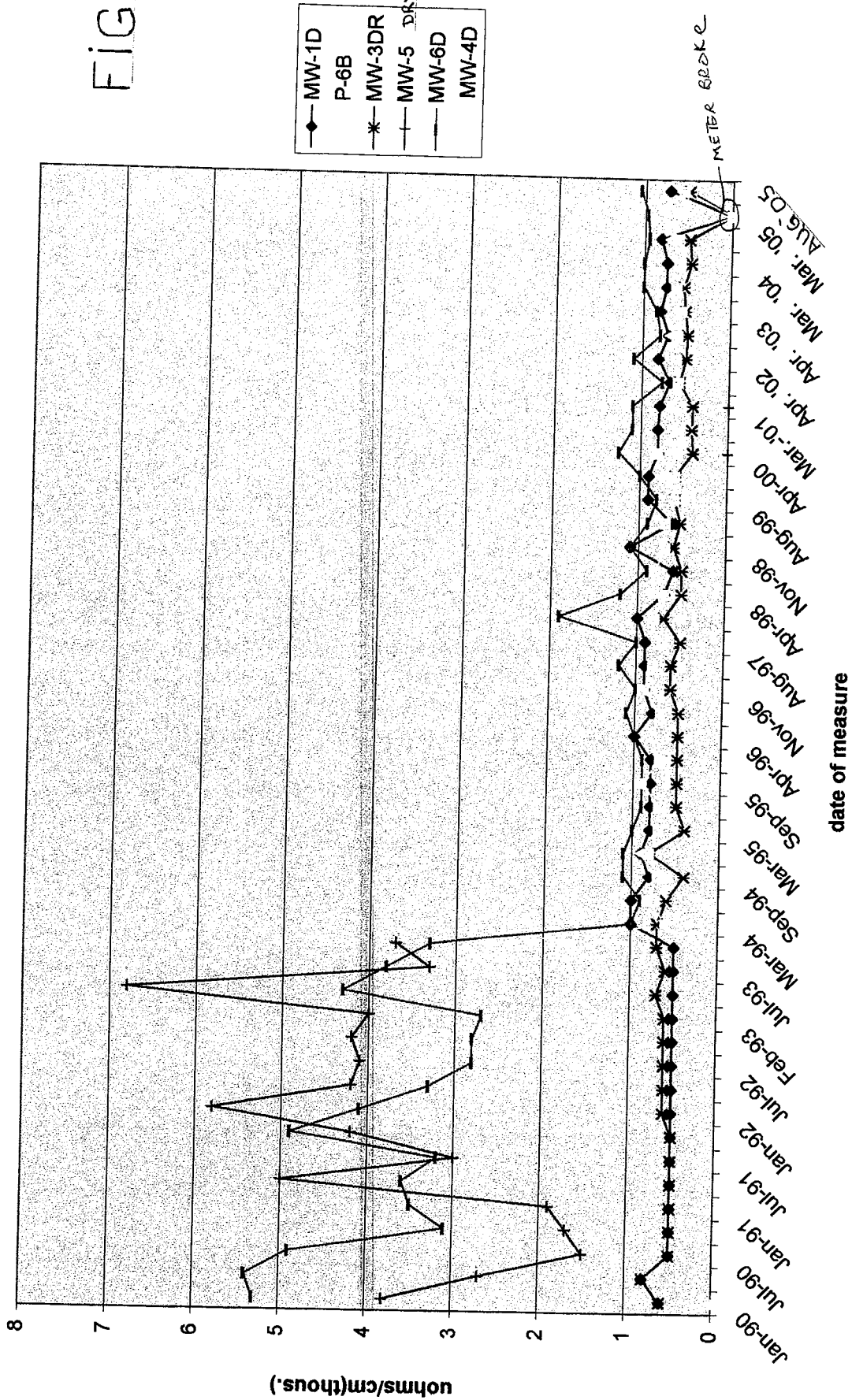


Fig 7

DRY AFTER '9

FIGURE # 7	PALMER ST. LANDFILL, MOENCH COMPANY											
	SPECIFIC CONDUCTIVITY vs TIME											
	(umhos/cm)(THOUSANDS)											
	Jan-90	Apr-90	Jul-90	Oct-90	Jan-91	May-91	Jul-91	Oct-91	Jan-92	May-92	Jul-92	Oct-92
P-6D												
MW-7D	1	1	0.7	0.8	0.5	0.7	0.8	0.7	0.5	0.8	0.6	0.6
MW-8D	0.5	0.6	0.3	0.3	0.2	0.2	0.2	0.3	0.4	0.4	0.4	0.5
BS-1	2.7	2.9	3	2.9	1	1.6	1.3	1.3	1.3	1.3	0.6	0.6
BS-3	2.8	2.9	1.8	1.8	1	1.8	1.1	0.9	0.9	0.9	1.1	0.5

	Jun-94	Sep-94	Dec-94	Mar-95	Jun-95	Sep-95	Dec-95	Apr-96	Aug-96	Nov-96	Apr-97	Aug-97	Nov-97	Apr-98	Aug-98	Nov-98	Apr-99
P-6D	0.7	0.9	0.9	0.5	0.6	0.6	0.4	0.6	0.6	0.7	0.6	0.6	0.6	0.6	0.5	0.7	0.6
MW-7D	0.7	0.7	1	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.6	0.7	0.6	0.7	0.7	0.62
MW-8D						0.3				0.3		0.3			0.5		
BS-1	0.6		0.8	1.1	0.7	1		1	0.7	0.3	1.5	0.5	0.5	0.5	0.6	0.7	0.9
BS-3	1	0.6	0.9	1.2	0.5	1.4	0.5	0.2	0.5	0.5	0.5	0.6	0.8	0.8	0.4	1.1	0.8

FIGURE # 7																		
P-6D	Aug-99	Nov-99	Sep-00	Apr-00	Mar-01	Aug-01	Apr-02	Aug-02	Apr-03	Aug-03	Mar-04	Aug-04	Mar-05	Aug-05				
	0.5	0.57	0.7	0.7	0.58	0.85	0.52	0.48	0.62	0.54	0.3	0.58	0.48	0.56				
MW-7D	0.61	0.59	0.7	0.7	0.6	0.65	0.58	0.79	0.68	0.76	0.72	0.72	meter brk	0.7				
MW-8D		0.53	0.4				0.4	0.44		0.36		0.54		0.46				
BS-1	0.62	0.6	1.05	1.05	0.52	1.05	0.39	1.1	0.9	0.54	1.1	0.7	1.5	0.36				
BS-3	0.56	0.56	0.8	0.8	1.1	0.39	1.6	1.2	0.44	0.24	0.52	0.52	meter brk	0.58				

FIG. 7

PLMR2SC

Palmer St. L/fill; Conductivity

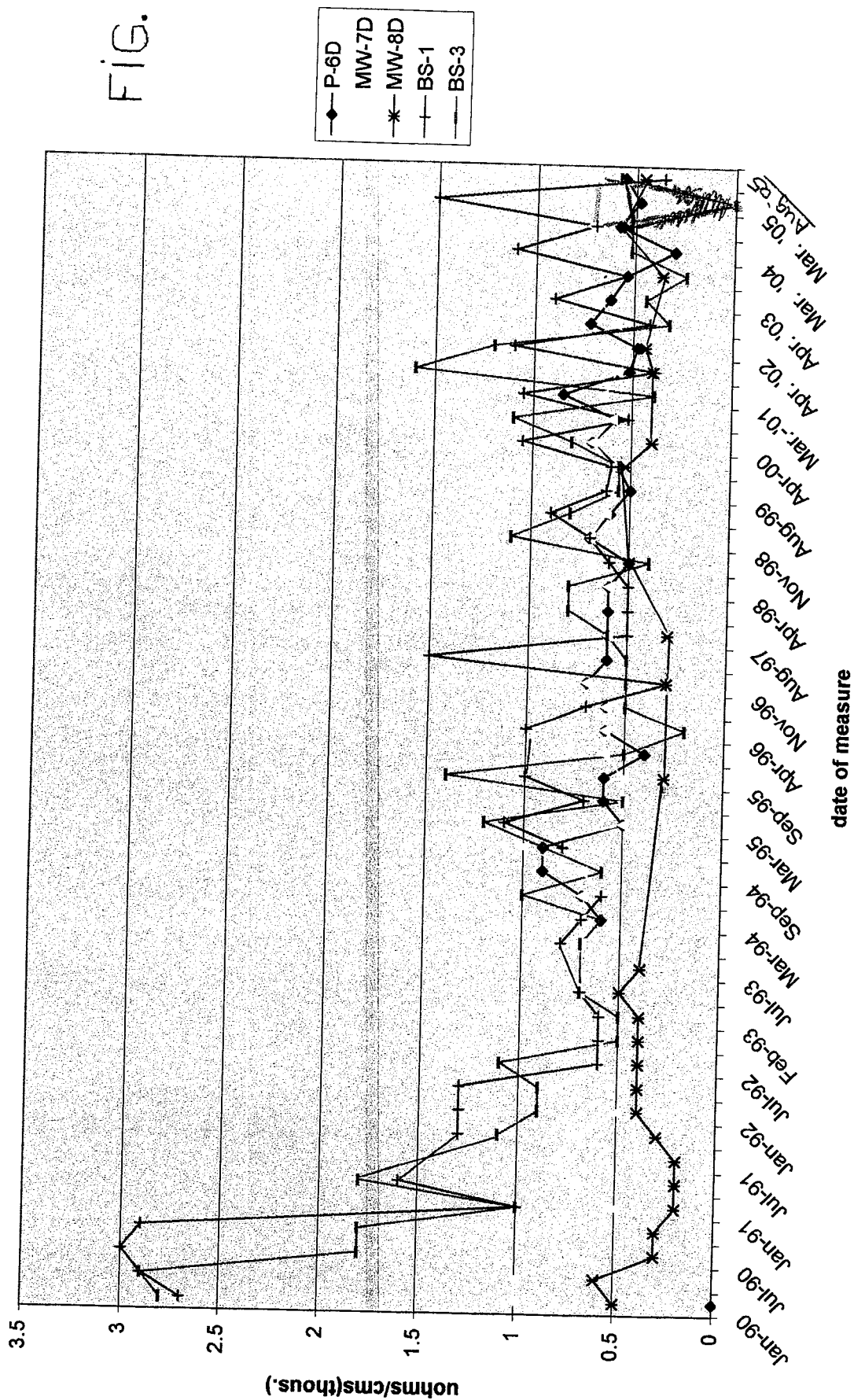


FIG. 7

4.3 RATE OF CONTAMINANT MIGRATION

Contaminant migration and potential environmental impacts for the Palmer Street Landfill are discussed in detail in the report entitled "Palmer Street Landfill - Evaluation of Alternative Cover Systems" prepared by Malcolm Pirnie, Inc., January 1989 (Reference 7). As described in the above-mentioned report, groundwater migrates from the landfill through the shallow water-bearing zone along both the eastern and northern boundaries of the waste/fill area. A reasonable assumption in determining the rate of contaminant migration across the site is the rate of contaminant migration is equivalent to the rate at which groundwater leaves the site. This latter calculation can be performed through the application of Darcy's Law which is expressed as:

$$V = \frac{ki}{\theta}$$

where: V = velocity of shallow groundwater flow (feet/day)
k = hydraulic conductivity of the shallow water bearing zone (feet/day)
i = hydraulic gradient (dimensionless)
 θ = average porosity of the shallow water bearing zone (dimensionless)

Values for k and θ were previously determined (see Reference 2) as 4.1 ft/day and 0.35, respectively. The hydraulic gradient (i) is measured perpendicular to the primary direction of groundwater flow (viz., to the east toward Cattaraugus Creek - see Section 5.0) using average water level elevations as measured in MW-1 and MW-3 and elevation as measured in MW-2A and MW-5 during the 1993 monitoring year. The hydraulic gradient for MW-1 and MW-3 is thus:

$$\frac{\Delta H}{\Delta X} = \frac{26.3}{600} = 0.044$$

where

ΔH = difference in average groundwater elevations between MW-1 and MW-3 (feet)

ΔX = distance between MW-1 and MW-3 (feet)

Upon inserting this value into the Darcy's Law expression for velocity, the following result is obtained:

$$V = \frac{ki}{\theta}$$

$$V = \frac{K}{\theta} \frac{(4.1)(0.044)}{0.35} = 0.52 \text{ ft/day}$$

Thus, the rate of contaminant migration across the site is approximately 0.52 feet/day between monitoring wells MW-1 and MW-3.

The hydraulic gradient for MW-2A and MW-5 is as follows:

$$\frac{\Delta H}{\Delta X} = \frac{24.5}{1085} = 0.022$$

ΔH = difference in average groundwater elevations between MW-2A and MW-5 (feet)

ΔX = distance between MW-2A and MW-5 (feet)

$$V = \frac{K}{\theta} \frac{(4.1)(0.022)}{0.35} = 0.26 \text{ ft/day}$$

The rate of contaminant migration across the site is approximately 0.26 ft/day between monitoring wells MW-2A and MW-5.

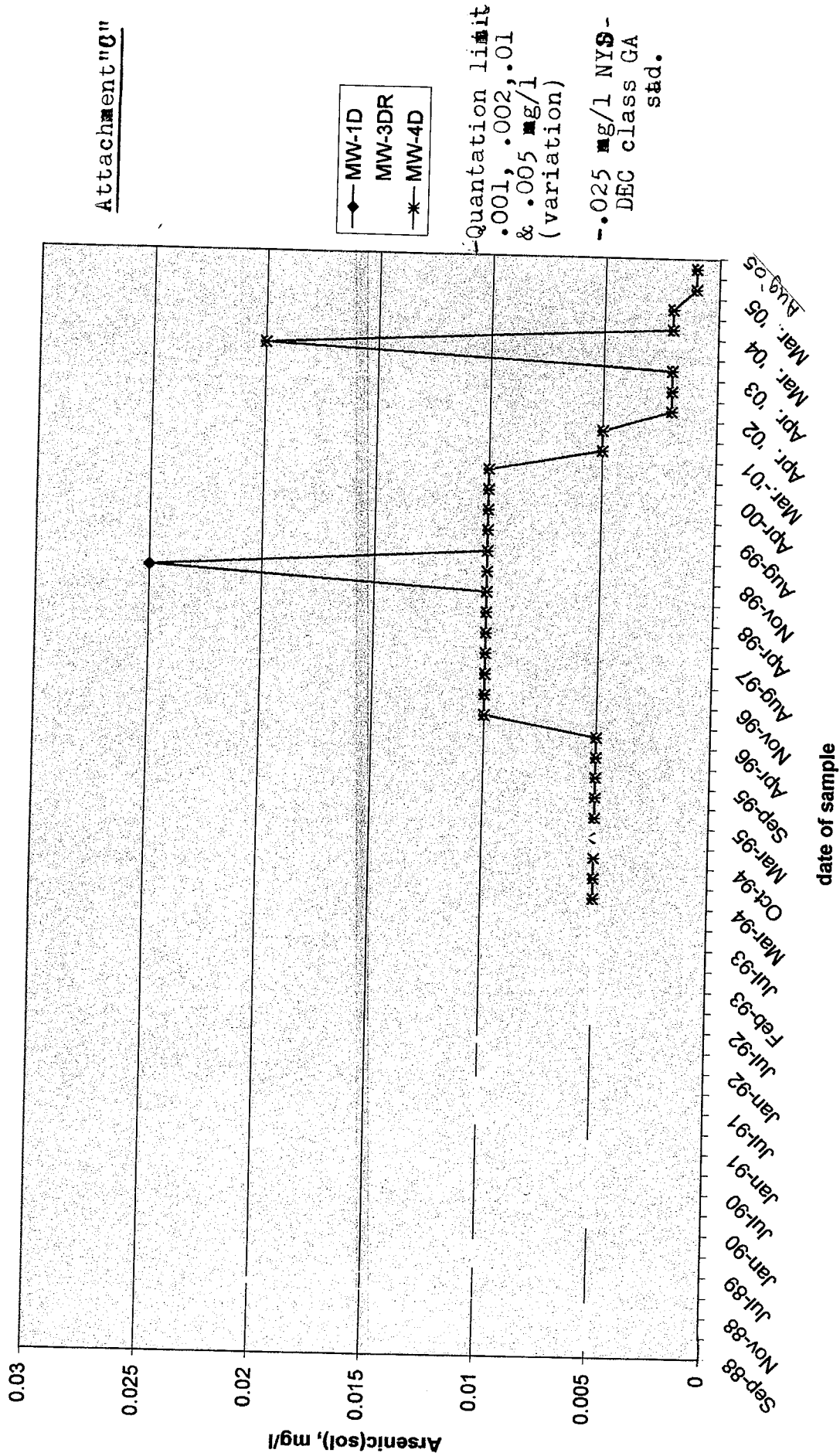
ATTACHMENT C

SOLUBLE METALS CONCENTRATION VS. TIME

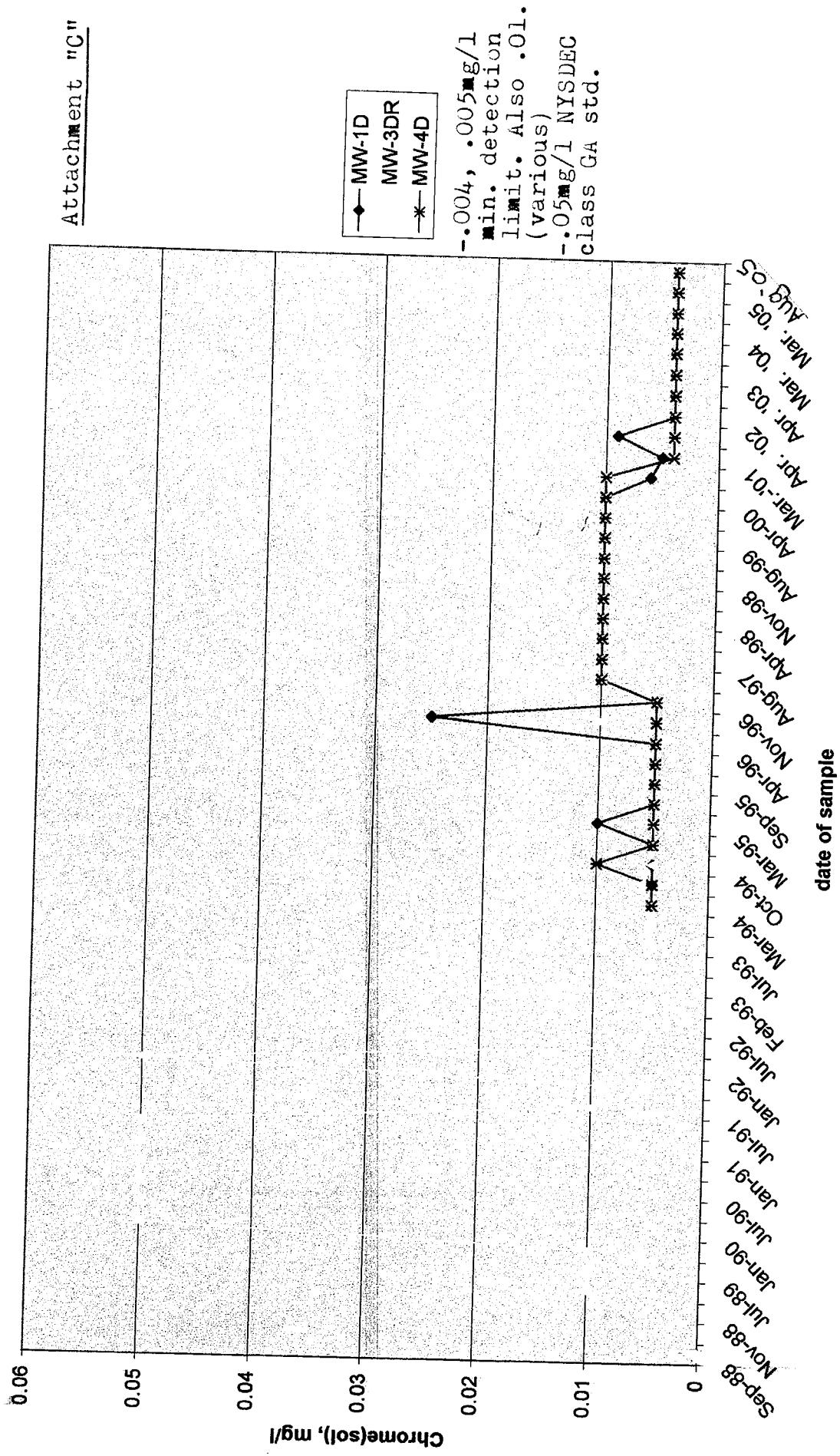
MONITORING EVENTS: March 2005

August 2005

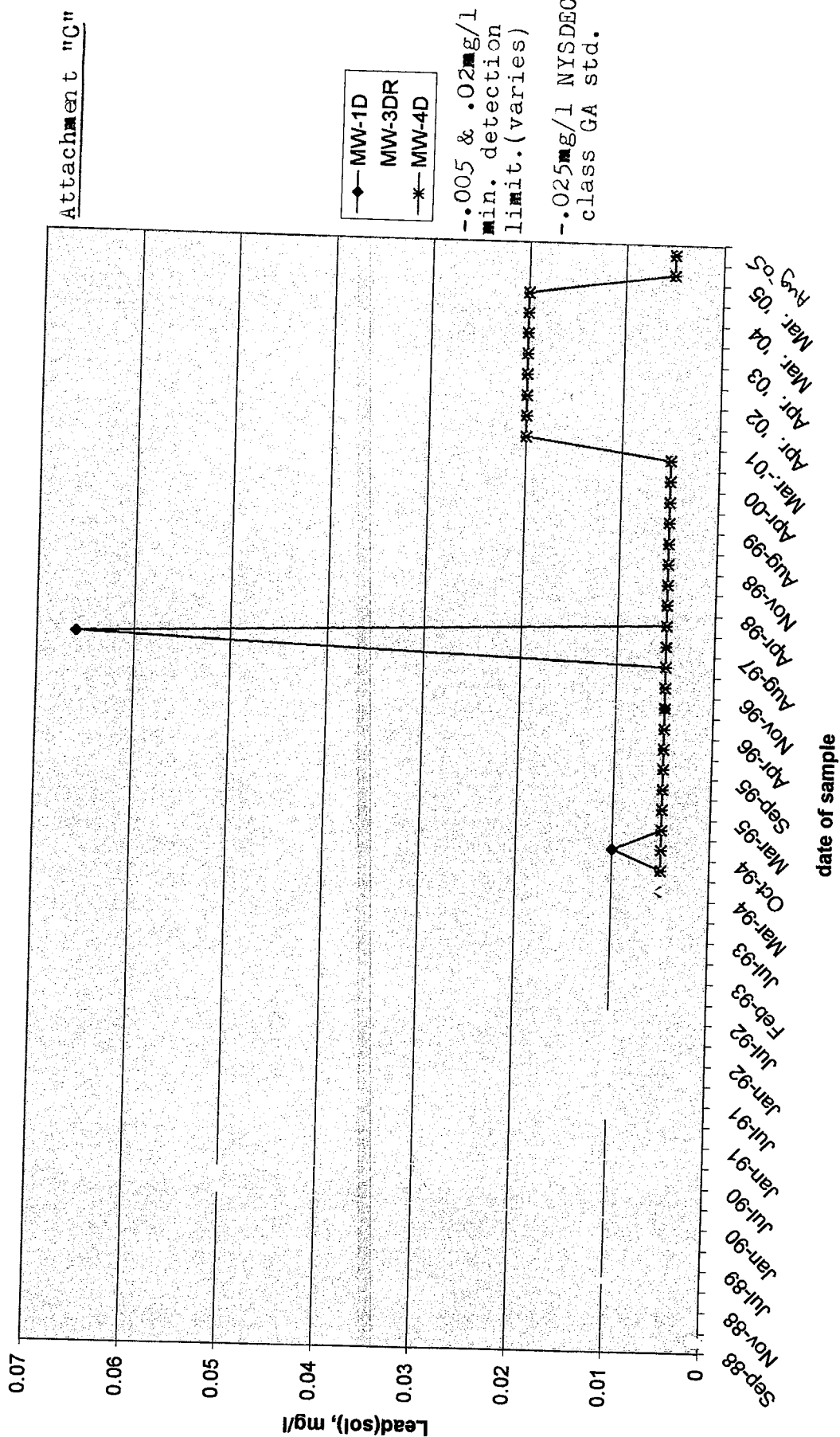
Palmer St. L/fill; Arsenic(sol)



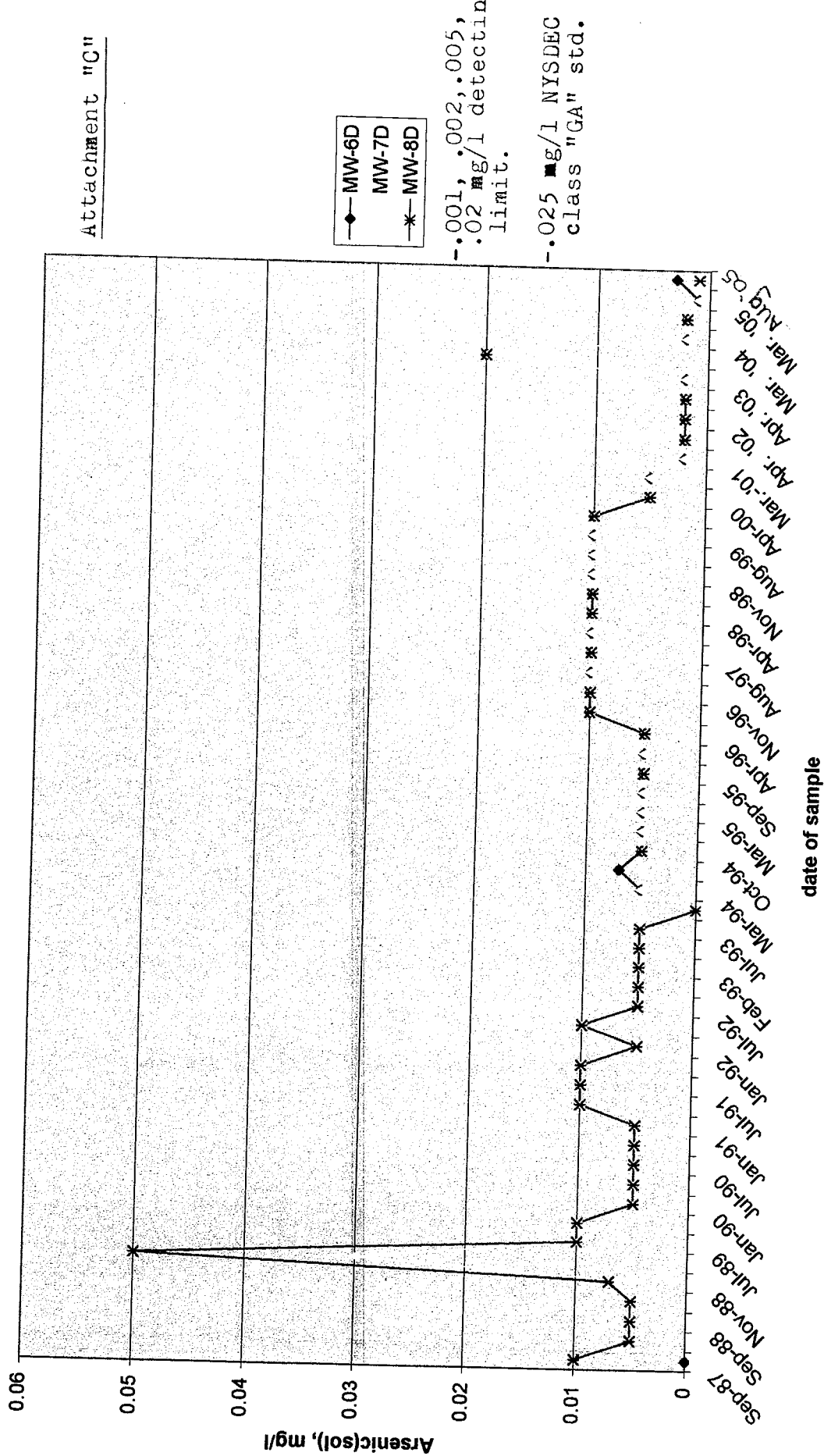
Palmer St. L/ill; Chrome(sol)



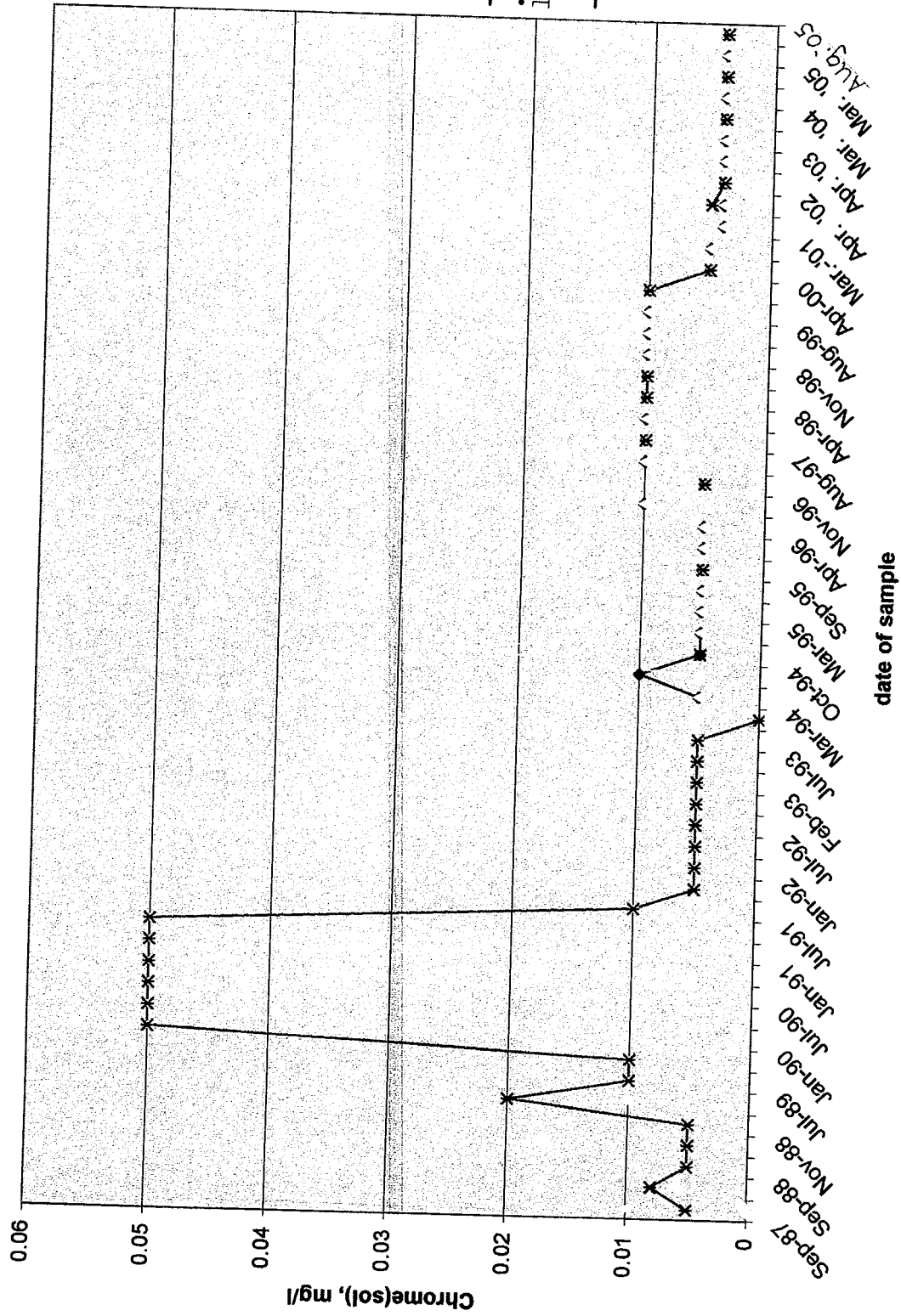
Palmer St. L/fill; Lead(soluble)



Palmer St. L/fill; Arsenic(sol)

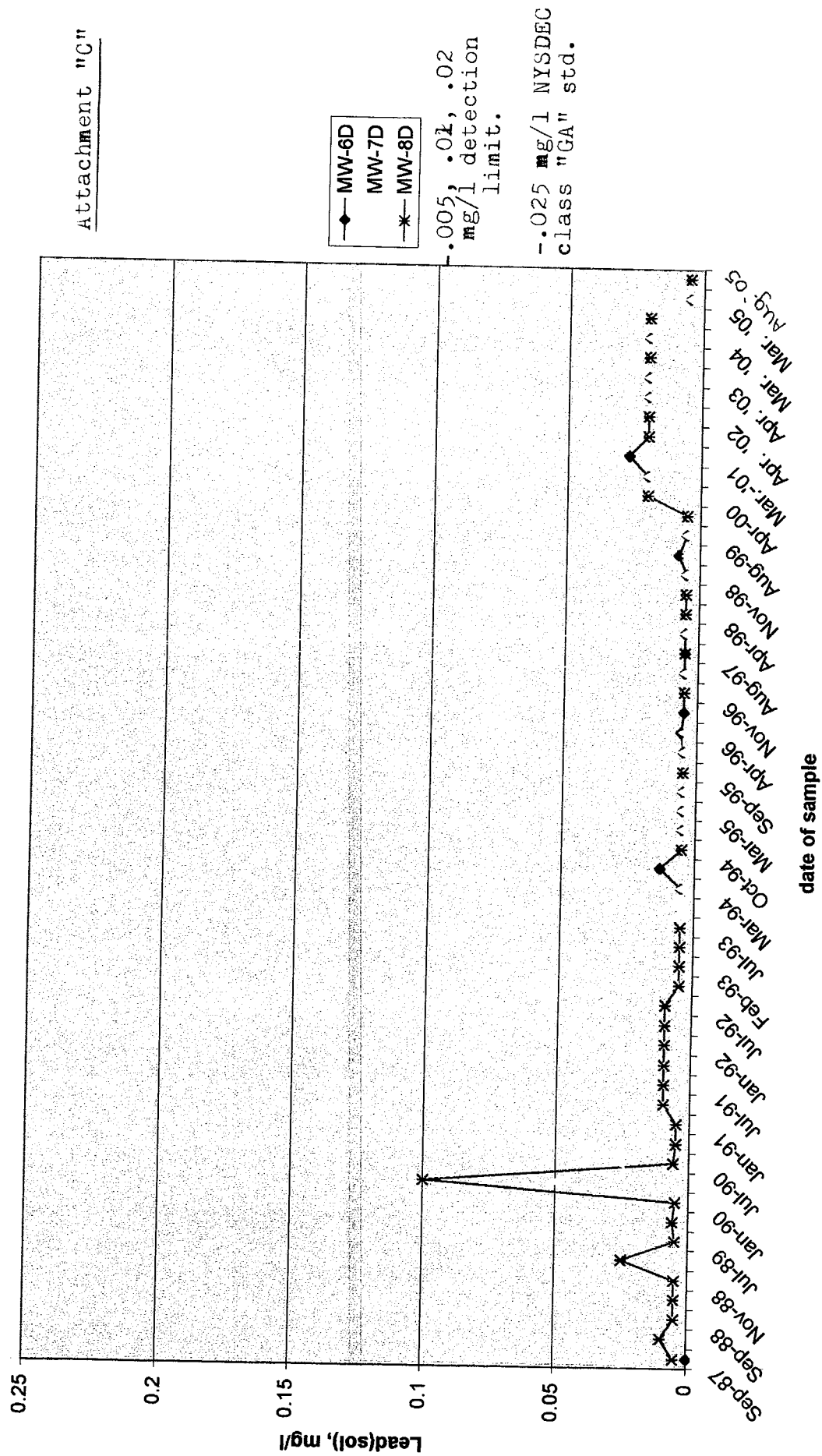


Palmer St. L/fill; Chrome(soluble)

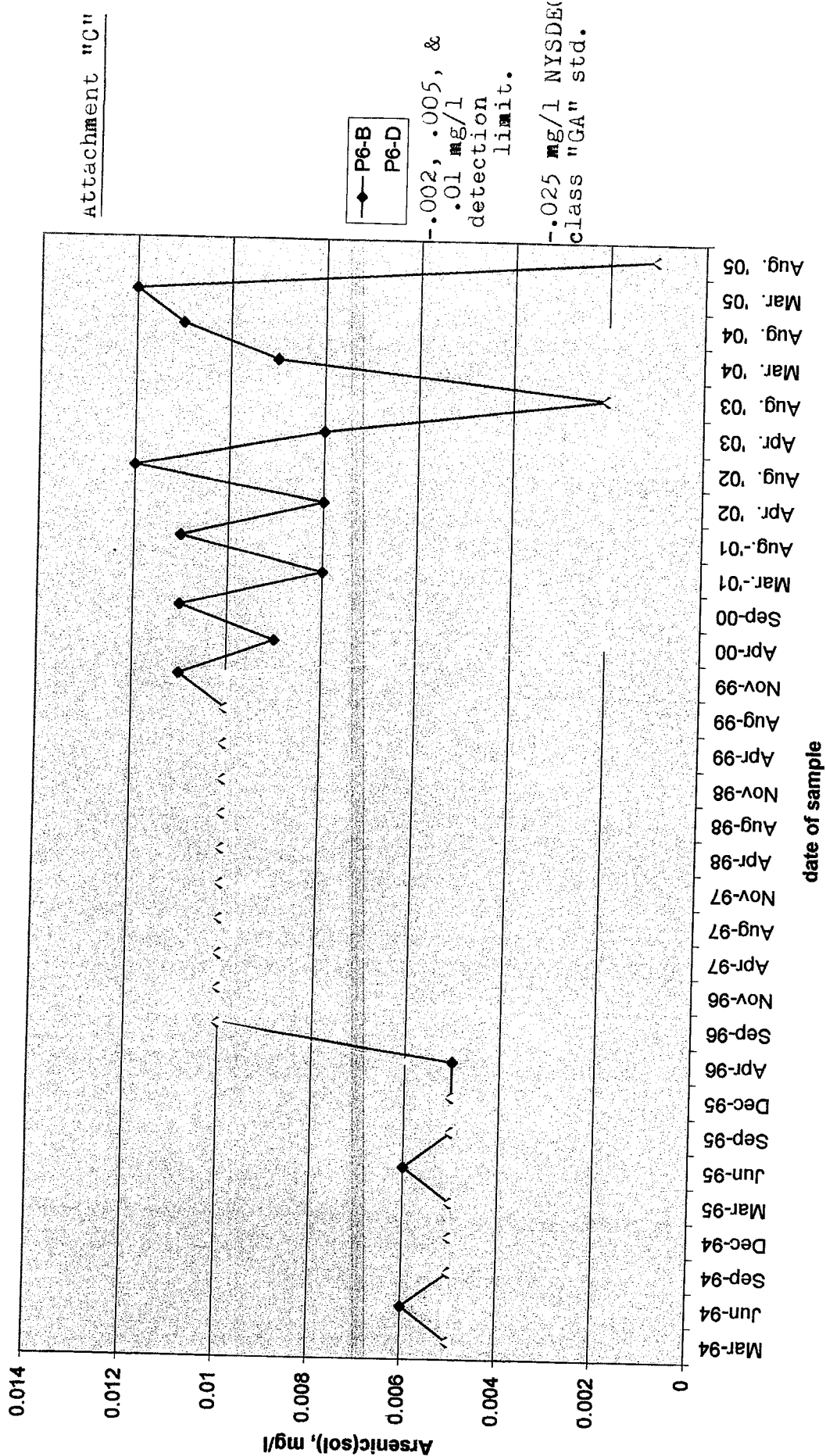


Attachment "C"

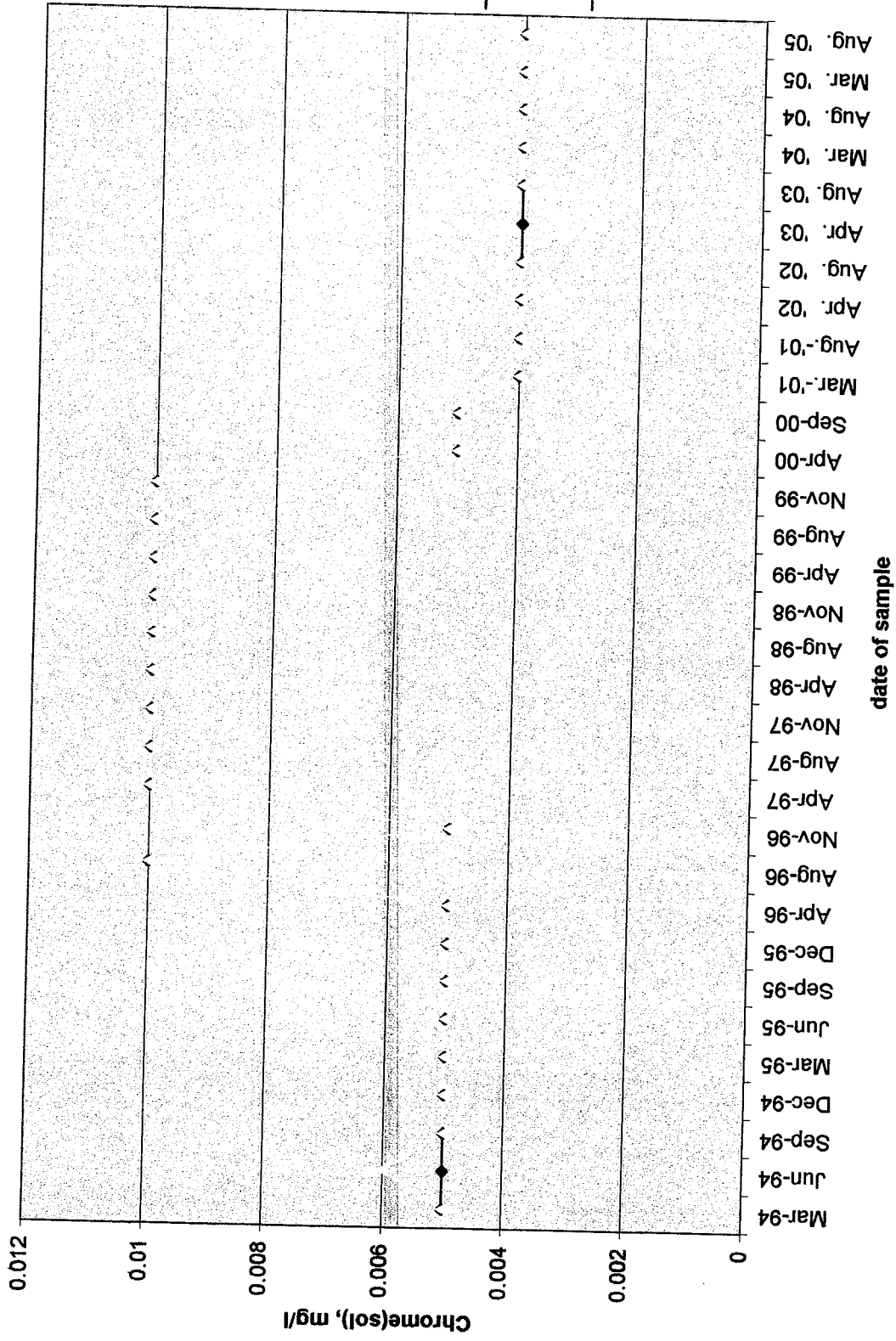
Palmer St. L/fill; Lead(soluble)



Palmer St. L/fill; Arsenic(soluble)

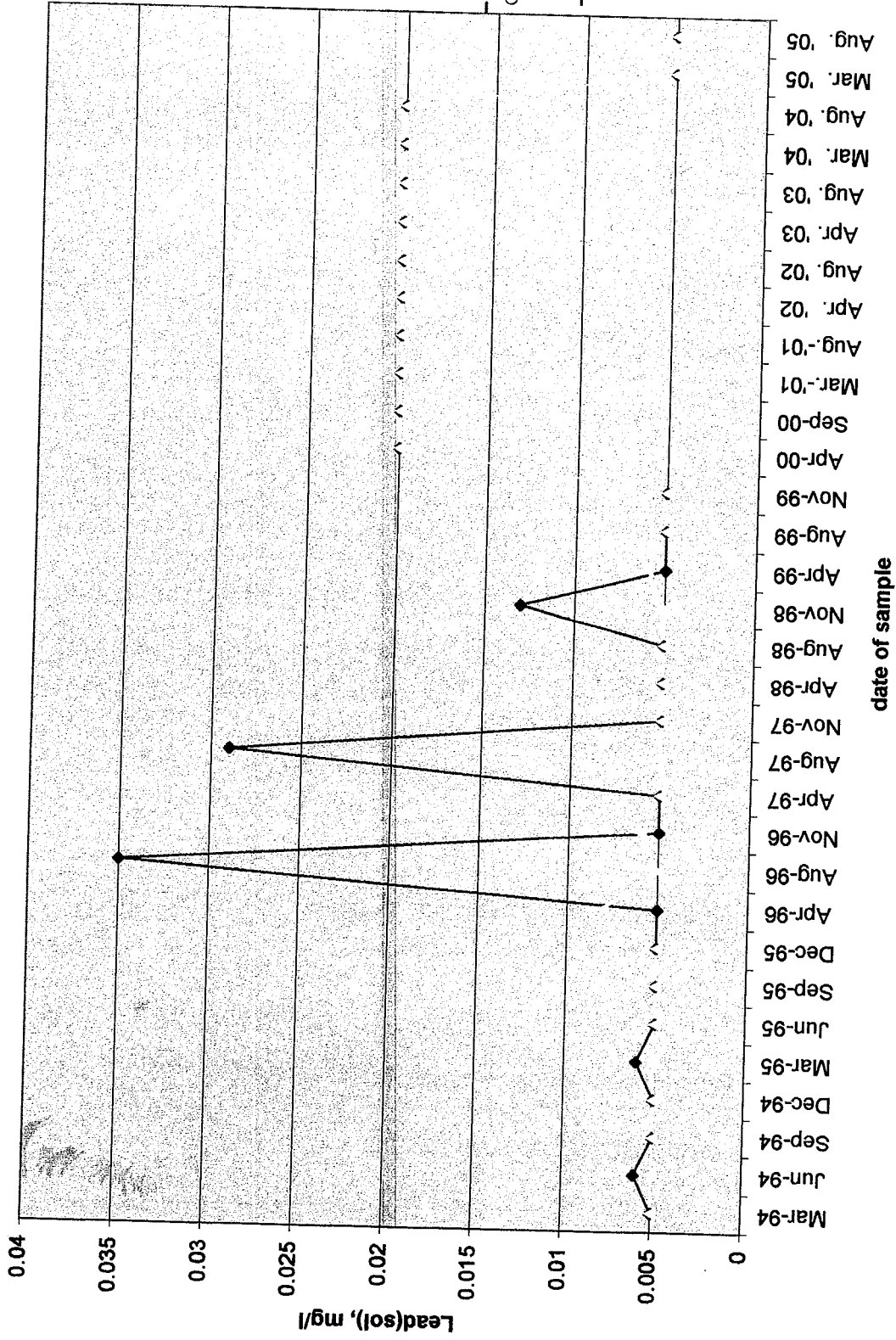


Palmer St. L/fill; Chrome(soluble)



Attachment "G"

Palmer St. L/fill; Lead, soluble



Attachment "G"

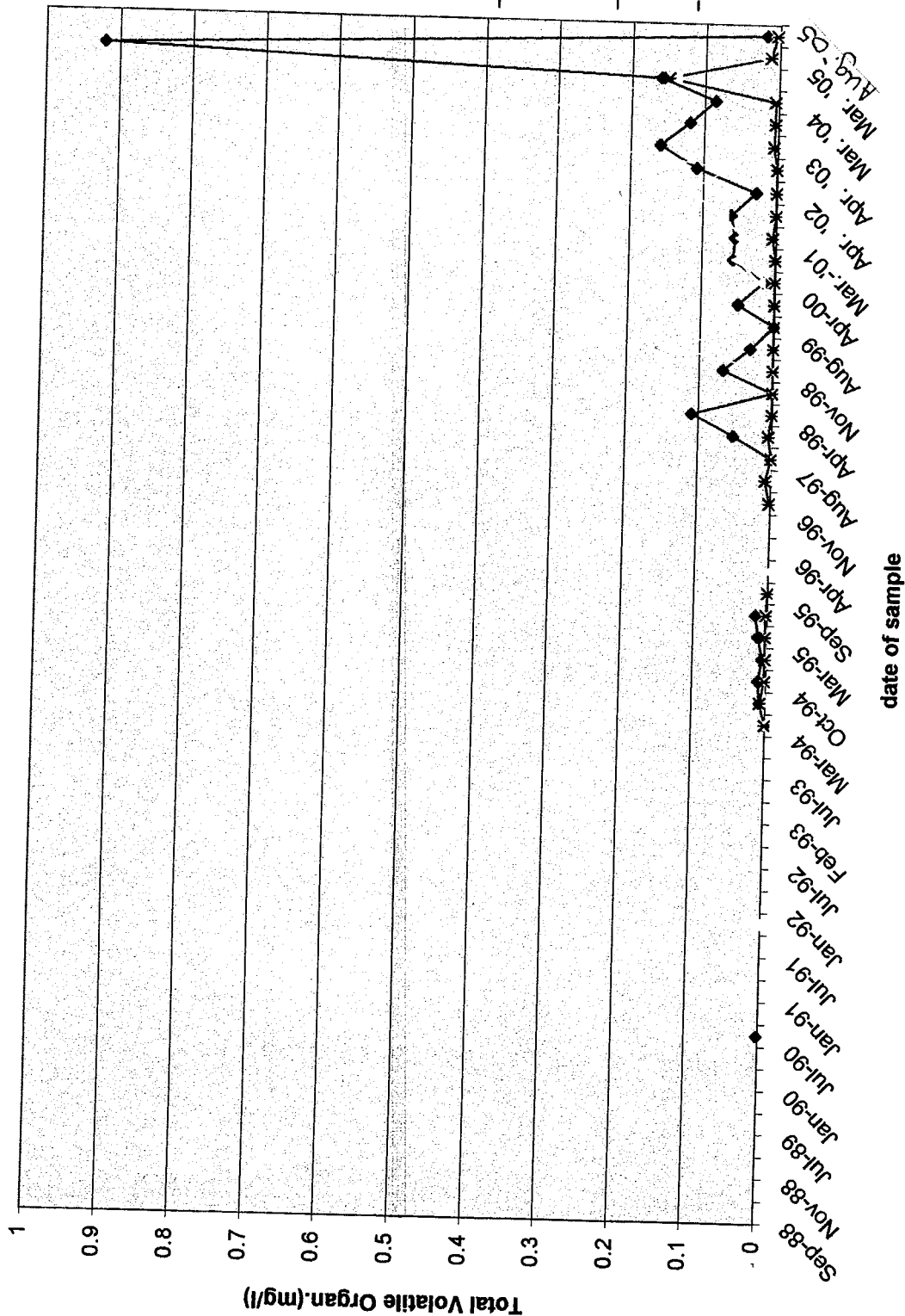
[illegible][illegible]

ATTACHMENT "D"

TOTAL VOLATILES vs TIME
(grouped by monitoring point)

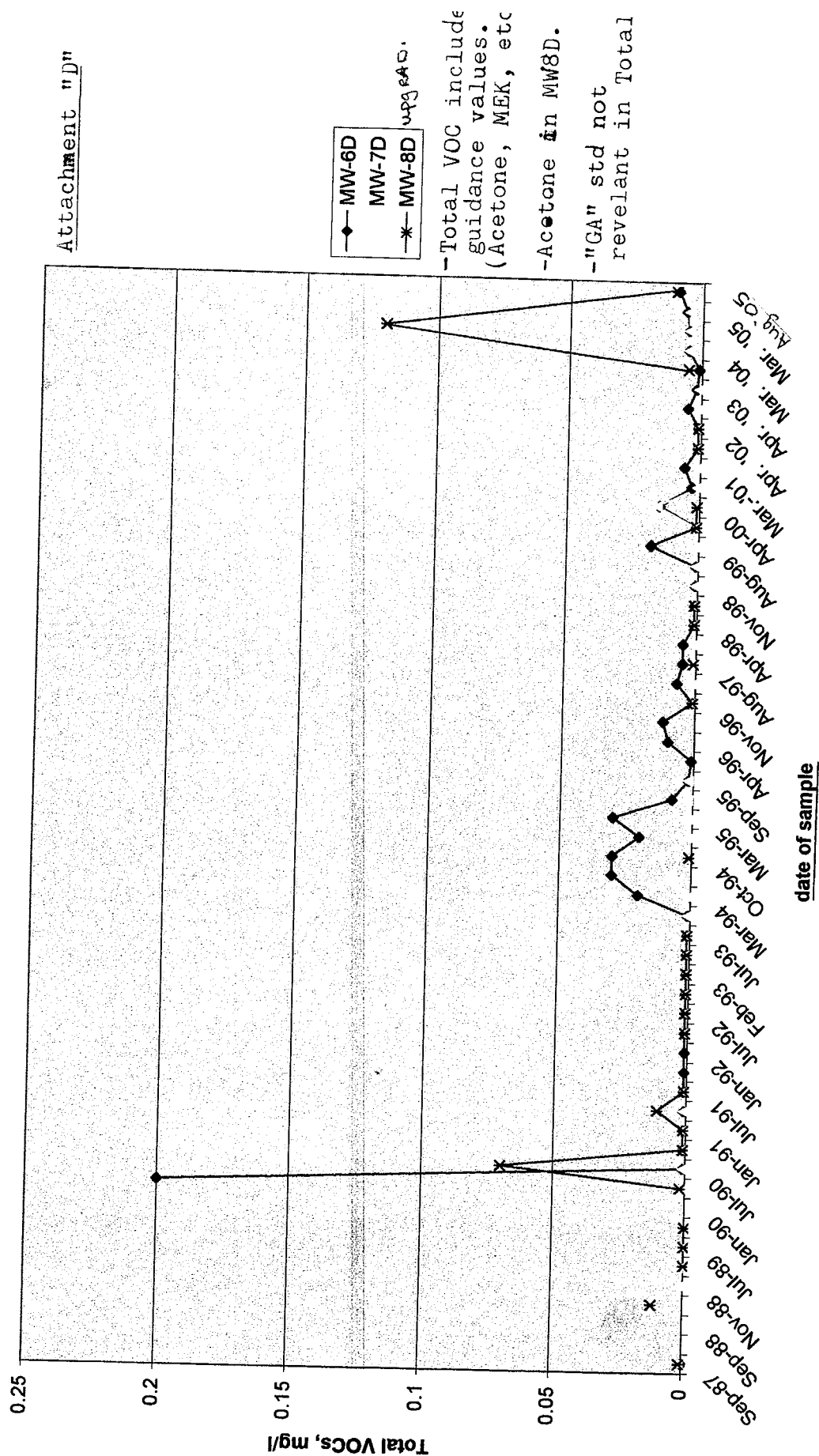
MONITORING EVENTS: March 2005
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Palmer St L/fill: Total Volatile Org. (mostly Acetone)



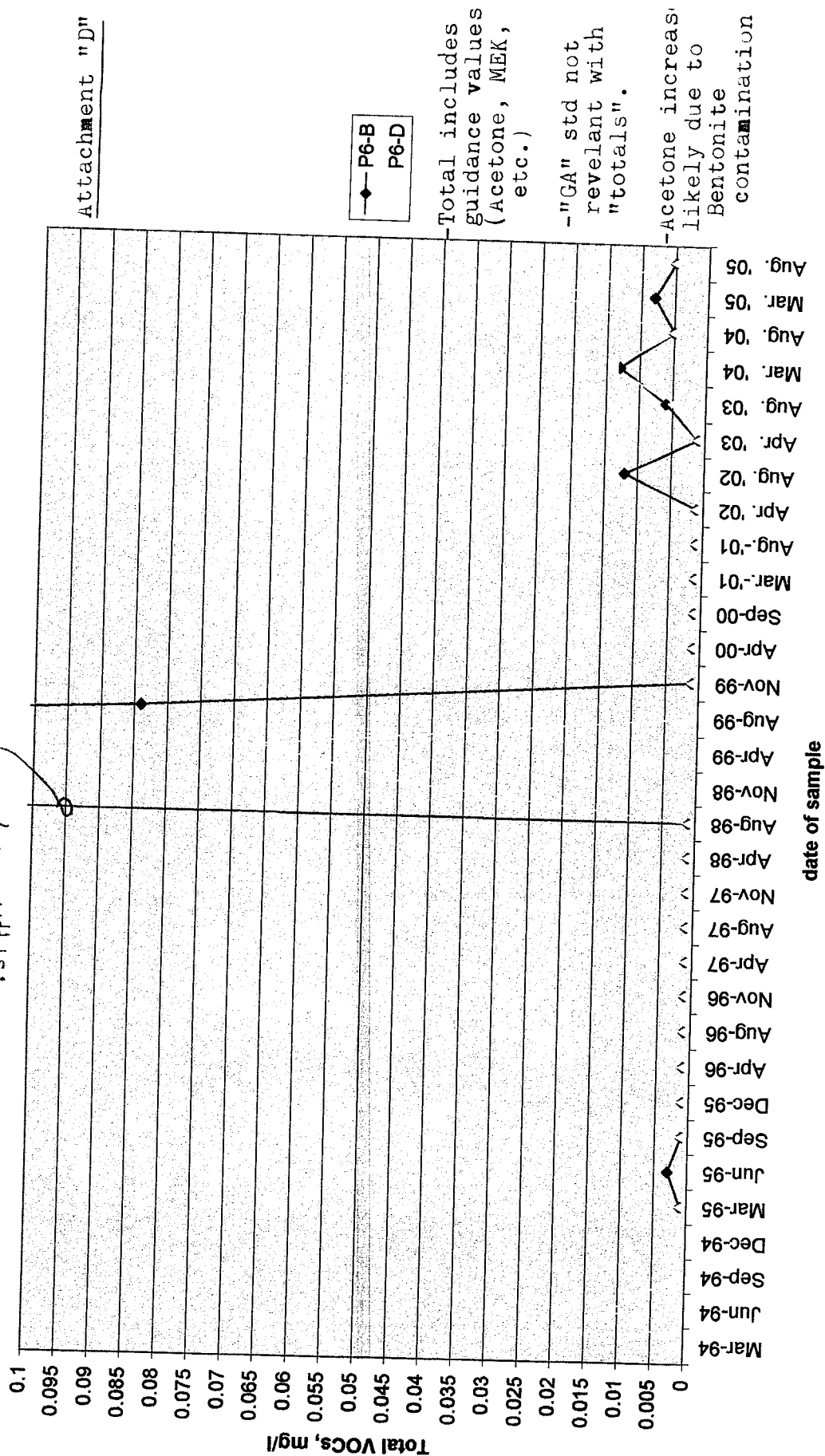
-Guidance values included since '98
Total=Acetone, MEK, etc.
-"GA" std. not relevant in total.
-Likely acetone contamination from old Bentonite pellets.

Palmer St. L/kill; Total VOCs(mostly Acetone)



Palmer St. L/fill; Total Volatile Organ.

.34 ppm mostly MEK



[illegible][illegible]

ATTACHMENT



PLRVOC14

		PALMER ST. L/F, MOENCH COMPANY											
		TOTAL VOLATILE ORGANICS vs TIME (MG/L)											
		BANK SEEPS											
													Attachment "D"
BS-1	Mar-94	0.13	Jun-94	Sep-94	Dec-94	Mar-95	Jun-95	Sep-95	Dec-95	Apr-96	Aug-96	Nov-96	Apr-97
					0.009	0.01	0.01			0.001	0.001	0.001	0.001
BS-3							0.001			0.001	0.001	0.001	0.001

BS-1	Aug-97	0.001	Nov-97	Apr-98	Aug-98	Nov-98	Apr-99	Aug-99	Nov-99	Apr-00	Sep-00	Mar-01	Aug-01
			0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
BS-3		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001

BS-1	Apr. '02	0.001	Aug. '02	0.001	Apr. '03	0.005	Aug. '03	0.005	Mar. '04	0.005	Aug. '04	0.005	Mar. '05	0.005	Aug. '05
			0.001	0.001	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
BS-3		0.001	0.001	0.001	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005

-No graphs generated as no/minimal detection in past 10 years.

-Bank seeps often dry, due to weather. Creek sample taken, adjacent to bank seep, in its place.

ATTACHMENT "E"

* FIELD MEASUREMENT DATA SHEETS;

SAMPLE EVENTS: March & August 2005

*Individual "field data sheets" were submitted with prior actual sample event reports. Contact Moench if you require them.

ATTACHMENT "F"

ANALYTICAL DATA EVENTS: March & August 2005

***Analytical data from Severn Trent Laboratory, Amherst, New York,
was submitted in the prior individual semi-annual reports.
Please contact Moench Co. if you require them.**

6.0 REFERENCES

1. Palmer Street Landfill Closure/Post-Closure Plan (EPA ID. NYD002126910), prepared by Malcolm Pirnie, Inc., revised February 1989.
2. Palmer Street Landfill, Post Closure Plan (EPA ID, NYD002126910), prepared by Malcolm Pirnie, Inc., July 1993.
3. Letter to Mr. Jeffrey Smith, Moench Tanning Company, from New York State Department of Environmental Conservation, dated August 31, 1993.
4. Palmer Street Landfill, Supplemental Hydrogeologic Investigation, prepared by Malcolm Pirnie, Inc., January 1989.
5. Sampling Plan/Quality Assurance Plan for Groundwater Monitoring - Palmer Street Landfill. Prepared by Malcolm Pirnie, Inc., August 1989.
6. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition, USEPA Office of Solid Waste and Emergency Response, November 1986.
7. Palmer Street Landfill, Evaluation of Alternative Cover Systems, prepared by Malcolm Pirnie, Inc., January 1989.
8. PALMER STREET LANDFILL, COVER SYSTEM PERFORMANCE EVALUATION, prepared by MALCOLM PIRNIE INC., OCTOBER 1995., and February 1999.
9. Palmer St. Landfill, Cover System Performance Evaluation, prepared by Geomatrix Consultants, Williamsville, NY. February 2004.