SDMS Document
68005

March 17, 1989

Mr. H. Gilbert Weil
163 Candlewick Lane
Bridgewater, N.J. 08807

Ms. Janet Feldstein
U.S. EPA Region II
Site Compliance Branch
26 Federal Plaza, Room 747
New York, N.Y. 10278

Dear Ms. Feldstein:

On March 15, 1989, I contacted you to make you aware of data from our bedrock investigation. I explained that this data was very preliminary, and as yet has not undergone quality assurance review. I then offered to meet with you to present this data, and also to suggest to you a program for continuing investigation.

On March 16, 1989, I received via telefax a letter requesting any and all data generated during implementation of POP Revisions 8 and 9. Please find subject data attached. However, you should understand that:

1. As I told you, the data is very preliminary. It had been received orally by Dames & Moore, and should be regarded as imprecise or quite possibly erroneous, until QA measures are complete.

2. Some soil samples were taken in methanol, a procedure not approved for this work. At your direction (from our meeting of 1/5/89), these results are not included.

3. Boring logs are being transferred from field notes to a more presentable form and will be available around 3/24/89.

4. Hydrologic data will be made available to me later today.

I continue to believe that a personal presentation to you wherein we might discuss these data, keeping their questionable accuracy in perspective, and also considering plans to improve our understanding of the movement of groundwater at the site will be the most constructive way to pursue this program. I look forward to your early response.

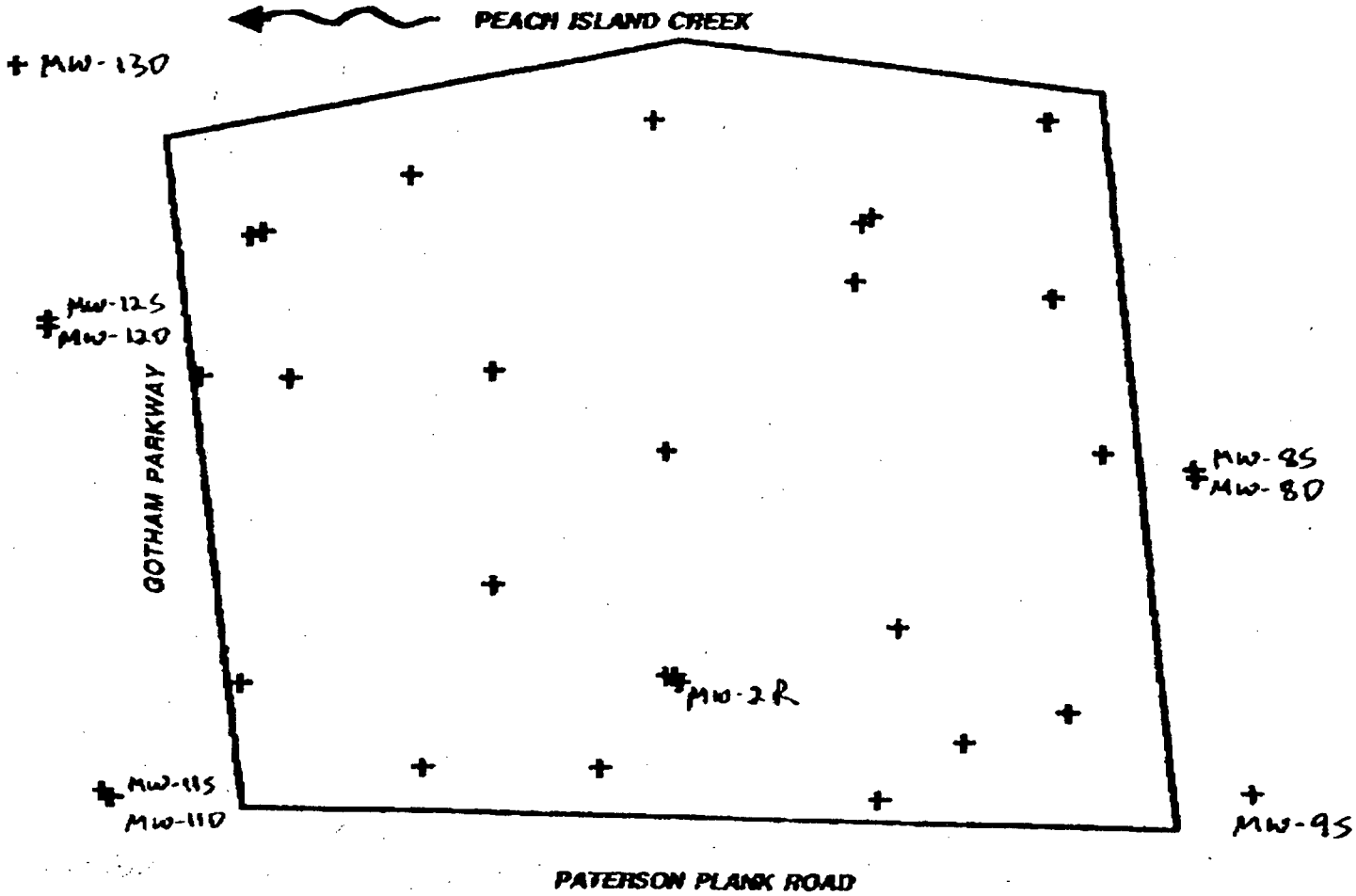
Very truly yours,

H G Weil

H. G. Weil

HGW/smd/325+
Attachment

CC: Mr. Raymond Basso, Chief - EPA
Mr. W. L. Warren, esq. - CSPS&C



Key

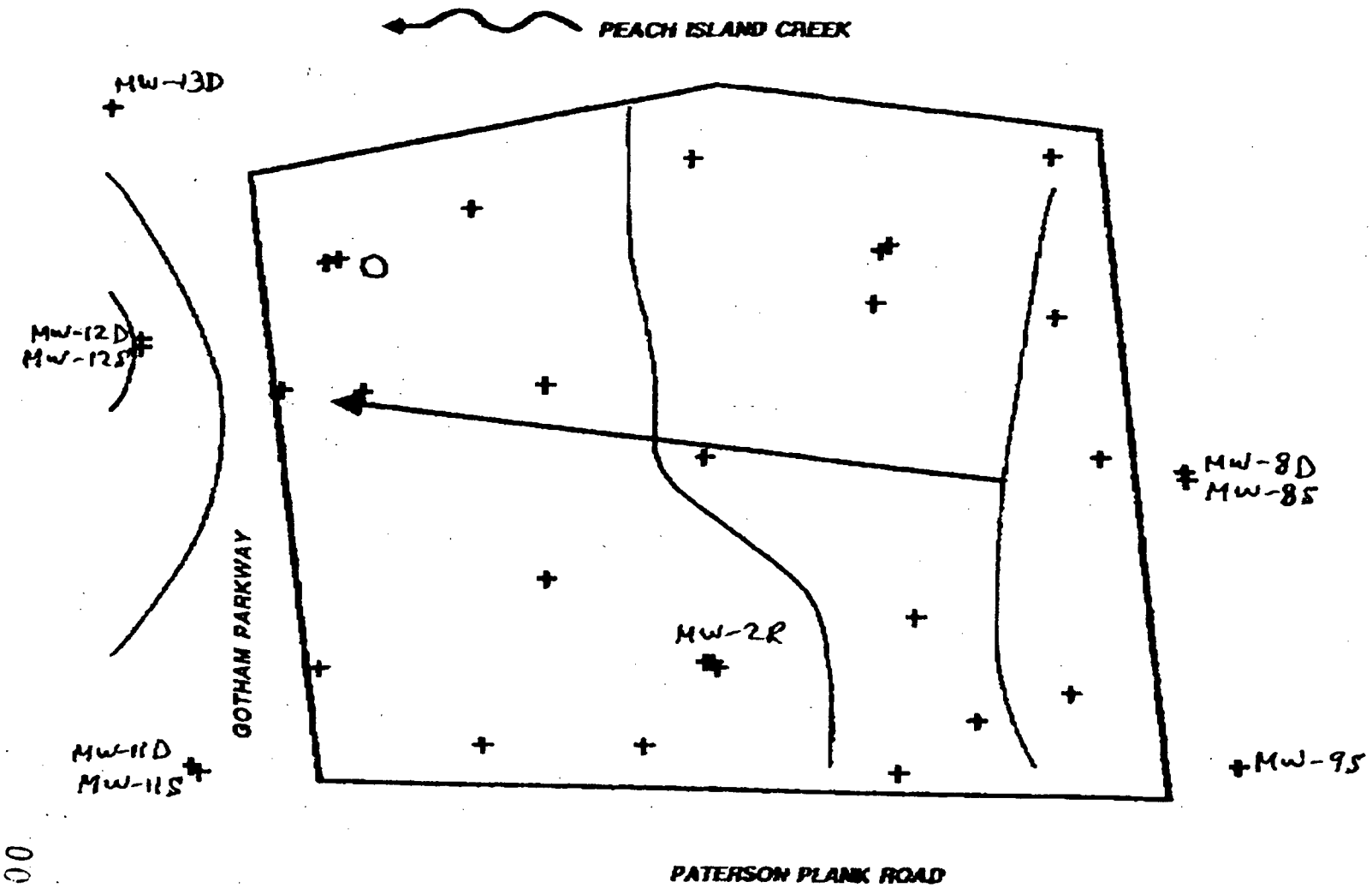
S = WATER TABLE WELL

D = TILL WELL

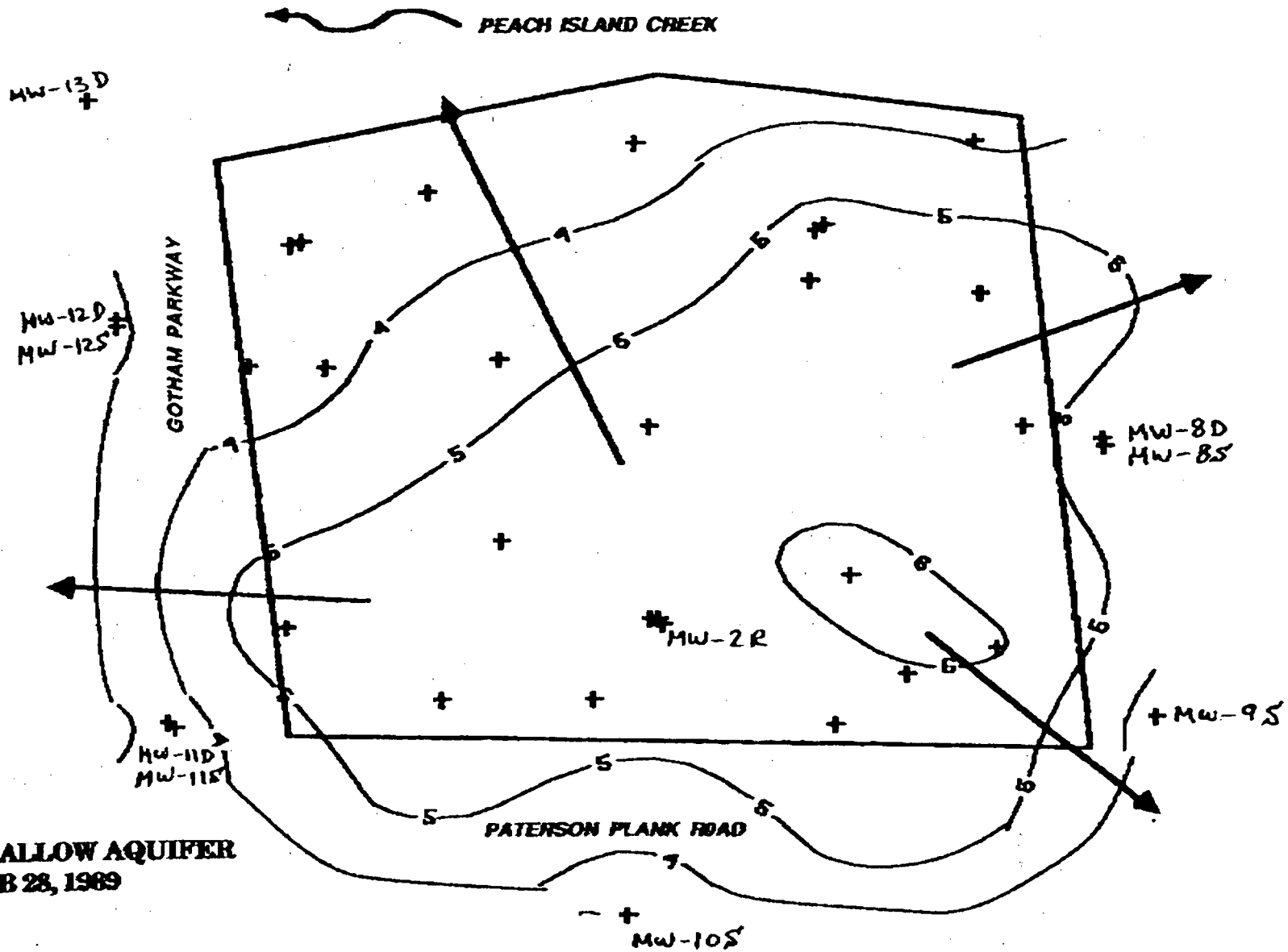
R = BEDROCK WELL

+ MW-10S

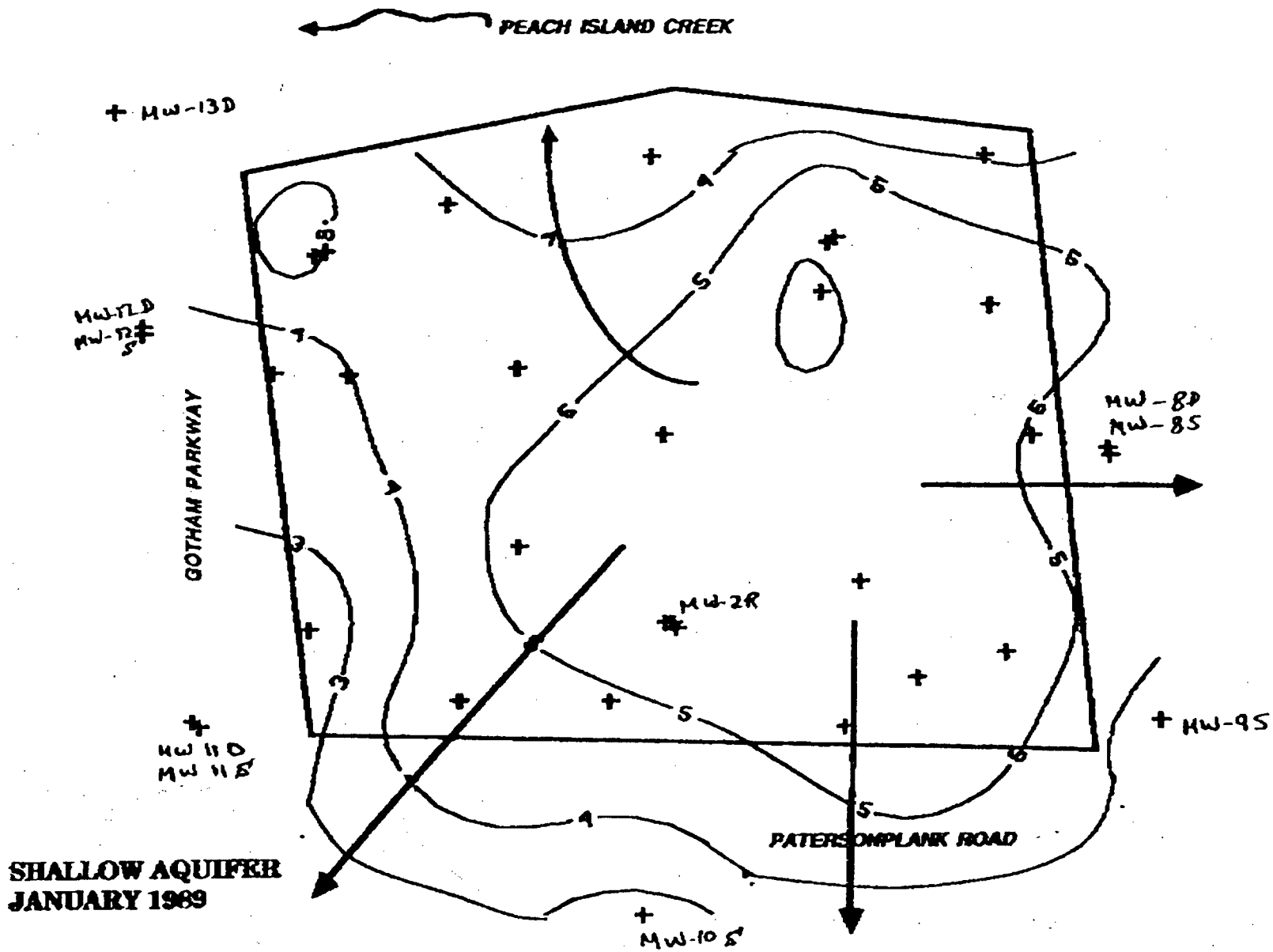
WELL LOCATIONS - POP Nos. 8 & 9



INTERMEDIATE AQUIFER
FEB. 28, 1989



SHALLOW AQUIFER
FEB 28, 1989



SHALLOW AQUIFER
JANUARY 1989

GW = GROUNDWATER

8S = 8 SHALLOW (OR WATER TABLE) WELL

ETC#	DM ID	DATE	PARAMETER	VALUE	UNIT	MDL
BJ0345	GW-8S	890210	1,2-Trans-dichloroethylene	44.5	ug/l	1.6
BJ0345	GW-8S	890210	Alkalinity as CaCO3	700	mg/l	5
BJ0345	GW-8S	890210	Chloride	1056	mg/l	1.0
BJ0345	GW-8S	890210	Dichlorodifluoromethane	14.6	ug/l	10
BJ0345	GW-8S	890210	Sulfate as SO4	220	mg/l	5
BJ0345	GW-8S	890210	Toluene	10.4	ug/l	6.0
BJ0345	GW-8S	890210	Total Dissolved Solids (TDS)	2740	mg/l	10
BJ0345	GW-8S	890210	Trichloroethylene	14.1	ug/l	1.9
BJ0335	GW-9S	890208	Acenaphthene	4.78	ug/l	2.0
BJ0335	GW-9S	890208	Alkalinity as CaCO3	560	mg/l	5
BJ0335	GW-9S	890208	Chloride	642.0	mg/l	1.0
BJ0335	GW-9S	890208	Fluorene	2.36	ug/l	2.0
BJ0335	GW-9S	890208	Naphthalene	2.97	ug/l	1.7
BJ0335	GW-9S	890208	Phenol	1.77	ug/l	1.6
BJ0335	GW-9S	890208	Sulfate as SO4	7	mg/l	5
BJ0335	GW-9S	890208	Total Dissolved Solids (TDS)	1600	mg/l	10
BJ0343	GW-10S	890210	Alkalinity as CaCO3	910	mg/l	5
BJ0343	GW-10S	890210	Chloride	996	mg/l	1.0
BJ0343	GW-10S	890210	Sulfate as SO4	380	mg/l	5
BJ0343	GW-10S	890210	Total Dissolved Solids (TDS)	3240	mg/l	10
BJ0342	GW-11S	890210	Alkalinity as CaCO3	360	mg/l	5
BJ0342	GW-11S	890210	Chloride	63.1	mg/l	1.0
BJ0342	GW-11S	890210	Sulfate as SO4	160	mg/l	5
BJ0342	GW-11S	890210	Total Dissolved Solids (TDS)	690	mg/l	10
BJ0341	GW-12S	890210	Alkalinity as CaCO3	120	mg/l	5
BJ0341	GW-12S	890210	Chloride	21.3	mg/l	1.0
BJ0341	GW-12S	890210	Sulfate as SO4	150	mg/l	5
BJ0341	GW-12S	890210	Total Dissolved Solids (TDS)	390	mg/l	10
BJ0341	GW-12S	890210	Trichloroethylene	4.75	ug/l	1.9

ETC#	ID	DATE	PARAMETER	[illegible]		
BJ0334	GW-2R	890208	1,2-Dichloroethane	357	ug/l	50
BJ0334	GW-2R	890208	Alkalinity as CaCO3	160	mg/l	5
BJ0334	GW-2R	890208	Chloride	246.0	mg/l	1.0
BJ0334	GW-2R	890208	Chloroform	753	ug/l	50
BJ0334	GW-2R	890208	Phenol	6.59	ug/l	1.5
BJ0334	GW-2R	890208	Sulfate as SO4	260	mg/l	5
BJ0334	GW-2R	890208	Total Dissolved Solids (TDS)	1160	mg/l	10
BJ0334	GW-2R	890208	Trichloroethylene	202	ug/l	50
BJ0338	GW-2R-D	890208	Trichloroethylene	275	ug/l	50
BJ0338	GW-2R-D	890208	1,2-Dichloroethane	507	ug/l	50
BJ0338	GW-2R-D	890208	Alkalinity as CaCO3	170	mg/l	5
BJ0338	GW-2R-D	890208	Chloride	256	mg/l	1.0
BJ0338	GW-2R-D	890208	Chloroform	898	ug/l	50
BJ0338	GW-2R-D	890208	Phenol	8.24	ug/l	1.5
BJ0338	GW-2R-D	890208	Sulfate as SO4	260	mg/l	5
BJ0338	GW-2R-D	890208	Total Dissolved Solids (TDS)	1160	mg/l	10
BJ2062	GW-2R	890227	1,2-Dichloroethane	770	ug/l	28
BJ2062	GW-2R	890227	Chloroform	1040	ug/l	16
BJ2062	GW-2R	890227	Methylene chloride	86.3	ug/l	28
BJ2062	GW-2R	890227	Trichloroethylene	426	ug/l	19
BJ2063	GW-2R	890301	Trichloroethylene	150	ug/l	9.5
BJ2063	GW-2R	890301	1,2-Dichloroethane	273	ug/l	14
BJ2063	GW-2R	890301	Chloroform	394	ug/l	8.0
BJ2063	GW-2R	890301	Methylene chloride	34.4	ug/l	14

ETC#	DM ID	DATE	PARAMETER	VALUE	UNIT	MDL
BJ0346	GW-8D	890210	1,2-Trans-dichloroethylene	7.99	ug/l	1.6
BJ0346	GW-8D	890210	Alkalinity as CaCO3	62	mg/l	5
BJ0346	GW-8D	890210	Chloride	212	mg/l	1.0
BJ0346	GW-8D	890210	Sulfate as SO4	360	mg/l	5
BJ0346	GW-8D	890210	Total Dissolved Solids (TDS)	950	mg/l	10
BJ0346	GW-8D	890210	Trichloroethylene	10.4	ug/l	1.9
BJ0757	GW-11D	890213	1,1,1-Trichloroethane	28.1	ug/l	3.8
BJ0757	GW-11D	890213	1,1-Dichloroethane	8.68	ug/l	4.7
BJ0757	GW-11D	890213	1,1-Dichloroethylene	15.4	ug/l	2.8
BJ0757	GW-11D	890213	1,2-Dichloroethane	61.0	ug/l	2.8
BJ0757	GW-11D	890213	1,2-Trans-dichloroethylene	120	ug/l	1.6
BJ0757	GW-11D	890213	Alkalinity as CaCO3	260	mg/l	5
BJ0757	GW-11D	890213	Chloride	153.6	mg/l	1.0
BJ0757	GW-11D	890213	Chloroform	6.28	ug/l	1.6
BJ0757	GW-11D	890213	Methylene chloride	11.5	ug/l	2.8
BJ0757	GW-11D	890213	Sulfate as SO4	210	mg/l	5
BJ0757	GW-11D	890213	Tetrachloroethylene	226	ug/l	4.1
BJ0757	GW-11D	890213	Toluene	12.0	ug/l	6.0
BJ0757	GW-11D	890213	Total Dissolved Solids (TDS)	850	mg/l	10
BJ0757	GW-11D	890213	Trichloroethylene	431	ug/l	1.9
BJ0759	GW-12D	890213	1,1,1-Trichloroethane	513	ug/l	380
BJ0759	GW-12D	890213	1,1-Dichloroethylene	373	ug/l	280
BJ0759	GW-12D	890213	Alkalinity as CaCO3	760	mg/l	5
BJ0759	GW-12D	890213	Chloride	526	mg/l	1.0
BJ0759	GW-12D	890213	Petroleum Hydrocarbons (IR)	1.6	mg/l	1.0
BJ0759	GW-12D	890213	Phenol	9.62	ug/l	1.7
BJ0759	GW-12D	890213	Sulfate as SO4	41	mg/l	5
BJ0759	GW-12D	890213	Tetrachloroethylene	683	ug/l	410
BJ0759	GW-12D	890213	Toluene	949	ug/l	600
BJ0759	GW-12D	890213	Total Dissolved Solids (TDS)	2070	mg/l	10
BJ0759	GW-12D	890213	Trichloroethylene	10100	ug/l	190
BJ0756	GW-13D	890213	1,1,1-Trichloroethane	154	ug/l	76
BJ0756	GW-13D	890213	1,1-Dichloroethylene	81.6	ug/l	56
BJ0756	GW-13D	890213	1,2-Dichloroethane	125	ug/l	56
BJ0756	GW-13D	890213	1,2-Trans-dichloroethylene	960	ug/l	32
BJ0756	GW-13D	890213	Alkalinity as CaCO3	61	mg/l	5
BJ0756	GW-13D	890213	Chloride	300	mg/l	1.0
BJ0756	GW-13D	890213	Chloroform	240	ug/l	32
BJ0756	GW-13D	890213	Sulfate as SO4	240	mg/l	5
BJ0756	GW-13D	890213	Tetrachloroethylene	218	ug/l	82
BJ0756	GW-13D	890213	Total Dissolved Solids (TDS)	1090	mg/l	10
BJ0756	GW-13D	890213	Trichloroethylene	1450	ug/l	38

ETC#	Well ID	DATE	PARAMETER	VALUE	UNIT	MDL
BH8649	MW12-S1	890117	Nickel, Total	31000	ug/kg	2800
BH8649	MW12-S1	890117	Tetrachloroethylene	4420	ug/kg	5.0
BH8649	MW12-S1	890117	Toluene	2430	ug/kg	5.0
BH8649	MW12-S1	890117	Trichloroethylene	3230	ug/kg	5.0
BH8649	MW12-S1	890117	Zinc, Total	74000	ug/kg	2800
BH8649	MW12-S1	890117	m-Xylene	2130	ug/kg	5.0
BH8649	MW12-S1	890117	o+p-Xylenes	1650	ug/kg	5.0
BH8454	MW12-S2	890117	Methylene chloride	6.08	ug/kg	5.0
BH8454	MW12-S2	890117	Trichloroethylene	23.4	ug/kg	5.0
BH8673	MW13-S1	890123	Antimony, Total	11000	ug/kg	8900
BH8673	MW13-S1	890123	Arsenic, Total	5500	ug/kg	5000
BH8673	MW13-S1	890123	Beryllium, Total	770	ug/kg	150
BH8673	MW13-S1	890123	Chromium, Total	20000	ug/kg	1500
BH8673	MW13-S1	890123	Copper, Total	30000	ug/kg	1500
BH8673	MW13-S1	890123	Cyanide, Total	0.24	mg/kg	0.71
BH8673	MW13-S1	890123	Lead, Total	25000	ug/kg	5000
BH8673	MW13-S1	890123	Methylene chloride	5.86	ug/kg	5.0
BH8673	MW13-S1	890123	Nickel, Total	29000	ug/kg	3000
BH8673	MW13-S1	890123	Petroleum Hydrocarbons (IR)	70	mg/l	25
BH8673	MW13-S1	890123	Phenolics, Total	0.1	mg/kg	3.6
BH8673	MW13-S1	890123	Trichloroethylene	15.8	ug/kg	5.0
BH8673	MW13-S1	890123	Zinc, Total	69000	ug/kg	3000
BH8674	MW13-S2	890124	1,1,1-Trichloroethane	1930	ug/kg	250
BH8674	MW13-S2	890124	1,1-Dichloroethylene	812	ug/kg	250
BH8674	MW13-S2	890124	1,2-Trans-dichloroethylene	1190	ug/kg	250
BH8674	MW13-S2	890124	Antimony, Total	11000	ug/kg	8800
BH8674	MW13-S2	890124	Beryllium, Total	1000	ug/kg	150
BH8674	MW13-S2	890124	Chlorobenzene	446	ug/kg	300
BH8674	MW13-S2	890124	Chromium, Total	30000	ug/kg	1500
BH8674	MW13-S2	890124	Copper, Total	40000	ug/kg	1500
BH8674	MW13-S2	890124	Cyanide, Total	0.11	mg/kg	0.72
BH8674	MW13-S2	890124	Lead, Total	25000	ug/kg	5000
BH8674	MW13-S2	890124	Nickel, Total	40000	ug/kg	2900
BH8674	MW13-S2	890124	Petroleum Hydrocarbons (IR)	69	mg/l	25
BH8674	MW13-S2	890124	Phenolics, Total	0.6	mg/kg	3.6
BH8674	MW13-S2	890124	Tetrachloroethylene	333	ug/kg	250
BH8674	MW13-S2	890124	Toluene	5950	ug/kg	300
BH8674	MW13-S2	890124	Trichloroethylene	19900	ug/kg	250
BH8674	MW13-S2	890124	Zinc, Total	93000	ug/kg	2900

MW = Soil Sample

ETC#	LID	DATE	PARAMETER			
BH8450	MW8-S1	890116	Arsenic, Total	5400	ug/kg	2600
BH8450	MW8-S1	890116	Beryllium, Total	840	ug/kg	130
BH8450	MW8-S1	890116	Chromium, Total	25000	ug/kg	1300
BH8450	MW8-S1	890116	Copper, Total	35000	ug/kg	1300
BH8450	MW8-S1	890116	Lead, Total	15000	ug/kg	640
BH8450	MW8-S1	890116	Methylene chloride	6.45	ug/kg	5.0
BH8450	MW8-S1	890116	Nickel, Total	34000	ug/kg	2600
BH8450	MW8-S1	890116	Zinc, Total	77000	ug/kg	2600
BH8451	MW8-S1D	890116	Arsenic, Total	5400	ug/kg	2700
BH8451	MW8-S1D	890116	Beryllium, Total	760	ug/kg	130
BH8451	MW8-S1D	890116	Chromium, Total	23000	ug/kg	1300
BH8451	MW8-S1D	890116	Copper, Total	31000	ug/kg	1300
BH8451	MW8-S1D	890116	Lead, Total	13000	ug/kg	660
BH8451	MW8-S1D	890116	Methylene chloride	7.07	ug/kg	5.0
BH8451	MW8-S1D	890116	Nickel, Total	31000	ug/kg	2700
BH8451	MW8-S1D	890116	Zinc, Total	70000	ug/kg	2700
BH8449	MW8-S2	890116	Arsenic, Total	4000	ug/kg	3000
BH8449	MW8-S2	890116	Beryllium, Total	1200	ug/kg	150
BH8449	MW8-S2	890116	Chromium, Total	29000	ug/kg	1500
BH8449	MW8-S2	890116	Copper, Total	34000	ug/kg	1500
BH8449	MW8-S2	890116	Delta-BHC	27.0	ug/kg	2.5
BH8449	MW8-S2	890116	Lead, Total	11000	ug/kg	740
BH8449	MW8-S2	890116	Methyl ethyl ketone	83.2	ug/kg	10
BH8449	MW8-S2	890116	Methylene chloride	77.3	ug/kg	5.0
BH8449	MW8-S2	890116	Nickel, Total	37000	ug/kg	3000
BH8449	MW8-S2	890116	Zinc, Total	87000	ug/kg	3000
BH8453	MW11-S1	890118	1,1,1-Trichloroethane	8.62	ug/kg	5.0
BH8453	MW11-S1	890118	1,1-Dichloroethylene	6.53	ug/kg	5.0
BH8453	MW11-S1	890118	Beryllium, Total	700	ug/kg	130
BH8453	MW11-S1	890118	Cadmium, Total	380	ug/kg	260
BH8453	MW11-S1	890118	Chromium, Total	27000	ug/kg	1300
BH8453	MW11-S1	890118	Copper, Total	31000	ug/kg	1300
BH8453	MW11-S1	890118	Lead, Total	19000	ug/kg	660
BH8453	MW11-S1	890118	Methylene chloride	17.7	ug/kg	5.0
BH8453	MW11-S1	890118	Nickel, Total	31000	ug/kg	2600
BH8453	MW11-S1	890118	Tetrachloroethylene	40.5	ug/kg	5.0
BH8453	MW11-S1	890118	Trichloroethylene	294	ug/kg	5.0
BH8453	MW11-S1	890118	Zinc, Total	83000	ug/kg	2600
BH8455	MW11-S2	890118	Tetrachloroethylene	84.8	ug/kg	50
BH8455	MW11-S2	890118	Trichloroethylene	499	ug/kg	50
BH8649	MW12-S1	890117	1,1,1-Trichloroethane	1120	ug/kg	5.0
BH8649	MW12-S1	890117	1,1-Dichloroethane	20.3	ug/kg	5.0
BH8649	MW12-S1	890117	1,1-Dichloroethylene	349	ug/kg	5.0
BH8649	MW12-S1	890117	1,2-Trans-dichloroethylene	48.7	ug/kg	5.0
BH8649	MW12-S1	890117	Benzene	5.92	ug/kg	5.0
BH8649	MW12-S1	890117	Beryllium, Total	830	ug/kg	140
BH8649	MW12-S1	890117	Chlorobenzene	444	ug/kg	6.0
BH8649	MW12-S1	890117	Chloroform	82.0	ug/kg	5.0
BH8649	MW12-S1	890117	Chromium, Total	26000	ug/kg	1400
BH8649	MW12-S1	890117	Copper, Total	31000	ug/kg	1400
BH8649	MW12-S1	890117	Cyanide, Total	0.93	mg/kg	0.69
BH8649	MW12-S1	890117	Ethylbenzene	934	ug/kg	7.2
BH8649	MW12-S1	890117	Lead, Total	15000	ug/kg	690
BH8649	MW12-S1	890117	Methyl ethyl ketone	53.1	ug/kg	10
BH8649	MW12-S1	890117	Methylene chloride	47.2	ug/kg	5.0

ETC#	LID	DATE	PARAMETER	VALUE	UNIT	DML
BH8324	MW2-S6	890111	1,1-Dichloroethylene	731	ug/kg	500
BH8324	MW2-S6	890111	1,2-Dichloroethane	6880	ug/kg	500
BH8324	MW2-S6	890111	Benzene	1320	ug/kg	500
BH8324	MW2-S6	890111	Beryllium, Total	430	ug/kg	110
BH8324	MW2-S6	890111	Chlorobenzene	1410	ug/kg	600
BH8324	MW2-S6	890111	Chloroform	11000	ug/kg	500
BH8324	MW2-S6	890111	Chromium, Total	12000	ug/kg	1100
BH8324	MW2-S6	890111	Copper, Total	11000	ug/kg	1100
BH8324	MW2-S6	890111	Cyanide, Total	0.59	mg/kg	0.57
BH8324	MW2-S6	890111	Lead, Total	8400	ug/kg	570
BH8324	MW2-S6	890111	Nickel, Total	16000	ug/kg	2300
BH8324	MW2-S6	890111	Toluene	1410	ug/kg	600
BH8324	MW2-S6	890111	Trichloroethylene	2830	ug/kg	500
BH8324	MW2-S6	890111	Zinc, Total	37000	ug/kg	2300
BH8328	MW2-S7	890111	1,2-Dichloroethane	261	ug/kg	5.0
BH8328	MW2-S7	890111	Beryllium, Total	240	ug/kg	120
BH8328	MW2-S7	890111	Chloroform	309	ug/kg	5.0
BH8328	MW2-S7	890111	Chromium, Total	8800	ug/kg	1200
BH8328	MW2-S7	890111	Copper, Total	8300	ug/kg	1200
BH8328	MW2-S7	890111	Cyanide, Total	0.80	mg/kg	0.56
BH8328	MW2-S7	890111	Lead, Total	3700	ug/kg	580
BH8328	MW2-S7	890111	Methylene chloride	83.4	ug/kg	5.0
BH8328	MW2-S7	890111	Nickel, Total	10000	ug/kg	2300
BH8328	MW2-S7	890111	Trichloroethylene	38.1	ug/kg	5.0
BH8328	MW2-S7	890111	Zinc, Total	23000	ug/kg	2300
BH8360	MW2-S8	890112	1,2-Dichloroethane	1020	ug/kg	250
BH8360	MW2-S8	890112	Beryllium, Total	780	ug/kg	120
BH8360	MW2-S8	890112	Chloroform	1570	ug/kg	250
BH8360	MW2-S8	890112	Chromium, Total	21000	ug/kg	1200
BH8360	MW2-S8	890112	Copper, Total	22000	ug/kg	1200
BH8360	MW2-S8	890112	Lead, Total	9100	ug/kg	620
BH8360	MW2-S8	890112	Nickel, Total	26000	ug/kg	2500
BH8360	MW2-S8	890112	Trichloroethylene	782	ug/kg	250
BH8360	MW2-S8	890112	Zinc, Total	62000	ug/kg	2500
BH8357	MW2-S9	890112	Beryllium, Total	520	ug/kg	120
BH8357	MW2-S9	890112	Chromium, Total	24000	ug/kg	1200
BH8357	MW2-S9	890112	Copper, Total	18000	ug/kg	1200
BH8357	MW2-S9	890112	Lead, Total	6000	ug/kg	620
BH8357	MW2-S9	890112	Nickel, Total	20000	ug/kg	2500
BH8357	MW2-S9	890112	Zinc, Total	48000	ug/kg	2500
BH8359	MW2-S10	890112	1,2-Dichloroethane	5220	ug/kg	500
BH8359	MW2-S10	890112	Arsenic, Total	4000	ug/kg	2400
BH8359	MW2-S10	890112	Beryllium, Total	670	ug/kg	120
BH8359	MW2-S10	890112	Chloroform	8530	ug/kg	500
BH8359	MW2-S10	890112	Chromium, Total	23000	ug/kg	1200
BH8359	MW2-S10	890112	Copper, Total	26000	ug/kg	1200
BH8359	MW2-S10	890112	Cyanide, Total	0.63	mg/kg	0.62
BH8359	MW2-S10	890112	Lead, Total	9700	ug/kg	610
BH8359	MW2-S10	890112	Methylene chloride	1070	ug/kg	500
BH8359	MW2-S10	890112	Nickel, Total	27000	ug/kg	2400
BH8359	MW2-S10	890112	Petroleum Hydrocarbons (IR)	96	mg/kg	31
BH8359	MW2-S10	890112	Phenolics, Total	4.2	mg/kg	3.1
BH8359	MW2-S10	890112	Trichloroethylene	1520	ug/kg	500
BH8359	MW2-S10	890112	Zinc, Total	64000	ug/kg	2400

ETC#	PM ID	DATE	PARAMETER	VALUE	UNIT	MDL
BH8358	MW2-S11	890112	Beryllium, Total	190	ug/kg	120
BH8358	MW2-S11	890112	Chromium, Total	5800	ug/kg	1200
BH8358	MW2-S11	890112	Copper, Total	5600	ug/kg	1200
BH8358	MW2-S11	890112	Lead, Total	3400	ug/kg	610
BH8358	MW2-S11	890112	Nickel, Total	7400	ug/kg	2400
BH8358	MW2-S11	890112	Zinc, Total	19000	ug/kg	2400
BH8358	MW2-S11	890112	bis(2-Ethylhexyl)phthalate	4890	ug/kg	390
BH8326	MW2-S12	890113	1,2-Dichloroethane	8100	ug/kg	500
BH8326	MW2-S12	890113	Chloroform	44200	ug/kg	500
BH[illegible]	MW2-S12	890113	Methylene chloride	7670	ug/kg	500
B[illegible]	MW2-S12	890113	Trichloroethylene	3250	ug/kg	500
BH[illegible]	MW2-S13	890113	Beryllium, Total	490	ug/kg	110
BH8327	MW2-S13	890113	Chromium, Total	13000	ug/kg	1100
BH8327	MW2-S13	890113	Copper, Total	8300	ug/kg	1100
BH8327	MW2-S13	890113	Cyanide, Total	0.74	mg/kg	0.56
BH8327	MW2-S13	890113	Lead, Total	5100	ug/kg	560
BH8327	MW2-S13	890113	Nickel, Total	19000	ug/kg	2200
BH8327	MW2-S13	890113	Zinc, Total	43000	ug/kg	2200
BH8325	MW2-S14	890113	1,2-Dichloroethane	221	ug/kg	50
BH8325	MW2-S14	890113	Chloroform	519	ug/kg	50
BH8325	MW2-S14	890113	Methylene chloride	630	ug/kg	50

VANCE SKINNER COMPANY INC.

931 West Sherman Avenue
Vineland, New Jersey 08360
609 - 692 - 5439

DAMES & MOORE
6 COMMERCE DRIVE
CRANFORD, N.J. 07016
14488-002

GEOPHYSICAL LOG

MW-2R

Job Name: S.C.P.
Job Loc.: CARLSTAT, N.J.

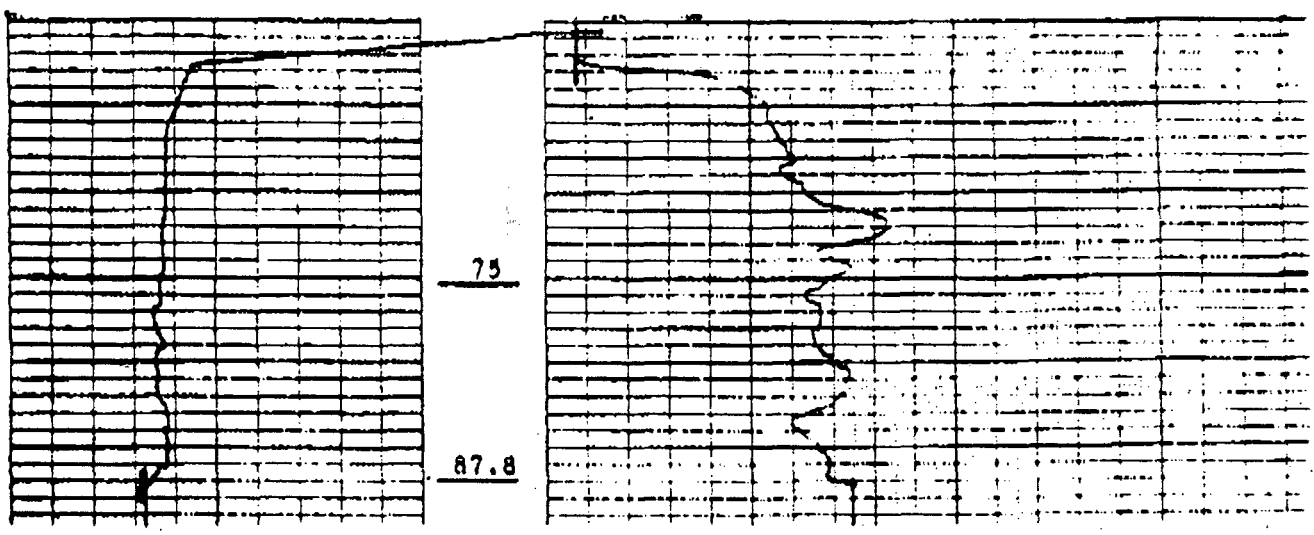
Date Logged: 26 Jan. 1989
Borehole Diameter: 6 in.
Drilling Fluid: None
Logging Rate: 18 Ft/Min.
Vertical Scale: 1 Ft/Div.

SPONTANEOUS POTENTIAL

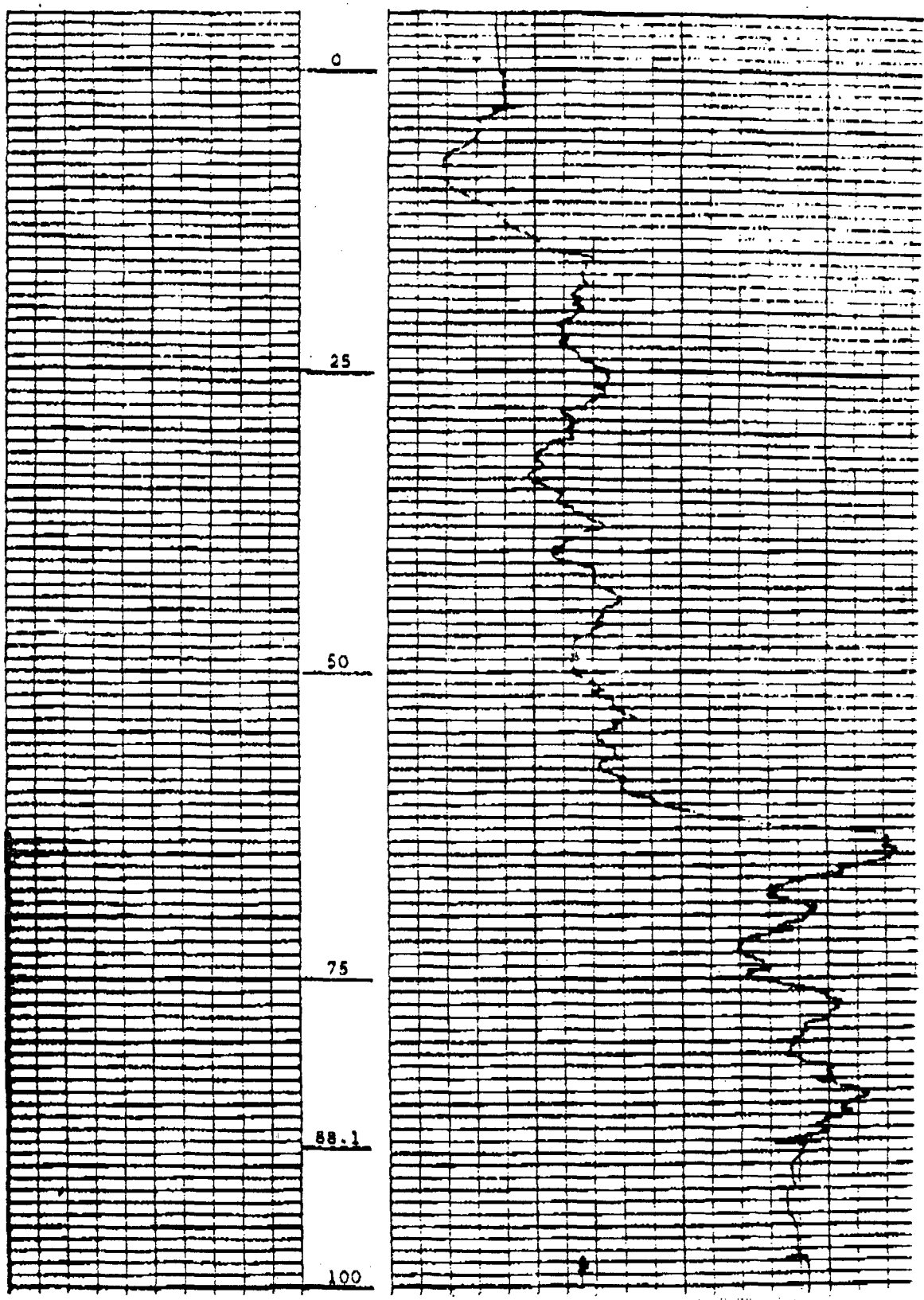
Mv/Div.: 5

RESISTIVITY
Type: Single Point

Ohm/Div.: 10



10 count/sec =1 division
Time constant: 3 seconds
logging rate:18 ft/minute



GROUNDWATER MONITORING WITH A GEOFLOW METER AT:

Carlstadt, New Jersey

PREPARED FOR:

Theodore Toskos
Dames & Moore
12 Commerce Drive
Cranford, New Jersey 07016

PREPARED BY:

X-V Associates, Inc.
281 Main Street
Falmouth, MA. 02540

January 1989

K.V. Associates, Inc. was contracted by Dames & Moore of Cranford, New Jersey to perform Geoflow measurements in a 6" I.D. open borehole, designated MW2R, at the SCP Superfund site located on Route 120, in Carlstadt, New Jersey. Monitoring commenced on the 25th of January, 1989, and concluded the same day. The prevailing weather condition was clear/partly cloudy, windy and seasonably cold.

The monitoring equipment used to determine flow parameters was the Model 30 Geoflow groundwater flowmeter. The groundwater flowmeter works on the principle of heat diffusion through a porous medium of glass beads in water and unconsolidated soils. The propagation of a single pulsed point source of heat, discreetly emitted from a submersible probe, is controlled by the groundwater flow direction and velocity. The initial heat source propagates laterally towards thermistors which are diametrically paired and circumscribing the heat source. The relative difference between the paired thermistors is digitally displayed on the land based control box, and represents directional vector components of the displaced temperature gradient field. The Geoflow Meters are now listed in the National Water Well Associations'Annual Equipment Catalog with a chapter devoted to field procedures in the ASTM's text on groundwater techniques (see Appendix).

Calibration

Prior to the monitoring phase of this project, the Geoflow Meter was calibrated against a known horizontal transport velocity in a portable 6" flow chamber/manometer. The probe was directly inserted into unconsolidated moderately sorted sand deposits located within the chamber. Due to the nature of the fractured shale borehole deposits and subsequent presumption of a vertical component in flow direction, simulation of the borehole in the flow chamber and consequent absolute velocity approximation was not feasible in calibrating, although relative velocities can be and were obtained (see appendix). The calibration procedure results in the determination of the instrumental sensitivity to the flow chamber threshold transport velocity and directional integrity.

Summarizing, the in situ monitoring of MW2R represents the flow direction and velocity in the horizontal plane, therefore, any horizontal deviation of flow results in a velocity attenuation created by the 3-D projection of the temperature gradient on the 2-D sensory plane. Directional determination is accurate in the horizontal plane and referenced to magnetic north.

Procedure/Results

Borehole MW2R was profiled at 5 ft. intervals from 85' to 70' below top of external casing stickup. These depths, corresponding to open borehole fractured shale deposits, were

monitored over a seven hour period.

Results of monitoring showed a relatively small variation in flow direction and relative velocity with depth of measurement (Direction: 21 - 31 degrees (MN), Velocity: 26 - 36 units). The cumulative flow direction, based on the vector resultant of the different monitoring depths, is 30 degrees from MN. The initial flow measurement taken at 85' ft. below TOC was non-conclusive due to irregular vector patterns, consequently, data was not used in the determination of the cumulative flow direction.

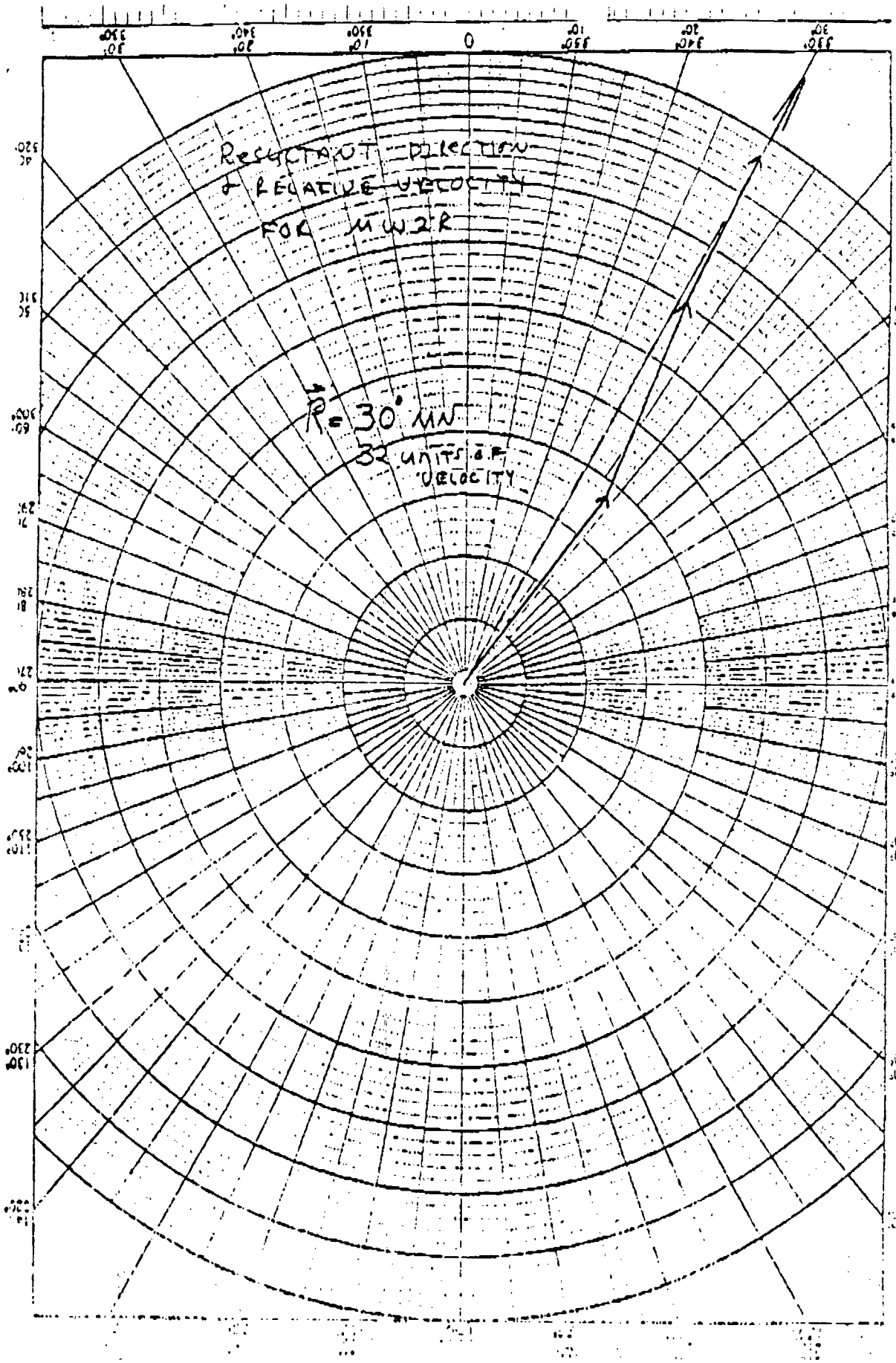
Conclusions

The following deductions can be extracted from this groundwater monitoring interim:

1) Groundwater proceeds, relative to the horizontal plane, in a northnortheast direction (30 degrees MN).

2) Groundwater direction and relative velocities encountered in monitoring were fairly consistent, relative to time and depth of measurement. One may infer that a certain degree of flow stability and continuity exists within this flow regime on the day of monitoring.

APPENDIX


0
RESULTANT DIRECTION
& RELATIVE VELOCITY
FOR MW2R
R = 30° MN
32 UNITS OF
VELOCITY

GROUNDWATER FLOW WORKSHEET

For use with K-V Associates, Inc. Groundwater Flowmeters, 4 channel probe

EPASCO SERVICES INC. - JACKIE MUMMA

Operator: Andrew Brolowski Date: 1/25/89

Station: MW2R Time: 11:20-12:10

Location: SCD (PATTERSON PLANK RD/RTE 130)

Soil Conditions: FRACTURED SHALE/REDBEDS

Depth to Measurement: 85.0' (TOC)

#1

MODEL 30-123
2.0 Amps
X 4 Sens.

Table of LCD Readout

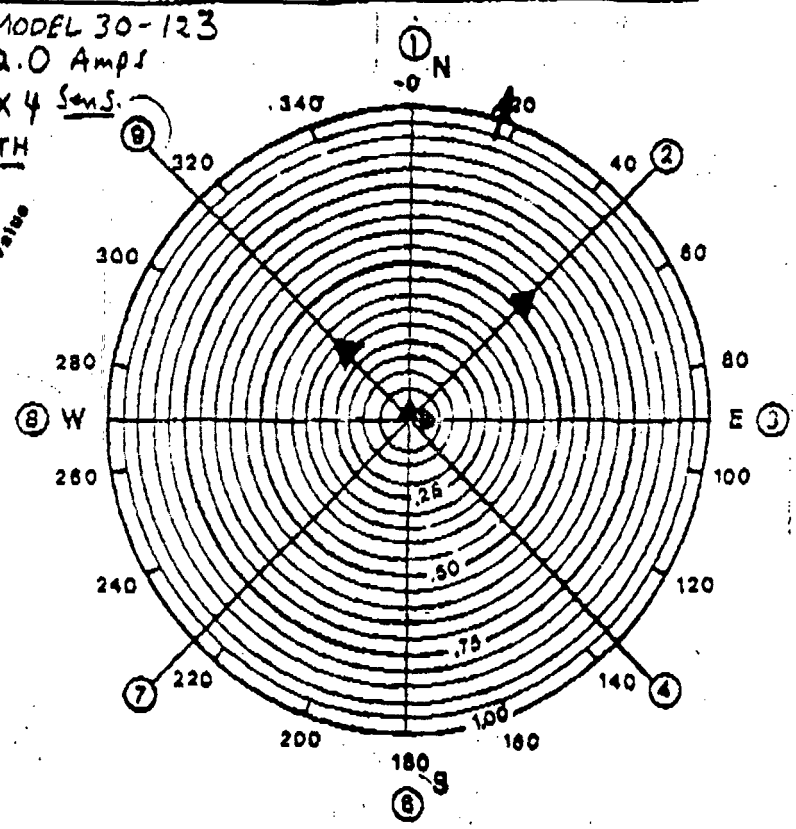
1 → N

Probe pair	A start	B end	C B-A
+1/-6	-50	-124	-74
+2/-7	-180	-155	+25
+3/-8	-190	-170	-20
+4/-9	+8	+42	+34

ROTATE PROBE 180° AT SAME DEPTH

→ S

Probe air	D start	E end	S E-D	F N-S / 2	G F / max. value
+1/-6	-36	-112	-76	1	
2/-7	-200	-198	+2	1.5	
+3/-8	-130	-150	-20	1.5	
-4/-9	+9	-56	-48	-7	

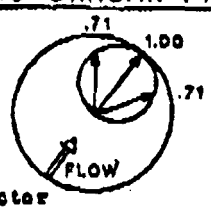


Use of Table

COLUMN G - Divide each reading in column F by the largest absolute value. Draw these 4 vectors on the circle chart according to the scale provided (i.e. strongest vector = 1.00).

Cosine Test Shows Uniform Flow

Vector end points will closely fit a circle inscribed about the longest vector. Values in column G will approximate vector lengths shown at right.



Vector Resolution to Determine Direction

1. Use KVA Vector Addition Program (TI-58/59-HP41C) calculators

OR

2. Solve graphically by placing 4 individual vector segments sequentially head to tail. (See manual for detailed instructions).

Velocity Determination

Refer to your calibration curve of readout versus preferred units of flow (e.g. feet per day).

Direction: 18° MN Velocity: 7

Form 104 available from your local K-V Associates, Inc. dealer.

Copyright 1981 K-V ASSOCIATES, INC., Falmouth, MA 02540 9/82

GROUNDWATER FLOW WORKSHEET

For use with K-V Associates, Inc. Groundwater Flowmeters, 4 channel probe

Table of LCD Readout

1→N

Probe pair	A start	B end	C B-A
+1/-6	-34	-15	+19
+2/-7	-260	-160	+100
+3/-8	-250	-210	+40
+4/-9	+60	+43	-17

Operator: Andy Bielowicki Date: 1/25/89 #2

Station: MW2R Time: 13:00-13:20

Location: SC [illegible] 120 - [illegible] FLOW FIANK RD

Soil Conditions: FRACTURED [illegible]

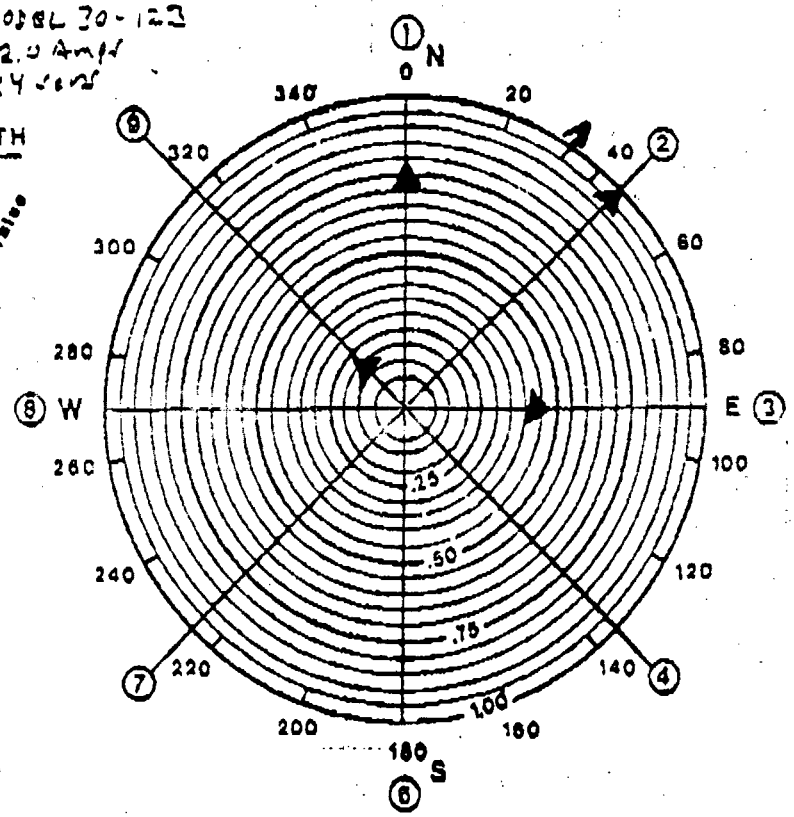
Depth to Measurement: 80'(TOC)

MODEL 30-123
2.0 Amp
X4 gain

ROTATE PROBE 180° AT SAME DEPTH

→S

Probe pair	D start	E end	S E-D	F N-S/2	G F/max. value
+1/-6	-40	-83	-43	31	
+2/-7	-275	-254	+21	40	
+3/-8	-227	-223	+4	18	
+4/-9	+70	+72	+2	9.5	

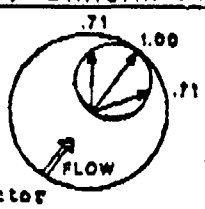


Use of Table

COLUMN G - Divide each reading in column F by the largest absolute value. Draw these 4 vectors on the circle chart according to the scale provided (i.e. strongest vector = 1.00).

Cosine Test Shows Uniform Flow

Vector end points will closely fit a circle inscribed about the longest vector. Values in column G will approximate vector lengths shown at right.



Vector Resolution to Determine Direction

1. Use KVA Vector Addition Program (TI-58/59-HP41C) calculators

OR

2. Solve graphically by placing 4 individual vector segments sequentially head to tail. (See manual for detailed instructions).

Velocity Determination

Refer to your calibration curve of readout versus preferred units of flow (e.g. feet per day).

Direction: 31' MN Velocity: 38

Form 104 available from your local K-V Associates, Inc. dealer.

Copyright 1981 K-V ASSOCIATES, INC., Falmouth, MA 02540 9/82

GROUNDWATER FLOW WORKSHEET

For use with K-V Associates, Inc. Groundwater Flowmeters, 4 channel probe

Table of LCD Readout

1→MS

Probe pair	A start	B end	C B-A
+1/-6	-40	-97	-57
+2/-7	-245	-233	+12
+3/-8	-220	-223	-3
+4/-9	-70	-90	-20

Operator: [illegible] Date: 1/25/89

Station: MW2R Time: 1510-1610 #3

Location: SCR (RTE 20 — [illegible])

Soil Conditions: FLAGGED SHALE/SS

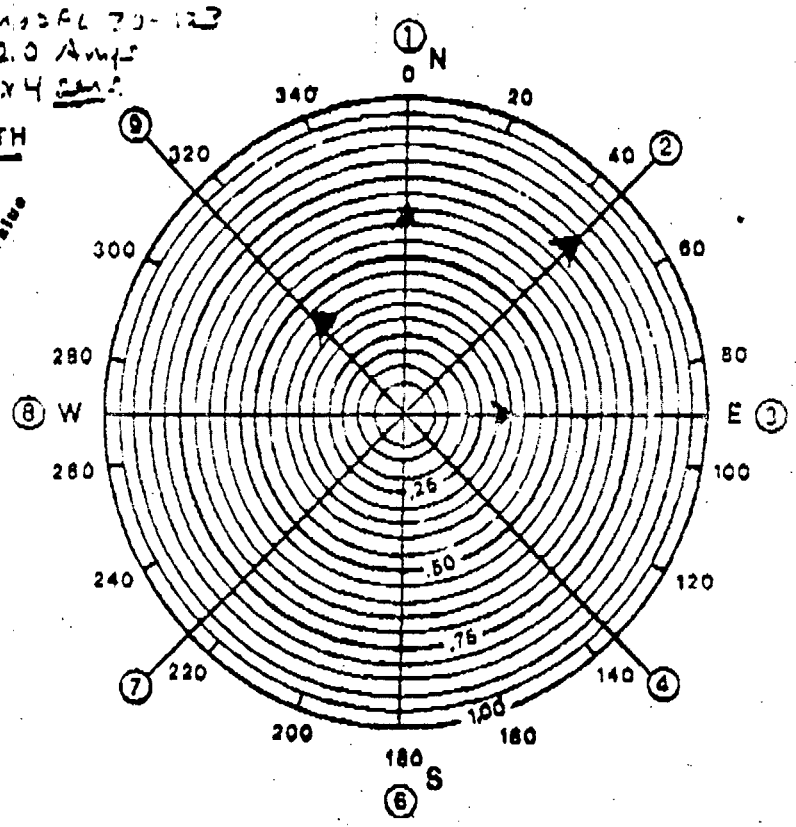
Depth to Measurement: 75.0 TOC

MODEL 70-123
2.0 Amps
x4 [illegible]

ROTATE PROBE 180° AT SAME DEPTH

→8 N

Probe air	D start	E end	S E-D	F N-S / 2	G F / max. value
+1/-6	-41	-44	-3	+ 27	
-2/-7	-240	-164	+76	+ 22	
+3/-8	-190	-166	+24	+ 17	
-4/-9	-50	-65	-15	- 18	

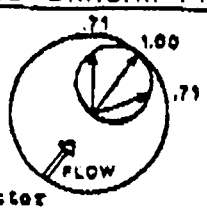


Use of Table

COLUMN G - Divide each reading in column F by the largest absolute value. Draw these 4 vectors on the circle chart according to the scale provided (i.e. strongest vector = 1.00).

Cosine Test Shows Uniform Flow

Vector end points will closely fit a circle inscribed about the largest vector. Values in column G will approximate vector lengths shown at right.



Vector Resolution to Determine Direction

1. Use KVA Vector Addition Program (TI-55/HP41C) calculators

OR

2. Solve graphically by placing 4 individual vector segments sequentially head to tail. (See manual for detailed instructions).

Velocity Determination

Refer to your calibration curve of readout versus preferred units of flow (e.g. feet per day).

Direction: 21° NN Velocity: 33

Form 104 available from your local K-V Associates, Inc. dealer.

Copyright 1981 K-V ASSOCIATES, INC., Falmouth, MA 02540 9/82

GROUNDWATER FLOW WORKSHEET

For use with K-V Associates, Inc. Groundwater Flowmeters, 4 channel probe

#4

Table of LCD Readout

1→N

Probe pair	A start	B end	C B-A
+1/-6	90	50	70
+2/-7	213	273	60
+3/-8	167	190	23
+4/-9	570	553	17

Operator: Andrew Beslowski Date: 1/25/89

Station: MW2R Time: 16:45-17:10

Location: SCRCRTE 120 - NJ

Soil Conditions: FRACTURED CHALK

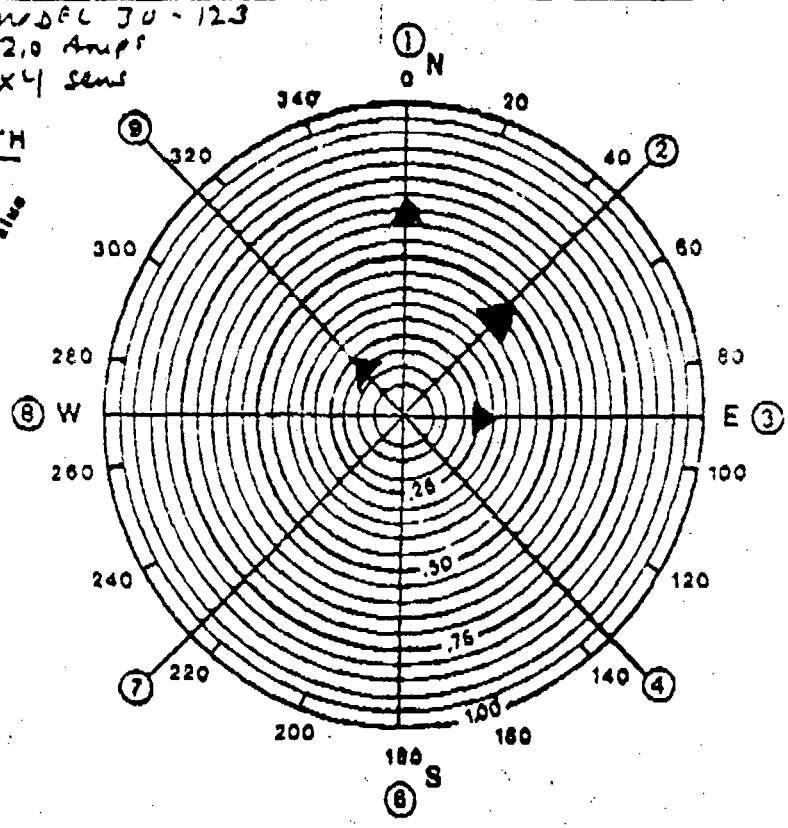
Depth to Measurement: 70' TOC

MODEL JU-123
2.0 Amps
x4 sens

ROTATE PROBE 180° AT SAME DEPTH

→S

Probe pair	D start	E end	S E-D	F N-S / 2	G F / max. value
+1/-6	31	96	65	+ 27.5	
+2/-7	320	320	100	+ 20	
+3/-8	174	221	47	+ 12	
+4/-9	570	572	2	- 9.5	

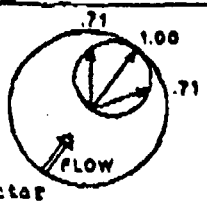


Use of Table

COLUMN G - Divide each reading in column F by the largest absolute value. Draw these 4 vectors on the circle chart according to the scale provided (i.e. strongest vector = 1.00).

Cosine Test Shows Uniform Flow

Vector end points will closely fit a circle inscribed about the strongest vector. Values in column G will approximate vector lengths shown at right.



Vector Resolution to Determine Direction

1. Use KVA Vector Addition Program (TI-58/59-HP41C) calculators

OR

2. Solve graphically by placing 4 individual vector segments sequentially head to tail. (See manual for detailed instructions).

Velocity Determination

Refer to your calibration curve of readout versus preferred units of flow (e.g. feet per day).

Direction: 22° NN Velocity: 26

Form 104 available from your local K-V Associates, Inc. dealer.

Copyright 1981 K-V ASSOCIATES, INC., Falmouth, MA 02540 004079 9/82

GROUNDWATER FLOW WORKSHEET

For use with K-V Associates, Inc. Groundwater Flowmeters, 4 channel probe

Table of LCD Readout

1→N

Probe pair	A start	B end	C Δ
+1/-6	-74	-13	-61
+2/-7	+21	+8	-59
+3/-8	+4	-6	-10
+4/-9	-16	-47	-31

Operator: Andrew Bobowski Date: 2/1/89
Station: Calibration Time: 8:30
Location: K.V. Service Room
Soil Conditions: Fine - Coarse Sand
Depth to Measurement: Chamber 6"

MODEL 30-120
2.0 Amp
x 4 Sens

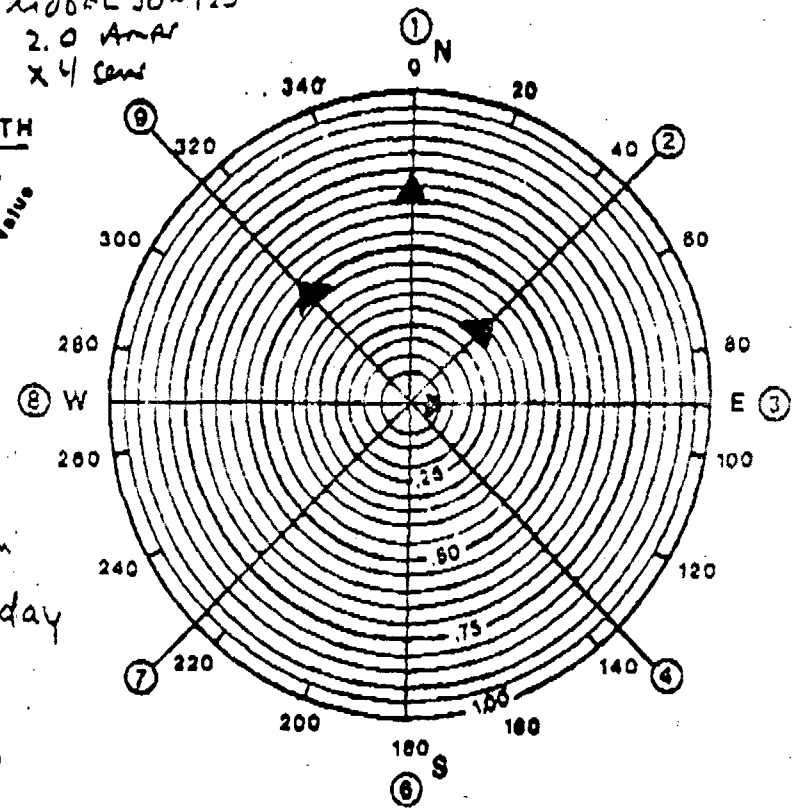
ROTATE PROBE 180° AT SAME DEPTH

→S

Probe pair	D start	E end	S E-D	F N-S/2	G F/max. value
+1/-6	-74	-123	-89	+ 95	
2/-7	+3	-4	-47	+ 38	
+3/-8	+1	-27	-21	+ 9	
4/-9	-21	+56	+77	- 54	

pump rate x Conversion factor

10ml/min x .26 = 2.6 ft/day

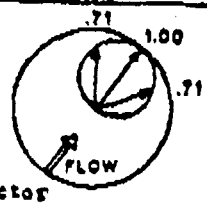


Use of Table

COLUMN G - Divide each reading in column F by the largest absolute value. Draw these 4 vectors on the circle chart according to the scale provided (i.e. strongest vector = 1.00).

Cosine Test Shows Uniform Flow

Vector end points will closely fit a circle inscribed about the longest vector. Values in column G will approximate vector lengths shown at right.



Vector Resolution to Determine Direction

1. Use KVA Vector Addition Program (T-88/89-HP41C) Calculators

OR

2. Solve graphically by placing 4 individual vector segments sequentially head to tail. (See manual for detailed instructions).

Velocity Determination

Refer to your calibration curve of readout versus preferred units of flow (e.g. feet per day).

Direction: 359° Velocity: 70

SENSITIVITY 70/2.6 = 27

Form 104 available from your local K-V Associates, Inc. dealer.

Copyright 1981 K-V ASSOCIATES, INC., Falmouth, MA 02540 9/82

004080

UNION CARBIDE

UNION CARBIDE CORPORATION
PACKAGING ENGINEERING

P. O. BOX 870, BOUND BROOK, NJ 08805
PHONE: (201) 563-6000

PANAFAX UF-600 TELECOPIER

Telecopier UNICOM Number: 8-422-5412
Direct Dial: 201-563-5412

Please Deliver the Following Pages to:

Name: Janet Feldstein
Firm: U.S. EPA Region II
City: New York
Phone:

From: H. G. Weil
Firm: UNION CARBIDE CORPORATION
City: BOUND BROOK, NJ 08805
Phone: 201-563-5905

Rec'd 3/17/89

Total number of pages 26 excluding cover letter.

Sent to: Telecopier Number 212-264-7611

Checking Number

Date: 3/17/89 Time: 4:20

IF YOU DO NOT RECEIVE ALL THE PAGES, PLEASE CALL BACK AS SOON AS POSSIBLE.

Operator's Name: Sue D'Agostino

Phone: 201-563-5907
UNICOM:

Special Instructions:

OC408