SFUND RECORDS CTR
88134167
ITX 2166-04746

SFUND RECORDS CTR
2166-04746

PACOIMA REMEDIATION 1984

RESPONSE TO QUESTION 7 PAGE 9

POOR LEGIBILITY

ONE OR MORE PAGES IN THIS DOCUMENT ARE DIFFICULT TO READ
DUE TO THE QUALITY OF THE ORIGINAL

2166-04746

Privileged and Company Private Attorney Client Communication and Work Product

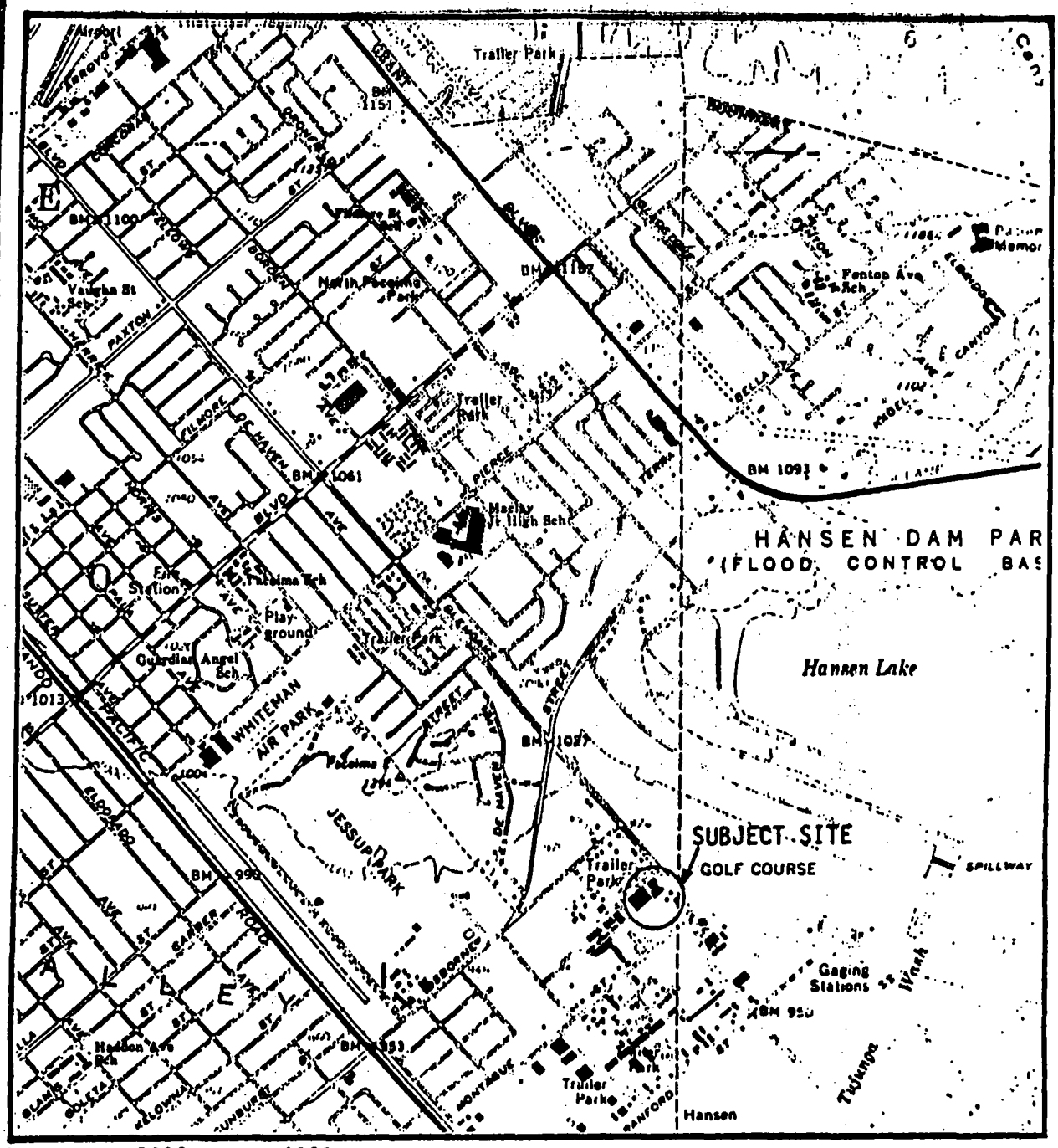
HR TEXTRON, INC.

PACOIMA SITE

DECEMBER 5, 1988

350061

INDEX MAP



0 2000 4000

scale feet

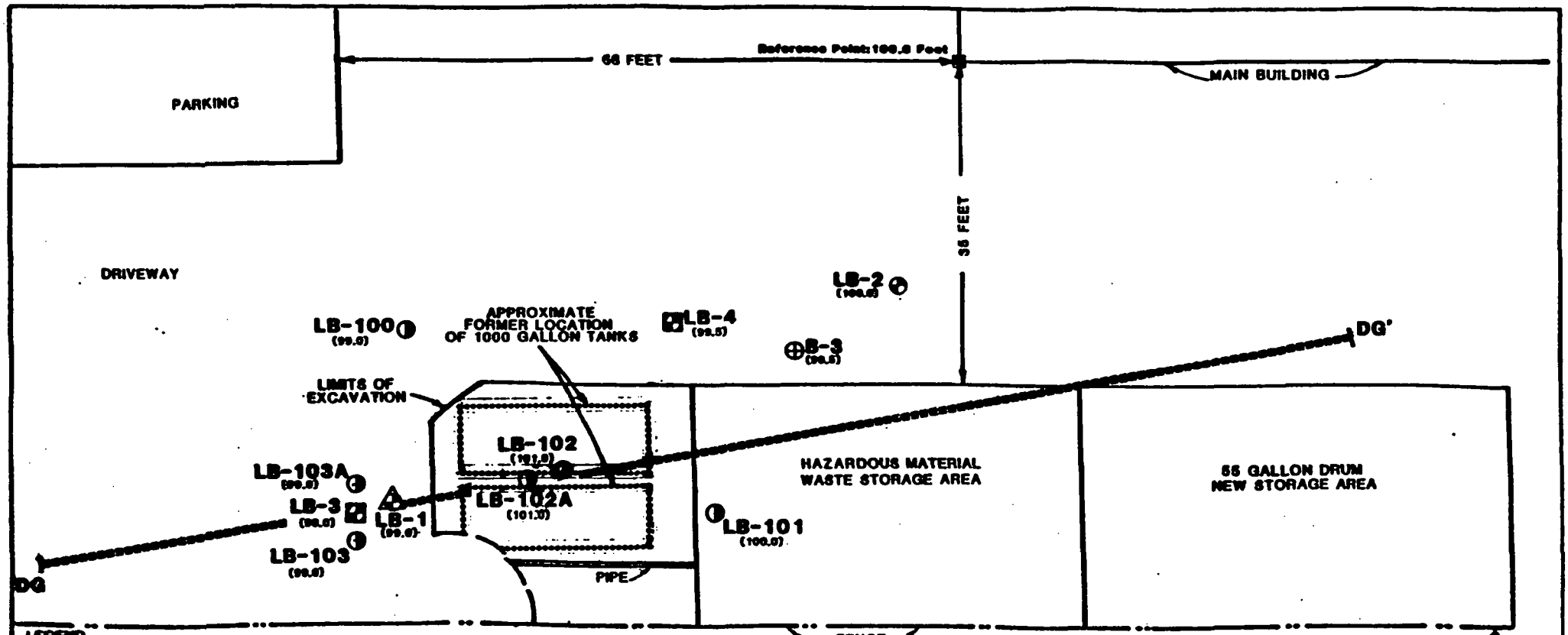
H. R. TEXTRON

10445 GLENOAKS BOULEVARD

CITY OF PACOIMA

(Subject Site Shown in Yellow)

Base Map: USGS San Fernando Quadrangle



LEGEND

(100.0) BORING ELEVATION RELATIVE TO REFERENCE POINT (LB-102 & LB-102A MEASURED TO TOP OF CASING

B-3 BORING DRILLED BY EARTH TECHNOLOGY GROUP 5/23/84

LB-1 ANGLE BORING DRILLED BY LEIGHTON & ASSOCIATES, INC. 5/30/85

LB-2 BORING DRILLED BY LEIGHTON & ASSOCIATES, INC. 5/30/85

TH-2 BORINGS DRILLED BY ENVIROPRO-5/29/86

LB-4 BORINGS DRILLED BY LEIGHTON & ASSOCIATES, INC. 1/88

LB-103 BORINGS DRILLED BY LEIGHTON & ASSOCIATES 9/88

DG DG' LOCATION OF GEOLOGIC CROSS-SECTION (See Plates 2 and 3)

PLATE 1

PLOT PLAN
SHOWING BORING LOCATIONS
HR TEXTRON
PACOIMA, CALIFORNIA

Project No. 7841189-13

Drafting By: mjs

11/28/88

Privileged and Confidential
Prepared at Request of
Attorney
Client Communication
and Work Product

TABLE 3

SUMMARY OF CHEMICAL ANALYSIS
OF SOIL SAMPLES FROM TANK 02 EXCAVATION
BR TEXTRON, PACOIMA, CALIFORNIA

Contaminant	SS* #4, 14 ft. 12/22/87	SS* #7, 14 ft. 12/22/87	SS* #11, 11 ft. 12/22/87	Reagent Blank 12/24/87	Field Blank 12/24/87	#3, 8 ft.** 1/30/89	#4, 8 ft.** 1/30/89	#5, 12 ft.** 1/31/89	#3, 12 ft.** 5/6/89	Tube 5 12 ft.** 5/6/89
Fuel Hydrocarbons (mg/kg)										
Fuel Hydrocarbons EPA Test Method 8015 (modified)	300	870	ND	ND	ND					
Hydrocarbon range	C20-C24	C20-C24	ND	ND	ND					
Hydrocarbons quantified	diesel	diesel	ND	ND	ND					
Total Petroleum Hydrocarbons EPA Test Method 418.1 (modified) (mg/kg)	1360	2200	367	---	---	10000	9100	7200		
Oil and Grease EPA Test Method 413.2 (mg/kg)	3120	4010	1130			18000	11000	11000	19000	9900
Metals (mg/kg)										
Chromium EPA Test Method 6010	5.0	9.2	2.2	ND						
Copper EPA Test Method 6010	6.0	3.1	4.1	ND	ND					
Nickel EPA Test Method 6010	3.0	1.2	0.70	ND	ND					
Lead EPA Test Method 7421	1.9	31.0	2.3	ND	ND					
Zinc EPA Test Method 6010	18.3	10.9	13.5	ND	ND					
Volatile Organics EPA Test Method 8240 (mg/kg)										
1,1,1 - Trichloroethane	ND	ND	ND	ND		210	120	230	16	18
1,1 - Dichloroethane	ND	ND	ND	ND		2	0.6	ND	ND	ND
Tetrachloroethylene	ND	ND	ND	ND		11	0.9	8	0.6	4
Trichloroethylene	ND	ND	ND	ND		0.6	2	ND	ND	ND
1,1 - Dichloroethylene	ND	ND	ND	ND		ND	0.3	ND	ND	ND
Toluene	0.06	0.06	ND	ND		ND	2	ND	ND	ND
All other compounds (listed) for EPA Test Method 8240 were not detected										
Additional Major Components										
Hydrocarbon C_{10}	0.10	ND	ND	ND	ND					
Hydrocarbon C_{10}	0.10	ND	ND	ND	ND					
Pentane	ND	ND	ND	0.60	ND					
Methyl Phenol	0.6	ND	ND	ND						
Unknown	1	1	ND	ND						
Alkane	0.9	ND	ND	ND						
Branched Alkane	0.9	ND	ND	ND						
Branched Alkane	0.8	ND	ND	ND						
Alkane	ND	1	ND	ND						
Alkane	ND	1	ND	ND						
Alkane	ND	2	ND	ND						
Alkane	ND	1	ND	ND						
Dimethyl Alkane			1	ND						
Phthalate			0.3	ND						
Semi Quantified by EPA Test Method 8240 (mg/kg)										
A C9H16 compound	20	20	ND	ND	20					
Cyclohexane compound	20	20	ND	ND	10					
Ethyl-Methyl Cyclohexane	100	100	ND	90	100					
1,1 - Dichloroethylene	ND	0.3	ND	ND	ND					
Trimethyl Cyclohexane	30	30	ND	ND	ND					
Xylene Isomers	ND	4	ND	ND	ND					
Alkyl Cyclohexane	ND	ND	ND	ND	20					
1st Alkyl Cyclohexane	ND	ND	ND	100	ND					
2nd Alkyl Cyclohexane	ND	ND	ND	500	ND					
a Terpene	ND	ND	ND	40	ND					
Ethylidimethyl Cyclohexane	ND	ND	ND	100	ND					
Organochlorine Pesticides & PCBs EPA Test Method 8080 (mg/kg)										
Aroclor 1260	0.11	ND	ND	ND	ND					
No other compounds listed for EPA Test Method 8080 detected										
Semi-Volatile Organics EPA Test Method 8270 (mg/kg)										
Bis (2-ethylhexyl) phthalate	ND	ND	1.1	TR	ND					
Di-N-Butylphthalate	ND	ND	TR	ND	ND					
Total Hydrocarbons C_{18} - C_{29}	40	60	ND	ND						

Notes: ND - Not Detected
TR - Detected at an unquantifiable trace level
Blank areas indicate samples were not tested for this parameter
* Analyses performed by Analytical Technologies
** Analyses performed by Brown and Caldwell

FACE SUPERIEURE THIS SIDE UP

TABLE 2

SUMMARY OF CHEMICAL ANALYSIS
OF SOIL SAMPLES FROM BORINGS

NR Textron
Pacoima, California

Privileged and Company
Private Attorney
Client Communication
and Work Product

SAMPLE #	DEPTH (FT)	DATE OF SAMPLE	EPA-418.1 TPH mg/kg	EPA-413.2 OIL & GREASE mg/kg	CHROMIUM	LEAD	EPA METHOD 8240 (ug/kg) 1,1,1-TRICHLORO-ETHANE	TRICHLORO-ETHENE	TETRA-CHLORO-ETHYLENE	TOLUENE	METHYLENE CHLORIDE	BEN-ZENE	ACE-TONE	XYLENE ISOMERS	ETHYL CYCLO-HEXANE	ETHYL METHYL CYCLO-HEXANE	1,2 DI-CHLORO-ETHANE
LB-1	10	05/30/85	27	27	NT	NT		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-1	20	05/30/85	14,000	15,000	NT	NT	55	ND	3	3	ND	ND	ND	4	20	300	ND
LB-1	30	05/30/85	9,000	10,000	NT	NT	87	ND	4	3	ND	ND	ND	3	10	300	ND
LB-1	40	05/30/85	20,000	20,000	NT	NT	100	ND	2	1	ND	ND	ND	3	20	300	ND
LB-1	50	05/30/85	30	30	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-2	10	05/30/85	41	45	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-2	20	05/30/85	ND	ND	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-2	30	05/30/85	ND	ND	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-2	40	05/30/85	ND	ND	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-2	50	05/30/85	ND	ND	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-3A**	13	01/06/88	6	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-5A**	23	01/06/88	3	1	ND	ND	ND	ND	ND	0.13	ND	ND	ND	ND	ND	ND	ND
LB3-7A**	33	01/06/88	4	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-9A**	43	01/06/88	3	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-11A	53	01/06/88	3	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRIP BLANK**		01/06/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FIELD BLANK**		01/07/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
QA SAMPLE**		01/07/88	ND	ND	ND	ND	ND	ND	ND	9 (ug/kg)	ND	ND	ND	ND	ND	ND	ND

7841189-13

Privileged and Company Private Attorney Client Communication and Work Product

Table 2 (Continued)

SAMPLE #	DEPTH (FT)	DATE OF SAMPLE	EPA-418.1 TPH mg/kg	EPA-413.2 OIL & GREASE mg/kg	CHROMIUM	LEAD	EPA METHOD 8240 (mg/kg) 1,1,1-TRICHLORO-ETHANE	TRICHLORO-ETHENE	TETRA-CHLORO-ETHYLENE	TOLUENE	METHYLENE CHLORIDE	BEN-ZENE	ACE-TONE	XYLENE ISOMERS	ETHYL CYCLO-HEXANE	ETHYL METHYL CYCLO-HEXANE	1,2 DI-CHLORO-ETHANE
LB3-13A**	63	01/06/88	4	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-15A**	73	01/07/88	7	9	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-17A**	83	01/07/88	23	19	0.2	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-19A**	93	01/07/88	9	25	ND	ND	ND	ND	ND	0.05	ND	ND	ND	ND	ND	ND	ND
LB3-S21A**	103	01/07/88	3	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S23(3)**	110	01/08/88	5	6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S1B*	.5	01/06/88	---		NT	NT	120	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S2B*	3	01/06/88	---	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S3B*	13	01/06/88	ND	NT	NT	NT	ND	ND	ND	ND	150	ND	ND	ND	ND	ND	ND
LB3-S4B*	18	01/06/88	---	NT	NT	NT	ND	ND	ND	ND	150	ND	ND	ND	ND	ND	ND
LB3-S5B*	23	01/06/88	---	NT	NT	NT	ND	ND	ND	ND	60	ND	ND	ND	ND	ND	ND
LB3-S6B*	28	01/06/88	---	NT	NT	NT	ND	ND	ND	ND	100	ND	ND	ND	ND	ND	ND
LB3-S7B*	33	01/06/88	---	NT	NT	NT	ND	ND	ND	ND	100	ND	ND	ND	ND	ND	ND
LB3-S8B*	38	01/06/88	---	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S9B*	43	01/06/88	ND	NT	NT	NT	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S10B*	48	01/06/88	ND	NT	NT	NT	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S11B*	53	01/06/88	2	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S12B*	58	01/06/88	2	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S13B*	63	01/06/88	2	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S14B*	68	01/07/88	14	NT	NT	NT	700	ND	ND	ND	150	ND	ND	ND	ND	ND	ND
LB3-S15B*	73	01/07/88	2	NT	NT	NT	ND	ND	ND	ND	150	ND	ND	ND	ND	ND	ND
LB3-S16B*	78	01/07/88	15	NT	NT	NT	ND	ND	ND	ND	150	ND	ND	ND	ND	ND	ND

Privileged and Company Private Attorney Client Communication and Work Product

Table 2 (Continued)

SAMPLE #	DEPTH (FT)	DATE OF SAMPLE	EPA-418.1 TPH mg/kg	EPA-413.2 OIL & GREASE mg/kg	CHROMIUM	LEAD	EPA METHOD 8240 (mg/kg) 1,1,1-TRICHLORO-ETHANE	TRICHLORO-ETHENE	TETRA-CHLORO-ETHYLENE	TOLUENE	METHYLENE CHLORIDE	BEN-ZENE	ACE-TONE	XYLENE ISOMERS	ETHYL CYCLO-HEXANE	ETHYL METHYL CYCLO-HEXANE	1,2 DI-CHLORO-ETHANE
LB3-S17B*	83	01/07/88	NT	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S18B*	88	01/07/88	15	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S19B*	93	01/07/88	9	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S20B*	98	01/07/88	16	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S21B*	103	01/07/88	6	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S23B*	110	01/08/88	2	NT	NT	NT	ND	ND	ND	NT	NT	ND	ND	ND	ND	ND	ND
LB4-S2A**	3	01/08/88	4	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S4A**	13	01/08/88	3	3	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S6A**	23	01/08/88	2	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S8A**	33	01/11/88	1	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S10A**	43	01/11/88	3	4	ND	ND	ND	ND	ND	ND	TR	ND	ND	ND	ND	ND	ND
LB4-S12A**	53	01/11/88	3	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S14A**	63	01/11/88	3	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S16A**	73	01/11/88	5	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trip Blank** -		01/08/88			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Field Blank**-		01/11/88	.08	.08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S18A**	83	01/11/88	6	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S20A**	93	01/12/88	3	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S22A**	103	01/12/88	3	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S23A**	108	01/12/88	2	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trip Blank** -		01/12/88			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Field Blank**-		01/12/88	.05	.05	ND	ND	ND	ND	ND	ND	TR	ND	TR	ND	ND	ND	TR

7841189-13

Privileged and Company
Private Attorney
Client Communication
and Work Product

Table 2 (Continued)

SAMPLE #	DEPTH (FT)	DATE OF SAMPLE	EPA-418.1 TPH mg/kg	EPA-413.2 OIL & GREASE mg/kg	CHROMIUM	LEAD	EPA METHOD 8240 (mg/kg) 1,1,1-TRICHLORO-ETHANE	TRICHLORO-ETHENE	TETRA-CHLORO-ETHYLENE	TOLUENE	METHYLENE CHLORIDE	BEN-ZENE	ACE-TONE	XYLENE ISOMERS	ETHYL CYCLO-HEXANE	ETHYL METHYL CYCLO-HEXANE	1,2 DI-CHLORO-ETHANE
BIN-S1**	--	01/13/88	210	260	ND	ND	ND	ND	ND	0.37	ND	ND	ND	ND	ND	ND	ND
BIN-S2**	--	01/13/88	130	130	ND	ND	ND	ND	ND	0.05	ND	ND	ND	ND	ND	ND	ND
SCF*	--	01/13/88	.16	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S1B*	.5	01/08/88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S2B*	3	01/08/88	ND?	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S3B*	8	01/08/88	ND?	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S4B*	13	01/08/88	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S5B*	18	01/08/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S6B*	23	01/08/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S7B*	28	01/11/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S8B*	33	01/11/88	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S9B*	38	01/11/88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S10B*	43	01/11/88	16	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S11B*	48	01/11/88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S12B*	53	01/11/88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S13B*	58	01/11/88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S14B*	63	01/11/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S15B*	68	01/11/88	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S16B*	73	01/11/88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S17B*	78	01/11/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S18B*	83	01/11/88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S19B*	88	01/11/88	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

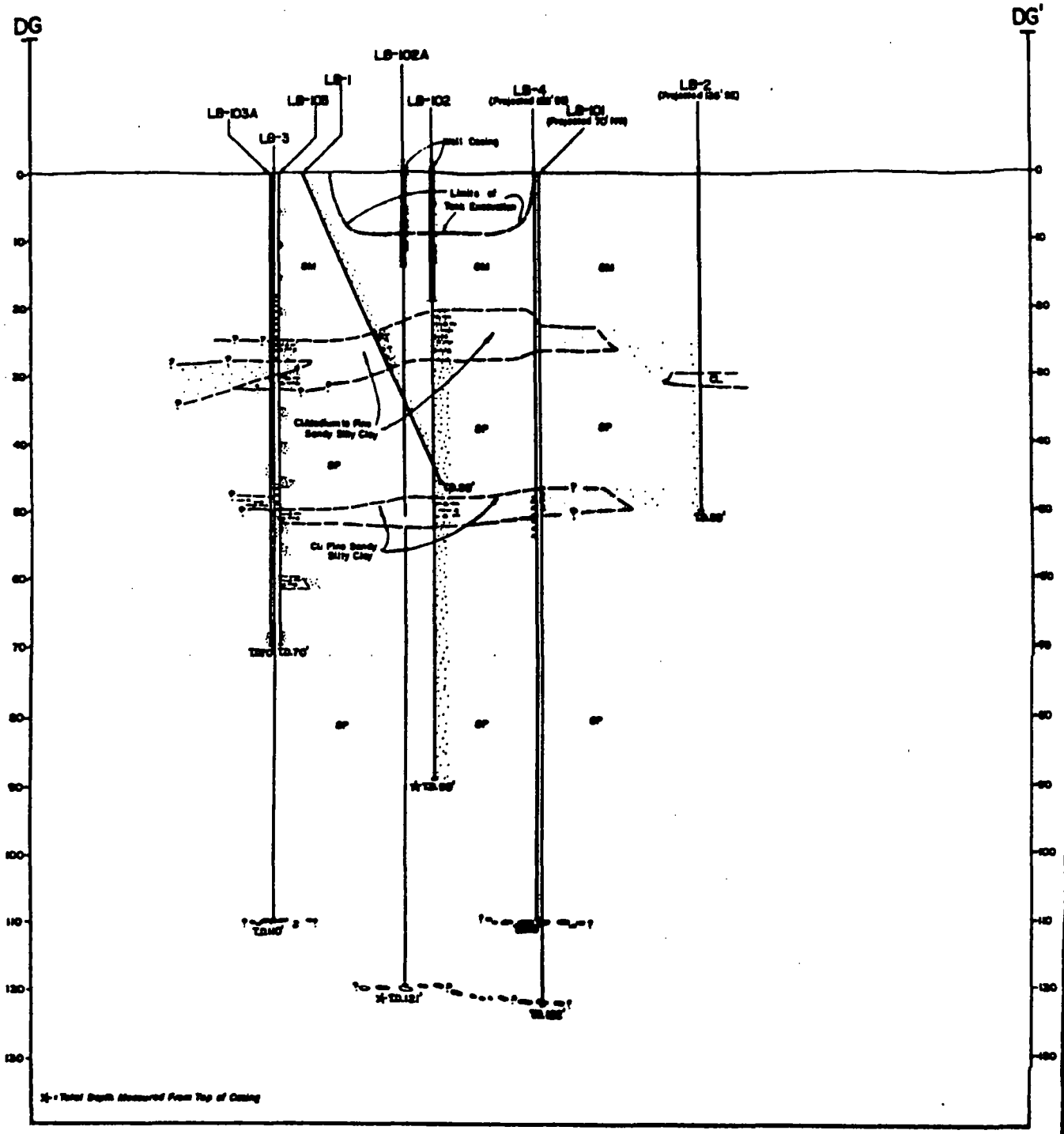
7841189-13

Privileged and Company
Private Attorney
Client Communication
and Work Product

Table 2 (Continued)

SAMPLE #	DEPTH (FT)	DATE OF SAMPLE	EPA-418.1 TPH mg/kg	EPA-413.2 OIL & GREASE mg/kg	CHROMIUM	LEAD	EPA METHOD 8240 (mg/kg) 1,1,1-TRICHLORO-ETHANE	TRICHLORO-ETHENE	TETRA-CHLORO-ETHYLENE	TOLUENE	METHYLENE CHLORIDE	BEN-ZENE	ACE-TONE	XYLENE ISOMERS	ETHYL CYCLO-HEXANE	ETHYL METHYL CYCLO-HEXANE	1,2 DI-CHLORO-ETHANE
LB4-S20B*	93	01/12/88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S21B*	98	01/12/88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S22B*	103	01/12/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TH-1	6.5	05/16/86	37	37	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-1	11	05/16/86	20	20	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-1	12.5	05/16/86	20	20	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-1	15.5	05/16/86	14	14	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-1	20	05/16/86	30	30	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-1	30	05/16/86	TR<10	TR<10	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-1	40	05/16/86	23	23	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	10	05/16/86	21	21	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	15	05/16/86	26	26	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	20	05/16/86	15	15	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	30	05/16/86	20	20	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	40	05/16/86	26	26	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	45	05/16/86	29	29	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	55	05/16/86	26	26	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	65	05/16/86	21	21	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	75	05/16/86	23	23	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	85	05/16/86	18	18	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	95	05/16/86	120	120	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	105	05/16/86	37	37	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	115	05/16/86	33	33	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

GEOLOGIC CROSS-SECTION DG-DG'



N40°E

Sand	P_a (cm water)	λ	S_w
1- #70 Silica	33.1	3.30	0.189
2- #50 Silica	13.5	2.49	0.098
3- #25 Ottawa	4.43	3.51	0.069
4- #16 Silica	3.77	3.86	0.078

TABLE 2 - Best Fit Brooks-Corey Parameters

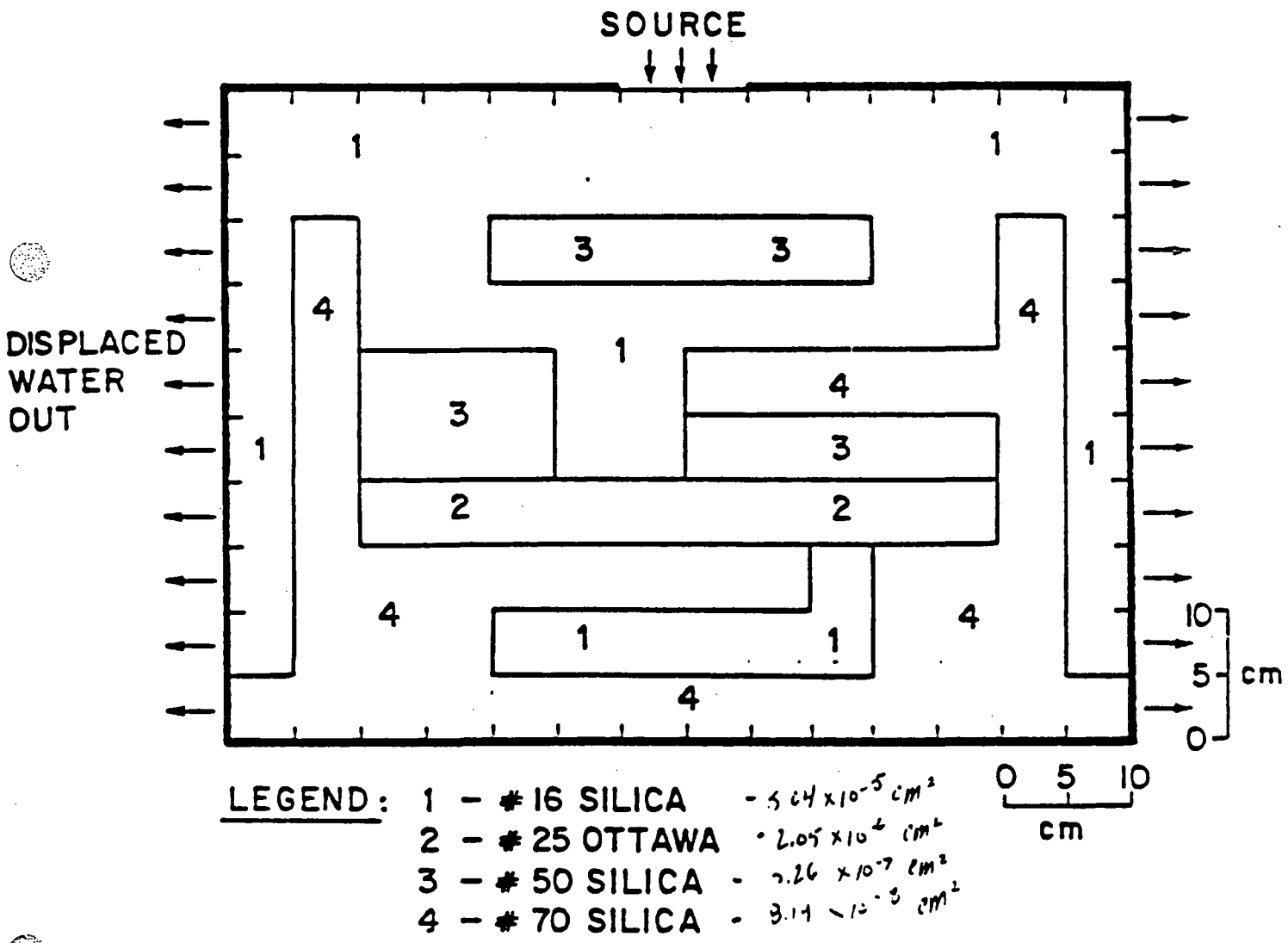
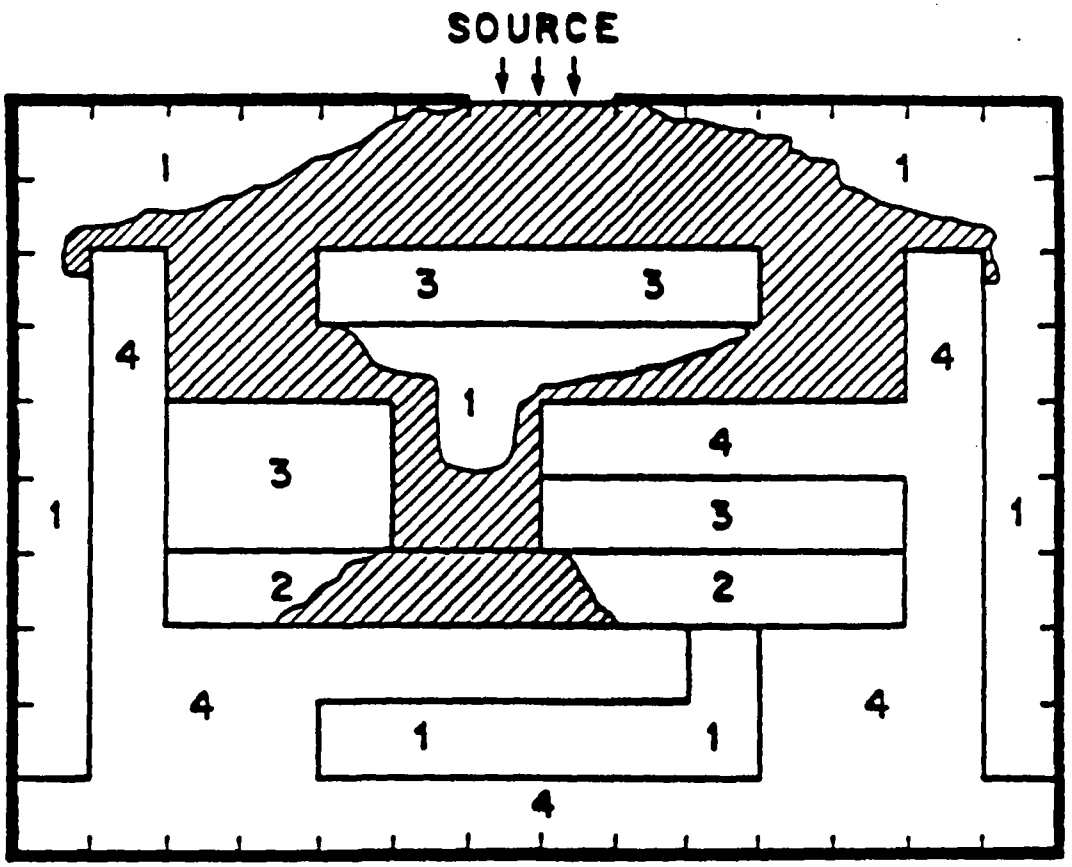


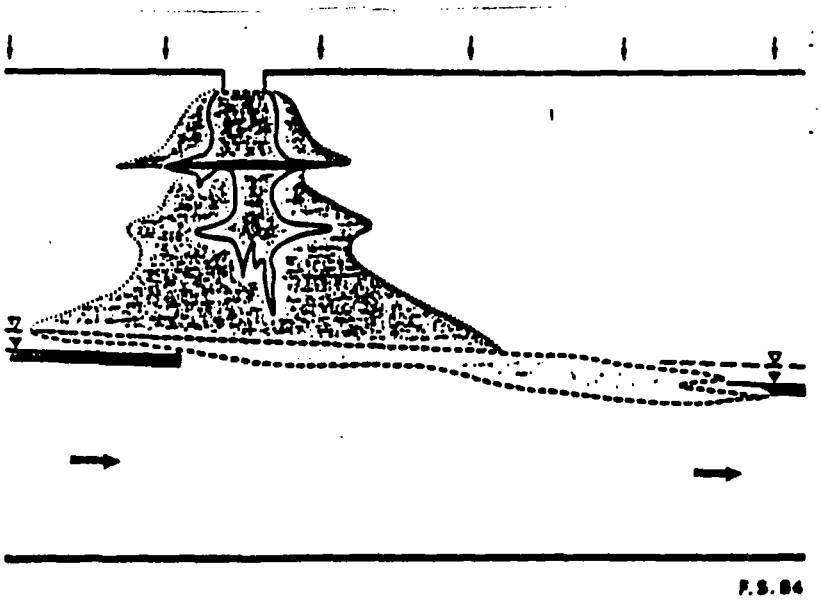
FIGURE 2



t = 321 s

FIG 12

IV.a.



IV.b.

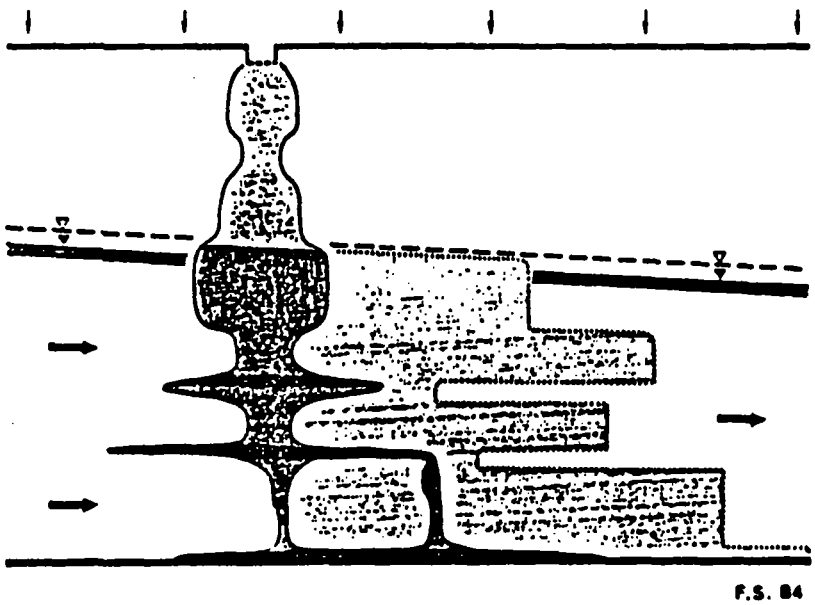


Figure IV.a. An envelope of CHC vapor develops around the core of the Figure III.b. spill, leading to a gas mound. Liquid and gaseous CHC tend to dam up on the top of low permeability layers. Grainsize at right.

Figure IV.b. Percolated mass of CHC exceeds the combined retention capacities of the unsaturated and saturated zones. Liquid CHC reaches the bottom confining bed and accumulates there. Groundwater velocity depends on local permeability.

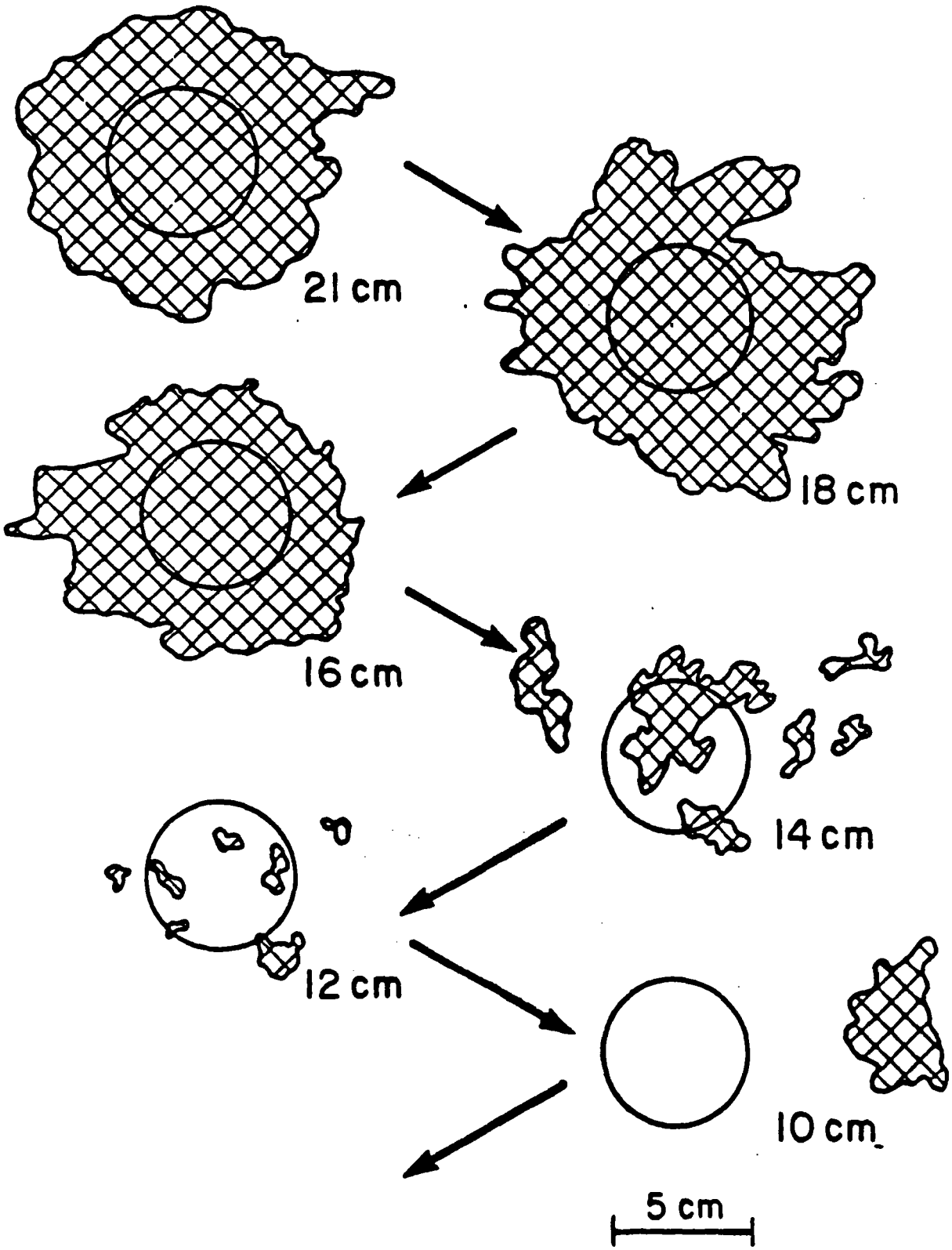
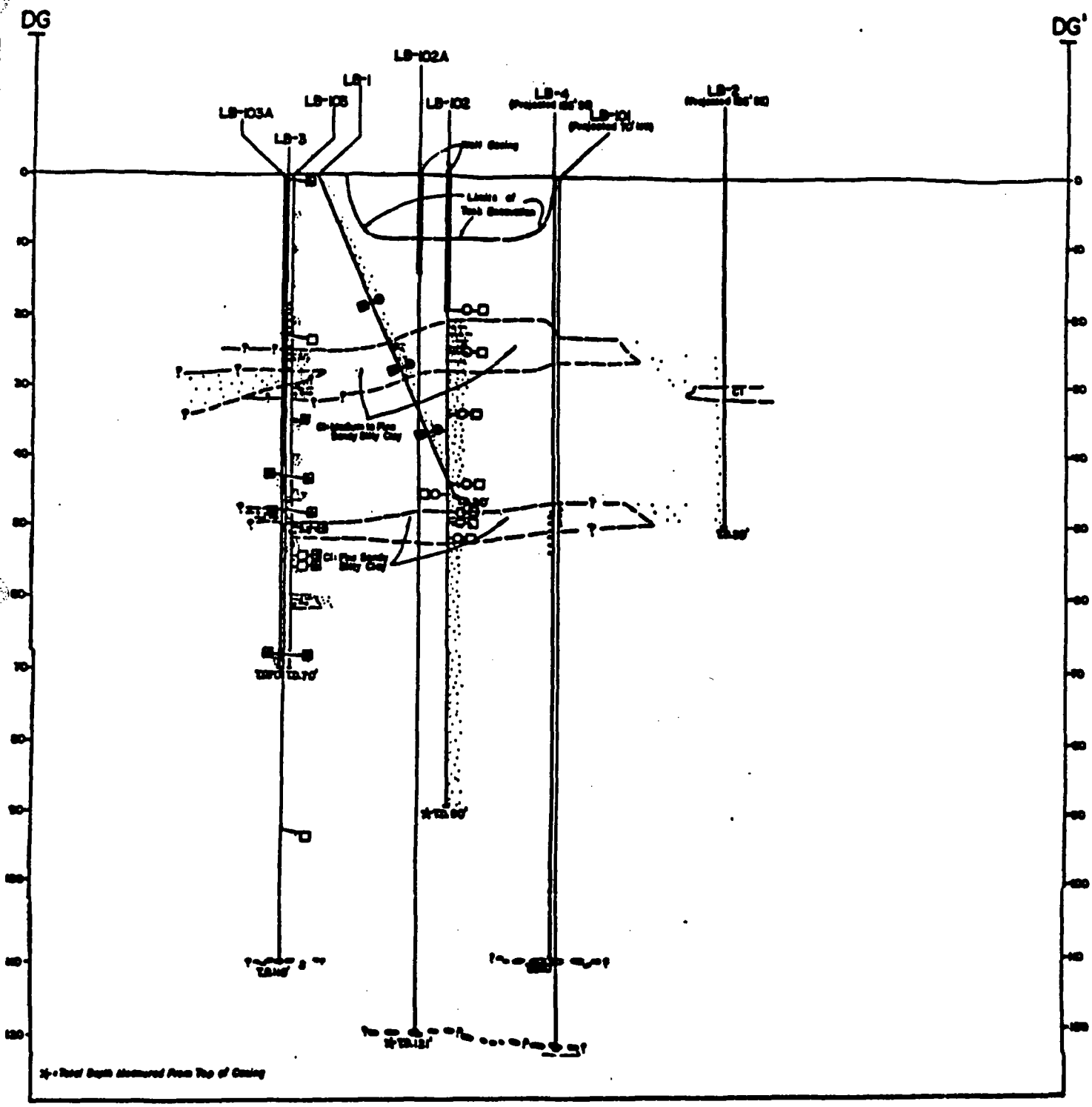


Figure 2.8. Infiltration of PER into a tank of medium sand (K = 8 x 10^{-4} m/s) under drainage conditions. The circles represent the area of the spill at the surface. The numbers indicate the distance above the water table. (Taken from Anderson, 1986, Experiment 10).

From Oregon Graduate Center: Johnson / Pankow

GEOLOGIC CROSS-SECTION DG-DG'
SHOWING VADOSE ZONE CONTAMINATION



N 40°E

LEGEND

Brown and Caldwell Laboratory, Inc., (BC) Test Results

■ Total Petroleum Hydrocarbons (TPH) > 75 mg/kg

● Volatile Organic Compounds (VOC)* Detection Limits mg/kg

Analytical Technologies, Inc. (ATI) Test Results

□ (TPH) Total Petroleum Hydrocarbons > 75 mg/kg

○ (VOC*) Volatile Organic Compounds Detection Limits ug/kg

Enseco/Chemical Research Laboratory (CRL) Test Results

⊞ (VOC*) Volatile Organic Compounds Detection Limits ug/kg

***Volatile Organic Compounds Detection Limits Per Laboratory**

	BC (mg/kg)	ATI (ug/kg)	CRL (ug/kg)
1,1,1 - Trichloroethane	300	50	5
Toluene	300	50	5
Xylene Isomers	100	50	5
Ethyl Cyclohexane	1000	NT	NT
Ethyl Methyl Cyclohexane	1000	NT	NT
Acetone	300	500	10
Tetrachloroethene (Tetrachloroethylene)	300	50	5
1,1-Dichloroethene	300	50	5
1,1,2-Trichloroethane	300	50	5
Trichloroethene	300	50	5
1,1-Dichloroethane	300	50	5
1,2-Dichloroethane	300	50	5
Ethylbenzene	300	50	5

mg/kg = milligrams per kilograms
ug/kg = micrograms per kilograms

GENERALIZED LITHOLOGIC DESCRIPTIONS

SM SILTY SANDS / SAND SILT MIXTURES

SP POORLY SORTED SANDS / GRAVELLY SANDS

CL FINE SANDY SILTY CLAY / MEDIUM-TO FINE SANDY SILTY CLAY

BOULDER BED

CONTACT BETWEEN VARYING LITHOLOGIC UNITS & QUERIED WHERE UNCERTAIN

TD TOTAL DEPTH OF BORING IN FEET

NOTE: RECORDED WATER LEVEL VARIANCE
IN
WELL NUMBER 4905K
(Located in Hansen Spreading Grounds,
Approximately 3500 Feet South of Subject Site)

1/13/78	258.5 Feet Below Grade
5/13/83	97.7 Feet Below Grade
8/30/88	237.4 Feet Below Grade

Privileged and Company
Private Attorney
Client Communication
and Work Product

TABLE 1

SUMMARY OF CHEMICAL ANALYSIS
OF SOIL SAMPLES FROM BORINGS

HR Textron
Pacoima, California

				EPA METHOD 8240*										
Sample #	Depth (Feet)	Date of Sample	EPA Method 481.1 (TPH)*	1,1,1, Tri-Chloro-Ethane	1,1,2-Tri Chloro-Ethane	Tri-Chloro-Ethene	Tetra-Chloro-Ethene	Toluene	Acetone	Xylene Isomers	1,1 Di-Chloro Ethene	Ethyl-benzene	1,2-Di-Chloro Ethane	1,1 Di-Chloro Ethane
LB-100.9.5	9.5	9-13-88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-20	20	9-13-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-31	31	9-13-88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-40	40	9-13-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-51	51	9-14-88	6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-60	60	9-14-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-69	69	9-14-88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-81.5	81.5	9-14-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-90.5	90.5	9-14-88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-101.5	101.5	9-14-88	3	ND	ND	ND	ND	ND	2.4	ND	ND	ND	ND	ND
LB-100-111.5	111.5	9-14-88	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-5	5	9-15-88	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-15	15	9-15-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-25	25	9-15-88	17	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-35	35.5	9-15-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-40	40	9-15-88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-45	44.5	9-15-88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-46	46	9-15-88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-48	47.5	9-15-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-49	49	9-15-88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-51	51	9-15-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-57	57	9-15-88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-60	60	9-16-88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-70	70.5	9-16-88	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-80	81	9-16-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-90	90	9-16-88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-100	100.5	9-16-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-110	110.5	9-16-88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*Milligrams per kilogram
NT = Not Tested

7841189-13

TABLE 1

SUMMARY OF CHEMICAL ANALYSIS
OF SOIL SAMPLES FROM BORINGS (CONT.)

HR Textron
Pacoima, California

Privileged and Company Private Attorney Client Communication and Work Product

				EPA METHOD 8240*										
Sample #	Depth (Feet)	Date of Sample	EPA Method 481.1 (TPH)*	1,1,1, Tri-Chloro-Ethane	1,1,2-Tri Chloro-Ethane	Tri-Chloro-Ethene	Tetra-Chloro-Ethene	Toluene	Acetone	Xylene Issomers	1,1 Di-Chloro Ethene	Ethyl-benzene	1,2-Di-Chloro Ethane	1,1 Di-Chloro Ethane
LB-102-20	20	9-15-88	9,800	100	ND	ND	8	4	ND	4	4	ND	ND	ND
LB-102-26	26	9-19-88	8,300	110	ND	ND	6	3	ND	ND	0.6	ND	ND	ND
LB-102-35	35	9-19-88	9,100	60	ND	ND	4	1	ND	ND	ND	ND	ND	ND
LB-102-45	45	9-19-88	14,000	5	ND	ND	0.1	0.07	ND	ND	ND	ND	ND	ND
LB-102-46.5	46.5	9-19-88	17,000	100	ND	ND	3	2	ND	ND	ND	ND	ND	ND
LB-102-49	49	9-19-88	3,800	64	ND	ND	2.4	1	ND	ND	ND	ND	ND	ND
LB-102-50	50.5	9-19-88	1,200	2	ND	ND	0.1	0.08	ND	ND	ND	ND	ND	ND
LB-102-53	52.5	9-19-88	11,000	120	ND	ND	4	ND	ND	ND	ND	ND	ND	ND
LB-102-54	54	9-19-88	6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-102-65	65	9-19-88	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-102-75	75	9-19-88	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-102-85	85.5	9-19-88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-102A-95	95	9-23-88	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-102A-100	100	9-23-88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-102A-110	110	10-04-88	9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-102A-115	115	10-04-88	11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-102A-120	120	10-04-88	32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103-35A	35	9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103-50A	50	9-13-88	NT	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103-53A	53	9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103-54.5A	54.5	9-13-88	NT	ND	ND	0.05	ND	ND	ND	ND	ND	ND	ND	ND
LB-103-56A	56	9-13-88	NT	ND	0.010	0.1	0.1	ND	ND	ND	ND	ND	ND	ND
LB-103-68A	68	9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103-35C	35	9-13-88	NT	0.016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103-50C	50	9-13-88	NT	0.150	0.013	ND	ND	0.027	ND	ND	0.009	ND	0.013	0.038
LB-103-53C	53	9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103-54.5C	54.5	9-13-88	NT	ND	ND	ND	ND	0.024	ND	ND	ND	ND	ND	ND
LB-103-56C	56	9-13-88	NT	0.020	ND	ND	ND	0.020	ND	ND	ND	ND	ND	ND
LB-103-68C	68	9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*Milligrams per kilogram
NT = Not Tested

7841189-13

TABLE 1

SUMMARY OF CHEMICAL ANALYSIS
OF SOIL SAMPLES FROM BORINGS (CONT.)

NR Textron
Pacoima, California

Privileged and Company Private Attorney Client Communication and Work Product

Sample #	Depth (Feet)	Date of Sample	EPA Method 481.1 (TPH)*	1,1,1, Tri-Chloro-Ethane	1,1,2-Tri Chloro-Ethane	Tri-Chloro-Ethene	Tetra-Chloro-Ethene	Toluene	Acetone	Xylene Issomers	1,1 Di-Chloro Ethene	Ethyl-benzene	1,2-Di-Chloro Ethane	1,1 Di-Chloro Ethane
				EPA METHOD 8240*										
LB-103A-43C	43	9-21-88	NT	0.007	ND	ND	ND	0.015	ND	ND	ND	ND	ND	ND
LB-103A-48C	48	9-21-88	NT	0.240	0.014	ND	ND	0.024	ND	ND	0.040	ND	0.014	ND
LB-103A-68C	68	9-21-88	NT	ND	ND	ND	ND	0.009	0.012	0.034	ND	ND	ND	ND
LB-103A-43A	43	9-21-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103A-48A	48	9-21-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103A-68A	68	9-21-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	.009	ND	ND
LB-104-10	10	10-3-88	5	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
LB-104-20	20	10-3-88	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-104-30	30	10-3-88	5	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
LB-104-40	40	10-3-88	9	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
LB-104-50	50	10-3-88	4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
LB-104-60	60	10-3-88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-104-70	70	10-3-88	5	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
LB-104-80	80	10-3-88	5	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
LB-104-105	105	10-3-88	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-104-110	110	10-3-88	9	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				EPA METHOD 624 (MICROGRAMS/LITER)										
MW-13AA		9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-13BA		9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-13AA		9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-13AA		9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-21AC		9-21-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-21BC		9-21-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-14A		9-14-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-1B		9-14-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-100A		9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-100B		9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-15A		9-15-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-15B		9-16-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-16A		9-16-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-16A		9-16-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-19A		9-19-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-19B		9-19-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*Milligrams per kilogram
NT = Not Tested

7841189-13

Privileged and Company Private Attorney Client Communication and Work Product

TABLE 1

SUMMARY OF CHEMICAL ANALYSIS
OF SOIL SAMPLES FROM BORINGS (CONT.)

HR Textron
Pacoima, California

				EPA METHOD 624 (MICROGRAMS PER LITER)										
Sample #	Depth (Feet)	Date of Sample	EPA Method 418.1 (TPH)*	1,1,1, Tri-Chloro-Ethane	1,1,2-Tri Chloro-Ethane	Tri-Chloro-Ethene	Tetra-Chloro-Ethene	Toluene	Acetone	Xylene Issomers	1,1 Di-Chloro Ethene	Ethyl-benzene	1,2-Di-Chloro Ethane	1,1 Di-Chloro Ethane
MW-21AA		9-21-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-21BA		9-21-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-23A		9-23-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-23B		9-23-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-2A		10-3-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-2B		10-3-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-4A		10-4-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-4B		10-4-88	NT	ND	ND	ND	ND	TR	ND	ND	ND	ND	ND	ND

*Milligrams per kilogram
NT = Not Tested

NOTE: All the MW samples are blanks analyzed by EPA Test Method 624.

Dec 15, 88

2166-04-46

FACILITIES
DEC 19 1988
ENGINEERING

LEIGHTON AND ASSOCIATES

Geotechnical and Environmental Engineering Consultants

2166-04746

LEIGHTON AND ASSOCIATES, INC.

Geotechnical and Environmental Engineering Consultants

Privileged and Company Private Attorney Client Communication and Work Product

EXECUTIVE SUMMARY OF
PHASE II SUBSURFACE INVESTIGATION AT
HR TEXTRON'S PACOIMA FACILITY
10445 GLENOAKS BOULEVARD
PACOIMA, CALIFORNIA

FACILITIES
DEC 19 1988
ENGINEERING

December 15, 1988

Project No. 7841189-13

Prepared for:

HR TEXTRON, INC.
25200 West Rye Canyon Road
Valencia, California 91355

Attention: Messrs. John Hedges and William Moses

25020 WEST AVENUE STANFORD, SUITE 190, VALENCIA, CALIFORNIA 91355

(805) 257-0150 • (818) 881-6031
FAX (805) 257-0819

350062

LEIGHTON AND ASSOCIATES, INC.

Geotechnical and Environmental Engineering Consultants

Privileged and Company Private Attorney Client Communication and Work Product

December 15, 1988

Project No. 7841189-13

TO: HR Textron, Inc.
25200 West Rye Canyon Road
Valenica, California 91355

ATTENTION: Messrs. John Hedges and William Moses

SUBJECT: Executive Summary of Phase II Subsurface Investigation at HR Textron's Pacoima Facility, 10445 Glenoaks Boulevard, Pacoima, California

Introduction

Leighton and Associates, Inc., has completed the Phase II subsurface contamination investigation at HR Textron's Pacoima facility located at 10445 Glenoaks Boulevard in Pacoima, California.

In general, our earlier findings concluded that a high concentration zone consisting of both volatile organic compounds (VOC) as well as Total Petroleum Hydrocarbons (TPH) exist as a semi-cylindrical body beneath the former Tank 2 locality which was removed exposing a leakage condition. Our recommendations where to refine the defined limits of this zone to the east and west via soil borings.

In response to our earlier reports, the Regional Water Quality Control Board (RWQCB) indicated that low level TPH below this zone suggest that:

a. A plume exist at depth as vertical "fingers" of contaminants exist and were not encountered by the exploratory boreholes,

b. The contaminants from the former Tank 2 have migrated beyond the base the 110±-foot borings, and/or

c. The contaminants exists at levels below the detection limits of laboratory equipment which could still increase in concentration and thus degrade the ground water table at approximately 150 to 250± feet below the ground surface.

25020 WEST AVENUE STANFORD, SUITE 190, VALENCIA, CALIFORNIA 91355

(805) 257-0150 • (818) 881-6031
FAX (805) 257-0819

Privileged and Company
Private Attorney
Client Communication
and Work Product

The RWQCB has therefore required that HR Textron install a monitoring well extending to the water table in order to evaluate whether HR Textron's Pacoima facility is contaminating the water table beneath. The RWQCB's comments regarding this matter are contained in their letter dated May 12, 1988.

The questions raised by the RWQCB were considered in great detail by ourselves and through discussions with Messrs. John Hedges, Marty Bell, and William Moses of HR Textron. It was Leighton and Associates' opinion that the quality of water beneath the site was probably similar to that of the majority of the San Fernando Valley which is widely recognized to contain deleterious chemical constituents of various detection limits. As a result of those internal meetings, a meeting was then arranged with the RWQCB in which the above issues and, in particular, the content of their letter were reviewed. The scope of our Phase II investigation was predicated upon and agreed upon to further evaluate the subject contamination zone beneath the former Tank 2 locality.

The issues of concern by the RWQCB and thus the focus of our Phase II scope are outlined as follows:

1. Does contamination exist beneath the lower continuous, 46- to 52.5-foot fine-grained layer and between the borings as vertical "fingers"?

2. What is the source(s) of the low levels of TPH (<<50 parts per million) contamination which exists not only in the vicinity of the Tank 2 site but at a depth beneath former Tank 2?

3. Does 1,1,1-Trichloroethane exist below the 46- to 52.5-foot deep, fine-grained layer as reported by CRL in two soil samples collected in Boring LB-3?

4. What is the quality of the ground water downgradient of the subject site?

5. What are the lateral and vertical limits of the high concentration contamination zone beneath former Tank 2?

Scope

The issues summarized above were explored through a detailed literature review, a subsurface field exploration program, and a detailed chemical testing program. The field program consisted of the collection of soil samples at various depths in seven additional borings to assess the lateral and vertical extent of the soil contamination zone above and below the 46- to 52.5-foot fine-grained layer (see Plates 1 and 2). The laboratory program consisted of testing selected soil samples by EPA Test Methods 418.1 for TPH and 8240 for VOCs. In addition, two soil samples were used for detailed chemical analysis to identify the characteristics of hydrocarbons present in the high concentration zone to those hydrocarbons encountered at considerable depth. A ground water sample was also collected from a water well located approximately 1.5 miles downgradient from the Pacoima facility in the Hansen Spreading Grounds to evaluate ground water quality. All collected data was assimilated, presented graphically in Plates 1 and 2, and tabulated in Table 1 and 2. The results of our Phase II study were

Prin ney
Clion ication
and Product

communicated to HR Textron in numerous meetings and are summarized in this Executive Summary. The following "Discussion" section provides a specific response to the issued outlined previously.

Discussion

1. "Finger" Theory - It is our professional opinion that the existence of contaminants as vertical "fingers" below the second, fine-grained layer is improbable. A total of 13 borings have been drilled in and adjacent to the former Tank 2 area. These borings extended up to 65± feet beneath the high concentration contamination zone and such "fingers" were not encountered. One of these borings, Boring LB-1 (see Plate 1), was drilled at an angle of 23 degrees from vertical and through the center of the excavation (Borings LB-102/LB-103A). Data collected during this investigation have indicated that the elevated zone of contamination is limited to the general area below the tank excavation. Both ATI and CRL report the presence of 1,1,1-TCA in the split soil samples from the upper portion of second fine-grained layer (i.e., at 50 feet). However, contradictory chemical data between the laboratories exists for the split samples below this clay layer. The other 10 vertical borings were drilled within 2 and 25 feet from the edge of the Tank 2 excavation.

   Whereas the "finger" theory of contaminant migration is plausible in a relatively permeable, homogenous medium, it is well documented in laboratory experience that the influence of even the most subtle stratification (layers) within these materials interrupts such migration and causes lateral spreading of contaminants either through adsorption or perching [Chonke, et al (1959); Scheidegger (1960); Chow and Scheidegger (1972); Gupta, et al (1973); Pinder and Abriola (1988); and Schwille (1988)]. This influence is observable in the soil of the second fine-grained layer and above where the high concentration plume exists. Although, silty sand layers also exist at depth beneath the second fine-grained layer, the influence of such "fingers" being laterally distributed was not encountered by our borings. Therefore, whereas the "finger" theory of contaminant migration is a viable model, it is highly unlikely that such "fingers" exist between our borings, particularly where stratification is encountered which would allow such contamination to be observed within our borings.

2. Source(s) of TPH at Depth - Low level TPH (<<55 ppm) has been encountered below the second fine-grained layer to 120 feet beneath the Tank 2 site as well as in Boring LB-104 located approximately 400 feet northeast of the tank site. The RWQCB also informs us that another site in the general area, but still a considerable distance from the HR Textron Pacoima facility, also encountered a widespread low level TPH condition. Further, trends in TPH concentration level either increasing toward or away from the Tank 2 site has not been recognized. We know of no mechanisms of migration of relatively immobile TPH which could identify the Tank 2 contamination as source of this widespread contamination. Other sources in the general vicinity include two major landfills immediately adjacent to the subject site and to the east, widespread industrial usage in the area, and naturally occurring organics within the alluvium (valley fill) indigenous to this general area. Samples

Privileged and Confidential
Private Company
Client Communication

collected in Boring LB-102 at 30.5 feet below the invert of the former tank ground surface (within the high concentration zone) and in a composite sample from 70 to 85.5± feet (considerably below the high concentration zone) were analyzed by Global Geochemistry Corporation laboratory in order to identify the specific signature (or species) of TPH and their relationship. Based upon their evaluation, they report that the hydrocarbons detected in low concentrations (10 mg/kg), from 55 to 110 feet below ground surface, are generated from a common organic material similar to the hydrocarbons found in high concentration (approximately 10,000 mg/kg) below the tank location (at 30.5 feet below ground surface). The type of organic source is predominantly associated with a marine environment, along with some contribution of terrestrial derived plant material. The hydrocarbons in the analyzed samples are typical of severely biodegraded crude oils. However, available sources for such a compound include not only the Tank 2 source onsite, but naturally occurring compounds, landfills, and other industrial facilities as well.

We are currently performing a similar laboratory test on samples collected in Boring LB-104 since it is unlikely that contaminants in Boring LB-104 originated at the Tank 2 source. This test will identify the capability of distinguishing sources. Findings from that laboratory testing will be provided in a future memorandum.

We therefore conclude that numerous sources could exist in the vicinity of the HR Textron Pacoima facility which could have caused the widespread, low level TPH contamination at depth onsite. The least likely source of such contamination is that of a small scale spill such as occurred at former Tank 2 site.

3. Volatile Organics in Soil Samples from Boring LB-3 - Volatile organics were reported in soil samples from Boring LB-3 at 43, 48, and 68 feet below grade. The halogenated organic compounds which were detected were 1,1,1-trichloroethane (1,1,1-TCA) and methylene chloride. As required by California Department of Health Services protocol, a split sample at 43 feet from Boring LB-3 was tested at Analytical Technologies, Inc. (ATI) and there was no 1,1,1-TCA was reported. Chemical Research Laboratories (CRL) did not test any duplicate samples. It was our conclusion then, that the CRL findings were suspect.

   Two borings (LB-103 and LB-103A) were drilled and sampled in the vicinity of Boring LB-3 to verify previously reported data by CRL. The chemical data is summarized in Tables 1 and 2. Soil samples were collected at 50 and 68 feet from Boring LB-103 and from 43, 48, and 68 feet from Boring LB-103A. These soil boring were located laterally about 2 feet from the soil samples which were suspect in Boring LB-3. The results from the second confirmation samples indicated the following:

Privileged and Company
Private Attorney
Client Communication
and Work Product

a. In the verification samples collected at 43 feet in Boring LB-103A, the following organic compounds were detected: 1,1,1-TCA and toluene were reported by CRL and not detected by ATI. (It should be noted that the detection limit for EPA Test Method 8240 by CRL was 0.005 milligrams per kilogram and 0.05 milligrams per kilogram by ATI.)

b. CRL reported in the verification samples at 48 feet from Boring LB-103A the presence of 1,1,1-TCA, 1,1,2-TCA, toluene, 1,1-Dichloroethene, and 1,2-Dichloroethane. ATI did not detect halogenated volatile organics in this sample.

c. In the verification samples at 50 feet from Boring LB-103, ATI reported 1,1,1-TCA, while CRL reported the presence of 1,1,1-TCA, 1,1,2-TCA, toluene, 1,1-Dichloroethene, 1,2-Dichloroethane and 1,1-Dichloroethane. (It should be noted that 1,1-Dichloroethene, 1,1-Dichloroethane, and 1,2-Dichloroethane could be from external sources-contaminants released into the soil, or result of the biodegration process of 1,1,1-TCA.)

d. No 1,1,1-TCA was detected by ATI in the verification samples at 68 feet from Boring LB-103A; while CRL reported the presence of toluene, acetone, ethylbenzene, total xylenes in their sample for Boring LB-103A.

Comparing the data from Boring LB-3 at 43, 48, and 68 feet, the confirmation data from both laboratories indicates the presence of 1,1,1-TCA in the sample at 50 feet in Boring LB-103 and confirms the absence of methylene chloride as previously reported by CRL. The report of acetone and total xylenes in only one sample may be attributed to laboratory handling of the samples, as these were detected in reagent blanks, at trace level. The presence of toluene is at trace levels (0.009 to .027 mg/kg); these levels are well below the 1,000 mg/kg level which is the acceptable cumulative soil contamination level for protection of ground water for Pacoima site specific conditions (DHS Luft Manual, 1988).

4. Ground Water Quality - Low levels of chlorinated hydrocarbons (<10 ug/l) were detected in the water sample collected from a well located 1.5 miles from the Pacoima facility. The only volatile organics present in the water well was toluene and 1,1,1-Trichloroethane at concentrations of 9 and 7 micrograms per liter (ug/l). These concentration levels are well below the DHS recommended action levels of 100 and 200 ppb, respectively. Tetrachloroethene (PCE) and Trichoroloethene (TCE) were not detected in this water sample. This well is located in the general downgradient direction from the site. Major industrial development exists between the Pacoima facility and this downgradient well, therefore the source of the VOC in the well is not known.

5. Lateral and Vertical Limits of the Vadose Soil Contamination Zone - Six additional soil borings (LB-100, LB-101, LB-102/102A and LB-103/103A) were drilled in and adjacent to the Tank 2 site to further evaluate the lateral and vertical extent of the vadose contamination zone. The subsurface geology is presented in Cross-Section DG-DG' (Plate 2) and the results of the soil vadose contamination is presented in Plate 3. Selected soil samples were chemically analyzed for their content of TPH and volatile organic compounds by EPA Test Methods 418.1 and 8240, respectively. High levels of TPH and low

Prepared and Company
Private Attorney
Client Communication
and Work Product

levels of halogenated volatile organics were reported in Boring LB-102 to a depth of 52.5 feet below ground surface. This contamination zone was not encountered in Borings LB-100 and LB-101. Trace levels of TPH and VOCs were reported in soil samples from Borings LB-103/103A to a depth of 50 feet below ground surface (this location is in the upper portion of fine-grained soil layer). Low level TPH concentration is encountered in all borings drilled, even Boring LB-104 located 400 feet northeast of the Tank 2 excavation. The vadose contamination zone associated with the former underground tanks has been defined to the west, to the north, and to the east and is encountered to a depth of 46 to 52.5 feet below ground surface, restricted to a fine-grained silty clay layer.

Conclusions

The following conclusions are presented in order of the issues presented previously and based upon the findings developed during both this and previous phase of investigation:

1. The presence of contamination "fingers" in the vicinity of Tank 2 beneath the second fine-grained layer is unlikely in that such contamination was not confirmed by the split samples submitted to ATI and CRL.

2. Widespread, low level TPH contamination appears to have originated from a regional source rather than a localized source representing a small volume of contaminants. A means of migration to allow movement of the contaminants from the Tank 2 site laterally 400 feet to the northeast at Boring LB-104 where similar contaminants where encountered, let alone similar offsite conditions literally miles from the site is not recognized. Methods of differentiating the low level TPH's are currently being reviewed to further identify the real source. Such source identification may require additional borings in order to identify increases in TPH levels assumed to be increasing in the direction of the source. It is our opinion that one such source of this contamination is the landfills to the southeast.

3. It is apparent that the presence of the fine-grained layer at approximately 46 to 52 feet below the ground surface has served an effective barrier to the vertical migration of contaminants originating from the former tanks. VOCs previously identified in Boring LB-3 at 68 feet below grade and suspected as erroneous due to laboratory testing methodology were confirmed as valid by additional Borings LB-103 and LB-103A located less than 4 feet from the Boring LB-3.

4. Water samples from a well 1.5 miles south of the subject facility did not contain TCE or PCE as suspected by the RWQCB nor did it contain TPH. Therefore, it is our opinion that the TCE, PCE, or TPH contamination in the vicinity of the Tank 2 has not contaminated the water table beneath. Other contaminants were encountered at concentrations above the detection limit of laboratory equipment in the water table represented by the water sample downgradient, but the source of such contaminants is unknown.

Privileged and Confidential
Attorney
Client Communication
and Work Product

5. The lateral and vertical limits of the high concentration zone above the second fine-grained layer has been clearly refined by the Phase II subsurface borings. The limits of this contamination is identified on Plate 3 (enclosed). The lateral limits of this zone in the southeasterly direction remains unidentified due to the inadequacy of data collected in former Borings TH-1 and TH-2. Additional borings will be necessary between Borings LB-102 and LB-102A which are located in the center of the excavation to those located on the adjacent property TH-1 and TH-2, and west of Borings LB-103/LB-103A for the lateral limit in the second fine-grained zone.

General Conclusion

It is our opinion that the data collected to date at the HR Textron Pacoima facility identifies a high concentration TPH and VOC zone currently contained by a fine grained layer within the alluvium approximately 52± feet beneath the ground surface. Its lateral and vertical limits are defined except in the southeasterly direction. We also conclude that the data substantiates a widespread low level TPH contamination exists and that this is the result of a broader source rather than from the leak at the Tank 2 area. The most likely source of such contamination appears to be either natural occurring organics and/or the adjacent landfills. We therefore recommend that future efforts be directed towards mitigation of the VOC/TPH zone in and above the second fine-grained layer and final definition of the southeasterly limit of that zone.

Whereas this is our scientific opinion based upon the data collected to date, it is further recognized that the RWQCB may require drilling to the water table based upon policies and/or politics rather than on the scientific basis by which our conclusions have been drawn. We suggest arranging a meeting with the RWQCB for HR Textron in the near future to make every attempt to persuade them from their earlier request for a ground water monitoring well.

784118 Privileged and Company
Private Attorney
Client Communication
and Work Product

Should you have any questions regarding this Executive Summary, please do not hesitate to contact us at our Valencia office. We appreciate this opportunity to be of service to HR Textron, Inc.

Respectfully submitted,

LEIGHTON AND ASSOCIATES, INC.

Marianne L. Maki

Marianne L. Maki
Senior Geologist

Thomas E. Mills

Thomas E. Mills, RG 4439
Director, Environmental Services

Bruce R. Hilton

Bruce R. Hilton, RG, CEG 1151
Chief Engineering Geologist

LMM/DM/VG/JJL/TM/BH/lh

Attachments: Table 1 - Summary of Chemical Results of Soil Samples from Borings LB-100 to LB-104
Table 2 - Summary of Chemical Results of Soil Samples from Previous Borings
Plate 1 - Plot Plan
Plate 2 - Geologic Cross-Section DG-DG'
Plate 3 - Geologic Cross-Section DG-DG' Showing Vadose Zone Contamination

Distribution: (6) Addressee

Privileged and Company
Attorney
Client Communication
and Work Product

TABLE 2

SUMMARY OF CHEMICAL ANALYSIS
OF SOIL SAMPLES FROM BORINGS

HR Textron
Pacoima, California

							EPA METHOD 8240 (mg/kg)										
SAMPLE #	DEPTH (FT)	DATE OF SAMPLE	EPA-418.1 TPH mg/kg	EPA-413.2 OIL & GREASE mg/kg	CHROMIUM	LEAD	1,1,1-TRICHLORO-ETHANE	TRICHLORO-ETHENE	TETRA-CHLORO-ETHYLENE	TOLUENE	METHYLENE CHLORIDE	BEN-ZENE	ACE-TONE	XYLENE ISOMERS	ETHYL CYCLO-HEXANE	ETHYL METHYL CYCLO-HEXANE	1,2 DI-CHLORO-ETHANE
LB-1	10	05/30/85	27	27	NT	NT		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-1	20	05/30/85	14,000	15,000	NT	NT	55	ND	3	3	ND	ND	ND	4	20	300	ND
LB-1	30	05/30/85	9,800	10,000	NT	NT	87	ND	4	3	ND	ND	ND	3	10	300	ND
LB-1	40	05/30/85	20,000	20,000	NT	NT	100	ND	2	1	ND	ND	ND	3	20	300	ND
LB-1	50	05/30/85	30	30	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-2	10	05/30/85	41	45	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-2	20	05/30/85	ND	ND	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-2	30	05/30/85	ND	ND	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-2	40	05/30/85	ND	ND	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-2	50	05/30/85	ND	ND	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-3A**	13	01/06/88	6	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-5A**	23	01/06/88	3	1	ND	ND	ND	ND	ND	0.13	ND	ND	ND	ND	ND	ND	ND
LB3-7A**	33	01/06/88	4	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-9A**	43	01/06/88	3	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-11A	53	01/06/88	3	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRIP BLANK**		01/06/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FIELD BLANK**		01/07/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
QA SAMPLE**		01/07/88	ND	ND	ND	ND	ND	ND	ND	9 (ug/kg)	ND	ND	ND	ND	ND	ND	ND

7841189-13

Privileged and Company
Private Attorney
Client Communication
and Work Product

Table 2 (Continued)

SAMPLE #	DEPTH (FT)	DATE OF SAMPLE	EPA-418.1 TPH mg/kg	EPA-413.2 OIL & GREASE mg/kg	CHROMIUM	LEAD	EPA METHOD 8240 (mg/kg) 1,1,1-TRICHLORO-ETHANE	TRICHLORO-ETHENE	TETRA-CHLORO-ETHYLENE	TOLUENE	METHYLENE CHLORIDE	BEN-ZENE	ACE-TONE	XYLENE ISOMERS	ETHYL CYCLO-HEXANE	ETHYL METHYL CYCLO-HEXANE	1,2 DI-CHLORO-ETHANE
LB3-13A**	63	01/06/88	4	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-15A**	73	01/07/88	7	9	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-17A**	83	01/07/88	23	19	0.2	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-19A**	93	01/07/88	9	25	ND	ND	ND	ND	ND	0.05	ND	ND	ND	ND	ND	ND	ND
LB3-S21A**	103	01/07/88	3	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S23(3)**	110	01/08/88	5	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S1B*	.5	01/06/88	---		NT	NT	120	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S2B*	3	01/06/88	---	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S3B*	13	01/06/88	ND	NT	NT	NT	ND	ND	ND	ND	150	ND	ND	ND	ND	ND	ND
LB3-S4B*	18	01/06/88	---	NT	NT	NT	ND	ND	ND	ND	150	ND	ND	ND	ND	ND	ND
LB3-S5B*	23	01/06/88	---	NT	NT	NT	ND	ND	ND	ND	80	ND	ND	ND	ND	ND	ND
LB3-S6B*	28	01/06/88	---	NT	NT	NT	ND	ND	ND	ND	100	ND	ND	ND	ND	ND	ND
LB3-S7B*	33	01/06/88	---	NT	NT	NT	ND	ND	ND	ND	100	ND	ND	ND	ND	ND	ND
LB3-S8B*	38	01/06/88	---	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S9B*	43	01/06/88	ND	NT	NT	NT	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S10B*	48	01/06/88	ND	NT	NT	NT	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S11B*	53	01/06/88	2	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S12B*	58	01/06/88	2	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S13B*	63	01/06/88	2	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S14B*	68	01/07/88	14	NT	NT	NT	700	ND	ND	ND	150	ND	ND	ND	ND	ND	ND
LB3-S15B*	73	01/07/88	2	NT	NT	NT	ND	ND	ND	ND	150	ND	ND	ND	ND	ND	ND
LB3-S16B*	78	01/07/88	15	NT	NT	NT	ND	ND	ND	ND	150	ND	ND	ND	ND	ND	ND

7841189-13

Privileged and Company
Private Attorney
Client Communication
and Work Product

Table 2 (Continued)

SAMPLE #	DEPTH (FT)	DATE OF SAMPLE	EPA-418.1 TPH mg/kg	EPA-413.2 OIL & GREASE mg/kg	CHROMIUM	LEAD	EPA METHOD 8240 (mg/kg) 1,1,1-TRICHLORO-ETHANE	TRICHLORO-ETHENE	TETRA-CHLORO-ETHYLENE	TOLUENE	METHYLENE CHLORIDE	BEN-ZENE	ACE-TONE	XYLENE ISOMERS	ETHYL CYCLO-HEXANE	ETHYL METHYL CYCLO-HEXANE	1,2 DI-CHLORO-ETHANE
LB3-S17B*	83	01/07/88	NT	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S18B*	88	01/07/88	15	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S19B*	93	01/07/88	9	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S20B*	98	01/07/88	16	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S21B*	103	01/07/88	6	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S23B*	110	01/08/88	2	NT	NT	NT	ND	ND	ND	NT	NT	ND	ND	ND	ND	ND	ND
LB4-S2A**	3	01/08/88	4	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S4A**	13	01/08/88	3	3	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S6A**	23	01/08/88	2	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S8A**	33	01/11/88	1	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S10A**	43	01/11/88	3	4	ND	ND	ND	ND	ND	ND	TR	ND	ND	ND	ND	ND	ND
LB4-S12A**	53	01/11/88	3	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S14A**	63	01/11/88	3	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S16A**	73	01/11/88	5	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trip Blank**	-	01/08/88			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Field Blank**	-	01/11/88	.08	.08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S18A**	83	01/11/88	6	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S20A**	93	01/12/88	3	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S22A**	103	01/12/88	3	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S23A**	108	01/12/88	2	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trip Blank**	-	01/12/88			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Field Blank**	-	01/12/88	.05	.05	ND	ND	ND	ND	ND	ND	TR	ND	TR	ND	ND	ND	TR

7841189-13

Privileged and Company
Private Attorney
Client Communication
and Work Product

Table 2 (Continued)

SAMPLE #	DEPTH (FT)	DATE OF SAMPLE	EPA-418.1 TPH mg/kg	EPA-413.2 OIL & GREASE mg/kg	CHROMIUM	LEAD	EPA METHOD 8240 (mg/kg) 1,1,1-TRICHLORO-ETHANE	TRICHLORO-ETHENE	TETRA-CHLORO-ETHYLENE	TOLUENE	METHYLENE CHLORIDE	BEN-ZENE	ACE-TONE	XYLENE ISOMERS	ETHYL CYCLO-HEXANE	ETHYL METHYL CYCLO-HEXANE	1,2 DI-CHLORO-ETHANE
BIN-S1**	--	01/13/88	210	260	ND	ND	ND	ND	ND	0.37	ND	ND	ND	ND	ND	ND	ND
BIN-S2**	--	01/13/88	130	130	ND	ND	ND	ND	ND	0.05	ND	ND	ND	ND	ND	ND	ND
SCF*	--	01/13/88	.16	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S1B*	.5	01/08/88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S2B*	3	01/08/88	ND?	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S3B*	8	01/08/88	ND?	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S4B*	13	01/08/88	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S5B*	18	01/08/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S6B*	23	01/08/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S7B*	28	01/11/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S8B*	33	01/11/88	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S9B*	38	01/11/88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S10B*	43	01/11/88	16	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S11B*	48	01/11/88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S12B*	53	01/11/88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S13B*	58	01/11/88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S14B*	63	01/11/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S15B*	68	01/11/88	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S16B*	73	01/11/88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S17B*	78	01/11/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S18B*	83	01/11/88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S19B*	88	01/11/88	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

7841189-13

Privileged and Company
Private Attorney
Communication
and Work Product

Table 2 (Continued)

SAMPLE #	DEPTH (FT)	DATE OF SAMPLE	EPA-418.1 TPH mg/kg	EPA-413.2 OIL & GREASE mg/kg	CHROMIUM	LEAD	EPA METHOD 8240 (mg/kg) 1,1,1-TRICHLORO-ETHANE	TRICHLORO-ETHENE	TETRA-CHLORO-ETHYLENE	TOLUENE	METHYLENE CHLORIDE	BEN-ZENE	ACE-TONE	XYLENE ISOMERS	ETHYL CYCLO-HEXANE	ETHYL METHYL CYCLO-HEXANE	1,2 DI-CHLORO-ETHANE
LB4-S20B*	93	01/12/88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S21B*	98	01/12/88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S22B*	103	01/12/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TH-1	6.5	05/16/86	37	37	NT	NT	ND	ND	ND	ND	ND	12 (ppb)	79 (ppb)	ND	ND	ND	ND
TH-1	11	05/16/86	20	20	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-1	12.5	05/16/86	20	20	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-1	15.5	05/16/86	14	14	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-1	20	05/16/86	30	30	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-1	30	05/16/86	TR<10	TR<10	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-1	40	05/16/86	23	23	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	10	05/16/86	21	21	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	15	05/16/86	26	26	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	20	05/16/86	15	15	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	30	05/16/86	20	20	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	40	05/16/86	26	26	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	45	05/16/86	29	29	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	55	05/16/86	26	26	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	65	05/16/86	21	21	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	75	05/16/86	23	23	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	85	05/16/86	18	18	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	95	05/16/86	120	120	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	105	05/16/86	37	37	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	115	05/16/86	33	33	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

7841189-13

Privileged and Company
Private Attorney
Client Communication
and Work Product

Table 2 (Continued)

SAMPLE #	DEPTH (FT)	DATE OF SAMPLE	EPA-418.1 TPH mg/kg	EPA-413.2 OIL & GREASE mg/kg	CHROMIUM	LEAD	EPA METHOD 8240 (mg/kg) 1,1,1-TRICHLORO-ETHANE	TRICHLORO-ETHENE	TETRA-CHLORO-ETHYLENE	TOLUENE	METHYLENE CHLORIDE	BEN-ZENE	ACE-TONE	XYLENE ISOMERS	ETHYL CYCLO-HEXANE	ETHYL METHYL CYCLO-HEXANE	1,2 DI-CHLORO-ETHANE
TH-2	120	05/16/86	56	56	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
B-3	composite 0-43	05/23/84		23,400	Stoddard Solvent 2400 mg/kg												

Note:
- LB = Leighton and Associates, Inc. borings
- TH = Enviropro, Inc. borings
- ND = Not Detected
- NT = Not Tested
- TR = Detected at an unquantifiable trace level
- * = Mobile Lab Results are not certified by the Department of Health Services, EPA Method 8010, the only detected compounds are shown in (mg/kg). All other compounds volatile chlorinated hydrocarbons and volatile aromatic hydrocarbons (EPA Method 8020) were not detected.
- ** = Analytical Technology, Inc. has a Department of Health Services certification.

TABLE 1

SUMMARY OF CHEMICAL ANALYSIS
OF SOIL SAMPLES FROM BORINGS

HR Textron
Pacoima, California

				EPA METHOD 8240*										
Sample #	Depth (Feet)	Date of Sample	EPA Method 481.1 (TPH)*	1,1,1, Tri-Chloro-Ethane	1,1,2-Tri Chloro-Ethane	Tri-Chloro-Ethene	Tetra-Chloro-Ethene	Toluene	Acetone	Xylene Issomers	1,1 Di-Chloro Ethene	Ethyl-benzene	1,2-Di-Chloro Ethane	1,1 Di-Chloro Ethane
LB-100.9.5	9.5	9-13-88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-20	20	9-13-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-31	31	9-13-88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-40	40	9-13-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-51	51	9-14-88	6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-60	60	9-14-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-69	69	9-14-88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-81.5	81.5	9-14-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-90.5	90.5	9-14-88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-101.5	101.5	9-14-88	3	ND	ND	ND	ND	ND	2.4	ND	ND	ND	ND	ND
LB-100-111.5	111.5	9-14-88	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-5	5	9-15-88	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-15	15	9-15-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-25	25	9-15-88	17	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-35	35.5	9-15-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-40	40	9-15-88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-45	44.5	9-15-88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-46	46	9-15-88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-48	47.5	9-15-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-49	49	9-15-88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-51	51	9-15-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-57	57	9-15-88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-60	60	9-16-88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-70	70.5	9-16-88	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-80	81	9-16-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-90	90	9-16-88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-100	100.5	9-16-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-110	110.5	9-16-88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*Milligrams per kilogram
NT = Not Tested

7841189-19

TABLE 1

SUMMARY OF CHEMICAL ANALYSIS
OF SOIL SAMPLES FROM BORINGS (CONT.)

HR Textron
Pacoima, California

				EPA METHOD 8240*										
Sample #	Depth (Feet)	Date of Sample	EPA Method 481.1 (TPH)*	1,1,1, Tri-Chloro-Ethane	1,1,2-Tri Chloro-Ethane	Tri-Chloro-Ethene	Tetra-Chloro-Ethene	Toluene	Acetone	Xylene Issomers	1,1 Di-Chloro Ethene	Ethyl-benzene	1,2-Di-Chloro Ethane	1,1 Di-Chloro Ethane
LB-102-20	20	9-15-88	9,800	180	ND	ND	8	4	ND	4	4	ND	ND	ND
LB-102-26	26	9-19-88	8,300	110	ND	ND	6	3	ND	ND	0.6	ND	ND	ND
LB-102-35	35	9-19-88	9,100	60	ND	ND	4	1	ND	ND	ND	ND	ND	ND
LB-102-45	45	9-19-88	14,000	5	ND	ND	0.1	0.07	ND	ND	ND	ND	ND	ND
LB-102-46.5	46.5	9-19-88	17,000	100	ND	ND	3	2	ND	ND	ND	ND	ND	ND
LB-102-49	49	9-19-88	3,800	64	ND	ND	2.4	1	ND	ND	ND	ND	ND	ND
LB-102-50	50.5	9-19-88	1,200	2	ND	ND	0.1	0.08	ND	ND	ND	ND	ND	ND
LB-102-53	52.5	9-19-88	11,000	120	ND	ND	4	ND	ND	ND	ND	ND	ND	ND
LB-102-54	54	9-19-88	6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-102-65	65	9-19-88	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-102-75	75	9-19-88	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-102-85	85.5	9-19-88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-102A-95	95	9-23-88	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-102A-100	100	9-23-88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-102A-110	110	10-04-88	9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-102A-115	115	10-04-88	11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-102A-120	120	10-04-88	32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103-35A	35	9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103-50A	50	9-13-88	NT	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103-53A	53	9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103-54.5A	54.5	9-13-88	NT	ND	ND	0.05	ND	ND	ND	ND	ND	ND	ND	ND
LB-103-56A	56	9-13-88	NT	ND	0.010	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103-68A	68	9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103-35C	35	9-13-88	NT	0.016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103-50C	50	9-13-88	NT	0.150	0.013	ND	ND	0.027	ND	ND	0.009	ND	0.013	0.038
LB-103-53C	53	9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103-54.5C	54.5	9-13-88	NT	ND	ND	ND	ND	0.024	ND	ND	ND	ND	ND	ND
LB-103-56C	56	9-13-88	NT	0.020	ND	ND	ND	0.020	ND	ND	ND	ND	ND	ND
LB-103-68C	68	9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*Milligrams per kilogram
NT = Not Tested

7841189-13

Privileged and Company
Private Attorney
Client Communication
and Work Product

TABLE 1

SUMMARY OF CHEMICAL ANALYSIS
OF SOIL SAMPLES FROM BORINGS (CONT.)

HR Textron
Pacoima, California

				EPA METHOD 8240*										
Sample #	Depth (Feet)	Date of Sample	EPA Method 481.1 (TPH)*	1,1,1, Tri-Chloro-Ethane	1,1,2-Tri Chloro-Ethane	Tri-Chloro-Ethene	Tetra-Chloro-Ethene	Toluene	Acetone	Xylene Issomers	1,1 Di-Chloro Ethene	Ethyl-benzene	1,2-Di-Chloro Ethane	1,1 Di-Chloro Ethane
LB-103A-43C	43	9-21-88	NT	0.007	ND	ND	ND	0.015	ND	ND	ND	ND	ND	ND
LB-103A-48C	48	9-21-88	NT	0.240	0.014	ND	ND	0.024	ND	ND	0.040	ND	0.014	ND
LB-103A-68C	68	9-21-88	NT	ND	ND	ND	ND	0.009	0.012	0.034	ND	ND	ND	ND
LB-103A-43A	43	9-21-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103A-48A	48	9-21-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103A-68A	68	9-21-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	.009	ND	ND
LB-104-10	10	10-3-88	5	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
LB-104-20	20	10-3-88	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-104-30	30	10-3-88	5	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
LB-104-40	40	10-3-88	9	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
LB-104-50	50	10-3-88	4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
LB-104-60	60	10-3-88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-104-70	70	10-3-88	5	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
LB-104-80	80	10-3-88	5	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
LB-104-105	105	10-3-88	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-104-110	110	10-3-88	9	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				EPA METHOD 624 (MICROGRAMS/LITER)										
MW-13AA		9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-13BA		9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-13AA		9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-13AA		9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-21AC		9-21-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-21BC		9-21-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-14A		9-14-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-1B		9-14-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-100A		9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-100B		9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-15A		9-15-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-15B		9-16-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-16A		9-16-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-16A		9-16-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-19A		9-19-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-19B		9-19-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*Milligrams per kilogram
NT = Not Tested

7841189-13

TABLE 1

SUMMARY OF CHEMICAL ANALYSIS
OF SOIL SAMPLES FROM BORINGS (CONT.)

HR Textron
Pacoima, California

Privileged and Company
Private Attorney
Client Communication
and Work Product

				EPA METHOD 624 (MICROGRAMS PER LITER)										
Sample #	Depth (Feet)	Date of Sample	EPA Method 481.1 (TPH)*	1,1,1, Tri-Chloro-Ethane	1,1,2-Tri Chloro-Ethane	Tri-Chloro-Ethene	Tetra-Chloro-Ethene	Toluene	Acetone	Xylene Issomers	1,1 Di-Chloro Ethene	Ethyl-benzene	1,2-Di-Chloro Ethane	1,1 Di-Chloro Ethane
MW-21AA		9-21-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-21BA		9-21-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-23A		9-23-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-23B		9-23-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-2A		10-3-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-2B		10-3-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-4A		10-4-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-4B		10-4-88	NT	ND	ND	ND	ND	TR	ND	ND	ND	ND	ND	ND

*Milligrams per kilogram
NT = Not Tested

NOTE: All the MW samples are blanks analyzed by EPA Test Method 624.

Copied 5-21-88: HEDGES, BELL, STEWART, ARRINGTON.

STATE OF CALIFORNIA

GEORGE DEUKMEJIAN, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
LOS ANGELES REGION

07 SOUTH BROADWAY, SUITE 4027
LOS ANGELES, CALIFORNIA 90012-4596
(213) 620-4460

2166-04746

FACILITIES
MAY 20 1988
ENGINEERING

May 12, 1988

Mr. William Moses
Director of Facilities
HR Textron Inc.
25200 West Rye Canyon Road
Valencia, CA 91355

UNDERGROUND TANK LEAK INVESTIGATION - HR TEXTRON INC. 10445 GLENOAKS BLVD. (ID #913310270)

This is in reference to the March 1988 report by Leighton & Associates containing the results of the investigation for the subject site.

Based on our review of the reports, we concluded that substantial soil contamination that could adversely affect the groundwater has taken place. You are therefore required to investigate groundwater contamination in accordance with the August 27, 1987 letter sent to you by the Regional Board. This investigation shall be downgradient of the excavation.

You have also proposed to drill two more shallow borings to determine the lateral extent of soil contamination. We have no objections to this proposal provided that the borings vertically extend until no contamination is found.

A report containing the results of your work is due to this Board no later than June 28, 1988.

If you have any questions, please call me at (213) 620-5662 or have a member of your staff call Mr. E. G. Solomon at (213) 620-5647.

JOSHUA M. WORKMAN
Senior Water Resource
Control Engineer

EGS/egs

cc: Ms. Marianne Maki, Leighton & Associates
Captain Arthur Leal, Los Angeles City Fire Department

35005

PARTIALLY SCANNED
OVERSIZE ITEM(S)

See document # 2211863
for partially scanned image(s).
(1 of 5) to (2 of 5)

For complete hardcopy version of the oversize document
contact the Region IX Superfund Records Center

2166-04746

LEIGHTON AND ASSOCIATES

Geotechnical and Environmental Engineering Consultants

Revision 2 - 9/12/88

SITE SAFETY PLAN

Project Numbers	7841189-08, 7841189-09
Project Location	10445 Glenoaks Boulevard, Pacoima, California
Client	HR Textron
Owner	HR Textron
Project Manager	Bruce R. Hilton
Onsite Safety Officer	Doug Kuhn
Plan Preparer	Mike Reust
Plan Reviewer	Thomas E. Mills
Date Finalized	September 12, 1988

FACILITIES
SEP 16 1988
ENGINEERING

Plan Approvals:

Thomas E. Mills 9-12-88
L&A Safety & Health Officer Date
Thomas E. Mills

Bruce R. Hilton 9-12-88
Project Manager Date
Bruce R. Hilton

25020 WEST AVENUE STANFORD, SUITE 190, VALENCIA, CALIFORNIA 91355

(805) 257-0150 • (818) 881-6031
FAX (805) 257-0819

35005

TABLE OF CONTENTS

Section		Page
1.0	INTRODUCTION	2
1.1	Facility Background	2
1.2	Field Activities	5
2.0	KEY PERSONNEL AND RESPONSIBILITIES	7
3.0	JOB HAZARD ANALYSIS	12
3.1	Hazard Analysis: Hollow-Stem Auger Drilling	18
3.2	Hazard Analysis: Ground Water Sampling	19
3.3	Hazard Analysis: Packaging and Shipment of Samples	20
3.4	Other Hazards: Heat Stress and Drilling into Buried Hazards	20
3.5	Packaging and Shipping Requirements	21
4.0	RISK ASSESSMENT SUMMARY	22
5.0	AIR MONITORING PLAN	23
5.1	Checklist for Using Monitoring Equipment (Instructions)	27
5.1.1	Checklist for Using the Photoionization Detector	27
5.1.2	Calibration of Century Organic Vapor Analyzer (OVA) Model OVA 128	28
6.0	PERSONAL PROTECTIVE EQUIPMENT (PPE)	33
6.1	Drilling of Boring (Hollow-Stem Augering)	34
7.0	WORK ZONES AND SECURITY MEASURES	37
8.0	DECONTAMINATION PROCEDURES	38
9.0	SITE EMERGENCY RESOURCES	40
10.0	STANDARD SAFE WORK PRACTICES	45
11.0	DRILLING AND SAMPLING PRACTICES	46
12.0	CONTINGENCY PLANS	47
12.1	Injuries	47
12.2	Fire and Explosion Response Procedures	50
12.3	Operations Shutdown	50
12.4	Compressed Gas Safety	50
12.5	Evacuation and Hospital Routes	51

LEIGHTON AND ASSOCIATES, INC.

TABLE OF CONTENTS

Section Page

13.0 TRAINING REQUIREMENTS 54

13.1 Health and Safety Training 54
13.2 Potential Routes of Exposure 55
13.3 Respirator Training 55
13.3.1 Checklist for Using a Respirator 55
13.3.2 Checklist for Using a Self-Contained Breathing Apparatus (if necessary)..... 58

ACCOMPANYING MAPS, ILLUSTRATIONS AND APPENDICES

Plates

Plate 1 - Geologic Cross-Section B-B', HR Textron, Pacoima - In Pocket

Tables

Table 2-1 - Emergency Contacts and Telephone Numbers 10
Table 3.1 - Exposure Limits, Recognition Qualities, and Symptoms for Anticipated Contaminants, HR Textron Pacoima Facility . 13
Table 5-1 - Calibration Record For OVA/PID 31
Table 5-2 - OVA/PIC Record 32

Figures

Figure 1-1 - Index Map of HR Textron Facility, Pacoima 3
Figure 1-2 - Plot Plan Showing Locations of Proposed and Previous Exploratory Borings, HR Textron, Pacoima Facility 4
Figure 2-1 - Plan Acceptance Form, Project Site Safety Plan 11
Figure 12-1 - Accident Report Form 48
Figure 12-2 - Field Exposure Form 49
Figure 12-3 - Evacuation Route, HR Textron Facility, Pacoima 52
Figure 12-4 - Route to Hospital from HR Textron Facility, Pacoima 53

SITE SAFETY PLAN

1.0 INTRODUCTION

This plan describes the health and safety procedures and practices to be used during the Phase II Soil Contamination Investigation at the HR Textron facility in Pacoima, California. All Leighton and Associates, Inc. (L&A) employees and its subcontractors will follow this plan. Variances will be cleared through the L&A Health and Safety Manager or Site Safety Officer prior to implementation.

The prime responsibility for employee safety will rest with: (1) L&A for its own employees, (2) L&A's subcontractors for their employees, and (3) with other parties whose employees will work under L&A's technical direction. This safety plan only applies to L&A and subcontractors for this project. Safety plans should be developed independently for separate efforts. L&A, its subcontractors, and other parties participating in onsite work will comply with all applicable requirements of the Occupational Safety and Health Administration (29 CFR 1910.120), and the draft TSCD "Site Safety Plan Outline and Guidance for Site Assessment or Site Mitigation Projects" ('Guidance document'). In the event of conflicting requirements, the most restrictive shall apply. L&A will be responsible for providing health and safety training, and for performing audits determining implementation of the Site Safety Plan. Subcontractors will be responsible for ensuring that their employees will comply with the Site Safety Plan and all applicable regulatory requirements.

1.1 Facility Background

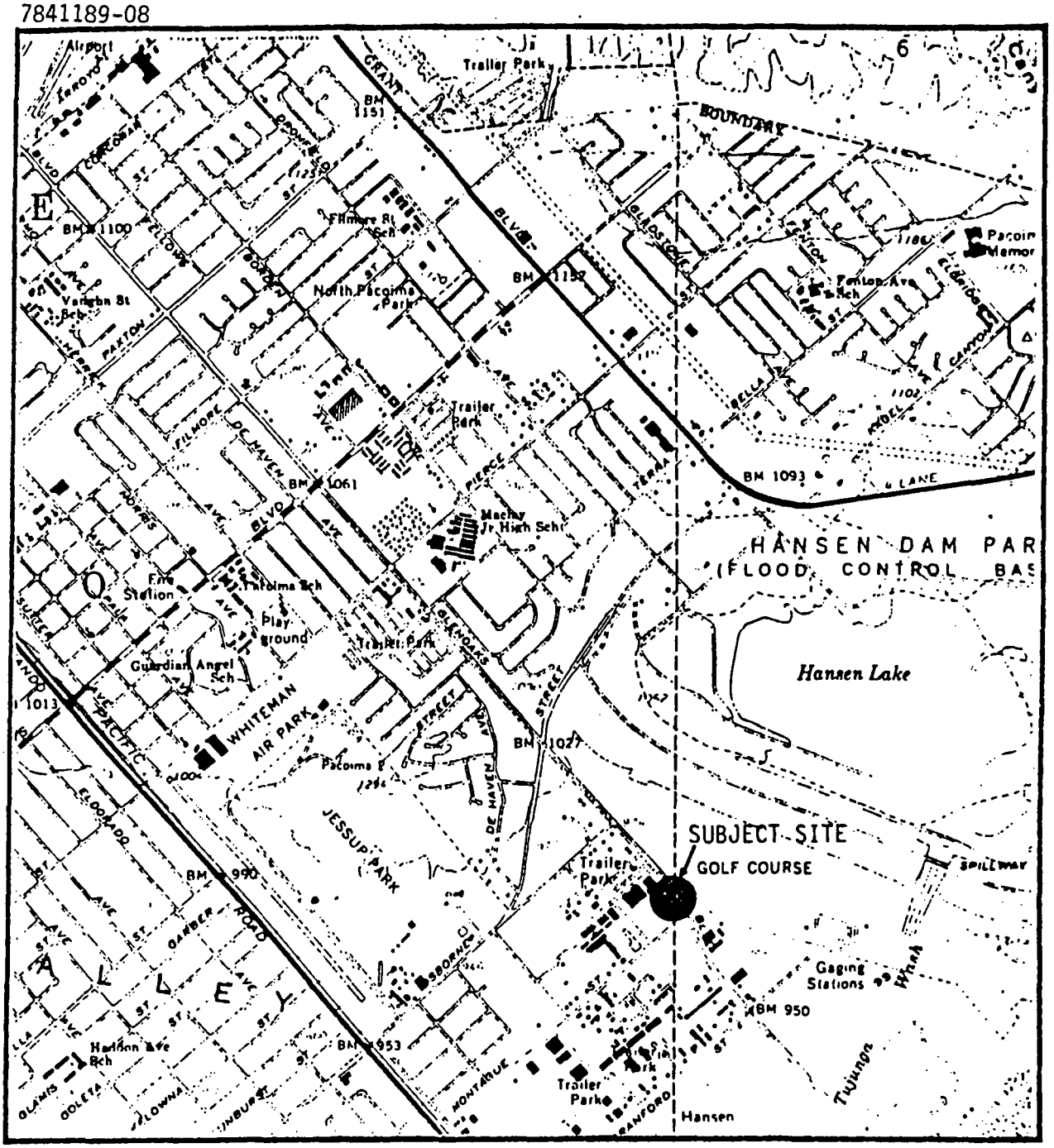
Site History: The site is located west of the Verdugo Hills in the northwesterly portion of the San Fernando Valley (Figure 1). The Textron plant consists of a large manufacturing building and smaller adjacent storage and support buildings occupying the majority of the site. The remaining portion of the site is covered with asphaltic concrete.

Previous field investigations in the vicinity of Tank Site 2 (see Figure 2) by Earth Technology Corporation and Leighton and Associates, Inc. have identified soil contamination in the vadose zone to an approximate depth of 50 feet and trace levels of TPH to 120 feet. Analysis of soil samples taken at the tank site indicated contamination from Stoddard solvent, oil and grease, heavy metals, and tetrachloroethylene.

According to various state, county, and city documents, one Class II landfill is located directly beneath portions of the Textron facility, and another landfill is located immediately to the southeast. It is our understanding that many compliance problems were associated with the landfill southeast of the site, including unrestricted access, dumping of industrial waste water, undiverted surface storm water, disposing of manure wastes, etc. Furthermore, materials and waste products that were contained and/or stored at the Textron facility may also be present in the adjacent and underlying landfills.

7841189-08

INDEX MAP



0 2000 4000
scale feet

H. R. TEXTRON

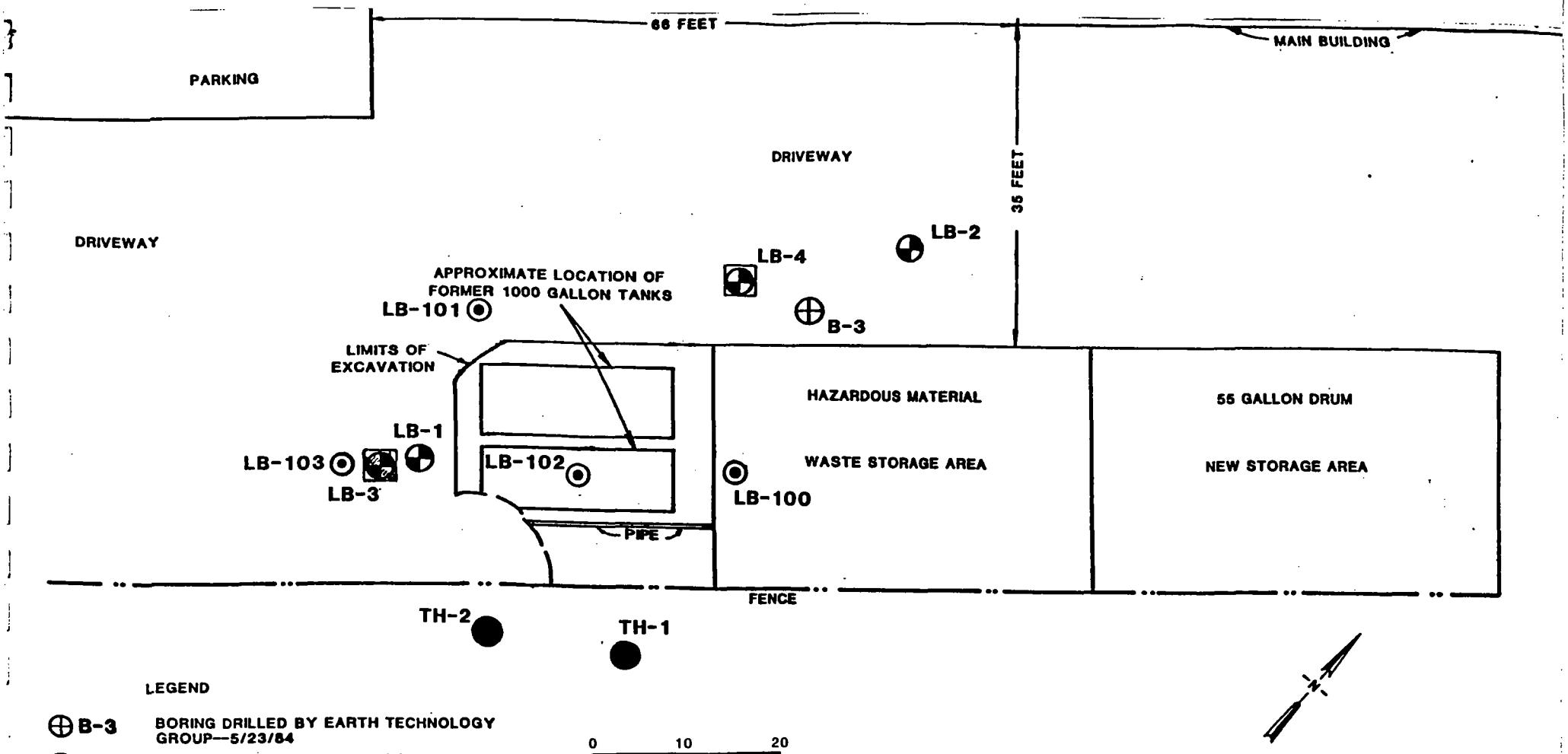
10445 GLENOAKS BOULEVARD

CITY OF PACOIMA

(Subject Site Shown in Yellow)

Figure 1.1
Base Map: USGS San Fernando Quadrangle (1966)
Photo revised 1972

LEIGHTON AND ASSOCIATES, INC.



LEGEND

- B-3 — BORING DRILLED BY EARTH TECHNOLOGY GROUP--5/23/84
- LB-2 — BORINGS DRILLED BY LEIGHTON AND ASSOCIATES, INC., --5/30/85
- TH-2 — BORINGS DRILLED BY ENVIROPRO--5/29/86
- LB-4 — BORINGS DRILLED BY LEIGHTON AND ASSOCIATES, INC., 1/88
- LB-1 — ANGLE BORING DRILLED BY LEIGHTON AND ASSOCIATES, INC., 5/30/85
- LB-103 — PROPOSED SOIL BORINGS

0 10 20
scale feet

Privileged and Company Private Attorney Client Communication and Work Product

FIGURE 2

PLOT PLAN
SHOWING LOCATIONS OF
PROPOSED AND PREVIOUS EXPLORATORY BORINGS
HR TEXTRON
PACOIMA, CALIFORNIA

Project No. 7841189-08, 09

Drafted By: PB/DK

1.2 Field Activities

The work plan includes the following:

Task A After review of available literature, approximately three soil borings (Borings LB-100, LB-101, and LB-102) will be drilled, continuously logged and sampled to a depth of approximately 130± feet in the vicinity of the Tank 2 excavation. To verify the lateral extent of the soil contamination associated with the leakage of the underground tanks, two of the three borings will be drilled northeast of the excavation and southwest of the excavation, respectively. To assess the vertical extent of the soil contamination, we recommend the third boring (LB-102) be drilled in the center of the tank excavation.

To assess the presence of 1,1,1-Trichloroethane detected at trace levels by CRL in three soil samples (i.e., at 43 feet, 48 feet, and 68 feet) from Boring LB-3, a 68 foot deep exploratory boring (LB-103) adjacent to Boring LB-3 will be drilled. Soil samples will be collected at 43, 48, and 68 feet. These soil samples are to be analyzed by EPA Test Method 8240 at ATI and CRL to determine the absence/presence of 1,1,1-Trichloroethane.

Task B Selected soil samples will be collected at 5-foot intervals and at major lithological units. Selected (every 10 feet or at major lithological changes) soil samples will be chemically analyzed by Analytical Technologies, Inc. (ATI), San Diego, California, a Department of Health Services (DHS) certified laboratory. Soil samples for chemical analysis will also be collected 3 to 6 inches above and below the clay lens/layer which has been identified at approximately 46 to 50 feet below grade in borings LB-3 and LB-4 (see Draft geological cross-section B-B'). A soil sample will also be collected and chemically analyzed from the central portion of the clay layer to determine if any contaminants have migrated through the clay unit. Sieve-hydrometer tests will be performed on two of these samples.

Soil Moisture samples will also be collected every five feet for analysis. Should any organic vapors be measured in a sample, those samples will need to be tested at a specialized laboratory (ERTEC), who can perform soil moisture analysis on contaminated soil samples. If perched water is encountered in any boreholes above this clay layer, the borehole will be terminated. The SSO will call LMM/BH/TM to determine the next step, which will be to terminate and backfill with a bentonite cement grout or continue drilling. The selected soil samples will be analyzed by EPA Test Methods 418.1, Modified 8015, and 8240 for the Total Petroleum Hydrocarbons (TPH) and volatile organics, respectively.

Task C Each of the two borings will be backfilled to the ground surface with a 3%-5% Bentonite-cement grout following the completion of drilling. Approximate borehole volume should be calculated by the onsite geologist following drilling, and at least an equal volume of grout should be placed in the borehole (assuming no caving of formational material in the borehole) to insure the filling of all cavities in the boring. Each boring should be "topped off" with additional grout to compensate for settlement within the borehole.

Task D To assess the quality of ground water with respect to TPH and volatile organics identified in the soil below former Tank 2, two wells, downgradient from the subject site will be sampled. The ground water samples obtained from these wells will be analyzed for their TPH and volatile organics by EPA Test Methods 418.1, Modified 8015, and 624, respectively.

Task E All of the materials resulting from drilling and sampling (i.e., soils and mud) will be stored in properly labeled containers, and will remain onsite for proper disposal by HR Textron.

2.0 KEY PERSONNEL AND RESPONSIBILITIES

For the Textron Pacoima facility soil contamination investigation, the following are the key personnel:

- Company Health and Safety Manager - Thomas E. Mills
- Project Manager - Bruce R. Hilton
- Site Safety Officer - Doug Kuhn

Responsibilities: The Company Health and Safety Manager is to review and approve the Site Safety Plan making sure that:

- The Site Safety Plan meets the 29 CFR 1910.120 and the DHS Guidance Document requirements.
- The team personnel and subcontractor assigned to this project are qualified and have the appropriate training and skills to handle all safety measures and/or emergency responses.
- The contract with the client has provisions that requires client cooperation with L&A in any emergency response.
- The contract with the client provides the client will assure the safe disposal, storage, and transportation of all contaminated waste materials resulted during this project.

The Project Manager (PM) will issue the Site Safety Plan and direct all onsite investigations. At the site, the PM and the Site Safety Officer (SSO) have the primary responsibility for the implementation of the Site Safety Plan.

The SSO is present at the site at all times during the work performed by Leighton and Associates, Inc. personnel and/or subcontractor. The Site Safety Officer has been trained on the use of the PID, OVA, and explosimeter. He has also undergone in-house health and safety training in the proper use of EPA Level C protective equipment, including respirator fit test. The SSO has received CPR and First Aid instructions.

The PM and SSO have the following responsibilities:

- Make sure all personnel protective and monitoring equipment is onsite and in proper working condition (including properly calibrated) and is used by all onsite personnel.
- Make sure that all onsite personnel are aware of the safety procedures observed in this plan and are also aware of the contingency/emergency plan.

- Inform all onsite personnel of the potential hazards which are associated with the site.
- Monitor the safety procedures used by all onsite personnel to ensure that they are appropriate.
- Discontinue the work of any field team members if he/she is found not suitable for field work because of health or mental reasons, taking necessary measures to ensure his/her safety.
- Correct any procedures or site conditions which may result in injury or exposure to hazardous substances/wastes.
- The SSO will report to PM any correction in safety procedures, and in the event of an accident, will complete the Accident Report Form.
- The SSO will complete a Field Exposure form (see Figure 11-2, page 48), at the completion of the field work.
- In the event of any accident, the PM is required to complete an Accident Report form (Figure 11-1, page 47) for submittal to the Company Safety and Health Manager. The Safety and Health Manager should address the situation and take appropriate action to correct the situation which caused the accident.

Project Personnel: All Leighton and Associates, Inc. project personnel involved with onsite activities are responsible for the following:

- Being familiar with, and implementing, the Site Safety Plan and sign off, as indicated in Figure 2-1 (page 10).
- Reporting to the PM any changes in the Site Safety Plan from those described in the Plan.
- Take all responsible precautions to prevent any injury to themselves and other onsite project personnel.
- Perform only those tasks which appear reasonable and safe to do, and immediately report any accidents or unwarranted site conditions to the PM.
- Prepare any accident/incident (Figure 11-1, page 47) and field exposure (Figure 11-2, page 48) report.

The key project personnel and their phone numbers are as follows:

Personnel	Company	Telephone Number
Bob Jetty	HR Textron, Pacoima	(818) 896-2411
William C. Moses	HR Textron, Valencia	(805) 253-5601
Grayson Walker	H-F Drilling, Inc.	(714) 632-5306
Bruce R. Hilton	L&A Project Manager	(805) 257-0150 (Office) (805) 249-5082 (Home)
Doug Kuhn	L&A Site Safety Officer	(805) 257-0150 (Office) (805) 269-1989 (Home)
Thomas Mills	L&A Health & Safety Mgr.	(714) 250-1421 (Office) (619) 943-7239 (Home)
Jim McNally	DHS	(213) 620-2380
E.G. Solomon	RWQCB	(213) 620-5647

TABLE 2-1

EMERGENCY CONTACTS AND TELEPHONE NUMBERS

Agency	Name of Contact	Telephone No.
Ambulance		911
Fire		911
Police		911
Hospital	Pacifica Hospital	(818) 767-3310
	San Fernando Community Hospital	(818) 361-7331
Poison Center		(213) 484-5151
L&A Medical Doctor	Dr. Peter Greaney	(714) 535-8221
L&A Industrial Hygienist	Michael Levine, PhD	(619) 535-9474

FIGURE 2-1

PLAN ACCEPTANCE FORM

PROJECT SITE SAFETY PLAN

Instructions: This form is to be completed by each person to work on the subject project work site, and returned to the L&A Health Safety Manager in Irvine.

For Leighton and Associates, Inc., Personnel

Job No. _____

Project Name _____

Date _____

I represent that I have read and understood the contents of the above plan and agree to perform my work in accordance with it.

_____
Name (Printed)

_____
Signed Date

For Subcontractor: L&A is informing the subcontractor on this project of the known potential for encountering hazardous materials during this field investigation. The subcontractor will indemnify and hold L&A harmless from and against all loss, damage, and expense arising out of the work to be performed by the subcontractor at the site where hazardous materials may be expected.

_____
Subcontractor's Name

_____
Name (Printed)

_____
Name (Printed)

_____
Signed Date

_____
Signed Date

LEIGHTON AND ASSOCIATES, INC.

3.0 JOB HAZARD ANALYSIS

General types of hazards associated with this program are listed below:

Mechanical Hazards: Cuts, contusions, (bruises, being struck by or striking objects, or being caught between objects).

Electrical Hazards: Possible excavation of buried cables and exposure of overhead power lines during drilling.

Chemical Hazards: Field exposure to chemicals listed in Table 3-1 of this plan.

Fire Hazards: Possible excavation of buried gas lines. Brush fires. Equipment fires.

TABLE 3.1

EXPOSURE LIMITS, RECOGNITION QUALITIES, AND SYMPTOMS
FOR ANTICIPATED CONTAMINANTS, HR TEXTRON PACOIMA FACILITY

Isopropyl Alcohol

TLV: 400 ppm
PEL: 400 ppm 980 mg/m^3
Odor: Alcohol-type, threshold 28.2 ppm
Symptoms: Irritation of eyes, nose, and throat. Prolonged exposure above TLV causes nausea, headaches, and mild narcosis.

Arrow 30 (Petroleum solvent)

TLV: NA
PEL: NA
Odor: "Oily"
Symptoms: Redness and chapping of skin.

Mobil Met - Gamma (Cutting fluid)

TLV: 5 mg/m^3 for oil mist
PEL: NA
Odor: Mild
Symptoms: Slight skin irritation.

Mentor 28 (Petroleum process oil)

TLV: NA
PEL: 5.0 mg/m^3 for oil mist (Table Z-129 CFR 1910.1000)
Odor: Mild kerosene odor
Symptoms: Slight skin irritation.

Proprietary Solvent (Denatured ethyl alcohol-based)

TLV: 100-1000 ppm
PEL: NA
Odor: Mild, non-residual
Symptoms: Excessive exposure to vapors irritating to eyes and respiratory tract; can produce headaches, drowsiness, nausea, and narcosis.

Trichlorotrifluorethane (Freon TF)

TLV: 1000 ppm
PEL: 1000 ppm 76000 mg/m^3
Odor: Slight ethereal odor
Symptoms: Anesthetic; inhalation of high concentrations can produce asphyxiation; repeated and prolonged skin contact will cause defatting and dermatitis

TABLE 3.1 (Cont'd.)

Mobilux - EP2 (Pressure grease)

TLV: 5.0 mg/m^3 for oil mist
PEL: NA
Odor: Mild
Symptoms: Moderate eye irritation; slight skin irritation.

Mobil DTE (Hydraulic oil)

TLV: NA
PEL: NA
Odor: Mineral Oil
Symptoms: None expected.

Brayco Mil-H-5606 (Hydraulic fluid)

TLV: NA
PEL: NA
Odor: Petroleum odor
Symptoms: Not expected except in very sensitive individuals.

Mobil Velocite Oil No. 6 and No. 10 (Spindle oil)

TLV: 5.0 mg/m^3 for oil mist
PEL: NA
Odor: Mild
Symptoms: None expected.

Keechem 125 (All purpose liquid cleaner)

TLV: 1000 ppm (estimated)
PEL: NA
Odor: Soapy
Symptoms: Defatting action on skin; possible rash; stinging and redness of eyes.

B-Kleen (Heavy duty degreaser)

TLV: NA
PEL: NA
Odor: Mild
Symptoms: Drying of skin.

TABLE 3.1 (Cont'd.)

Lacquer Thinner

TLV: 200 ppm
PEL: NA
Odor: Aromatic
Symptoms: Anesthesia; headache, nausea, dizziness, etc. Liquid irritating to skin and eyes.

Methyl Ethyl Ketone (MEK)

TLV: 200 ppm
PEL: 200 ppm 590 mg/m^3
Odor: Sharp, fragrant, mint-like; 6-10 ppm threshold.
Symptoms: Irritates nose and throat; headache, dizziness, upset stomach, vomiting; unconsciousness

Petroleum Distillate Thinners

TLV: 125 ppm
PEL: 125 ppm
Odor: NA
Symptoms: Eye irritation, skin defatting and drying, skin irritation and dermatitis; irritating to mucous membranes

Pennwalt MP + 2 (Water soluble cutting oil)

TLV: NA
PEL: 5 mg/m^3
Odor: Bland
Symptoms: Slight skin and moderate eye irritant

Stoddard Solvent (Mineral spirits)

TLV: 100 ppm
PEL: 100 ppm 525 mg/m^3
Odor: Petroleum odor - 1 ppm threshold
Symptoms: Central nervous system depressant and a mucous membrane irritant; dizziness, headache, intoxication to euphoria leading to unconsciousness.

1,1,1 - Trichloroethane

TLV: 200 ppm
PEL: 350 ppm
Odor: Mild, sweetish, pleasant, ether-like - 100 ppm threshold.
Symptoms: Headache, drowsiness, impaired judgement, unconsciousness; brief exposure at 900-1000 ppm causes mild eye irritation and loss of coordination.

TABLE 3.1 (Cont'd.)

Zinc Chromate Primer

TLV: 125 ppm
PEL: NA
Odor: Paint-like
Symptoms: Eye irritation; defatting and drying of skin resulting in irritation and dermatitis.

TABLE 3.1 (Cont'd.)

General First Aid Treatment

Eye - Irrigate immediately; get medical assistance.
Skin - Soap wash promptly.
Inhalation - Move to fresh air; get medical assistance.
Ingestion - Get medical assistance.

TLV: Threshold Limit Value times weighted average concentration for a normal eight hour work day.

PEL: Permissible Exposure Limit.

Thermal Hazards: Exposure to outside temperature extremes while wearing protective clothing.

Acoustical Hazards: Exposure to excessive noise during drilling operations involving hollow-stem auger drilling.

Radioactive Hazards: None identified to date.

3.1 Hazard Analysis: Hollow-Stem Auger Drilling

Hollow-stem auger drilling activities will potentially expose field personnel to the hazards listed below:

Chemical Hazards:

- Exposure to chemical contamination present in soils. Suspected chemical contamination presently includes:

  - degreasing agents (chlorinated hydrocarbons)
  - hydrocarbon solvents (petroleum hydrocarbons)
  - lubricating oils (petroleum hydrocarbons)
  - paints and paint solvents (ketones, alcohols)
  - detergents (phosphates)
  - hydraulic fluids (tricresyl phosphate)

Most of these contaminants, when present in high enough concentration, can present dermal exposure hazards. Air monitoring results will be used as indicators of contaminant concentrations in soil. Dermal protection will be accomplished through the use of personal protective clothing and equipment.

Drilling personnel will also be exposed to exhaust from the equipment operation.

Physical Hazards:

- Exposure to physical hazards associated with hollow-stem augering includes the following:

  - snapping cables
  - brush, equipment, or gas-main fires
  - being hit by equipment
  - becoming entwined in rotating tools
  - falling objects
  - exposure to excessive noise
  - exposure to excessive outside temperatures

Mechanical hazards, including snapping cables, being struck by equipment, becoming entwined in rotating tools and falling objects, will be controlled by a combination of personal protective equipment use and training of drilling employees in safe and proper operation of drilling equipment (as provided by the drilling subcontractor). Evaluation and control of potentially hazardous noise will be through the use of sound level monitoring and hearing protection devices. Excessive outside temperatures will be controlled through workplace observations and appropriate work/rest cycles.

3.2 Hazard Analysis: Ground Water Sampling

Ground water sampling activities may potentially expose field personnel to the hazards listed below:

Chemical Hazards:

- Exposure to chemical contamination from ground water obtained from monitoring wells during the sampling operation may occur. Suspected chemical contamination may include:

  - degreasing agents (chlorinated hydrocarbons)
  - hydrocarbon solvents (petroleum hydrocarbons)
  - lubricating oils (petroleum hydrocarbons)
  - paints and paint solvents (ketones, alcohol)
  - detergents (phosphates)
  - hydraulic fluids (tricresyl phosphate)

- Contaminated ground water may be splashed into the eyes, mouth, and/or onto the skin of field personnel during the ground water sampling operation.

  Most of these contaminants, when present in high enough concentration, can present dermal exposure hazards. Dermal protection will be accomplished through the use of personal protective clothing and equipment and safe work practices.

Physical Hazards:

- Exposure to chemical contamination may be caused by glass sampling vials/bottles that inadvertently break while handling. In addition, cuts may occur due to the broken glass.

- If a bladder pump is used for ground water sampling, caution must be used when handling the compressed nitrogen gas cylinder so as not to break the valve. Also, caution must be used when connecting the electrical leads of the bladder pump control unit to an electrical source (i.e., 12-volt car battery) so as not to induce an electrical shock or short circuit.

- If a submersible pump operated by a portable generator is used as part of the ground water sampling operation, caution must be used to prevent electrical shock. Safety precautions are to include keeping electrical cords away from water puddles, keeping the electrical generator dry, and to be aware of worn or frayed insulation on electrical wires.

- Exposure to excessive outside temperatures because of required personal protective equipment.

The physical hazards mentioned above, will be controlled by the use of personal protective equipment and safe work practices. Excessive outside temperatures will be controlled through work place observations and appropriate work/rest cycles.

3.3 Hazard Analysis: Packaging and Shipment of Samples

After the samples have been collected in sampling jars or approved containers, the containers must be properly packaged to protect shipping personnel from exposure. There is no great hazard in performing the packaging operation, yet if this operation is not done properly, unsuspecting personnel may be exposed if the containers leak or break. Shipping procedures for hazardous samples are given in Subsection 3.5 of this plan.

3.4 Other Hazards: Heat Stress and Drilling into Buried Hazards

During the day-to-day field work, the Supervising or Well-Site Geologist must be alert for the signs and symptoms of heat stress. A hazard exists when individuals are required to work in warm temperatures while wearing impervious protective clothing. When the ambient air temperature at the site exceeds about 65 degrees Fahrenheit, heat stress may become a problem. If these conditions are encountered, the following precautions will be taken:

- The Onsite Safety Coordinator or Geologist will regularly monitor the ambient air temperature;
- Field team members will be observed for the following signs and symptoms of heat stress:
  - dizziness
  - profuse sweating
  - skin color change
  - increased heart rate
  - body temperatures in excess of 100°F as measured by fever detectors (forehead straps)
  - vision problems

Any team member who exhibits any of these symptoms will be removed immediately from field work and requested to consume electrolyte fluid or cool water every hour while resting in a shaded area. The individual should not return to work until symptoms are no longer recognizable. If the symptoms appear critical, persist or get worse, medical attention will be sought immediately.

During the planning/mobilization phase of the program, the Project Manager shall consult with HR Textron and receive their approval of all locations of the proposed boring and consult them on the location of utility lines and other underground hazards. Each proposed well location will be thoroughly scanned with a cable and pipe detector prior to the commencement of drilling. If drilling cuttings indicate any signs of drums or cylinders, drilling will be stopped immediately and the borehole will be closed. When working near energized power lines, clearance will be obtained according to local utility requirements.

3.5 Packaging and Shipping Requirements

All hazardous samples are to be personally delivered to a DHS-certified lab by L&A personnel. The following instructions shall be followed to comply with DOT regulations:

- The primary container will be packaged to protect it from breaking:
  - All lids will be taped,
  - the primary container will be wrapped with absorbent brown paper (wadding),
  - the primary container will be placed in a plastic bag (zip-lock), and
  - the containers labeled according to the DOT regulations.

4.0 RISK ASSESSMENT SUMMARY

All workers will be instructed to remain clear of the work zones during the drilling and sampling phases of this investigation (special instructions will be posted in this respect).

The property is fenced and no access to the working area is available from the outside.

The site is located in a relatively commercial area so that no major interference with the nearby/surrounding community is expected, as the vapor release will be minimized in all the operations during this investigation.

During previous investigations, no interference with the workers at the operating facility or the nearby or surrounding community was recorded.

5.0 AIR MONITORING PLAN

Personnel and environmental exposure to airborne hazards and excessive noise will be monitored to ensure that personnel and environmental exposures do not exceed acceptable limits. Airborne contamination will be measured by two methods: 1) Century organic vapor analyzer, 2) HNU photoionization detector. Weekly audits performed by L&A staff geologist not working on the field program, using an audit checklist (Checklist 5-1) will be conducted to ensure compliance with the safety plan.

Before any field activities commence, the background air quality levels of the site will be determined and noted using a photoionization detector (PID). Daily background readings shall be taken in the proposed work area. The readings will be taken in locations away from outside sources of potential contamination in order to obtain accurate results. These locations should be marked on a site plot plan.

Additionally, on-going real time air monitoring will be conducted throughout the project. Air monitoring equipment such as the PID and OVA will be used to monitor the site conditions for volatile solvent vapors.

The data provided from these field monitoring activities will be used to determine the levels of protection required and help establish decontamination and disposal procedures.

The following schedule will be followed for air monitoring during any soil sampling and drilling activities.

- Background air contaminant levels for volatile solvents will be obtained with direct reading instruments and recorded for the work area. These readings will be taken at the start of the operation, after lunch prior to reentry by the investigation team, prior to entering a new work area and prior to leaving contaminated areas at the end of the day's operation.

- If conditions or data suggests potential contamination, the following procedures will be followed.

  - Air monitoring will be conducted at the trench or bore hole.

  - Air monitoring will be conducted in the breathing zones of the workers in the immediate area. This air monitoring of personnel and the trench or bore hole will be implemented by the Site Safety Officer or designate.

  - The following concentration limits (units for PID reading) at the breathing zones associated with a Level of Protection have been established for this project.

    0-5 units above background - Level D protection equipment
    5-50 units above background - Level C protection equipment
    50-500 units above background - Level B (move offsite; vacate area - contact L&A Industrial Hygienist - Mike Levine

All applicable monitoring or analytical instruments shall be calibrated daily. Calibration data, site reading, date, time, weather conditions, wind direction, and monitoring locations shall be recorded daily (Table 5-2).

Checklist 5-1

Weekly Safety Checklist

Project Name _____

Project Number _____

Date _____

	Yes	No
1. Weekly Safety Meeting		
- Attended by entire field crew	___	___
- Work/rest schedules set	___	___

Comments: _____

_____

	Yes	No
2. Respiratory Protection		
- Inspection of equipment	___	___
- Cartridges changed/dated	___	___
- Negative/Positive pressure testing	___	___
- Proper decontamination	___	___
- Proper respirator storage	___	___

Comments: _____

_____

	Yes	No
3. Work Zones/Decontamination		
- Work zone violation	___	___
- Proper adherence to decontamination procedures	___	___

Comments: _____

_____

LEIGHTON AND ASSOCIATES

Checklist 5-1

Weekly Safety Checklist
(continued)

	Yes	No
4. Personal Hygiene		
- Field crew wash-up before eating and before leaving the site.	___	___

Comments: _____

_____

5. Ambient Monitoring		
- Air monitoring forms filled out properly	___	___

Comments: _____

_____

6. Emergency Equipment		
- Fire extinguisher	___	___
- Air horn tested	___	___
- Eye wash/shower testing	___	___
- Phone operational	___	___

Comments: _____

_____

7. Site Security		
- Equipment secure	___	___
- Waste contained	___	___
- Emissions controlled	___	___
- Gate locked	___	___

Comments: _____

_____

Signed by: _____

LEIGHTON AND ASSOCIATES

5.1 Checklist for Using Monitoring Equipment (Instructions)

5.1.1 Checklist for Using the Photoionization Detector

1. Before attaching the probe, check the function, and switch on the control panel to make sure it is in the off position.

2. Attach the probe by plugging in the 12-pin plug to the interface on the readout module.

3. Turn the six-position function switch to the battery check position. The needle on the meter should read within or above the green battery arc on the scale. If not, recharge the battery. If The red indicator comes on, the battery should be recharged.

4. Turn the function switch to any range setting. Look into the end of the probe briefly to see if the lamp is on. If it is on, it will give a purple glow. Do not stare into the probe for any length of time, as UV light can damage your eyes. The instrument is now ready for operation.

5. To zero the instrument, turn the function switch to the standby position and rotate the zero potentiometer until the meter reads zero. Clockwise rotation of the span knob produces a downscale deflection while counterclockwise rotation yields an upscale deflection. Note: No zero gas is needed since this is an electronic zero adjustment. If the span adjustment setting is changed after the zero is set, the zero should be rechecked and adjusted, if necessary. Wait 15 to 20 seconds to ensure that the zero reading is stable. If necessary, readjust the zero.

6. Turn function switch to the 0-20, 0-200, or 0-2000 position.

7. Place probe in the atmosphere to be monitored; if the needle moves to the upper limit of the scale, change the function switch to the next position.

8. The HNU should be calibrated as per the manufacturer's instructions. Fill in the calibration checklist as required (see Figure 4-3 of the L&A Safety and Health Manual).

5.1.2 Calibration of Century Organic Vapor Analyzer (OVA) Model OVA 128

CALIBRATION - GENERAL

The OVA is capable of responding to nearly all organic compounds. For precise analyses, it will be necessary to calibrate the instrument with the specific compound of interest. This is especially true for materials containing elements other than carbon and hydrogen.

The instrument is factory-calibrated to a methane in air standard. However, it can be easily and rapidly calibrated to a variety of organic compounds. A GAS SELECT control is incorporated on the instrument panel which is used to set the electronic gain to a particular organic compound.

Internal electronic adjustments are provided to calibrate and align the electronic circuits. There are four (4) such adjustments all located on the electronics board. One adjustment potentiometer, R-38, is used to set the power supply voltage and is a one-time factory adjustment. The remaining three adjustments, R-31, R-32, and R-33, are used for setting the electronic amplifier gain for each of the three (3) calibration ranges. Access to the adjustments is accomplished by removing the instrument from its case.

ELECTRONIC ADJUSTMENTS

Primary calibration of this instrument is accomplished at the factory using methane in air sample gases.

GAIN ADJUSTMENT

a) Place instrument in normal operation with CALIBRATE switch set to X10 and GAS SELECT control set to 300.

b) Use the CALIBRATE ADJUST (zero) knob and adjust the meter read [6˜ to zero.

c) Introduce a methane sample of a known concentration (near 100 ppm) and adjust trimpot R-32 on circuit board (see Figure 4-1 for location) so that meter reads equivalent to the known sample.

d) This sets the instrument gain for methane with the panel mounted gain adjustment (GAS SELECT) set at a reference number of 300.

3) Turn off H2 SUPPLY VALVE to put out flame.

BIAS ADJUSTMENT

a) Leave CALIBRATE switch on X10 position and use CALIBRATE ADJUST (zero) knob to adjust meter reading to 4 ppm.

b) Place CALIBRATE switch in X1 position and, using trimpot R-31 on circuit board, adjust meter reading to 4 ppm.

c) Move CALIBRATE switch to X10 position again. Use CALIBRATE ADJUST (zero) knob to adjust meter to a reading of 40 ppm.

d) Move CALIBRATE switch to X100 position and use trimpot R-33 on circuit board to adjust meter reading to 40 ppm.

e) Move CALIBRATE switch to X10 position and use CALIBRATE ADJUST (zero) knob to adjust meter reading to zero.

f) Unit is now balanced from range to range, calibrated to methane, and ready to be placed in normal service.

CALIBRATION TO OTHER ORGANIC VAPORS SETTING GAS SELECT CONTROL (Span)

Primary calibration of the instrument is accomplished using a known mixture of a specific organic vapor compound. After the instrument is in operation and the "normal background" is zeroed out," draw a sample of the calibration gas into the instrument. The GAS SELECT knob on the panel is then used to shift the readout meter indication to correspond to the concentration of the calibration gas mixture.

The instrument is then calibrated for the vapor mixture being used. After this adjustment, the setting on the "digidial" is read and recorded for that particular organic vapor compound. This exercise can be performed for a large variety of compounds, and when desiring to read a particular compound, the GAS SELECT control is turned to the predetermined setting for the compound. Calibration on any one range automatically calibrates the other two ranges.

USING EMPIRICAL DATA

Relative response data may be obtained, which can then be used to estimate concentrations of various vapors. With the instrument calibrated to methane, obtain the concentration reading for a calibration sample of the test vapor. The relative response, in percent, for that test vapor would then be the concentration read/concentration of the calibrated sample X100. A calibration record will be maintained on Table 5-1.

OVA measurements above background levels in the work zone will be recorded on a log, and will be made a part of the permanent project file. The time, date, location, vapor concentration, and the name of the individual making the reading will be recorded. (See Table 5-2.)

TABLE 5-1

CALIBRATION RECORD FOR OVA/PID

Date Calibrated	Type of Instrument PID OVA	Calibrated by	Comments Concerning Calibration	Date of Next Calibration

TABLE 5-2

OVA/PID Record

Project # _____

Project Name _____

Project Address _____

_____

_____

Date	Time	Wind Direction	Location	Type of Instrument PID OVA	OVA/PID Reading (in units)	Recorded By

LEIGHTON AND ASSOCIATES, INC.

6.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

Depending on site and drilling conditions, On-Site Safety Officer (SSO) may increase or decrease the level of protection. Some general guidelines that will be used are as follows:

- Tyvek coveralls shall be worn by drilling personnel who handle the contaminated auger flights and other parts of the downhole drilling equipment.
- Tyvek suits should only be worn when there is a reasonable probability of skin contact with hazardous substances. They should not be worn when there is no splash or dust hazard present. They contribute little in the way of skin protection against volatile organic chemicals and greatly increase the danger of heat injury.
- Chemical splash goggles or a safety face shield should be worn when increased splash hazards exist, such as steam cleaning activities.
- Butyl rubber (solvex Edmont) gloves underneath disposable PVC gloves will provide hand protection when handling contaminated soils and water samples.
- Respiratory protection will be worn during drilling activities that expose the workers to hazardous airborne materials. In cases where monitoring confirms that contamination is not present, the SSO may discontinue the use of the respiratory protection. Air monitoring activities will increase when respirators are not being used.

During conditions where the temperature, humidity, and solar radiation are high and the air movement is low, the following procedures should be followed to prevent heat stress injury:

- Work activity periods will be limited to reduce the amount of heat the body produces.
- Workloads and/or duration of physical exertion will be less during the first days of exposure to heat, and will be gradually increased to allow acclimatization when practical.
- Heavy work will be scheduled during the cooler periods of the day when practical.

- Work and rest periods in high heat conditions will be established. In moderately hot conditions, 5-minute rest periods in the shade alternating with 25-minute work periods in the sun may be desirable. Under severe conditions, the duration of rest periods will be increased.
- Electrolyte drinking fluids will be available and workers exposed to heat stress conditions will be encouraged to replace lost body fluids.
- No contact lens will be worn on the site (29 CFR-1910, 134).

6.1 Drilling of Boring (Hollow-Stem Augering)

Respiratory protection:	When photoionization detector (PID) readings indicate breathing zone concentration in excess of exposure limits (see Section 5.0), all field personnel will wear a approved half-face air-purifying respirator fitted with combination organic vapor/dust, mist, and fume cartridges. All field personnel must complete checklist 6-1.
Ear Protection:	All field personnel will be required to use hearing protection during machinery operation.
Eye Protection:	The field team will wear chemical splash goggles while in the Exclusion Zone, and impact resistant safety glasses with attached side shields while on the job site.
Body Protection:	All field personnel will wear a full-coverage Tyvek suit when skin contact with waste material is possible, otherwise Level D protection will be required, i.e., cloth (non-PVC coated) overalls. Non-metallic hard hats will be worn by all personnel at all times at the drill site.
Hand Protection:	Butyl rubber gloves will be worn by the drilling crew. Nitrite gloves will be worn by all L&A personnel. The gloves will be taped to the arm of the Tyvek suit. (A new pair of surgical gloves will be worn when handling each soil sample.)
Foot Protection:	Neoprene rubber boots with steel toes and shanks will be worn. The boots will be taped to the leg of the Tyvek suit.
Miscellaneous:	First aid kit with thermometer and first aid manual. Five gallon bucket of water and sponges to facilitate emergency skin rinsing and eye washing. Fire extinguisher.

For Level D protection during site operation, respirators will be kept on site and accessible to each field team member. For Level C protection, respirators will be used upon entry into an area of suspected contamination. Respirator cartridges or canisters will be changed when break through is suspected or weekly. The respirator will be cleaned and inspected after each use. Gloves, Tyvek overalls, will be changed daily or when they become significantly soiled or damaged.

Checklist 6-1

RESPIRATION TRAINING CERTIFICATION

I have received instruction in the use of respirators, and I have been given and understand the information described below:

a. The reasons for the need of respirator protection.

b. The nature, extent, and effects of respiratory hazards to which the person may be exposed.

c. An explanation of why engineering controls are not adequate enough to provide complete protection in all field situations.

d. An explanation of why a particular respiratory has been selected for a specific situation.

e. Instructions in inspecting, donning, checking the fit of, and wearing the respirators.

f. An opportunity for each respirator user to handle, don, check the fit, and wear the respirator selected.

g. An explanation of how to maintain and store the respirator, including decontamination of the respirator.

h. Instructions in how to recognize and cope with emergency situations.

i. Regulations concerning respirator use.

Respirator type: _____

Employee: _____

L&A Health and Safety Officer: _____

7.0 WORK ZONES AND SECURITY MEASURES

Work zones will be delineated to prevent and reduce the migration of contaminants. Movement of personnel and equipment between zones would be limited by access control points. The field personnel will prevent migration of site contaminants by using work zones and equipment/personnel decontamination procedures. Decontamination procedures will be discussed in Section 8.0 The following describes the zones to be established during drilling. Prior to setting up the work zones, flags will be set up around the work zone so all onsite personnel can visually see them.

Zone 1: Exclusion Zone

All people entering the Exclusive Zone must wear prescribed Level D or C protection. An entry and exit checkpoint will be established at the periphery of the Exclusion Zone to regulate the flow of personnel and/or equipment into and out of the zone.

Due to the nature of the investigation, the Exclusion Zone will be applied during boring and sampling.

The Exclusion Zone will be delineated on a 25-foot radius around the drilling operation. This zone will be "moved" according with the location of the boring. The peripheral checkpoint will also be located accordingly to verify that the procedures established for entering and exiting are followed.

This zone is where potentially hazardous airborne contaminants and physical hazards to the workers will be contained. Appropriate personal protection will be required in this area. The size of the Exclusion Zone may be changed to accommodate site conditions and to ensure contaminant containment. Air monitoring will be performed in accordance with Section 5.0.

Zone 2: Contamination Reduction Zone

This zone provides a transition between contaminated zone (Exclusion Zone) and the noncontaminated, clean area (Support Zone). This zone serves to reduce the probability of the clean zone becoming contaminated, and to minimize the transfer of contaminating substances on people or equipment is limited.

At the boundary between the Exclusion Zone and Contamination Reduction Zone will be located the decontamination checkpoint. The boundaries of the Contamination Reduction Zone will be moved accordingly with the Exclusion Zone, but will always include this checkpoint. No personnel will be permitted into the Contamination Reduction Zone or the Exclusion Zone unless they are in full compliance with the existing Site Safety Plan.

Zone 3: Support Zone

This is the outermost part of the site and its boundaries will also be "moved" accordingly with the location of the Exclusion Zone and Zone 2. In any instances, this zone will be close to the access points to the site, depending on the wind direction. This zone will be located at least 50 feet upwind of the Exclusion Zone.

8.0 DECONTAMINATION PROCEDURES

The following decontamination procedures have been developed with the intent of minimizing and/or eliminating the potential for: 1) cross-contamination to clean areas, 2) personal exposures resulting from the removal of contaminated clothing, and 3) transfer of contamination to areas offsite, including the homes and vehicles of onsite workers.

Specifically, these procedures are designed to physically remove contaminants and/or convert them into innocuous substances. This is accomplished by passing personnel through various stages of contamination reduction. In this process, contaminated clothing and equipment are cleaned or removed as required to achieve maximum personal protection, and minimize body and respiratory exposure to harmful substances.

Decontamination will be performed on all personnel who have entered areas suspected of containing hazardous materials (Exclusion Zone). The procedures set forth herein are based on the assumption that all personnel and equipment leaving the Exclusion Zone are grossly contaminated. They pertain to the decontamination of protective clothing, respirators, and personnel only. Procedures for the decontamination of sampling tools and other related equipment will be dependent upon the extent of QA/QC necessary during sampling activities.

Decontamination corridor, including the "decontamination check point" shall be set up in a neutral area between the Exclusion Zone and the designated support zone - "clean area". It shall also be situated upwind of the exclusion zone when possible so as to minimize the potential of exposure to contaminated soils/particulates through wind transfer.

The decontamination corridor will be comprised of several stages which coincide with procedures necessary for the proper decontamination of equipment with respect to the suspected contaminants. These stages/procedures are listed respectively below:

Stage No. 1: Segregated Equipment Drop - All equipment and consumables which require either disposal or special handling (e.g., special decontamination) shall remain in this area and be attended to per specifications within the subject scope of work.

All equipment, sample containers, and notes will be removed to the decontamination area. Spades, shovels, auger flights, etc., will be decontaminated by brushing them under a water rinse. A high-pressure steam cleaner may also be used for decontamination. Steam cleaning will be performed at an approved steam cleaning location. Drainage from the steam cleaning area will be collected and stored in a 55-gallon drum and properly labeled.

Stage No. 2: Outer gloves and boot covers will be removed and placed inside a garbage bag.

Stage No. 3: The Tyvek coverall will be untaped from boots and gloves and removed. The boots, under gloves, and respirator are still worn at this time.

Stage No. 4: The under gloves and respiratory are removed in Support Zone. Boots can remain on the feet if visible contamination is not adhering to them.

Stage No. 5: General Field Wash

General rules that will be followed for personnel in the Support Zone are as follows:

- All personnel will wash their hands, face, neck, and forearms before consuming any food or liquids, smoking, or using the restroom.

9.0 SITE EMERGENCY RESOURCES

The HR Textron Corporation site is an operating facility with an onsite water supply and phones available for outside communications. The specific phone and source of water locations will be covered in the daily safety briefing. At a minimum, emergency articles to be taken into the field include a first aid kit and manual and multi-purpose fire extinguisher.

EMERGENCY PROCEDURE

In the event that an emergency develops onsite, the procedures delineated herein re to be immediately followed. Emergency conditions are considered to exist if:

- Fire or flashing occurs.
- The field personnel are involved in an accident or experience any adverse effects or symptoms of chemical exposure while on the scene.
- A condition is discovered that suggests the existence of a situation more hazardous than anticipated.

A. In the Event of Personal Chemical Exposure

The following emergency procedures shall be followed:

- In the event that field personnel experience any adverse effects or symptoms of exposure while on the scene, or if there is a discovery of any condition that would suggest the existence of a situation more hazardous than anticipated, work will be halted immediately until the Site Safety Officer has been notified and appropriate instructions have been provided to the field team.
- Pre-established wind indicators (socks or ribbons) visible to all onsite personnel, shall be provided by the Site Safety Officer to indicate possible routes for upwind escape. Preferrably, the pre-established site work area entrance/exit routes delineated by the Site Safety Officer shall be utilized.
- Any team member who has been exposed to chemical hazards shall be taken to the decontamination area. All clothing that is contaminated shall be immediately removed. The affected body portion will be promptly bathed with soap and flushed with clean water. First aid shall be administered if necessary.
- The contaminating material involved will be identified, if possible.
- Field personnel shall not expose themselves or others to the materials unnecessarily. They shall stay upwind, control access to the area, and wear appropriate protective equipment.

- If the incidents warrants, the Site Safety Officer shall call the appropriate emergency services. See the list of emergency phone numbers in Section 10. The location of the emergency care facility is indicated on Figure 1.

- The Site Safety Officer shall record information concerning exposure of team members to chemicals (see Table 1).

B. In the Event of Personal Injury

It is difficult to list all possible activities which could lead to physical injury during site operations. It is important that individual judgement, common sense, and the collective judgement of the remediation team be used during the site clean-up to prevent injury to anyone.

Each field team member will be required to wear protective equipment at all times on site to protect against physical injury. Each field team member will be required to wear a non-metallic, electrical insulating, impact resistant hard hat to help prevent injury from overhead hazards. Each member will also be required to wear clear or lightly-tinted ANSI approved, impact-resistant safety glasses (prescription or standard, no contact lenses are to be worn on the job site). The glasses will be fitted with clear, solid side shields to help prevent eye injury from chemicals or projectiles during work around machinery or drilling or sampling equipment.

Finally, each remediation team member shall wear ANSI approved, steel-toed, steel-shank work boots or wear appropriate chemical resistant boots.

Each field team member will be responsible for the maintenance of these items.

The following emergency procedures shall be followed when an accident occurs that results in personal injury:

- Remove people from dangerous areas or equipment.

- Call the Site Safety Officer to the scene immediately.

- Follow guidelines listed in Section 12.A if the area has chemical hazards.

- Examine injury and administer first aid if necessary. Refer to the first aid manual and first aid kit for instructions.

- Call emergency services if the situation warrants.

C. In the Event of Heat Stress

Heat stress may become an important risk if physical exertion is experienced and/or safety equipment is worn. The risk of heat stress becomes more significant above ambient temperatures of 70°F

In temperatures of 70°F and above, the following provides guidance for work/rest regimen for personnel wearing Level D or C protection.

- 75°F to 85°F - Workers will not be allowed to work more than 1 hour without taking at least a 15-minute break.
- 80°F to 95°F - Workers will not be allowed to work more than 45 minutes without at least a 15-minute break.
- Exceeding 95°F - Workers will not be allowed to work more than 30 minutes without at least a 15-minute break.

Symptoms of Heat Stroke

Heat stroke results when the temperature control system of the body stops functioning properly. If a person does not perspire properly, brain damage and death may occur if the body temperature is not reduced.

The victim is flushed with hot, dry skin, and experiences severely elevated body temperature. Other symptoms include: dizziness, headache, nausea, rapid pulse, and unconsciousness.

First Aid for Heat Stroke

CALL EMERGENCY SUPPORT SERVICES IMMEDIATELY (see Section 2). HEAT STROKE IS LIFE THREATENING. Immediately cool the body by removing clothing and sponging the body with alcohol, cool water, wet towels, or placing in tub of cold water until body temperature has decreased to at least 102°F.

Stop cooling and observe for 10 minutes. Once temperature remains lowered, dry the person off using fans or air conditioning. Electrolyte-replacing drinks should be administered is possible.

Symptoms of Heat Exhaustion

Heat exhaustion is a result of over exertion in hot or warm weather.

The person exhibits pale, clammy skin, and profuse perspiration. Other symptoms include: weakness, headache, and nausea.

First Aid for Heat Exhaustion

Transfer victim to a cooler or shaded area. Victim should lie down with feet raised. Fan and cool with wet compresses. Give electrolyte-replacing liquids to drink.

Symptoms of Heat Cramps

Heat cramps are due to loss of salt resulting in spasms usually in abdomen or limbs.

First Aid for Heat Cramps

Apply warm, moist compress and pressure to reduce pain. Give Electrolyte-replacing liquids to drink.

Procedures for Monitoring Heat Stress

Work involving exposure to high heat situations will be monitored by each person in the field. The Site Safety Officer will document the monitoring data. Procedures for monitoring heat stress are presented below:

- Worker heart rate will be measured by wrist pulse for 15 to 30 seconds during a period just after the worker has started his or her rest periods. Heart rates must not exceed 110 beats per minute. If the heart rate exceeds 110 beats per minute, the work period will be decreased by 10 minutes (33 percent and the rest period will remain the same. If, at the next rest period, the worker's heart rate continues to exceed 110 beats per minute, then the work period will be shortened by another 33 percent, and body temperature monitoring will be implemented.

- If conditions warrants, body temperature will be measured orally with a clinical thermometer early in the rest period. Body temperatures should not exceed 1000.0 degrees F. If the body temperature is higher than 100.0 degrees F, the work period will be shortened by 33 percent. Body temperatures will be measured at the end of the rest period to confirm that the employee is able to return to work. No employee with a sustained body temperature of over 100 degrees F will be allowed to return to work until his or her temperature stabilizes below 100 degrees for 15 minutes.

- Each worker will be carefully checked for symptoms of heat illness and treated accordingly.

- If the symptoms of heat stress are evident and persist, the Site Safety Officer will call the appropriate emergency services. See the list of emergency telephone numbers in Section 2. The emergency care facility is indicated in Figure 11.4.

D. In the event of Fire or Explosion

Due to the nature of the equipment, activity, and unknown hazards associated with trenching and remedial operation, there is a potential for a fire or explosion. Smoking is prohibited upwind or in the exclusion or contamination reduction zone. The following procedures are prescribed if a fire or explosion occurs or if any imminent risk to either is detected:

- Evacuate personnel from area of danger.
- If possible, shut down mechanical operations and equipment.
- Call Site Safety Officer to the scene.
- If appropriate, conduct air monitoring.
- Administer first aid if necessary.

The Site Safety Officer shall:

- First attempt to extinguish the fire with fire extinguishers, soil and/or water available onsite.
- Notify the Fire Department.
- Contact the location hospital immediately when a major fire starts, advising them of the chemicals involved. The Poison Control Center should be contacted, if appropriate.
- Call the emergency contact.
- Keep personnel out of the smoke or mist created by the fire and hose streams. Immediately evacuate areas in the path of smoke

10.0 STANDARD SAFE WORK PRACTICES

General:

1. Eating, drinking, chewing tobacco, smoking, and carrying matches or lighters is prohibited in the contaminated or potentially contaminated area, or where the possibility for the transfer of contamination exists.

2. Avoid contact with potentially contaminated substances. Do not walk through puddles, pools, mud, etc. Avoid, whenever possible, kneeling on the ground, leaning or sitting on equipment or ground. Do not place monitoring equipment on potentially contaminated surface (i.e., ground, etc.).

3. All field crew members should make use of their senses (all senses) to alert them to potentially dangerous situations in which they should not become involved, i.e., presence of strong, irritating, or nauseating odors.

4. Prevent, to the extent possible, spillages. In the event that a spillage occurs, contain liquid if possible.

5. Prevent splashing of the contaminated materials.

6. Field crew members shall be familiar with the physical characteristics of investigations, including:

   - wind direction in relation to the ground zero area
   - accessibility to associates, equipment, and vehicles
   - communication
   - hot zones (areas of known or suspected contamination)
   - site access
   - nearest water sources

7. The number of personnel and equipment in the contaminated area should be minimized and consistent with site operations.

8. All wastes generated during field activities should be disposed as directed by the SSO.

11.0 DRILLING AND SAMPLING PRACTICES

For all drilling and sampling activities, the following standard safety procedures shall be employed.

1. Site Safety Officer or delegate shall double-check any site electrical and pipe drawings for location of overhead and subsurface utilities prior to initiating drilling.

2. Before raising the drill rig mast (derrick) or other extended device on the site in the vicinity of power lines, the site safety officer or delegate will walk completely around the drill rig. He will determine what the minimum distance from any point on the equipment to the nearest power line will be when the equipment is raised and/or being raised. The equipment will not be raised this distance is less than 20 feet (6m), the minimum clearance stipulated by federal, state, and local regulations.

3. Underground electricity hazards are sometimes more dangerous than overhead lines because they are unseen. It will not be assumed that underground utilities are located on or near boundary or property lines or immediately beneath a warning sign. The underground utilities may be a considerable distance from the sign or boundary line. A locating service, representatives of the utility or both will be brought onsite prior to remediation estimates if evidence indicates or suggest a potential problem.

4. All drilling and sampling equipment should be cleaned before proceeding to the drill site.

5. At the drill or sampling site, all soil and ground water sampling equipment should be cleaned with a mild trisodium phosphate solution, and rinsed with distilled water after each use.

6. Work in "cleaner" areas should be conducted first where practical.

7. The minimum number of personnel necessary to achieve the objectives shall be within 25 feet of the drilling or sampling activity.

8. Appropriate emergency and backup subcontracted personnel should remain 25 feet from the drilling or sampling activity where practical.

12.0 CONTINGENCY PLANS

Emergency procedures listed in this plan are designed to give the field team instruction in handling medical emergencies, fires, explosions, and excessive emissions during drilling/coring. Leighton and Associates, Inc. will immediately notify HR Textron of any incident, and will complete and submit an Accident Report Form (see Figure 12-1) and a Field Exposure Form (see Figure 12-1).

12.1 Injuries

Medical problems that occur onsite will be handled competently and quickly. Each field team member will be made aware of the instructions and information given below:

- Write down and post the telephone numbers of local and community ambulances and medical facilities. These numbers are listed on the last page of this document.
- Seek immediate professional medical attention for personnel that are bleeding severely, not breathing, experiencing intense pain, or are unconscious. Each member of the field team should know how to call for an ambulance.
- If you get anything in your eyes (chemicals or dust), flood them with water with an eyewash for 15 minutes. The field supervisor should be notified immediately of the problem. The supervisor will make sure that the victim washes the eyes for a full 15 minutes.
- Do not remove objects that are impaled (stuck) in the eye.
- Always seek medical attention for eye injuries.
- Stop bleeding with direct pressure. Place a bandage over the wound and press down with your hand. Use a tourniquet only in extreme cases when you are not able to stop severe bleeding.
- If you contact contaminants, wash the affected area with soap and water as soon as possible. If large amounts of waste come in contact with the body, a full-body shower with soap will be required immediately. Emergency shower facilities will be provided by HR Textron.

Figure 12-1

LEIGHTON & ASSOCIATES
EMPLOYEE SAFETY, INCIDENT/ACCIDENT AND LOSS FORM

DISTRIBUTION: REGIONAL OFFICE: OM, POM, SAFETY OFFICER
CORPORATE OFFICE: PERSONNEL, V.P. OF OPERATIONS, SAFETY OFFICER

EMPLOYEE NAME _____ DATE _____

TITLE _____ SUPERVISOR _____

PROJECT NAME AND NUMBER _____

LOCATION OF INCIDENT _____

TYPE OF INCIDENT: PERSONAL INJURY _____ PROPERTY DAMAGE _____ PROPERTY LOSS _____

DATE OF INCIDENT _____ TIME OF INCIDENT _____ ESTIMATED LOSS $ _____

WEATHER CONDITIONS AT TIME OF INCIDENT? _____

WHAT WAS EMPLOYEE DOING WHEN INCIDENT OCCURRED? _____

DESCRIBE INCIDENT _____

HOW DID INCIDENT OCCUR? (FOR AUTO ACCIDENT, USE BACK, IF NECESSARY) _____

NAMES, ADDRESSES & PHONE NUMBERS OF THOSE INVOLVED IN INCIDENT:

NAME	ADDRESS	PHONE

WITNESSES:

POLICE REPORT? OFFICER NAME _____ BADGE NO. _____

CITY/COUNTY _____ REPORT NO. _____

WAS MEDICAL ATTENTION RENDERED? _____ NAME OF PHYSICIAN/HOSPITAL _____

ADDRESS AND/OR PHONE NO. OF PHYSICIAN/HOSPITAL _____

NATURE OF INJURY AND PART OF BODY AFFECTED _____

LIST HOURS AND DAYS, IF TIME OFF FROM WORK: FROM _____ TO _____

SIGNATURE _____ DATE _____

(OVER)

Figure 12-2

FIELD EXPOSURE FORM

Name of Submittor _____

Date _____

Field Program _____

Project Number _____

Project Manager _____

Description of field activities, including duration of time, sampling techniques hazardous materials, and levels of contaminants present in soil, water, sludge, etc.

_____

Signature Date

Distribution: CS&HM, PM, Project File, and Personnel File

LEIGHTON AND ASSOCIATES, INC.

12.2 Fire and Explosion Response Procedures

Fires onsite can be started by natural occurrence, work activities, or the activities of others. The field team will have a multipurpose (A, B, C) fire extinguisher on hand at all times. The procedure for using a fire extinguisher is to pull the safety pin, point the extinguisher at the base of the flames, and discharge the extinguisher by sweeping the flames from a distance of about 6 feet. The extinguisher operator should move in as the flames are being put out.

- Never use water on an electrical fire or a solvent fire. All extinguishers will be dry chemical and labeled "A, B, C."
- Keep decontamination solvents well away from any ignition sources.

12.3 Operations Shutdown

Drilling operations may be suspended for several reasons. Monitoring for airborne contamination will be conducted at the drilling site. When an increase of 5 ppm above background is detected by PID analyses, additional monitoring with detector tubes will be initiated near the breathing zone (BZ) of workers closest to the open hole. Detector tubes used will be for: Vinyl Chloride, Benzene, and Perchloroethylene. The following criteria will be used to determine when operations must be stopped:

- PID indicates 50 ppm total vapors at BZ.
- Detector tubes indicate 3 ppm vinyl chloride at BZ.
- Detector tubes indicate 10 times the Exposure Limit for any other of the previously-identified chemical contaminants.

When any of these conditions exist, the drilling operations will stop, the cuttings will be contained, the borehole covered, and the site secured. All personnel will leave the work area until Leighton and Associates, Inc. Health and Safety Manager has determined that operations may resume.

In addition, drilling will stop and the derrick will be lowered during high winds or electrical storms.

12.4 Compressed Gas Safety

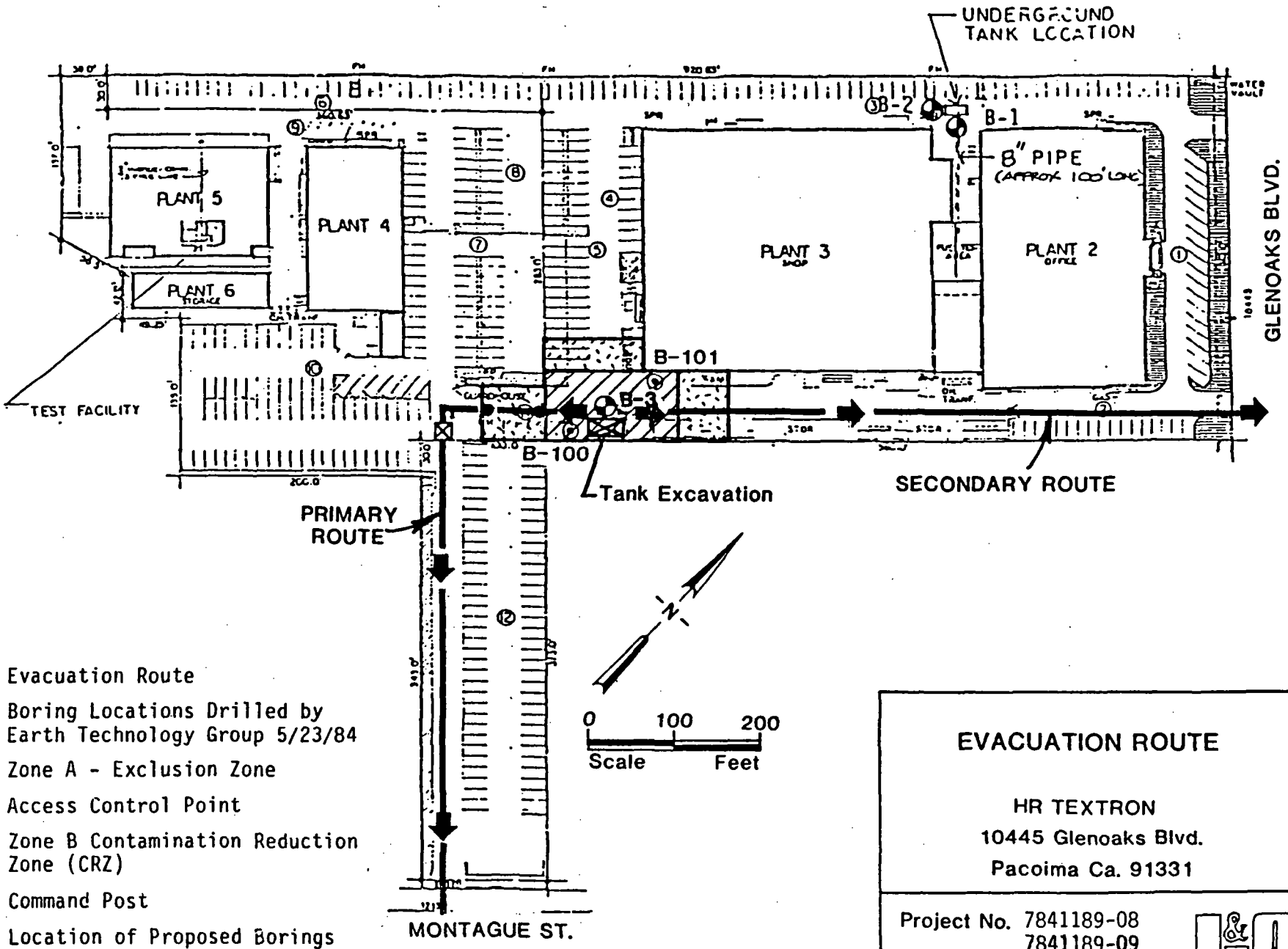
Compressed gas cylinders will be handled, transported, and maintained in accordance with OSHA and DOT regulations. The following procedures will be used to ensure the safe operation of compressed gas cylinders:

- Removable valve caps will be on the cylinders except when the cylinders are connected to dispensing equipment;

- Cylinders will not be used as rollers, supports, or for any purpose other than what they were designed for;
- The user will keep cylinder valves off at all times, except when the cylinder is in use;
- Prior to field use, all cylinders will be tested for leaks; leaking cylinders will be reflected for use;
- Cylinders will be moved only with a hard truck or similar conveyance for secured transporting;
- Caps will not be used for lifting containers;
- Cylinders will not be stored in direct sunlight, or near salt or other corrosive chemicals;
- Cylinders will be secured and stored in an upright position; and
- Cylinders will be connected to regulators of a proper design.

12.5 Evacuation and Hospital Routes

Figure 12.3 is a site plan map illustrating two evacuation routes from the exclusion zone in case of an emergency. The primary route exits to Montague Street and the secondary route exits to Glenoaks Boulevard. Also, attached is an area map showing routes to two nearby hospitals (Figure 12.4).



LEGEND:

- Evacuation Route
- B-3 Boring Locations Drilled by Earth Technology Group 5/23/84
- Zone A - Exclusion Zone
- Access Control Point
- Zone B Contamination Reduction Zone (CRZ)
- Command Post
- B-101 Location of Proposed Borings

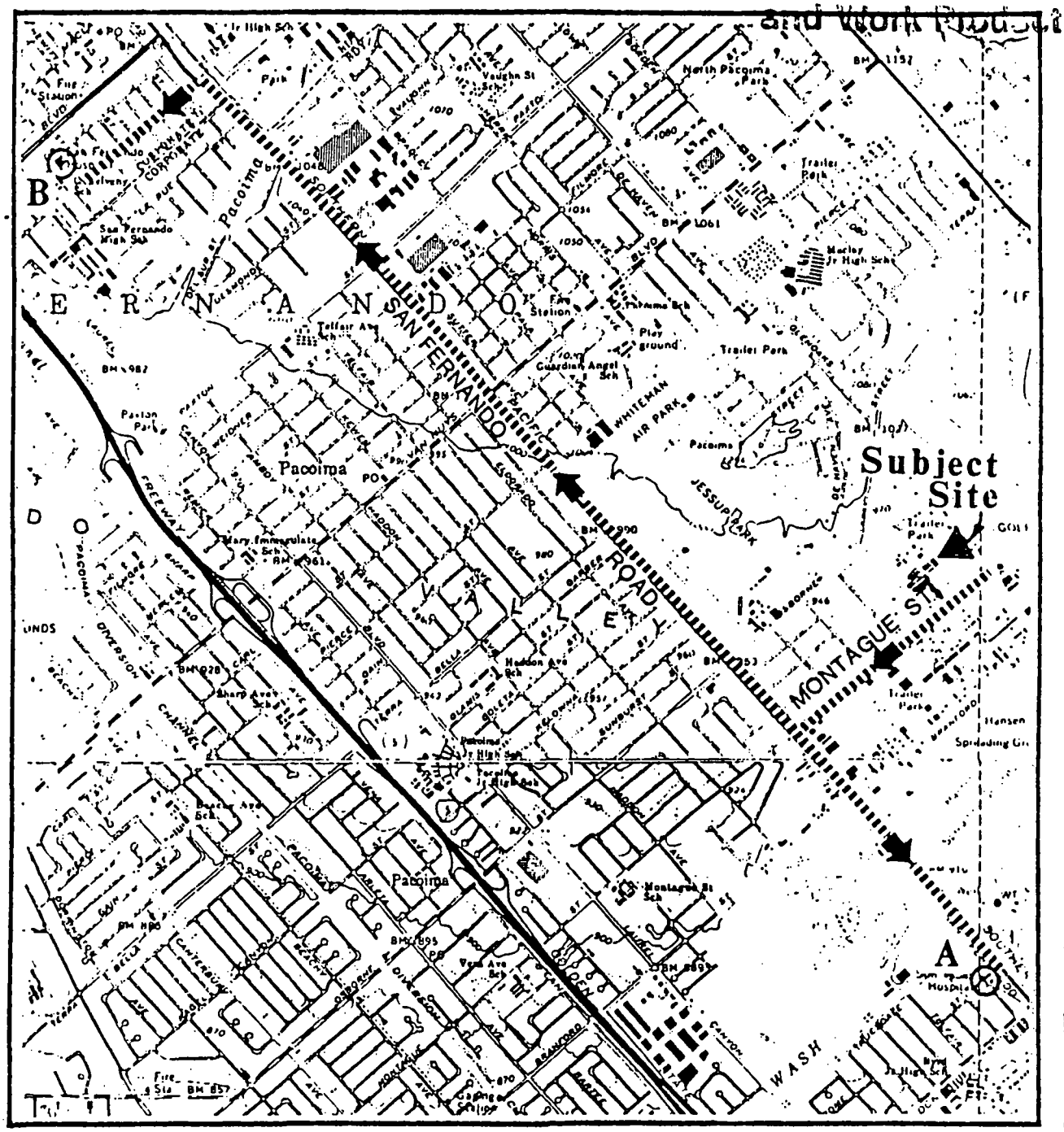
EVACUATION ROUTE

HR TEXTRON
10445 Glenoaks Blvd.
Pacoima Ca. 91331

Project No. 7841189-08
7841189-09

Figure No. 12.3

Privileged and Confidential
Private Attorney
Client Communication
and Work Product



A

PACIFICA HOSPITAL
9449 San Fernando Road
Sun Valley, Ca. 91352
(818) 767-3310

B

SAN FERNANDO COMMUNITY HOSPITAL
700 Chatsworth Drive
San Fernando, Ca. 91340
(818) 361-7331

ROUTE TO HOSPITAL
FROM
HR TEXTRON
10445 Glenoaks Blvd.
Pacoima Ca. 91331

Project No. 7841189-08
7841189-09

Figure No. 12.4

U.S.G.S. 7 1/2 Minute San Fernando and Van Nuys Quadrangles

13.0 TRAINING REQUIREMENTS

Field subcontractor personnel training will consist of instructing the field team in methods of conducting all field activities safely. Each section of this plan is intended to provide information to accomplish this goal. It will be the responsibility of the Project Manager and the SSO to ensure that the field team has access to this plan, has read the safety procedures contained herein, and understands how to conduct this work safely. The Onsite Safety Officer and Project Manager will be responsible for ensuring that all field team members understand the SID Safety Plan, and that all training related to the plan was received. Each day prior to the beginning site work, the onsite Safety Officer will meet with the field team to discuss the contents of the Safety Plan, and ensure that all members are adequately informed of safe work practices.

13.1 Health and Safety Training

Prior to starting the work, the onsite Safety Officer will conduct a training session and ensure that each field team member understands his or her safety responsibilities. All field team members will be instructed regarding potential health and safety hazards. Specifically, the following topics will be covered in the initial training session.

- Potential routes of contact with toxic and/or corrosive materials, excessive noise, or physical site hazards. Potential chemical exposure routes include:

  - skin contact/absorption
  - eye contact
  - inhalation
  - ingestion

- Types, proper use, limitations, and maintenance of applicable protective clothing and equipment. This equipment includes:

  - eye protection
  - gloves
  - safety boots
  - Tyvek coveralls
  - respirators

- Respiratory protection using air-purifying respirators equipped with organic vapor cartridges and dust filters. The following will be discussed:

  - forms of respirators: air-purifying, air-supplied, and self-contained.
  - selection of respiratory protection based on the hazard.

- NIOSH certification of all equipment to be used onsite.
- medical/physical fitness to wear respiratory protection.
- use, limitations, and maintenance of full-face respirators including qualitative fit testing, routine inspection, replacement of parts, cleaning, disinfection, decontamination, and storage requirements.

- Proper decontamination procedures and adherence to work zone boundaries;
- Proper waste/cuttings handling and disposal procedures;
- Reporting of accidents and availability of medical assistance; and
- Safety procedures for the use of compressed gases.

13.2 Potential Routes of Exposure

The field team may be exposed to various site hazards. Workers may be exposed to chemicals coming into contact (skin or eyes) by breathing vapors, fumes, mists, or dusts, or by ingestion. The following subsections describe how the worker will avoid these exposures.

13.3 Respirator Training

The respirators selected for this project will provide protection against anticipated levels of airborne gases, fumes, mists, and dusts. To ensure that the mask will perform as expected, the respirator must be inspected, fit-tested, maintained, and properly sorted according to Leighton and Associates, Inc. policy and governmental regulations.

13.3.1 Checklist for Using a Respirator

Full-Face Respirators

Inspection Procedure

1. Look for breaks or tears in the headband material. Also, stretch to check the elasticity.
2. Make sure all headbands, fasteners, and adjusters are in place and not bent.
3. Check the facepiece for dirt, cracks, tears, or holes. The rubber should be flexible, not stiff.
4. Look at the shape of the facepiece for possible distortion that may occur if the respirator is not protected during storage.

5. Check the exhalation valve located near the chin between the cartridges by the following:

   - unsnap the cover;
   - lift the valve and inspect the seat and valve for cracks, tears, dirt, and distortion; and
   - replace the cover; it should spin freely.

6. Check both inhalation valves (inside the cartridge holders). Look for same signs as above.

7. Check the yoke for cracks.

8. Make sure the cartridge holders are clean. Make sure the gaskets are in place and the threads are not worn. Also look for cracks and other damage.

9. Check the cartridges for dents or other damage, especially in the threaded part.

Procedure for Putting on Respirator

1. Screw the cartridge into the holder hand-tight, so there is a good seal with the gasket in the bottom of the holder -- but don't force it. If the cartridge won't go in easily, back it out and try again.

   Always use cartridges made by the same manufacturer who made the respirator.

2. Place the facepiece over face and swing the bottom in so that it rests against your chin. FACIAL HAIR THAT INTERFERES WITH THE FIT OF THE MASK IS FORBIDDEN.

3. Hold the respirator in place and fasten the top strap over the crown of your head.

4. Fit the respirator on your face and fasten the strap around your neck. Don't twist the straps. Use the metal slide to tighten or loosen the fit -- but not too tight.

5. Test the fit by:

   - lightly cover the exhalation valve with the palm of your hand. Exhale -- if there is a leak, you will feel the air on your face, and

   - cover the cartridges with the palms of your hands. Again, don't press too hard. Inhale -- the facepiece should collapse against your face.

- If there is a leak with either test, adjust the headbands or reposition the facepiece and test until no leakage is detected.

Sanitizing Procedures

1. Remove all cartridges, plus seals not affixed to their seats.

2. Remove elastic headbands.

3. Remove exhalation cover.

4. Remove speaking diaphragm or speaking diaphragm-exhalation valve assembly.

5. Remove inhalation valves.

6. Wash facepiece and breathing tube in cleaner/sanitizer powder mixed with warm water, preferably at 120° to 140°F. Wash components separately from the facemask, as necessary. Remove heavy soil from surfaces with a hand brush.

7. Remove all parts from the wash water and rinse twice in a clean warm water.

8. Air dry parts in a designated clean area.

9. Wipe facepieces, valves, and seats with a damp, lint-free cloth to remove any remaining soap or other foreign materials.

10. Respirator Storage:

    Respirators will be stored in a ziplock bag in a clean, safe, and dry environment (e.g., not near the Exclusion Zone).

11. Respirators Use and Limitations

    Respirators selected for this program will be used properly and within the limits for which they were designed. These air-purifying respirators will be useful at concentrations below the 1,000 ppm filtration limit of the cartridges, provided other criteria is not exceeded (see Table 6-1). These masks do not provide oxygen and will not be used in confined spaces or oxygen-deficient atmospheres.

13.3.2 Checklist for Using a Self-Contained Breathing Apparatus (if necessary)

Mine Safety Appliances (MSA) 401

Inspecting Procedures: Before proceeding, check that:

1. High-pressure hose connector is tight on cylinder fitting.
2. Bypass valve is closed.
3. Mainline valve is closed.
4. Regulator outlet is not covered or obstructed.

Backpack and Harness Assembly

5. Visually inspect straps for wear, damage, and completeness.
6. Check wear and function of buckle.
7. Check backplate for damage and attachment to cylinder.

Cylinder and Valve Assembly

8. Check cylinder to assure that it is tightly fastened to backpack.
9. Open cylinder valve; listen or feel for leakage around packing and hose connection.

Regulator

10. Listen or feel for leakage in high-pressure hose or hose-to-cylinder connection.
11. Remove hand from regulator outlet.
12. Open mainline valve after covering regulator outlet with palm of hand.
13. Note stoppage of air flow when positive pressure builds.
14. Close mainline valve.
15. Remove hand from regulator outlet.
16. Open bypass valve slowly to assure proper function.
17. Cover regulator outlet again with palm of hand and open mainline.

18. Note pressure reading on regulator gauge.

19. With hand still on regulator outlet, close cylinder valve.

20. Slowly remove hand from outlet and allow air to flow.

21. Note pressure when low-pressure alarm sounds; it should be between 550-650 psi.

22. Completely remove hand and close mainline valve.

23. Check regulator for leaks. Blow into regulator for 5 to 10 seconds; suck air from outlet also for 5 to 10 seconds. If a positive pressure or vacuum cannot be maintained, do not sue SCBA. It is leaking.

24. Inspect harness and facepiece for damaged serrations and deteriorated rubber.

25. Inspect lens for damage and proper seal in facepiece.

26. Visually inspect exhalation valve for damage and buildup of dirt.

27. Stretch breathing tube and carefully look for deterioration and holes.

28. Inspect connector for damage and presence of O-ring.

29. Perform negative and positive pressure tests with facepiece.

Procedure for Putting On

1. Check cylinder reading. It should be full (2,116 psi).

2. Lift cylinder over head.

3. Rest on back.

4. Slide down back.

5. Fasten chest strap, if you wish.

6. Hike unit up on back and pull tabs to tighten.

7. Fasten waist belt.

8. Check regulator air flow:

   - cover regulator outlet;

   - open cylinder valve fully; Audi-Larm should ring;

   - open mainline valve and check pressure gauge (2,116 psi);

   - keep regulator outlet covered;

   - close cylinder valve; regulator pressure should not drop more than 100 psi in 30 seconds; and

   - take hand from regulator outlet; Audi-Larm should ring at 500-540 psi; close mainline valve.

9. Put on the facepiece:

   - put chin in first;

   - pull harness back over head; and

   - to tighten straps, pull straight back -- not out.

10. Check facepiece fit:

   - block breathing tube and inhale;

   - hold breath 10 seconds and facepiece should collapse against face; and

   - to test exhalation valve, gently inhale; if valve is not operating properly, a heavy blow-by or air will be felt at temples.

Operating Procedures

1. Open cylinder valve.

2. Connect breathing tube to regulator.

3. Open mainline valve (gold knob) -- breathe normally.

4. To test bypass valve (red knob), open and close it quickly.

PARTIALLY SCANNED
OVERSIZE ITEM(S)

See document # 2211863
for partially scanned image(s).
(3 of 5)

For complete hardcopy version of the oversize document
contact the Region IX Superfund Records Center

2166-04746

LEIGHTON AND ASSOCIATES

Geotechnical and Environmental Engineering Consultants

350

LEIGHTON AND ASSOCIATES, INC.

Geotechnical and Environmental Engineering Consultants

EXECUTIVE SUMMARY OF PHASE II SUBSURFACE INVESTIGATION AT HR TEXTRON'S PACOIMA FACILITY 10445 GLENOAKS BOULEVARD PACOIMA, CALIFORNIA

November 23, 1988

Project No. 7841189-13

Prepared for:

HR TEXTRON, INC.
25200 West Rye Canyon Road
Valencia, California 91355

Attention: Messrs. John Hedges and William Moses

25020 WEST AVENUE STANFORD, SUITE 190, VALENCIA, CALIFORNIA 91355

(805) 257-0150 • (818) 881-6031
FAX (805) 257-0819

LEIGHTON AND ASSOCIATES, INC.

Geotechnical and Environmental Engineering Consultants

November 23, 1988

Project No. 7841189-13

TO: HR Textron, Inc.
25200 West Rye Canyon Road
Valenica, California 91355

ATTENTION: Messrs. John Hedges and William Moses

SUBJECT: Executive Summary of Phase II Subsurface Investigation at HR Textron's Pacoima Facility, 10445 Glenoaks Boulevard, Pacoima, California

Introduction

Leighton and Associates, Inc., has completed the Phase II subsurface contamination investigation at HR Textron's Pacoima facility located at 10445 Glenoaks Boulevard in Pacoima, California. The purpose of the investigation was to obtain the necessary data to confirm that soil contamination previously identified in the vicinity of the former Tank 2 site is limited to the soil zone within 55± feet of the ground surface, and thus does not extended to the water table.

The scope of our services was directed toward addressing the following questions raised by the Regional Water Quality Control Board (RWQCB) in the letter dated May, 12, 1988, and at our June 17, 1988, meeting.

1. Does contamination exist as "fingers" (tentacles) beneath the continuous, 55± deep, fine-grained layer? (See Plate 1).

2. What is the source(s) of low levels Total Petroleum Hydrocarbon (TPH) contamination which exist below 55± feet and at substantial distances laterally away from the tank site?

3. Do halogenated organic compounds soil contamination exist at depths of 43, 48, and 68 feet below ground surface in the vicinity of Boring LB-3 as reported by previous laboratory test results?

4. What is the quality of the ground water downgradient?

5. What are the lateral and vertical limits of the vadose soil contamination zone associated with the former underground tanks?

25020 WEST AVENUE STANFORD, SUITE 190, VALENCIA, CALIFORNIA 91355

(805) 257-0150 • (818) 881-6031
FAX (805) 257-0819

Scope

The answers to the questions summarized in the former paragraph were explored through detailed literature review, subsurface field exploration program, chemical laboratory testing program, and analysis of data. All available information was assimilated, presented graphically in Plates 1 and 2, tabulated in Table 1 and Table 2 and reviewed by our in-house team of specialists. The results are summarized in this document. The field program consisted of the collection of soil samples at various depths in seven borings to assess the lateral and vertical extent of the contamination zone above 55± feet (see Plate 1). The laboratory program consisted of testing selected soil samples by EPA Test Methods 418.1 for Total Petroleum Hydrocarbons (TPH) and 8240 for Volatile Organic Compounds (VOC). Laboratory test results are summarized in Tables 1 and 2. In addition, two soil samples were used for detailed chemical analysis to identify the characteristics of their carbon degradation. A ground water sample was collected from a water well located approximately 1.5 miles downgradient from the Pacoima facility to determine ground water quality.

Discussion

1. "Finger" Theory - A total of 13 borings have been drilled in and around the Tank 2 excavation. Only in Boring LB-1, drilled at a 23 degree angle through the center of the excavation and Borings LB-102/102A drilled in the center of the excavation were high level TPH and VOC soil contamination encountered. These borings were drilled within an area of 45 feet by 40 feet. It is unlikely that a finger of contamination exists beyond the tank excavation. Tight drilling coverage of an area 45 feet by 40 feet of 13 borings has indicated that the high contamination zone is limited to the tank excavation and beneath it to 55± feet. Although it has been shown that contaminates in the vadose zone spread laterally in fine-grained material, this phenomena was not observed in our drilling program.

   Our review of the available literature on the "finger" theory of contaminant migration in porous media indicates that contaminant fingers can be formed in the laboratory environment. One of the causes of finger formation is heterogeneity, which is always present in the field. However, no contaminant fingers were detected in the thirteen borings drilled in and around the tank excavation beneath a fine-grained clay layer which occurs at 55± feet. Therefore, it is our opinion that "fingers" below 55± feet are unlikely, but could not be ruled out unequivocably.

2. Source of TPH at Depth - Global Geochemistry Corporation laboratory has examined the chemical make-up of the various types of hydrocarbons detected in a soil sample below the former tanks (i.e., 18.5 feet below the invert of the former tanks) and from 70 to 85.5 feet below grade which was in the zone of less than 10 ppm level of TPH. Both samples were collected from Boring LB-102.

Based upon their evaluation, they report that the nature of hydrocarbons detected in low concentrations (10 mg/kg) at depth (from 55 to 110 feet below ground surface) are generated from a very similar organic source, to that of hydrocarbons found in high concentration (approximately 10,000 mg/kg) below the tanks location (at 30.5 feet below ground surface). At both locations the hydrocarbons are typical of severely biodegraded crude oils which may be from more than one source.

However, it remains uncertain if the TPH at depth (i.e., greater than 55 feet below grade) is from the same source as the TPH at the shallower depth. The uncertainty arises from the fact that trace TPH levels are also present in the soils from a background boring located approximately 400 feet northeast of the former Tank 2. Low level background TPH contamination in the vadose zone has been documented in other sites in the Pacoima area. Therefore, the finding, in conjunction with no known mechanism for the migration of TPH from the Tank 2 area to a broad area indicates that evidence does not suggest that the trace levels of TPH at depth (greater than 55 feet) could be associated with contamination from the former Tank 2 site.

3. Volatile Organics in Soil Samples from Boring LB-3 - Volatile organics were detected in soil samples from Boring LB-3 (i.e., at 43, 48, and 68 feet below grade). The halogenated organic compounds which were detected were 1,1,1-trichloroethane (1,1,1-TCA) and methylene chloride. As required by California Department of Health Services protocol, Analytical Technologies, Inc. (ATI) tested a duplicate sample at 43.0 feet from Boring LB-3 and there was no 1,1,1-TCA contamination found in this sample. Chemical Research Laboratories (CRL) did not test duplicate samples were initially reported for 1,1,1-TCA and methylene chloride were present (i.e., 43, 48, and 68 feet). It was our conclusion that these CRL findings were suspect and therefore halogenated hydrocarbons did not exist below 55± feet. The chemical data is summarized in Tables 1 and 2. HR Textron redrilled two borings (LB-103 and LB-103A) in the vicinity of Boring LB-3 to verify previously reported data. Soil samples were collected at 50 and 68 feet from Boring LB-103 and from 43, 48, and 68 feet from Boring LB-103A. These soil locations were approximately located laterally within 2 feet of the soil samples which were suspect. The results from the second confirmation samples indicated the following:

   a. The following organic compounds were detected in the verification samples collected at 43 feet in Boring LB-103A; 111-TCA and toluene which were detected by CRL and not detected by ATI. (It should be noted that the detection limit for EPA Test Method 8240 by CRL was 5 micrograms per kilogram and 50 micrograms per kilogram by ATI.)

   b. CRL reported in the verification samples at 48 and 50 feet from Borings LB-103A and LB-103, respectively, the presence of the following organic compounds: 1,1,1-TCA, 1,1,2-TCA, toluene, 1,1-Dichloroethene, and 1,1-Dichloroethane. ATI did not detect halogenated volatile organics in the sample at 48 feet but reported 1,1,1-TCA in the soil sample from Boring LB-103 at 50 feet. CRL also reported along with 1,1,1-TCA the presence of 1,1,2-TCA, toluene, 1,1-Dichloroethene, 1,2-Dichloroethane and 1,1-

Dichloroethane in this same sample. (It should be noted that 1,1-Dichloroethene, 1,1-Dichloroethane, and 1,2-Dichloroethane could be from external sources-contaminants released into the soil, or result of the biodegration process of 1,1,1-TCA.)

c. No 1,1,1-TCA was detected by ATI from the verification samples at 68 feet; while CRL reported the presence of toluene, acetone, ethylbenzene total xylenes in the sample for Boring LB-103A.

The confirmation data indicates the presence of organics of concern (VOC) in the samples at the 43, 48 and 50 feet, while the data confirms the absence of VOC's (methylene chloride) as previously reported by CRL below the fine-grained layer at 55± feet. The report of acetone and total xylene in only one sample is attributed to laboratory handling of the samples, (as these were detected in reagent blank also at trace level) while the presence of toluene is at trace levels (0.009 to .027 mg/kg) are well below the 1,000 mg/kg level which is the acceptable cumulative soil contamination level for protection of ground water for Pacoima site specific conditions (DHS Luft Manual, 1988). No halogenated hydrocarbons were detected below 50 feet depths.

TPH has been detected in low levels, from 55 feet to the total depth of the borings (i.e., 120 feet) around the former Tank Site 2, as well as in the soils of the background boring (i.e., Boring LB-104) which is located approximately 400 feet northeast of Boring LB-102.

4. Ground Water Quality - Low levels of chlorinated hydrocarbons (<10 ug/l) were detected in the water sample collected from a well located 1.5 miles from the Pacoima facility. The only volatile organics present in the water well was toluene and 1,1,1-trichloroethane at concentrations of 9 and 7 micrograms per liter (ug/l). Tetrachloroethene (PCE) and trichoroloethene (TCE) were not detected in this water sample. This well is located in the general downgradient direction from the site. Major industrial development exists between the Pacoima facility and this downgradient well, therefore the source of the VOC in the well is not known.

5. Lateral and Vertical Limits of the Vadose Soil Contamination Zone - A total of six new soil borings (LB-100, LB-101, LB-102/102A and LB-103/103A) were drilled in and adjacent to the Tank 2 site to further evaluate the lateral and vertical extent of the vadose soil contamination zone. The subsurface geology is presented in Cross-Section DG-DG' (Plate 1) and the results of the soil vadose contamination is presented in Plate 2. Selected soil samples were chemically analyzed for their compounds of TPH and volatile organic content by EPA Test Methods 418.1 and 8240, respectively. The chemical results of this investigation is summarized in Table 1. Previous chemical results are summarized in Table 2. High level TPH and halogenated volatile organics contamination was encountered in Boring LB-102 to a depth of 52.5 feet below ground surface. This high level contamination zone was not encountered in Borings LB-100 and LB-101. A much lower level contamination zone was encountered in soil samples from Borings LB-103/103A to a depth of

50 feet below ground surface; this location is above the base of the fine-grained soil layer at 55± feet. Low level TPH contamination is encountered in all borings drilled, even Boring LB-104 located 400 feet northeast of the Tank 2 excavation. The vadose soil contamination zone associated with the former underground tanks has been defined to the west, to the north, and to the east and is encountered to a depth 55± feet below ground surface, restricted to a fine-grained silty clay layer.

Conclusions

Based upon the findings developed during this phase of the investigation, the following conclusions are presented.

1. The presence of fingers of contamination is unlikely to exist at the Tank 2 site below the depth of 55± feet. Thirteen borings have been drilled in and adjacent to the Tank 2 site and contaminant fingers were not encountered.

2. Global Geochemistry Corporation data suggests that the low levels of TPH (less than 10 ppm) found below the highly contaminated soil zone and laterally from the highly contaminated soil zone may or may not be associated with the liquid from the former 1,000-gallon tanks. The uncertainty arise from the fact that trace TPH levels are present in the soils from a background boring located approximately 400 feet northeast of the former Tank 2 area.

3. It is apparent that the presence of the second, fine-grained (silty clay) layer, approximately 50 to 55 feet below grade, appears to have been an effective barrier to the vertical movement of the contaminants from the former tanks. The halogenated volatile organic plume does not exist below the silty clay layer (55± feet) in the vicinity of Borings LB-3/LB-103/LB-103A as confirmed by the resultant resampling program.

4. Based upon the chemical data from the 54 samples collected below the layer silty clay, there is no sufficient evidence of halogenated volatile organic "fingers" below the silty clay layer located at 50 to 56 feet below grade. Therefore, we believe that it is probable that halogenated volatile organics associated within the high level soil contaminated zone have not extended below 55± feet, thus adversely affecting the local ground water table.

5. The liquid from Tank 2 has migrated under gravity, virtually vertically downward into the second fine-grained layer located at 50 to 56 feet below grade. The vertical and horizontal limits of this high level soil contaminated zone (the zone with detected halogenated volatile organics and highest TPH content) has been identified to the north, northwest, northeast direction, and southeast for TPH only. Additional exploration to delineate the southwest boundary for both TPH and halogenated volatile organics and for halogenated volatile organics to the southeast.

General Conclusion

Based upon the above conclusions, it is our opinion that the condition identified to date does not warrant the need for a ground water monitoring well in the area of former Tank 2 and that future efforts should focus upon retaining the plume within the upper 55±-foot and mitigation such contaminates recommendations will be provided under separate cover.

Should you have any questions regarding this Executive Summary, please do not hesitate to contact us at our Valencia office. We appreciate this opportunity to be of continued service.

Respectfully submitted,

LEIGHTON AND ASSOCIATES, INC.

Marianne L. Maki

Marianne L. Maki
Senior Geologist

Thomas E. Mills

Thomas E. Mills, RG 4439
Director, Environmental Services

Bruce R. Hilton

Bruce R. Hilton, CEG 1151
Chief Engineering Geologist

LMM/DM/VG/JJL/TM/BH/lh

Attachments: Table 1 - Summary of Chemical Results of Soil Samples from Borings LB-100 to LB-104
Table 2 - Summary of Chemical Results of Soil Samples from Previous Borings
Plate 1 - Plot Plan
Plate 2 - Geologic Cross-Section DG-DG'
Plate 3 - Geologic Cross-Section DG-DG' Showing Vadose Zone Contamination

Distribution: (6) Addressee

TABLE 1

SUMMARY OF CHEMICAL ANALYSIS
OF SOIL SAMPLES FROM BORINGS

HR Textron
Pacoima, California

				EPA METHOD 8240*										
Sample #	Depth (Feet)	Date of Sample	EPA Method 481.1 (TPH)*	1,1,1, Tri-Chloro-Ethane	1,1,2-Tri Chloro-Ethane	Tri-Chloro-Ethene	Tetra-Chloro-Ethene	Toluene	Acetone	Xylene Issomers	1,1 Di-Chloro Ethene	Ethyl-benzene	1,2-Di-Chloro Ethane	1,1 Di-Chloro Ethane
LB-100.9.5	9.5	9-13-88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-20	20	9-13-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-31	31	9-13-88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-40	40	9-13-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-51	51	9-14-88	6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-60	60	9-14-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-69	69	9-14-88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-81.5	81.5	9-14-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-90.5	90.5	9-14-88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-100-101.5	101.5	9-14-88	3	ND	ND	ND	ND	ND	2.4	ND	ND	ND	ND	ND
LB-100-111.5	111.5	9-14-88	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-5	5	9-15-88	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-15	15	9-15-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-25	25	9-15-88	17	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-35	35.5	9-15-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-40	40	9-15-88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-45	44.5	9-15-88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-46	46	9-15-88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-48	47.5	9-15-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-49	49	9-15-88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-51	51	9-15-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-57	57	9-15-88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-60	60	9-16-88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-70	70.5	9-16-88	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-80	81	9-16-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-90	90	9-16-88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-100	100.5	9-16-88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-101-110	110.5	9-16-88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*Milligrams per kilogram
NT = Not Tested

7841189-13

TABLE 1

SUMMARY OF CHEMICAL ANALYSIS
OF SOIL SAMPLES FROM BORINGS (CONT.)

HR Textron
Pacoima, California

				EPA METHOD 8240*										
Sample #	Depth (Feet)	Date of Sample	EPA Method 481.1 (TPH)*	1,1,1, Tri-Chloro-Ethane	1,1,2-Tri Chloro-Ethane	Tri-Chloro-Ethene	Tetra-Chloro-Ethene	Toluene	Acetone	Xylene Issomers	1,1 Di-Chloro Ethene	Ethyl-benzene	1,2-Di-Chloro Ethane	1,1 Di-Chloro Ethane
LB-102-20	20	9-15-88	9,800	180	ND	ND	8	4	ND	4	4	ND	ND	ND
LB-102-26	26	9-19-88	8,300	110	ND	ND	6	3	ND	ND	0.6	ND	ND	ND
LB-102-35	35	9-19-88	9,100	60	ND	ND	4	1	ND	ND	ND	ND	ND	ND
LB-102-45	45	9-19-88	14,000	5	ND	ND	0.1	0.07	ND	ND	ND	ND	ND	ND
LB-102-46.5	46.5	9-19-88	17,000	100	ND	ND	3	2	ND	ND	ND	ND	ND	ND
LB-102-49	49	9-19-88	3,800	64	ND	ND	2.4	1	ND	ND	ND	ND	ND	ND
LB-102-50	50.5	9-19-88	1,200	2	ND	ND	0.1	0.08	ND	ND	ND	ND	ND	ND
LB-102-53	52.5	9-19-88	11,000	120	ND	ND	4	ND	ND	ND	ND	ND	ND	ND
LB-102-54	54	9-19-88	6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-102-65	65	9-19-88	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-102-75	75	9-19-88	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-102-85	85.5	9-19-88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-102A-95	95	9-23-88	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-102A-100	100	9-23-88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-102A-110	110	10-04-88	9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-102A-115	115	10-04-88	11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-102A-120	120	10-04-88	32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103-35A	35	9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103-50A	50	9-13-88	NT	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103-53A	53	9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103-54.5A	54.5	9-13-88	NT	ND	ND	0.05	ND	ND	ND	ND	ND	ND	ND	ND
LB-103-56A	56	9-13-88	NT	ND	0.010	0.1	0.1	ND	ND	ND	ND	ND	ND	ND
LB-103-68A	68	9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103-35C	35	9-13-88	NT	0.016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103-50C	50	9-13-88	NT	0.150	0.013	ND	ND	0.027	ND	ND	0.009	ND	0.013	0.038
LB-103-53C	53	9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103-54.5C	54.5	9-13-88	NT	ND	ND	ND	ND	0.024	ND	ND	ND	ND	ND	ND
LB-103-56C	56	9-13-88	NT	0.020	ND	ND	ND	0.020	ND	ND	ND	ND	ND	ND
LB-103-68C	68	9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*Milligrams per kilogram
NT = Not Tested

7841189-13

TABLE 1

SUMMARY OF CHEMICAL ANALYSIS
OF SOIL SAMPLES FROM BORINGS (CONT.)

HR Textron
Pacoima, California

				EPA METHOD 8240*										
Sample #	Depth (Feet)	Date of Sample	EPA Method 481.1 (TPH)*	1,1,1, Tri-Chloro-Ethane	1,1,2-Tri Chloro-Ethane	Tri-Chloro-Ethene	Tetra-Chloro-Ethene	Toluene	Acetone	Xylene Issomers	1,1 Di-Chloro Ethene	Ethyl-benzene	1,2-Di-Chloro Ethane	1,1 Di-Chloro Ethane
LB-103A-43C	43	9-21-88	NT	0.007	ND	ND	ND	0.015	ND	ND	ND	ND	ND	ND
LB-103A-48C	48	9-21-88	NT	0.240	0.014	ND	ND	0.024	ND	ND	0.040	ND	0.014	ND
LB-103A-68C	68	9-21-88	NT	ND	ND	ND	ND	0.009	0.012	0.034	ND	ND	ND	ND
LB-103A-43A	43	9-21-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103A-48A	48	9-21-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-103A-68A	68	9-21-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	.009	ND	ND
LB-104-10	10	10-3-88	5	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
LB-104-20	20	10-3-88	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-104-30	30	10-3-88	5	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
LB-104-40	40	10-3-88	9	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
LB-104-50	50	10-3-88	4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
LB-104-60	60	10-3-88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-104-70	70	10-3-88	5	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
LB-104-80	80	10-3-88	5	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
LB-104-105	105	10-3-88	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-104-110	110	10-3-88	9	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				EPA METHOD 624 (MICROGRAMS/LITER)										
MW-13AA		9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-13BA		9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-13AA		9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-13AA		9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-21AC		9-21-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-21BC		9-21-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-14A		9-14-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-1B		9-14-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-100A		9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-100B		9-13-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-15A		9-15-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-15B		9-16-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-16A		9-16-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-16A		9-16-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-19A		9-19-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-19B		9-19-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*Milligrams per kilogram
NT = Not Tested

7841189-13

TABLE 1

SUMMARY OF CHEMICAL ANALYSIS
OF SOIL SAMPLES FROM BORINGS (CONT.)

HR Textron
Pacoima, California

				EPA METHOD 624 (MICROGRAMS PER LITER)										
Sample #	Depth (Feet)	Date of Sample	EPA Method 481.1 (TPH)*	1,1,1, Tri-Chloro-Ethane	1,1,2-Tri Chloro-Ethane	Tri-Chloro-Ethene	Tetra-Chloro-Ethene	Toluene	Acetone	Xylene Issomers	1,1 Di-Chloro Ethene	Ethyl-benzene	1,2-Di-Chloro Ethane	1,1 Di-Chloro Ethane
MW-21AA		9-21-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-21BA		9-21-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-23A		9-23-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-23B		9-23-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-2A		10-3-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-2B		10-3-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-4A		10-4-88	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-4B		10-4-88	NT	ND	ND	ND	ND	TR	ND	ND	ND	ND	ND	ND

*Milligrams per kilogram
NT = Not Tested

NOTE: All the MW samples are blanks analyzed by EPA Test Method 624.

TABLE 2

SUMMARY OF CHEMICAL ANALYSIS
OF SOIL SAMPLES FROM BORINGS

HR Textron
Pacoima, California

							EPA METHOD 8240 (mg/kg)										
SAMPLE #	DEPTH (FT)	DATE OF SAMPLE	EPA-418.1 TPH mg/kg	EPA-413.2 OIL & GREASE mg/kg	CHROMIUM	LEAD	1,1,1-TRICHLORO-ETHANE	TRICHLORO-ETHENE	TETRA-CHLORO-ETHYLENE	TOLUENE	METHYLENE CHLORIDE	BEN-ZENE	ACE-TONE	XYLENE ISOMERS	ETHYL CYCLO-HEXANE	ETHYL METHYL CYCLO-HEXANE	1,2 DI-CHLORO-ETHANE
LB-1	10	05/30/85	27	27	NT	NT		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-1	20	05/30/85	14,000	15,000	NT	NT	55	ND	3	3	ND	ND	ND	4	20	300	ND
LB-1	30	05/30/85	9,800	10,000	NT	NT	87	ND	4	3	ND	ND	ND	3	10	300	ND
LB-1	40	05/30/85	20,000	20,000	NT	NT	100	ND	2	1	ND	ND	ND	3	20	300	ND
LB-1	50	05/30/85	30	30	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-2	10	05/30/85	41	45	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-2	20	05/30/85	ND	ND	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-2	30	05/30/85	ND	ND	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-2	40	05/30/85	ND	ND	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-2	50	05/30/85	ND	ND	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-3A**	13	01/06/88	6	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-5A**	23	01/06/88	3	1	ND	ND	ND	ND	ND	0.13	ND	ND	ND	ND	ND	ND	ND
LB3-7A**	33	01/06/88	4	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-9A**	43	01/06/88	3	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-11A	53	01/06/88	3	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRIP BLANK**		01/06/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FIELD BLANK**		01/07/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
QA SAMPLE**		01/07/88	ND	ND	ND	ND	ND	ND	ND	9 (ug/kg)	ND	ND	ND	ND	ND	ND	ND

Table 2 (Continued)

SAMPLE #	DEPTH (FT)	DATE OF SAMPLE	EPA-418.1 TPH mg/kg	EPA-413.2 OIL & GREASE mg/kg	CHROMIUM	LEAD	EPA METHOD 8240 (mg/kg) 1,1,1-TRICHLORO-ETHANE	TRICHLORO-ETHENE	TETRA-CHLORO-ETHYLENE	TOLUENE	METHYLENE CHLORIDE	BEN-ZENE	ACE-TONE	XYLENE ISOMERS	ETHYL CYCLO-HEXANE	ETHYL METHYL CYCLO-HEXANE	1,2 DI-CHLORO-ETHANE
B3-13A**	63	01/06/88	4	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B3-15A**	73	01/07/88	7	9	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B3-17A**	83	01/07/88	23	19	0.2	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B3-19A**	93	01/07/88	9	25	ND	ND	ND	ND	ND	0.05	ND	ND	ND	ND	ND	ND	ND
B3-S21A**	103	01/07/88	3	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B3-S23(3)**	110	01/08/88	5	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B3-S1B*	.5	01/06/88	---		NT	NT	120	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B3-S2B*	3	01/06/88	---	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B3-S3B*	13	01/06/88	ND	NT	NT	NT	ND	ND	ND	ND	150	ND	ND	ND	ND	ND	ND
B3-S4B*	18	01/06/88	---	NT	NT	NT	ND	ND	ND	ND	150	ND	ND	ND	ND	ND	ND
B3-S5B*	23	01/06/88	---	NT	NT	NT	ND	ND	ND	ND	80	ND	ND	ND	ND	ND	ND
B3-S6B*	28	01/06/88	---	NT	NT	NT	ND	ND	ND	ND	100	ND	ND	ND	ND	ND	ND
B3-S7B*	33	01/06/88	---	NT	NT	NT	ND	ND	ND	ND	100	ND	ND	ND	ND	ND	ND
B3-S8B*	38	01/06/88	---	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B3-S9B*	43	01/06/88	ND	NT	NT	NT	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B3-S10B*	48	01/06/88	ND	NT	NT	NT	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B3-S11B*	53	01/06/88	2	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B3-S12B*	58	01/06/88	2	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B3-S13B*	63	01/06/88	2	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B3-S14B*	68	01/07/88	14	NT	NT	NT	700	ND	ND	ND	150	ND	ND	ND	ND	ND	ND
B3-S15B*	73	01/07/88	2	NT	NT	NT	ND	ND	ND	ND	150	ND	ND	ND	ND	ND	ND
B3-S16B*	78	01/07/88	15	NT	NT	NT	ND	ND	ND	ND	150	ND	ND	ND	ND	ND	ND

7841189-13

Table 2 (Continued)

SAMPLE #	DEPTH (FT)	DATE OF SAMPLE	EPA-418.1 TPH mg/kg	EPA-413.2 OIL & GREASE mg/kg	CHROMIUM	LEAD	EPA METHOD 8240 (mg/kg) 1,1,1-TRICHLORO-ETHANE	TRICHLORO-ETHENE	TETRA-CHLORO-ETHYLENE	TOLUENE	METHYLENE CHLORIDE	BEN-ZENE	ACE-TONE	XYLENE ISOMERS	ETHYL CYCLO-HEXANE	ETHYL METHYL CYCLO-HEXANE	1,2 DI-CHLORO-ETHANE
LB3-S17B*	83	01/07/88	NT	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S18B*	88	01/07/88	15	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S19B*	93	01/07/88	9	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S20B*	98	01/07/88	16	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S21B*	103	01/07/88	6	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S23B*	110	01/08/88	2	NT	NT	NT	ND	ND	ND	NT	NT	ND	ND	ND	ND	ND	ND
LB4-S2A**	3	01/08/88	4	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S4A**	13	01/08/88	3	3	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S6A**	23	01/08/88	2	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S8A**	33	01/11/88	1	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S10A**	43	01/11/88	3	4	ND	ND	ND	ND	ND	ND	TR	ND	ND	ND	ND	ND	ND
LB4-S12A**	53	01/11/88	3	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S14A**	63	01/11/88	3	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S16A**	73	01/11/88	5	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trip Blank**	-	01/08/88			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Field Blank**	-	01/11/88	.08	.08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S18A**	83	01/11/88	6	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S20A**	93	01/12/88	3	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S22A**	103	01/12/88	3	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S23A**	108	01/12/88	2	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trip Blank**	-	01/12/88			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Field Blank**	-	01/12/88	.05	.05	ND	ND	ND	ND	ND	ND	TR	ND	TR	ND	ND	ND	TR

Table 2 (Continued)

SAMPLE #	DEPTH (FT)	DATE OF SAMPLE	EPA-418.1 TPH mg/kg	EPA-413.2 OIL & GREASE mg/kg	CHROMIUM	LEAD	EPA METHOD 8240 (mg/kg) 1,1,1-TRICHLORO-ETHANE	TRICHLORO-ETHENE	TETRA-CHLORO-ETHYLENE	TOLUENE	METHYLENE CHLORIDE	BEN-ZENE	ACE-TONE	XYLENE ISOMERS	ETHYL CYCLO-HEXANE	ETHYL METHYL CYCLO-HEXANE	1,2 DI-CHLORO-ETHANE
BIN-S1**	--	01/13/88	210	260	ND	ND	ND	ND	ND	0.37	ND	ND	ND	ND	ND	ND	ND
BIN-S2**	--	01/13/88	130	130	ND	ND	ND	ND	ND	0.05	ND	ND	ND	ND	ND	ND	ND
SCF*	--	01/13/88	.16	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S1B*	.5	01/08/88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S2B*	3	01/08/88	ND?	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S3B*	8	01/08/88	ND?	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S4B*	13	01/08/88	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S5B*	18	01/08/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S6B*	23	01/08/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S7B*	28	01/11/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S8B*	33	01/11/88	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S9B*	38	01/11/88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S10B*	43	01/11/88	16	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S11B*	48	01/11/88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S12B*	53	01/11/88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S13B*	58	01/11/88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S14B*	63	01/11/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S15B*	68	01/11/88	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S16B*	73	01/11/88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S17B*	78	01/11/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S18B*	83	01/11/88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S19B*	88	01/11/88	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

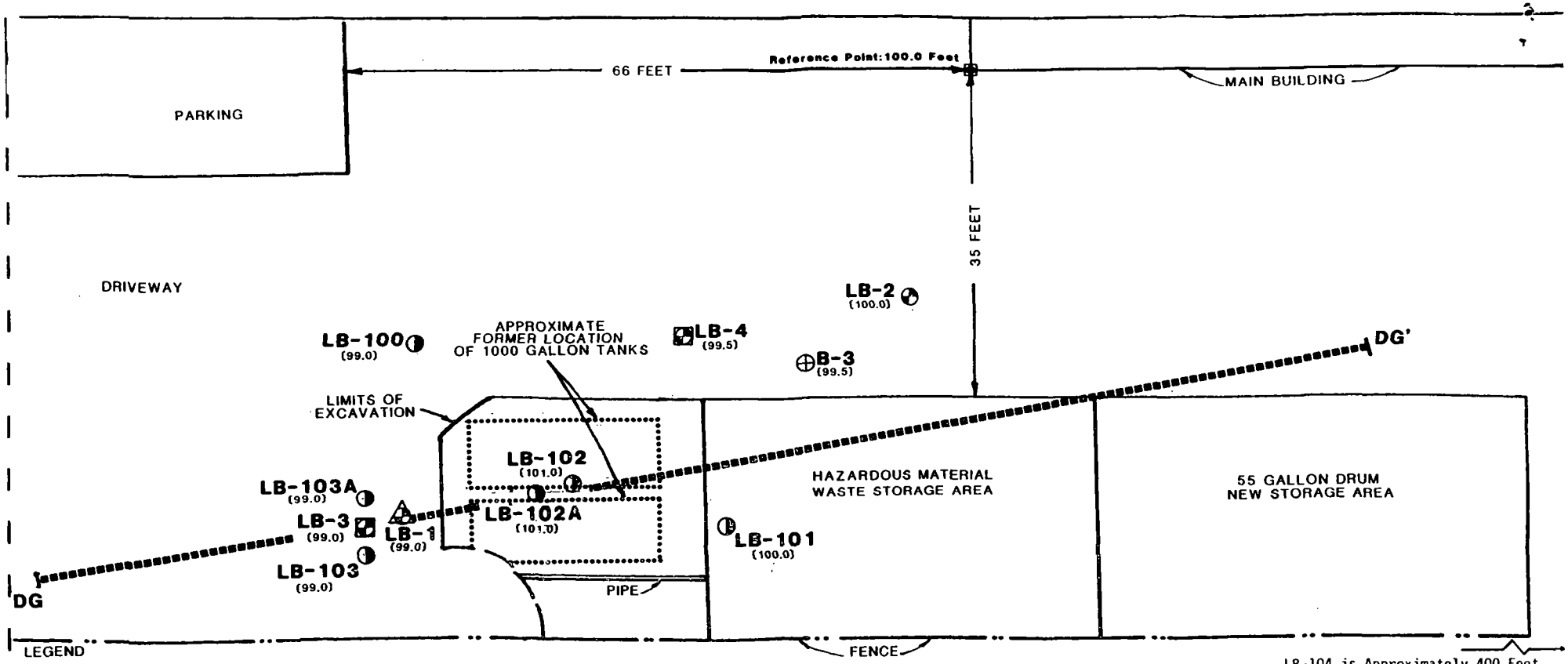
Table 2 (Continued)

SAMPLE #	DEPTH (FT)	DATE OF SAMPLE	EPA-418.1 TPH mg/kg	EPA-413.2 OIL & GREASE mg/kg	CHROMIUM	LEAD	EPA METHOD 8240 (mg/kg) 1,1,1-TRICHLORO-ETHANE	TRICHLORO-ETHENE	TETRA-CHLORO-ETHYLENE	TOLUENE	METHYLENE CHLORIDE	BEN-ZENE	ACE-TONE	XYLENE ISOMERS	ETHYL CYCLO-HEXANE	ETHYL METHYL CYCLO-HEXANE	1,2 DI-CHLORO-ETHANE
LB4-S20B*	93	01/12/88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S21B*	98	01/12/88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S22B*	103	01/12/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TH-1	6.5	05/16/86	37	37	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-1	11	05/16/86	20	20	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-1	12.5	05/16/86	20	20	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-1	15.5	05/16/86	14	14	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-1	20	05/16/86	30	30	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-1	30	05/16/86	TR<10	TR<10	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-1	40	05/16/86	23	23	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	10	05/16/86	21	21	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	15	05/16/86	26	26	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	20	05/16/86	15	15	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	30	05/16/86	20	20	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	40	05/16/86	26	26	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	45	05/16/86	29	29	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	55	05/16/86	26	26	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	65	05/16/86	21	21	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	75	05/16/86	23	23	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	85	05/16/86	18	18	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	95	05/16/86	120	120	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	105	05/16/86	37	37	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	115	05/16/86	33	33	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

Table 2 (Continued)

SAMPLE #	DEPTH (FT)	DATE OF SAMPLE	EPA-418.1 TPH mg/kg	EPA-413.2 OIL & GREASE mg/kg	CHROMIUM	LEAD	EPA METHOD 8240 (mg/kg) 1,1,1-TRICHLORO-ETHANE	TRICHLORO-ETHENE	TETRA-CHLORO-ETHYLENE	TOLUENE	METHYLENE CHLORIDE	BEN-ZENE	ACE-TONE	XYLENE ISOMERS	ETHYL CYCLO-HEXANE	ETHYL METHYL CYCLO-HEXANE	1,2 DI-CHLORO-ETHANE
TH-2	120	05/16/86	56	56	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
B-3	composite 0-43	05/23/84		23,400	Stoddard Solvent 2400 mg/kg												

Note:
- LB = Leighton and Associates, Inc. borings
- TH = Enviropro, Inc. borings
- ND = Not Detected
- NT = Not Tested
- TR = Detected at an unquantifiable trace level
- * = Mobile Lab Results are not certified by the Department of Health Services, EPA Method 8010, the only detected compounds are shown in (mg/kg). All other compounds volatile chlorinated hydrocarbons and volatile aromatic hydrocarbons (EPA Method 8020) were not detected.
- ** = Analytical Technology, Inc. has a Department of Health Services certification.



LEGEND

(100.0) BORING ELEVATION RELATIVE TO REFERENCE POINT (LB-102 & LB-102A MEASURED TO TOP OF CASING

B-3 BORING DRILLED BY EARTH TECHNOLOGY GROUP 5/23/84

LB-1 ANGLE BORING DRILLED BY LEIGHTON & ASSOCIATES, INC. 5/30/85

LB-2 BORING DRILLED BY LEIGHTON & ASSOCIATES, INC. 5/30/85

TH-2 BORINGS DRILLED BY ENVIROPRO-5/29/86

LB-4 BORINGS DRILLED BY LEIGHTON & ASSOCIATES, INC. 1/88

LB-103 BORINGS DRILLED BY LEIGHTON & ASSOCIATES 9/88

DG DG' LOCATION OF GEOLOGIC CROSS-SECTION (See Plates 2 and 3)

PLATE 1

PLOT PLAN
SHOWING BORING LOCATIONS
HR TEXTRON
PACOIMA, CALIFORNIA

Project No. 7841189-13

Drafting By: mjs 11/23/88

PARTIALLY SCANNED
OVERSIZE ITEM(S)

See document # 2211863
for partially scanned image(s).
(4 of 5) – (5 of 5)
For complete hardcopy version of the oversize document
contact the Region IX Superfund Records Center

2166-04746

PACOIMA REMEDIATION 1985

RESPONSE TO QUESTION 7 PAGE 9

350033

2166-04746

INVOICE

H. D. Howard, Inc.
TANK TESTING
P. O. BOX 3613
GRANADA HILLS, CA 91344
(818) 368-8820
CONTR. LIC. 431644

INVOICE NO.	8586-407
DATE	12/27/85
ACCOUNT NO.	Vendor# H-3569
YOUR P.O. NUMBER	Verbal-17466
TERMS	Net 15 days
SALESMAN	H.D. Howard

CUSTOMER

HR TEXTRON INC.

25200 WEST RYE CYN. ROAD

VALENCIA, CA. 91355

ATT: BETTY SELDNER

QTY.	UNIT	DESCRIPTION	UNIT PRICE	AMOUNT
1	tanks	Performed Petro-Tite tightness test on underground storage tanks/systems.	$500.00	$500.00
	hours	Travel time.	N/C	N/C
	miles	Mileage. (within mileage allowance)	N/C	N/C
2	hours	Performance delay.(Tank was to be full upon arrival,took Textron employees 2hrs. to fill)	50.00	100.00

Betty Seldner

PLEASE PAY FROM THIS INVOICE

JOB LOCATION: HR TEXTRON INC.
10445 GLENAOKS
PACOIMA, CA.

SUB TOTAL	$600.00
TAX	
TOTAL	$600.00

Date of Test: 12/16/85

THANK YOU.....

350033

HR TEXTRON

HR Textron Inc.
a Subsidiary of Textron Inc.
25200 West Rye Canyon Road
Valencia Calif 91355

805-659-4030
TWX 910/336/1438
TELEX 65/1492

✓ WY

NON PRODUCTION

PURCHASE ORDER

VENDOR NO. H3569

P.O. No. 17468

KN 12/3

HIP ABOVE ADDRESS UNLESS OTHERWISE INDICATED BELOW

SHOW THIS NUMBER ON ALL INVOICES, PACKING SLIPS, BILLS OF LADING ETC.

TO: H.B. HOWARD, INC
HARVEY HOWARD
P.O. BOX 3613
GRANADA HILLS CA 91344

☐ 25200 W. RYE CANYON RD. VALENCIA, CALIF. 91355
☐ 10445 GLENOAKS BLVD. PACOIMA, CALIF. 91331
☐ 12137 MONTAGUE ST. PACOIMA, CALIF. 91331
☐ OTHER →

SPECIAL INSTRUCTIONS: 500.00

CONFIRMING ON VERBAL PHONE WIRE	ORDER TAKEN BY	PHONE NO.	TERMS	INSP. REQUIRED YES NO	PRIORITY
		818-368-8820	NET		

ORDER DATE	BUYER	TAX	RE-SALE	SHIP VIA	F.O.B.	RESALE PERMIT NO.
12/2/85	108	X				SYAC 13-001487

ITEM	REQ. NO.	QUAN./UNIT OR'D.	DESCRIPTION	UNIT PRICE/DISC.
	3[illegible] SELONER 10[illegible]-1	1 LOT	INTEGRITY TESTING AT PACOIMA FACILITY. NO MILEAGE CHARGE	[illegible].00/LOT DELIVERY DATE 12/2/85
	3822-150			
2				DELIVERY DATE
3				DELIVERY DATE
4				DELIVERY DATE
5				DELIVERY DATE

VENDOR
PLEASE NOTE OUR IN PLANT DELIVERY REQUIREMENT FOR EACH ITEM

– RETURN ACKNOWLEDGMENT COPY IMMEDIATELY.
– DELIVERY AGAINST THIS ORDER CONSTITUTES ACCEPTANCE OF ALL TERMS AND CONDITIONS ON THE FACE AND REVERSE SIDE HEREOF AND ANY SUPPLEMENTS ATTACHED HERETO.
– PACKING LIST MUST ACCOMPANY EACH SHIPMENT SHOWING PURCHASE ORDER NUMBER.
– INVOICE MUST SHOW YOUR SHIPPER OR PACKING LIST NUMBER.
– DO NOT INVOICE MORE THAN ONE PURCHASE ORDER ON AN INVOICE.

By Willie Matlock
PURCHASING MANAGER OR BUYER

A 003 (REV. 5/81)

VENDOR

Data Chart for Tank System Tightness Test

RETEST: NO ✓ YES ___ - System test of _____ indicated leakage.

petro tite TANK TESTER

PLEASE PRINT

DATE: 12-16-85

OWNER Property ☒ Tank(s) ☒	H.R. TEXTRON, INC (Name) MR EV MILLER (Address) (818) 896-2411 (Representative) (Telephone) 10445 GLENOAKS BLVD. PACOIMA, CAL. (Name) (Address) (Representative) (Telephone)
2. OPERATOR	MR EV MILLER. (Name) (Address) (818) 896-2411 (Telephone)
3. REASON FOR TEST (Explain Fully)	TO DETERMINE TIGHTNESS OF: ___ -- [redacted]. 1 -- UNDERGROUND TANK/SYSTEMS. ✓
4. WHO REQUESTED TEST AND WHEN	MS BETTY SELDNER (Name) (Title) (Company or Affiliation) 11-21-85 (Date) VALENCIA, CA (Address) (805) 253-5227 (Telephone)
5. WHO IS PAYING FOR THIS TEST?	H.R. TEXTRON, INC. (Company, Agency or Individual) BETTY SELDNER (Person Authorizing) (Title) (805) 253-5227 (Telephone) 25200 WEST RYE CANYON RD. (Billing Address) VALENCIA, (City) CAL. (State) 91355 (Zip) MS BETTY SELDNER (Attention of) P.O. 17[illegible] (Order No.) VENDOR S. H. 3569 (Other Instructions)

6. TANK(S) INVOLVED #1

Identify by Direction	Capacity	Brand/Supplier	Grade	Approx. Age	Steel/Fiberglass
WEST	5000	UNKNOWN	USED SOLVENT	UNKNOWN	STEEL.

7. INSTALLATION DATA

Location	Cover	Fills	Vents	Siphones	Pumps
WESTSIDE OF PROPERTY	BLACKTOP.	4"	2"	NONE	NONE
North inside driveway, Rear of station, etc.	Concrete, Black Top, Earth, etc.	Size, Titefill make, Drop tubes, Remote Fills	Size, Manifolded	Which tanks?	Suction, Remote, Make if known

8. UNDERGROUND WATER

NO WELL'S Test well ___ Probe ___

Depth to the Water table = Other -- UNKNOWN "

Is the water over the tank? ☐ Yes ☐ No ?

9. FILL-UP ARRANGEMENTS

Tanks to be filled 0700 hr. 12-16-85 Date Arranged by MR EV MILLER (Name) (Telephone)

Extra product to "top off" and run TSTT. How and who to provide? Consider NO Lead.

(WATER TEST) TANK FILL WITH WATER HOSE.

Terminal or other contact for notice or inquiry NONE (Company) TOP OFF FROM WATER HOSE. (Name) (Telephone)

10. CONTRACTOR, MECHANICS, any other contractor involved

NONE.

11. OTHER INFORMATION OR REMARKS

TEST RESULTS: Advised-- MR EV MILLER.

VISITORS:

Additional information on any items above. Officials or others to be advised when testing is in progress or completed. Visitors or observers present during test etc.

12. TEST RESULTS

Tests were made on the above tank systems in accordance with test procedures prescribed for petro tite TANK TESTER as detailed on attached test charts with results as follows:

Tank Identification	Tight	Leakage Indicated	Date Tested
#1 WEST (OVERFLOW)	NO	SEE ATTACHED REPORT	12-16-85

(SEE ATTACHED REPORT.)

13. CERTIFICATION

This is to certify that these tank systems were tested on the date(s) shown. Those indicated as "Tight" meet the criteria established by the National Fire Protection Association Pamphlet 329.

July 1, 1980 (Date)

389; 511; 624; 629; 641; 994. (Serial No. of Thermal Sensor)

H. HOWARD M. REYOME
D. HOWARD B. UNDERWOOD
J. MORGAN M. BELL ✓ (Technicians)

H. D. Howard, Inc. (Testing Contractor or Company) James P. Morgan (By: Signature)

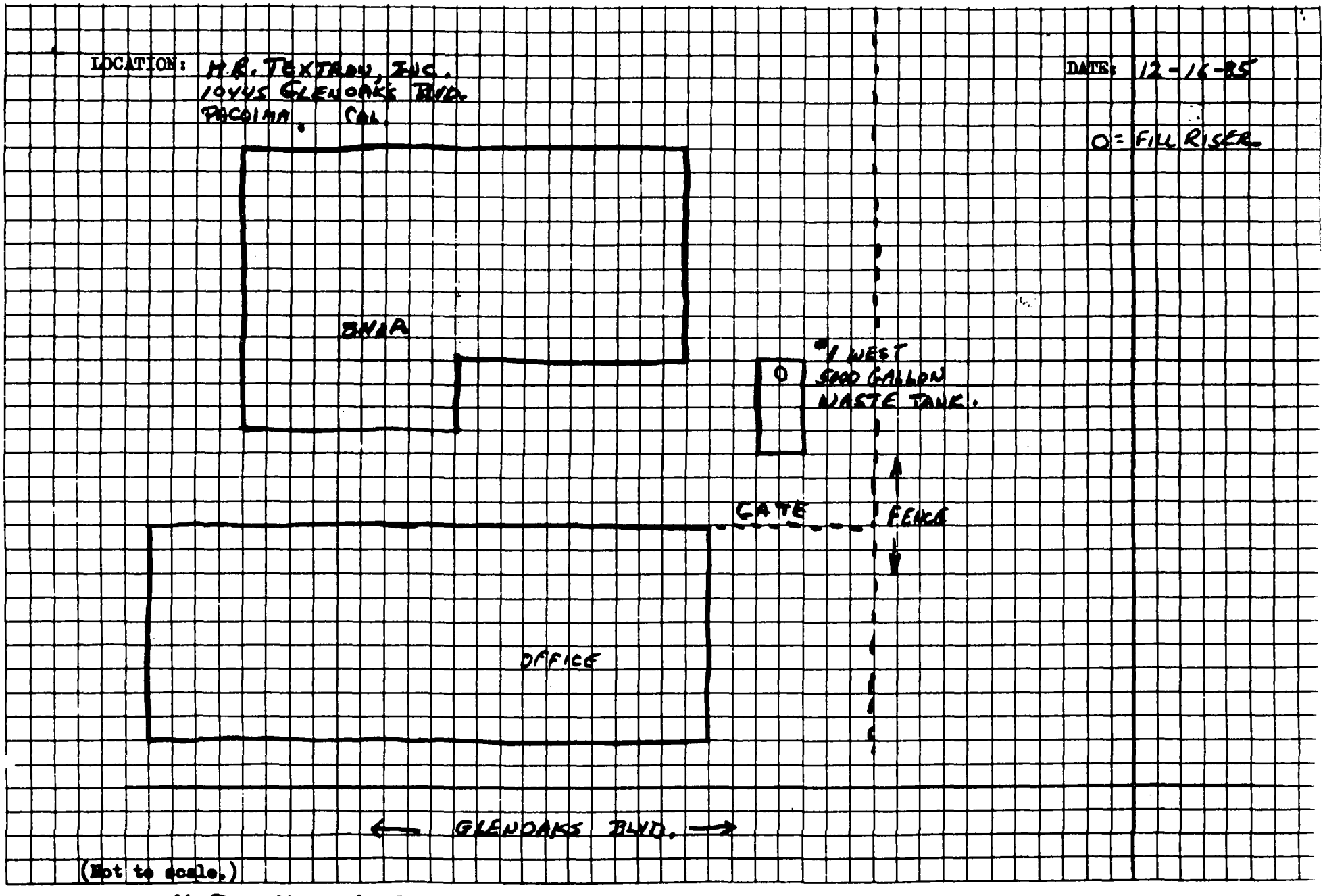
TANK TESTING
P.O. BOX 3613
GRANADA HILLS, CA 91344 (Address)

414810073

LOCATION: M.R. TEXTRON, INC.
10455 GLENOAKS BLVD.
PACOIMA, CAL.

DATE: 12-16-85

O = FILL RISER



(Not to scale.)

H. D. Howard, Inc.
TANK TESTING
P.O. BOX 3613
GRANADA HILLS, CA 91344

petro tite
LINE TESTER
TANK TESTER

HEATH CONSULTANTS INCORPORATED
100 TOSCA DRIVE
STOUGHTON, MA. 02072 (617) 344-1400

Form 568

14. H.R. TEXTRON INC. 10445 GLENOAKS BLVD. PACOIMA, CA 12-16-85

Name of Supplier, Owner or Dealer | Address No. and Street(s) | City | State | Date of Test

15. TANK TO TEST

#1 WEST
Identify by position

SOLVENT OVERFLOW TANK (WATER TEST)
Brand and Grade

16. CAPACITY

Nominal Capacity 5,000 Gallons

By most accurate capacity chart available 5,000 Gallons

Is there doubt as to True Capacity? [✓] VACHART

See Section "DETERMINING TANK CAPACITY"

From
- [✓] Station Chart
- [ ] Tank Manufacturer's Chart
- [ ] Company Engineering Data
- [ ] Charts supplied with Petro Tite
- [X] Other PER CUSTOMER

17. FILL-UP FOR TEST

Stick Water Bottom before Fill-up N/A to ½ in. - N/A Gallons

	Stick Readings to ½ in.	Gallons	Total Gallons on Reading
Inventory	TANK, PIPING + TESTSTAND		
DELIVERY----	FILLED BY CUSTOMERS HOSE		
TOP OFF----			
Product in full tank (up to fill pipe)			5,000

Fill up STICK BEFORE AND AFTER EACH COMPARTMENT DROP OR EACH METERED DELIVERY QUANTITY

Tank Diameter 95" STEEL

18. SPECIAL CONDITIONS AND PROCEDURES TO TEST THIS TANK SYSTEM TEST. AIR BLED FROM 8" DRAIN LINE.

See manual sections applicable. Check below and record procedure in log (26).

- [ ] Water in tank
- [ ] High water table in tank excavation
- [ ] Line(s) being tested with LVLLT

VAPOR RECOVERY SYSTEM
- [ ] Stage I
- [ ] Stage II

N/A

19. TANK MEASUREMENTS FOR TSTT ASSEMBLY

Bottom of tank to Grade*	169 "
Add 30" for 4" L	30 "
Add 24" for 3" L or air seal	0 "
Total tubing to assemble Approximate	199 "

20. EXTENSION HOSE SETTING

Tank top to grade*	74 "
Extend hose on suction tube 8" or more below tank top	30 "

*If Fill pipe extends above grade, use top of fill.

21. TEMPERATURE/VOLUME FACTOR (a) TO TEST THIS TANK

Is Today Warmer? [ ] Colder? [ ] ___ °F Product in Tank ___ °F Fill-up Product on Truck ___ °F Expected Change (+ or −)

22. Thermal-Sensor reading after circulation 13402 digits 63/64 nearest °F

23. Digits per °F in range of expected change 324 digits

24. 5,000 (total quantity in full tank (16 or 17)) × .000115 (coefficient of expansion for involved product) = .575 (volume change in this tank per °F) gallons

25. .575 (volume change per °F (24)) ÷ 324 (Digits per °F in test Range (23)) = .0017746135 (Volume change per digit. Compute to 4 decimal places.)

This is test factor (a) .0018

OBSERVED GRAVITY --------

OBSERVED TEMPERATURE ---- WATER TEST.

CORRECTED API GRAVITY ----------

O. E. ---------- .000115

H. D. Howard, Inc.
TANK TESTING
P.O. BOX 3613
GRANADA HILLS, CA 91344

Petro Tite TANK TESTER

HEATH CONSULTANTS INCORPORATED
100 TOSCA DRIVE
STOUGHTON, MA 02072 (617) 344-1400

26. LOG OF TEST PROCEDURES			30. HYDROSTATIC PRESSURE CONTROL		31. VOLUME MEASUREMENTS IN GALLONS TO .001 GAL.			34. TEMPERATURE COMPENSATION SEE FACTOR (a)			38. NET VOLUME CHANGES EACH READING	39. ACCUMULATED CHANGE
H.R. TEXTRON, INC. 10445 ALEMOOKS PACOIMA, CA.												
27. DATE / TIME (24 hr.)	28. Record details of setting up and running test. (Use full length of line if needed.)	29. Reading No.	Standpipe Level in Inches: Beginning of Reading	Standpipe Level in Inches: Level to which Restored	32. Product in Graduate: Before Reading	Product in Graduate: After Reading	Product Replaced (−) / Product Recovered (+)	35. Thermal Sensor Reading	36. Change Higher + Lower − (e)	37. Computation (c) × (e) = Expansion + Contraction −	Temperature Adjustment: Volume Minus Expansion (+) or Contraction (−) ø33(V) − ø37(T)	At High Level record Total End Deflection / *If Low Level compute * Change per Sensor (GPM criteria)
	and 1 WEST SOLVENT OVERFLOW TANK.											
	5000 GALLON'S.											
0645	ARRIVED AT SITE; TOOK TANK BURIAL MEASUREMENTS; CHECKED FOR WATER; TOOK INVENTORY OF PRODUCT ON HAND;											
	PREPARED AREA FOR TESTING.											
N/A	TOP OFF DELIVERY TRUCK ARRIVED; ASSISTED DRIVER IN FILLING TANK.											
	NO DELIVERY TRUCK - WATER TEST.											
1015	SET UP TEST STAND AND STARTED CIRCULATING PUMP. BLED AIR FROM 8" DRAIN LINE.											
1115	FIRST SENSOR READING	1	---	42.0	---		---					
1130	HIGH LEVEL TEST STARTED	2		"	AFTER (1) HOUR CIRCULATION							
1145	" " " CONT'D	3		"	TEST DATA NOT RECORDED DUE							
1200	" " " "	4		"	TO RAPID LOSS IN TESTSTAND.							
1215	" " " "	5		"	TIME CHECK MADE,							
1230	" " " "	6		"	LOSS OF 1½" PER MINUTE, 4 TIMES.							
1245	" " " "	7		"								
1300	" " " "	8		"								
1301	DROP TO LOW LEVEL TEST	—	—	42.0 / 12.0	—	—	—	—	—	—	—	
1315	CON'T LOW LEVEL TEST	9		12.0								
1330	" " " "	10		"								
1345	" " " "	11		"								
1400	" " " "	12		"								
1415	" " " "	13		"								
											James P. Morgan	

2166-04746
FACILITIES
JUL 31 1985
ENGINEERING

LEIGHTON and ASSOCIATES
INCORPORATED

SOIL ENGINEERING GEOLOGY GEOPHYSICS GROUND WATER HAZARDOUS WASTES

July 30, 1985

Project No. 7841189-02

TO: California Regional Water Quality Control Board
Los Angeles Region
107 South Broadway, Room 4027
Los Angeles, California 90012-4596

ATTENTION: Mr. Dave Bacharowski

SUBJECT: Soil Sample Analysis, H. R. Textron, 10445 Glenoaks, Pacoima, California

In accordance with your request, we are enclosing the laboratory test results of soil samples taken at the subject site. The samples were analyzed for oil and grease content, total petroleum hydrocarbons, and volatile organics. The boring locations are shown on the attached map.

If you have any questions or comments, please contact me at your convenience.

Respectfully submitted,

LEIGHTON AND ASSOCIATES, INC.

Dale Radford

Dale Radford
Senior Geotechnical Engineer

DER/BH/jm

Distribution: (1) Addressee
(1) H. R. Textron
Attention: Ms. Betty Seldner

Attachments: Results of Laboratory Analysis
Boring Location Map

350034

25530 AVENUE STANFORD, SUITE 208, VALENCIA, CALIFORNIA 91355 (800) 253-4567 • (805) 257-0150 • (818) 881-6031

IRVINE • WESTLAKE/VENTURA • DIAMOND BAR/WALNUT • SAN BERNARDINO/RIVERSIDE • SAN DIEGO

RECEIVED
JUN 19 1985
LEIGHTON & ASSOC.

BROWN AND CALDWELL
ANALYTICAL LABORATORIES

LOG NO: P85-05-380

Received: 30 MAY 85
Reported: 12 JUN 85

Corrected Report

Dale Radford
Leighton & Associates
25530 Avenue Stanford
Valencia, CA 91355

Purchase Order: 7841189-02

Project: TEXTRON PCMA

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
05-380-1	LB-1 @ 10'	30 MAY 85
05-380-2	LB-1 @ 20'	30 MAY 85
05-380-3	LB-1 @ 30'	30 MAY 85
05-380-4	LB-1 @ 40'	30 MAY 85
05-380-5	LB-1 @ 50'	30 MAY 85
05-380-6	LB-2 @ 10'	30 MAY 85

PARAMETER	05-380-1	05-380-2	05-380-3	05-380-4	05-380-5	05-380-6
Oil & Grease by Infrared, mg/kg	27	15,000	10,000	20,000	30	45
Hydrocarbons by IR, mg/kg	27	14,000	9800	20,000	30	41

LOG NO: P85-05-380

Received: 30 MAY 85
Reported: 12 JUN 85

Dale Radford
Leighton & Associates
25530 Avenue Stanford
Valencia, CA 91355

Purchase Order: 7841189-02

Project: TEXTRON PCMA

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
05-380-1	LB-1 @ 10'	30 MAY 85
05-380-2	LB-1 @ 20'	30 MAY 85
05-380-3	LB-1 @ 30'	30 MAY 85
05-380-4	LB-1 @ 40'	30 MAY 85
05-380-5	LB-1 @ 50'	30 MAY 85
05-380-6	LB-2 @ 10'	30 MAY 85

PARAMETER	05-380-1	05-380-2	05-380-3	05-380-4	05-380-5	05-380-6
Purgeable Priority Pollutants						
Extraction	06/05/85	06/05/85	06/06/85	06/06/85	06/06/85	06/06/85
1,1,1-Trichloroethane, mg/kg	<0.3	55	87	100	<0.3	<0.3
Acrolein, mg/kg	<3	<3	<3	<3	<3	<3
Acrylonitrile, mg/kg	<3	<3	<3	<3	<3	<3
Tetrachloroethylene, mg/kg	<0.3	3	4	2	<0.3	<0.3
Toluene, mg/kg	<0.3	3	3	1	<0.3	<0.3
Other Purgeable Priority Pollutants,	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Semi-Quantified Results **						
A C9 unsaturated hydrocarbon, mg/kg	---	30	30	40	---	---
Dimethyl Cyclooctane, mg/kg	---	---	20	20	---	---
Dimethylcyclohexane, mg/kg	---	8	9	8	---	---
Trimethylcyclohexane, mg/kg	---	60	50	60	---	---

LOG NO: P85-05-380

Received: 30 MAY 85
Reported: 12 JUN 85

Dale Radford
Leighton & Associates
25530 Avenue Stanford
Valencia, CA 91355

Purchase Order: 7841189-02

Project: TEXTRON PCMA

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
05-380-1	LB-1 @ 10'	30 MAY 85
05-380-2	LB-1 @ 20'	30 MAY 85
05-380-3	LB-1 @ 30'	30 MAY 85
05-380-4	LB-1 @ 40'	30 MAY 85
05-380-5	LB-1 @ 50'	30 MAY 85
05-380-6	LB-2 @ 10'	30 MAY 85

PARAMETER	05-380-1	05-380-2	05-380-3	05-380-4	05-380-5	05-380-6
Xylene Isomers, mg/kg	---	4	3	3	---	---
Ethylcyclohexane, mg/kg	---	20	10	20	---	---
Ethyl Methyl Cyclohexane Isomer, mg/kg	---	300	300	300	---	---

** Quantification based upon comparison of total ion count or the compound with that of the nearest internal standard.

LOG NO: P85-05-380

Received: 30 MAY 85
Reported: 12 JUN 85

Dale Radford
Leighton & Associates
25530 Avenue Stanford
Valencia, CA 91355

Purchase Order: 7841189-02

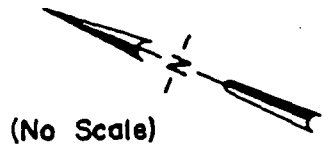
Project: TEXTRON PCMA

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
05-380-7	LB-2 @ 20'	30 MAY 85
05-380-8	LB-2 @ 30'	30 MAY 85
05-380-9	LB-2 @ 40'	30 MAY 85
05-380-10	LB-2 @ 50'	30 MAY 85

PARAMETER	05-380-7	05-380-8	05-380-9	05-380-10
Oil & Grease by Infrared, mg/kg	<20	<20	<20	<20
Hydrocarbons by IR, mg/kg	<20	<20	<20	<20
Purgeable Priority Pollutants				
Extraction	06/06/85	06/06/85	06/06/85	06/06/85
Acrolein, mg/kg	<3	<3	<3	<3
Acrylonitrile, mg/kg	<3	<3	<3	<3
Other Purgeable Priority Pollutants,	<0.3	<0.3	<0.3	<0.3

Edward Wilson, Laboratory Director



Concrete Pad

LB-2
Vertical
T.D.50'

Limits of Excavation

Previous Location
1,000 Gallon Tank

Concrete Curb

LB-1
25° Slant
T.D. 50'

PL

Guard House

BORING LOCATION MAP

H.R. TEXTRON
10445 Glenoaks
Pacoima, CA

350035

Project No: 7841189-02

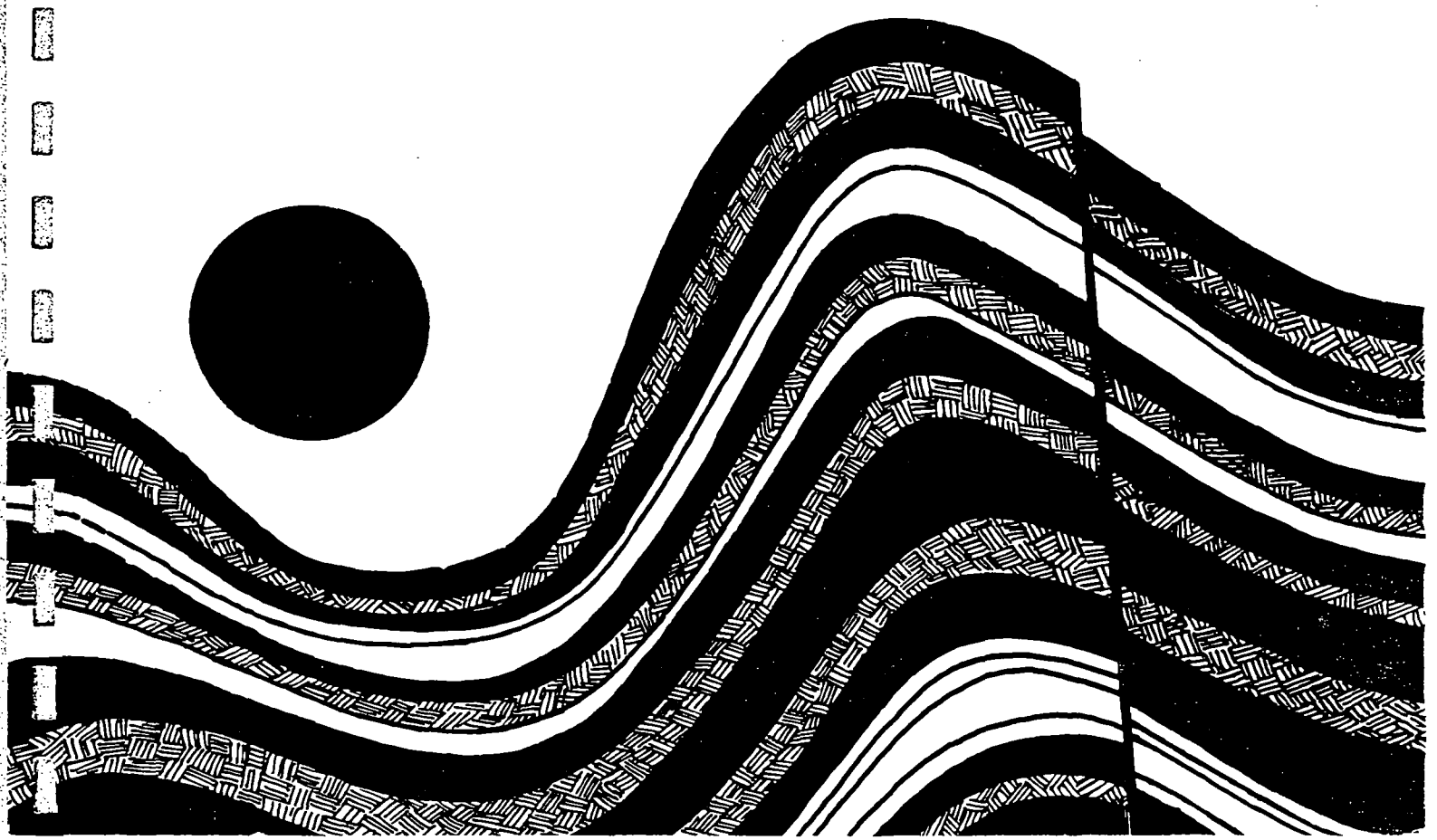
Leighton & Associates

Plate No: _____

2166-04746

Pacoima
Mar 6, 85

Leighton and Associates



LEIGHTON and ASSOCIATES
INCORPORATED

SOIL ENGINEERING GEOLOGY GEOPHYSICS GROUND WATER HAZARDOUS WASTES

March 6, 1985

Project No. 7841189-01

TO: H. R. Textron
25200 West Rye Canyon Road
Valencia, California 91355

ATTENTION: Ms. Betty Seldner

SUBJECT: Soil Sampling and Testing at Tank Site 2, 10445 Glenoaks Boulevard, Pacoima, California

Introduction

In accordance with your request, we have sampled the soils below Tank Site 2 at H. R. Textron's Pacoima facility. The purpose of our work was to analyze the soils for possible contamination from the contents of the tanks. The scope of our work included sampling of the soil below the tanks subsequent to their removal, observation of soil excavation, delivery of soil samples to an approved laboratory, analysis of field and laboratory data, and preparation of this report which presents our findings, conclusions, and recommendations.

Accompanying Map, Illustration, and Appendices

Index Map - Page 2
Plot Plan - Plate 1 - rear of text
Appendix A - Laboratory Test Results
Appendix B - Uniform Hazardous Waste Manifest

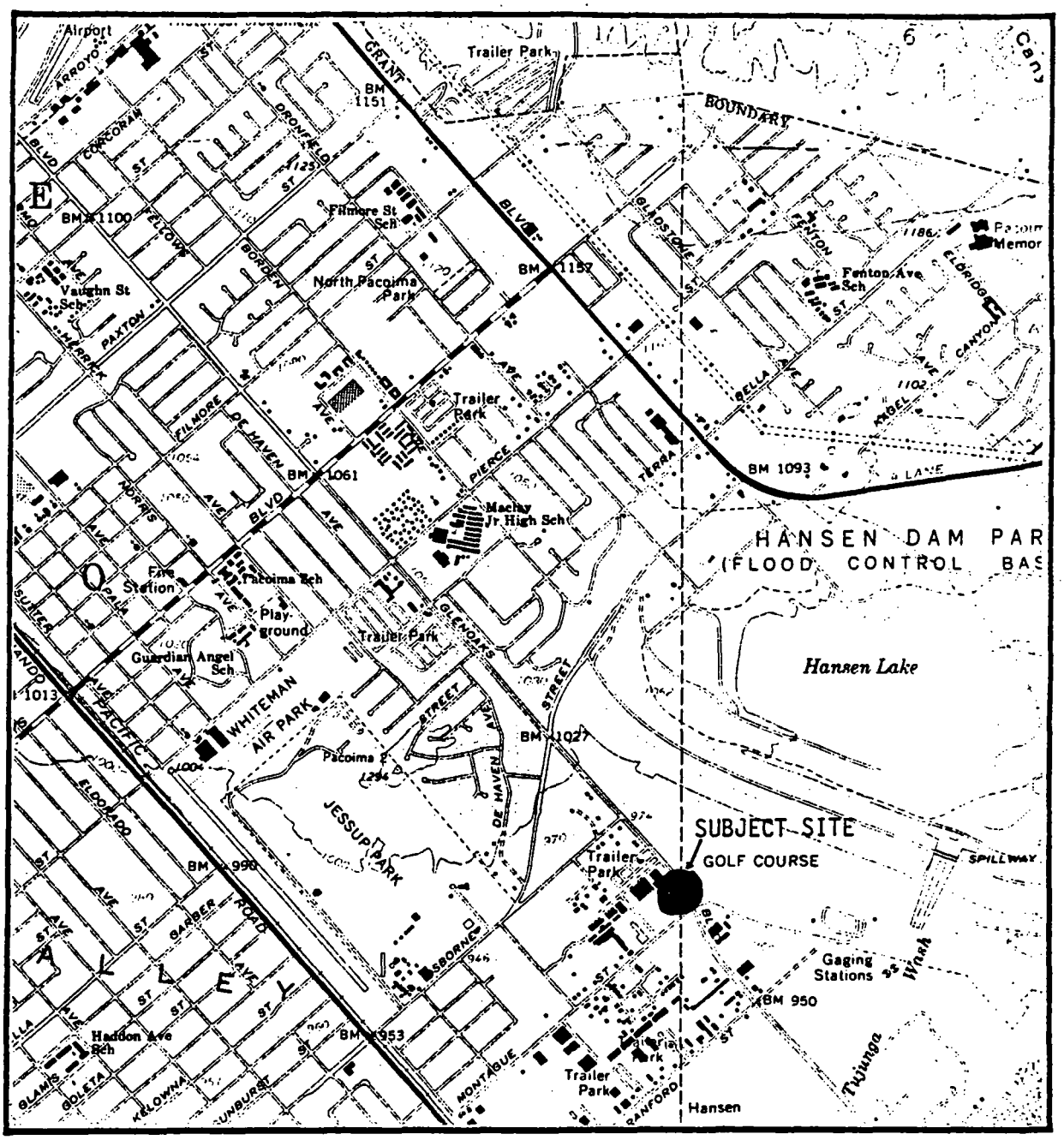
350036

25530 AVENUE STANFORD, SUITE 208, VALENCIA, CALIFORNIA 91355 (800) 253-4567 • (805) 257-0150 • (818) 881-6031

IRVINE • WESTLAKE/VENTURA • DIAMOND BAR/WALNUT • SAN BERNARDINO/RIVERSIDE • SAN DIEGO
PALM DESERT • SANTA CLARITA/VALENCIA

7841189-01

INDEX MAP



0 2000 4000

scale feet

H. R. TEXTRON

10445 GLENOAKS BOULEVARD

CITY OF PACOIMA

(Subject Site Shown in Yellow)

Base Map: USGS San Fernando Quadrangle

350037

LEIGHTON and ASSOCIATES INCORPORATED

Site Description and Background

The subject site is located west of the Verdugo Hills in the northwesterly portion of the San Fernando Valley. The Textron plant consists of a large manufacturing building and smaller adjacent storage and support buildings occupying the majority of the site. The remaining portion of the site is covered with asphaltic concrete pavement. Drainage of the site is by sheet flow to concrete swales and directed to offsite gutters and streets.

On May 22, 1984, two borings were drilled at Tank Site 1. One boring was made at Tank Site 2 on May 23, 1984 (see Plot Plan). No obvious contamination was detected at Tank Site 1. Obvious contamination was found at Tank Site 2. Analysis of soil samples taken at the tank site indicated contamination from Stoddard solvent, oil and grease, heavy metals, and trace amounts of tetrachloroethylene. Results of the analysis are included in Appendix A.

Onsite Sampling and Analysis

Tank 2 was removed on January 30, 1985. Stained soil below the tank was removed to a depth of 6± feet. Two relatively undisturbed samples were taken at this elevation. To obtain these samples, our field representative was protected by a disposable suit, rubber gloves, and a full-face respirator. The soil samples were taken in 3-inch long brass tubes, capped at both ends with teflon caps, properly identified, and placed on ice. Readings with a photoionization detector indicated contamination in the northeasterly portion of the excavation at about 48 parts per million (ppm) at 6± feet below the existing ground. More soil was then removed to a depth of 8± feet below the existing grade. Two more samples were obtained as previously described. The photoionization detector readings at this location were 38 ppm at that elevation. On January 31, 1985, soil was removed to a depth of 12 feet below existing ground. The onsite representative of the Regional Quality Control Board indicated that the depth of removal was acceptable pending further sampling and analysis. One soil sample was taken at that depth. The photoionization detector reading was 70 ppm in the excavation at that depth.

Analyses were conducted on the soil samples taken at 8± feet and 12± feet for volatile organics, total hydrocarbons, and oil and grease content. The results of the laboratory analyses are presented in Appendix A.

Summary of Analysis

The results of laboratory analyses indicate that the major contaminants present vary with depth as follows:

Contaminants	8 ft (ppm)	12 ft (ppm)
trichloroethane	120 to 210	230
tetrachloroethylene	11 to 14	8
cyclohexane compounds	20 to 100	10 to 100
oil and grease	11,000 to 18,000	11,000
total petroleum hydrocarbons	9,100 to 14,000	7,300

The cyclohexane compounds as well as oil and grease and petroleum hydrocarbons are probably indicative of the constituents of Stoddard solvent previously contained by the tank.

Conclusions and Recommendations

General Conclusions

The following conclusions are presented, based upon our field observations and results of laboratory analysis on selected soil samples.

1. 1, 1, 1 trichlorethane contamination appeared to increase slightly with depth.

2. Tetrachlorethylene contamination appeared to decrease with depth.

3. Cyclohexane compound contamination appeared to be constant with depth.

4. Total hydrocarbon contamination appeared to decrease with depth. Oil and grease contamination appeared to be constant with depth.

5. Removal of obviously contaminated (stained) soil to clean material in the northeasterly portion of the excavation was conducted as requested by the representative of the Regional Water Quality Control Board. Soils removed from the excavation were properly disposed of in an appropriate Class II landfill.

6. Depth to ground water below the site is unknown at this time. No water was observed in the 43-foot boring drilled on May 23, 1984, nor was water encountered in the excavation of January 31, 1985.

Recommendations

1. If the excavation is to remain open for an extended period of time, berms should be constructed around the perimeter to prevent runoff from entering the excavation. Further, the surface of the excavation should be covered to prevent rain from entering.

2. Backfill of the excavation should be made with clean, granular soils. The upper 3 feet of the backfill should be compacted to a minimum of 90 percent of maximum density as determined by ASTM Test Method D1557-78, Method C. Placement and compaction of the backfill should be observed and tested by the soils engineer prior to paving.

3. The excavation should be paved with an impermeable material such as asphaltic concrete or concrete to prevent water from entering the backfilled excavation.

7841189-01

If you have any questions regarding our report, please do not hesitate to contact this office. We appreciate this opportunity to be of service.

Respectfully submitted,

LEIGHTON AND ASSOCIATES, INC.

Dale Radford

Dale Radford
Senior Geotechnical Engineer

Thomas E. Mills

Thomas E. Mills
Project Manager

Bruce R. Hilton

Bruce R. Hilton, CEG 1151
Chief Engineering Geologist

DER/TM/BH/dmh

Distribution: (6) Addressee

LEIGHTON and ASSOCIATES
INCORPORATED

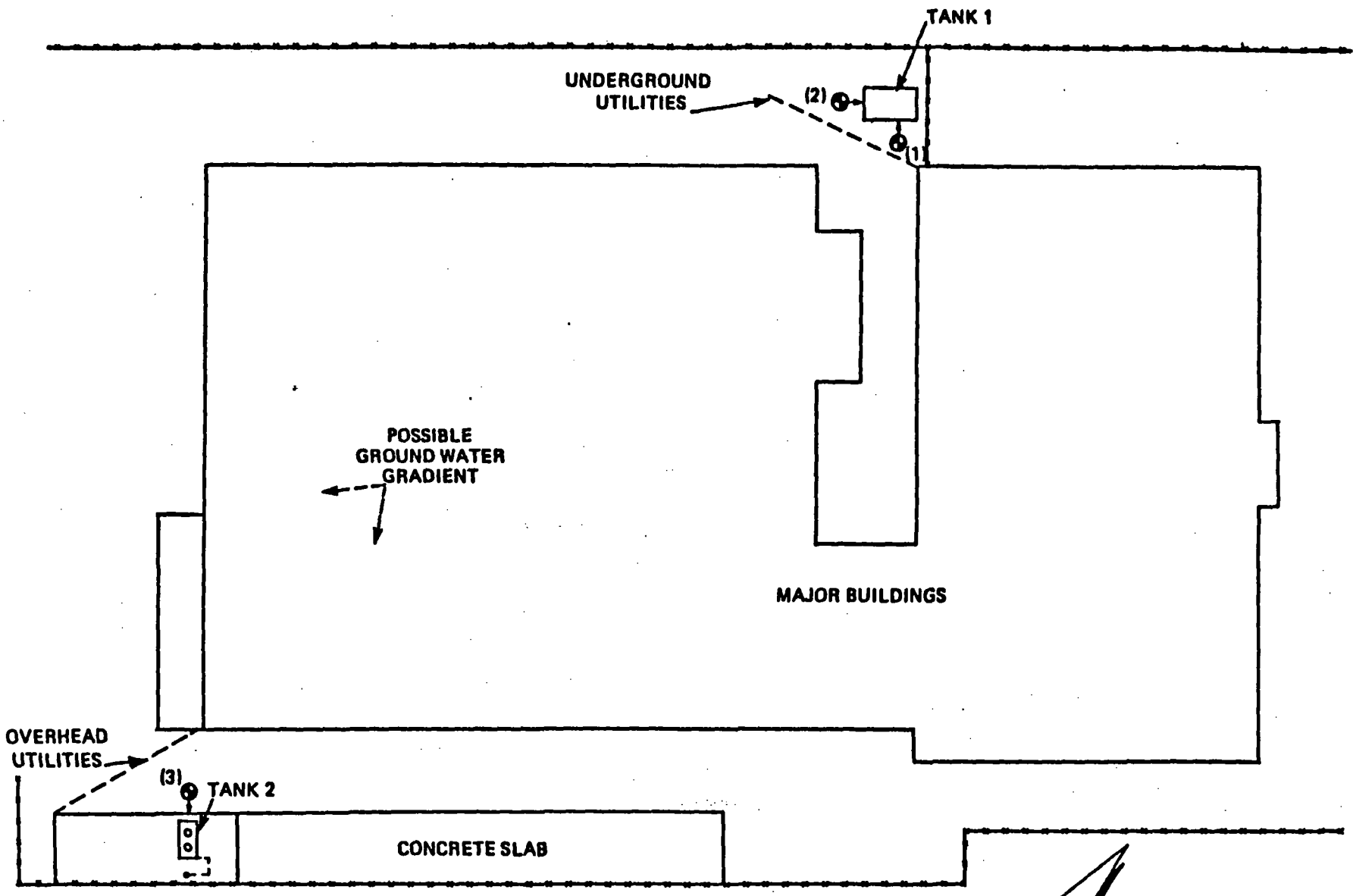


PLATE 1

EXPLANATION

⊙ APPROXIMATE SLANT BORING LOCATIONS

(1) BORING NUMBER

H. R. TEXTRON
10445 Glen Oaks Boulevard
Pacioma, California

PLATE 1. PLOT PLAN SHOWING SOIL BORING LOCATIONS

850038

7841189-01

CHEMICAL ANALYSIS OF SAMPLE COMPOSITE #3 BY OTHERS

I	
Priority Pollutants	Tetrachloroethylene (Trace Amount)
Non-Priority Pollutants	Stoddard Solvent 2400 μg/g
II	
Oil and Grease	23,400 μg/g
pH	5.90
Al	7,260 μg/g
Cu	8.0 μg/g
Fe	10,500 μg/g
Mn	164 μg/g

Date Sampled: May 23, 1984

TEXTRON, PACOIMA
LABORATORY TEST RESULTS

Sample No. 3 at 8 feet, northeasterly portion of excavation.

Lower limit of detection = 0.6 mg/kg

		Concentration
A.	Purgeable Priority Pollutants	
	1,1-Dichloroethane	2
	1,1,1-Trichloroethane	210
	Trichloroethylene	0.6
	Tetrachloroethylene	11
B.	Semi-Quantified Results	
	C-9 hydrocarbon	20
	Ethylmethylcyclohexane	100
	Trimethylcyclohexane	30
	Cyclohexane	20
C.	Oil and Grease	18,000
	Total petroleum hydrocarbons	14,000

TEXTRON, PACOIMA
LABORATORY TEST RESULTS

Sample No. 4 at 8 feet, southeasterly portion of excavation.

Lower limit of detection = 0.3 mg/kg

		Concentration
A.	Priority Pollutants	
	1,1-Dichloroethylene	0.3
	1,1-Dichloroethane	0.6
	1,1,1-Trichloroethane	12.0
	Trichloroethylene	0.9
	Tetrachloroethylene	14
	Toluene	2
B.	Non-Priority Pollutants	
	C-9 Hydrocarbon	20
	Ethylmethylcyclohexane	100
	Trimethylcyclohexane	30
	Cyclohexane	20
	Xylene isomers	4
C.	Oil and Grease	11,000
	Total petroleum hydrocarbons	9,100

TEXTRON, PACIOMA
LABORATORY TEST RESULTS

Sample No. 5 at 12 feet, northeasterly portion of excavation.

Lower limit of detection = 2 mg/kg

	Concentration
A. Purgeable Priority Pollutants	
1,1,1-Trichloroethane	230
Tetrachloroethylene	8
B. Semi-Quantified Results	
A C9H16 Hydrocarbon	30
Ethly Methyl Cyclohexane	100
Alkyl Cyclohexane	20
Cyclohexane	10
C. Oil and Grease	11,000
Total hydrocarbons	7,300

...ia—Health and Welfare Agency

Department of Health Services
Toxic Substances Control Division
Sacramento, California

...nt or type. (Form designed for use on elite (12-pitch) typewriter.) Profile # E0567

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAD041162330 Manifest Document No. 96707
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
H K Textron
10445 Glenoaks Blvd.
Pacoima, CA, 91331
010-896-2411

4. Generator's Phone ( )

A. State Manifest Document Number: 84446409
B. State Generator's ID: CAD041162330

5. Transporter 1 Company Name: American Environmental
6. US EPA ID Number: CAD067825364
C. State Transporter's ID: 50333
D. Transporter's Phone: 916-7056666

7. Transporter 2 Company Name:
8. US EPA ID Number:
E. State Transporter's ID:
F. Transporter's Phone:

9. Designated Facility Name and Site Address
Environmental Protection Corp.
3040 19th Street
Bakersfield, CA 93301
10. US EPA ID Number: CAD030384267
G. State Facility's ID: CAD030384267
H. Facility's Phone: (805) 399-8644

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. NA 9189 Hazardous waste Solid NOS - orm - E	1	DT	18	Y	611
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above
A,1 Soil 98 %
A,2 Soluble cutting oil 1 %
A,3 Stoddard Solvent <1 %

K. Handling Codes for Wastes Listed Above: 03

15. Special Handling Instructions and Additional Information
Gloves, Boots
2

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

Printed/Typed Name	Signature	Date Month Day Year
Chuck Youngjohn	Chuck Youngjohn	01 30 85

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month Day Year
Michael W Tweddle	Michael W Tweddle	01 30 84

18. Transporter 2 Acknowledgement or Receipt of Materials

Printed/Typed Name	Signature	Date Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Date Month Day Year
David Hankins	David Hankins	01 30 85

HS 8022 A (7/84)
PA 8700-22)

Yellow: TSDF SENDS THIS COPY TO GENERATOR WITHIN 30 DAYS

Fld-91 EPC # 42435 18 yds ✓

84 80541

California—Health and Welfare Agency

Department of Health Services
Toxic Substances Control Division
Sacramento, California

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Profile # W0176

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAD041162330
Manifest Document No.
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
HR TEXTRON
10445 GLENOAKS BLVD.
PACOIMA, CA. 91331
4. Generator's Phone (818) 896-8411

A. State Manifest Document Number 84366190
B. State Generator's ID CAD041162330

5. Transporter 1 Company Name: AMERICAN ENVIRONMENTAL
6. US EPA ID Number: CAD067825364
C. State Transporter's ID 50160
D. Transporter's Phone 916-985-6666

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
ENVIRONMENTAL PROTECTION CORP.
3040 19TH STREET
BAKERSFIELD, CA. 93301
10. US EPA ID Number: CAT080010283
G. State Facility's ID CAT080010283
H. Facility's Phone (805) 768-4806

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. NA 9187 HAZARDOUS WASTE LIQUID N.O.S. ORM-E	1	T	02300	G	241
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above
A.1 WATER - 90%
A.2 SOIL - 8%
A.3 SOLUBLE OIL - 2%

K. Handling Codes for Wastes Listed Above
04

15. Special Handling Instructions and Additional Information
GLOVES AND GOGGLES

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

Printed/Typed Name	Signature	Date (Month Day Year)
CHUCK TEXTRON	[signature]	01 30 85

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date (Month Day Year)
TOM MAGNESS	[signature]	1 30 85

18. Transporter 2 Acknowledgement or Receipt of Materials

Printed/Typed Name	Signature	Date (Month Day Year)

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Date (Month Day Year)
[illegible] SANDERS	[signature]	1 30 85

GENERATOR / TRANSPORTER / FACILITY

DHS 8022 A (7/84)
(DHS 8700-22)

Yellow: TSDF SENDS THIS COPY TO GENERATOR WITHIN 30 DAYS

84 80641

Department of Health Services
Toxic Substances Control Division
Sacramento, California

...n designed for use on elite (12-pitch) typewriter.) Profile # E0867

...RM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: CAD041162330 | Manifest Document No.:
2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: P K Textrod, 10445 Glenoaks Blvd., Pacoima, CA 91331
4. Generator's Phone (818) 876-2411

A. State Manifest Document Number: 84446411
B. State Generator's ID: CAD041162330

5. Transporter 1 Company Name: American Environmental
6. US EPA ID Number: CAD067825364
C. State Transporter's ID: 50333
D. Transporter's Phone: 916-7856666

7. Transporter 2 Company Name:
8. US EPA ID Number:
E. State Transporter's ID:
F. Transporter's Phone:

9. Designated Facility Name and Site Address: Environmental Protection Corp., 3040 19th Street, Bakersfield, Ca. 93301
10. US EPA ID Number: CAD030384267
G. State Facility's ID: CAD030384267
H. Facility's Phone: 606 399-8644

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. NA 9187 Hazardous Waste Solid NOS - orm-E	1	DT	1.8	Y	611
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above
A1 Soil 98 %
A2 soluble cutting oil 1 %
A3 Studdered solvent <1 %

K. Handling Codes for Wastes Listed Above: 03

15. Special Handling Instructions and Additional Information
Gloves + Boots

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

Printed/Typed Name: Chuck Y. Jenn | Signature: [signature] | Date: Month 01 Day 31 Year 85

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Michael W Tweedle | Signature: Michael W Tweedle | Date: Month 01 Day 31 Year 85

18. Transporter 2 Acknowledgement or Receipt of Materials
Printed/Typed Name: | Signature: | Date: Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Val Fitzsimmons | Signature: [signature] | Date: Month 01 Day 31 Year 85

DHS 8022 A (7/84)
(...A 8700-22)

Yellow: TSDF SENDS THIS COPY TO GENERATOR WITHIN 30 DAYS

84 89641

California—Health and Welfare Agency

Department of Health Services
Toxic Substances Control Division
Sacramento, California

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Profile # E0867

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: CAD041162330 — Manifest Document No.:
2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: HR Textron, 10445 Glenoak Blvd., Pacoima, CA
4. Generator's Phone (818) 896-2411
5. Transporter 1 Company Name: American Environmental
6. US EPA ID Number: CAD067825364
7. Transporter 2 Company Name:
8. US EPA ID Number:
9. Designated Facility Name and Site Address: Environmental Protection Corp., 3040 19th Street, Bakersfield, CA 93301
10. US EPA ID Number: CAD030384267

A. State Manifest Document Number: 84446488
B. State Generator's ID: CAD041162330
C. State Transporter's ID: 50333
D. Transporter's Phone: 916-985-6666
E. State Transporter's ID:
F. Transporter's Phone:
G. State Facility's ID: CAD030384267
H. Facility's Phone: 606-399-8644

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. NA 9189 Hazardous waste solid NOS - ORM-E	1	DT	18	Y	611
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above
A1 soil 98 %
A2 Soluble oil (cutting) 1 %
A3 Studded Solvent <1 %

K. Handling Codes for Wastes Listed Above: 03

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

Printed/Typed Name: Chuck Townsend — Signature: [signature] — Date: Month Day Year: 02 01 85

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Michael W Tweddle — Signature: Michael W Tweddle — Date: Month Day Year: 02 01 85

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: — Signature: — Date: Month Day Year:

19. Discrepancy Indication Space
Quantity in truck was 12 yds, rather than 18 yds.

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: DAVID HANKINS — Signature: David Hankins — Date: Month Day Year: 02 01 85

DHS 8022 A (7/84) EPA 8700-22) Fld-Pl Yellow: TSDF SENDS THIS COPY TO GENERATOR WITHIN 30 DAYS EPS# 42466

84 80541

2166-04746

PACOIMA REMEDIATION 1986

RESPONSE TO QUESTION 7 PAGE 9

2166-04746

cc: Mini
2-9-87
please file
Pac Tanks - Test results

HR TEXTRON

HR Textron Inc.
a Subsidiary of Textron Inc.

25200 West Rye Canyon Road
Valencia, Calif. 91355
805/259-4030

TWX 910/336/1438 TELEX 65/1492

February 5, 1987

Mr. Dave Bacharowski
California Regional Quality
Control Water Board
107 South Broadway, Suite 4027
Los Angeles, CA 90012-4596

Dear Dave,

Enclosed are the boring logs from the soil sample taken at the American Fence Company for HR Textron's Pacoima's remedial program.

We hope this data will be enough to permit you to authorize us to start our Pacoima test program.

Thank you.

Sincerely,

Betty J. Seldner

Betty J. Seldner
Director, Environmental Management
and Communications

BJS:cg

Enclosure

350039

envirepro inc.
Environmental and Hazardous Waste Technology

Ms. Betty Seldner
Director, Environmental Management
H R Textron
25200 W. Rye Canyon Road
Valenica, CA 91355

February 3, 1987
Project No. 12112

Dear Ms. Seldner:

In accordance with your telephone request of February 3, 1987, we are transmitting field drilling records for TH 1 and TH 2, H R Textron-Pacoima to you.

If we can provide additional information, please contact Enviropro's office at: (818) 998-7197.

Yours very truly,

ENVIROPRO, INC.

M. Uziel

Michael M. Uziel Ph.D.
President

Harry Kues

Harry Kues C.E.G.
Sr. Hydrogeologist

ENVIROPRO, INC. (818) 998-7197
8475 Canoga Avenue Canoga Park, CA 91311

Field Drilling Record

Project Name: H R Textron - Pacoima Project #: 12102

Location: 10445 Glenoaks Blvd., Pacoima Sheet: 1 of 4

Boring #: TH 1 Date: 4-29-86 Field Geologist: George Pavlov

Checked by Geologist: Harry Kues Harry Kues Lic. #: 264

Drill Co. Datum Exploration Drilling technique: Hollow stem auger B-61HD

Boring Diameter: 8" Sampler Standard penetrometer

Authorized Signature:

Depth (Ft.) of Sample	Sample C=Chem. G=Geo.	Blows	Graphic Log	Descriptive Data, i.e. Color; Moisture; Grain Size; Sorting, etc.
0 - 2	--	--		Dark brown Silt with pebbles up to 50 mm.
2	C,G	2-3-5/18		Dark gray medium Sand, some silt, damp, loose.
3 - 5	C,G	8-16-18/18		Dark brown medium Sand with few gravelly particles, loose, damp.
5	C,G	6-6-5/18		Red cuttings from bricks, pieces of brown rock.
6.5	C,G	6-13-10/		Red to brown cuttings from bricks, piece of wire. The samplings plugged with brown sandy Clay.
8		10-17-36/		Dark brown medium Sand and Silt with few pebbles, loose, slightly damp.

ENVIROPRO, INC. (818) 995-7197
8475 Canoga Avenue Canoga Park, CA 91311

Field Drilling Record

Project Name: H R Textron - Pacoima Project #: 12102

Location: 10445 Glenoaks Blvd., Pacoima Sheet: 2 of 4

Boring #: TH 1 Date: 4-29-86 Field Geologist: George Pavlov

Checked by Geologist: Harry Kues Lic. #: 264

Drill Co. Datum Exploration Drilling technique: Hollow stem auger B-61HD

Boring Diameter: 8" Sampler Standard penetrometer

Authorized Signature:

Depth (Ft.) of Sample	Sample C=Chem. G=Geo.	Blows	Graphic Log	Descriptive Data, i.e. Color; Moisture; Grain Size; Sorting, etc.
9.5	C,G	27-27-27/18		Yellowish brown medium Sand to gravel, pebbles up to 35 mm (70%), loose, damp.
11	C,G	22-26-29/18		Light yellowish gray ill sorted medium to coarse Sand with pebbles up to 35mm, loose, slightly damp.
12.5	C,G	14-19-22/18		Light yellowish gray ill sorted medium to coarse Sand with pebbles up to 15 mm, loose, damp.
14	C,G	15-10-12/18		Light yellowish gray medium to coarse Sand with pebbles up to 25 mm, loose, damp.
15.5	C,G	20-25-31/		Light yellowish brown ill sorted medium to coarse Sand with pebbles up to 30 mm, loose, damp.

ENVIROPRO, INC. (818) 998-7197
8475 Canoga Avenue Canoga Park, CA 91311

Field Drilling Record

Project Name: H R Textron - Pacoima Project #: 12102

Location: 10445 Glenoaks Blvd., Pacoima Sheet: 3 of 4

Boring #: TH 1 Date: 4-29-86 Field Geologist: George Pavlov

Checked by Geologist: Harry Kues Harry Kues Lic. #: 264

Drill Co. Datum Exploration Drilling technique: Hollow stem auger B-61HD

Boring Diameter: 8" Sampler Standard penetrometer

Authorized Signature:

Depth (Ft.) of Sample	Sample C=Chem. G=Geo.	Blows	Graphic Log	Descriptive Data, i.e. Color; Moisture; Grain Size; Sorting, etc.
17		16-19-20/18		Light yellowish brown ill sorted medium to coarse Sand, gravel up to 30 mm, loose, slightly damp.
18.5		14-26-26/18		Upper 1" fine Sand and Silt, damp, friable. The rest is yellowish brown ill sorted medium Sand with minor clay, loose, damp.
20		25-17-18/18		Light yellowish brown ill sorted medium to coarse Sand and pebbles up to 30 mm, loose, damp. Lowest 2" dark brown sticky, silty Clay, damp.
24.5		10-18-26/18		Yellowish brown silty to sandy Clay, damp. Clay starts between 23 and 24 feet.

ENVIROPRO, INC. (818) 998-7197
8475 Canoga Avenue Canoga Park, CA 91311

Field Drilling Record

Project Name: H R Textron - Pacoima Project #: 12102

Location: 10445 Glenoaks Blvd., Pacoima Sheet: 4 of 4

Boring #: TH 1 Date: 4-29-86 Field Geologist: George Pavlov

Checked by Geologist: Harry Kues Lic. #: 264

Drill Co. Datum Exploration Drilling technique: Hollow stem auger B-61HD

Boring Diameter: 8" Sampler Standard penetrometer

Authorized Signature: _____

Depth (Ft.) of Sample	Sample C=Chem. G=Geo.	Blows	Graphic Log	Descriptive Data, i.e. Color; Moisture; Grain Size; Sorting, etc.
29.5		12-19-29/18		Dark brown silty Clay with pebbles up to 30 mm, damp.
34.5		29-64-64/18		Light yellowish brown medium to coarse Sand and Pebbles with chips from bigger cobbles, loose, damp.
38	--	--		Big bolder, drill shakes and jumps. End of the hole.

ENVIROPRO, INC. (818) 998-7197
8475 Canoga Avenue Canoga Park, CA 91311

Field Drilling Record

Project Name: H R Textron - Pacoima Project #: 12102

Location: 10445 Glenoaks Blvd., Pacoima Sheet: 1 of 8

Boring #: TH 2 Date: 4-29-86 Field Geologist: George Pavlov

Checked by Geologist: Harry Kues Lic. #: 264

Drill Co. Datum Exploration Drilling technique: Hollow stem auger B-61HD

Boring Diameter: 8" Sampler Standard penetrometer

Authorized Signature:

Depth (Ft.) of Sample	Sample C=Chem. G=Geo.	Blows	Graphic Log	Descriptive Data, i.e. Color; Moisture; Grain Size; Sorting, etc.
3				Yellowish brown Silt, friable.
5		6-15-13		Yellowish gray medium Sand with
10		22-18-18		gravel particles (<1%) and pebbles up to 30 mm, loose, damp.
15		8-8-8		Yellowish brown ill sorted medium Sand with silt and minor clay, damp, friable.
18	--	--		Clayey Silt, friable.
20		8-10-10		Dark brown silty Clay, damp, stiff.
		18-27-30		Light yellow brown silty Clay with Sand particles, damp.

ENVIROPRO, INC. (818) 996-7197
8475 Canoga Avenue Canoga Park, CA 91311

Field Drilling Record

Project Name: H R Textron - Pacoima Project #: 12102

Location: 10445 Glenoaks Blvd., Pacoima Sheet: 2 of 8

Boring #: TH 2 Date: 4-29-86 Field Geologist: George Pavlov

Checked by Geologist: Harry Kues Harry Kues Lic. #: 264

Drill Co. Datum Exploration Drilling technique: Hollow stem auger B-61HD

Boring Diameter: 8" Sampler Standard penetrometer

Authorized Signature:

Depth (Ft.) of Sample	Sample C=Chem. G=Geo.	Blows	Graphic Log	Descriptive Data, i.e. Color; Moisture; Grain Size; Sorting, etc.
25	C,G	17-21-23/18		Dark brown clayey Silt. 10" from the bottom is yellowish brown fine Sand to Silt, damp, friable.
30	C,G	20-45-50/18		Light brown fine and coarse Sand with pieces of broken pebbles, loose, slightly damp.

ENVIROPRO, INC. (818) 998-7197
8475 Canoga Avenue Canoga Park, CA 91311

Field Drilling Record

Project Name: H R Textron - Pacoima Project #: 12102

Location: 10445 Glenoaks Blvd., Pacoima Sheet: 3 of 8

Boring #: TH 2 Date: 4-30-86 Field Geologist: George Pavlov

Checked by Geologist: Harry Kues Harry Kues Lic. #: 264

Drill Co. Datum Exploration Drilling technique: Hollow stem auger B-61HD

Boring Diameter: 8" Sampler Standard penetrometer

Authorized Signature:

Depth (Ft.) of Sample	Sample C=Chem. G=Geo.	Blows	Graphic Log	Descriptive Data, i.e. Color; Moisture; Grain Size; Sorting, etc.
35	C,G	4-4/ - 60/ 12 4		Olive brown medium to coarse Sand with silt, damp, friable.
40	C,G	50/ - 100/ 2 2		Light brown ill sorted medium Sand, loose, damp. On the opening of the sampler piece of rock.
45		100/6		Yellowish brown medium to coarse Sand, loose, damp, pieces of cobbles.
50	C,G	12-18-32/ 18		Yellowish brown sandy to silty Clay, damp, friable.
55	C,G	86/6		Light gray coarse Sand with pebbles and cobbles, loose, damp.

ENVIROPRO, INC. (818) 993-7197
8475 Canoga Avenue Canoga Park, CA 91311

Field Drilling Record

Project Name: H R Textron - Pacoima Project #: 12102

Location: 10445 Glenoaks Blvd., Pacoima Sheet: 4 of 8

Boring #: TH 2 Date: 4-30-86 Field Geologist: George Pavlov

Checked by Geologist: Harry Kues Lic. #: 264

Drill Co. Datum Exploration Drilling technique: Hollow stem auger B-61HD

Boring Diameter: 8" Sampler Standard penetrometer

Authorized Signature:

Depth (Ft.) of Sample	Sample C=Chem. G=Geo.	Blows	Graphic Log	Descriptive Data, i.e. Color; Moisture; Grain Size; Sorting, etc.
60	C,G	114/6		Yellowish gray medium to coarse Sand with pebbles, loose, damp. HNU = 0.3.
65	C,G	120/6		Gray medium to coarse Sand with pebbles, loose, damp. HNU = 0.3

ENVIROPRO, INC. (818) 995-7197
8475 Canoga Avenue Canoga Park, CA 91311

Field Drilling Record

Project Name: H R Textron - Pacoima Project #: 12102

Location: 10445 Glenoaks Blvd., Pacoima Sheet: 5 of 8

Boring #: TH 2 Date: 5-1-86 Field Geologist: George Pavlov

Checked by Geologist: Harry Kues Harry Kues Lic. #: 264

Drill Co. Datum Exploration Drilling technique: Hollow stem auger B-61HD

Boring Diameter: 8" Sampler Standard penetrometer

Authorized Signature:

Depth (Ft.) of Sample	Sample C=Chem. G=Geo.	Blows	Graphic Log	Descriptive Data, i.e. Color; Moisture; Grain Size; Sorting, etc.
70	C,G	90/ - 50/ 6 3		Olive gray medium to coarse Sand with gravel particles and pebbles up to 20 mm, loose, damp. HNU = .6 ppm.
75	C,G	165/ - 100/ 6 3		Wethered pieces of rocks broken by the sampler to medium size gray Sand. The rest is yellowish brown medium size Sand, damp, loose. HNU = 0.6 ppm.
80	C,G	86/ - 64/ 6 1		Pieces of wethered rocks reduced to medium to coarse Sand. The rest is yellowish brown medium to coarse Sand with pebbles, loose, slightly damp. HNU = 0.6 ppm.

ENVIROPRO, INC. (818) 998-7197
8475 Canoga Avenue Canoga Park, CA 91311

Field Drilling Record

Project Name: H R Textron - Pacoima Project #: 12102

Location: 10445 Glenoaks Blvd., Pacoima Sheet: 6 of 8

Boring #: TH 2 Date: 5-1-86 Field Geologist: George Pavlov

Checked by Geologist: Harry Kues Lic. #: 264

Drill Co. Datum Exploration Drilling technique: Hollow stem auger B-61HD

Boring Diameter: 8" Sampler Standard penetrometer

Authorized Signature:

Depth (Ft.) of Sample	Sample C=Chem. G=Geo.	Blows	Graphic Log	Descriptive Data, i.e. Color; Moisture; Grain Size; Sorting, etc.
85		89/ - 50/ 6 7		Light gray to yellowish gray medium with coarse Sand, granules and pieces of gravel, loose, slightly damp. HNU = 0.6 ppm.
90				Light gray fine to coarse Sand with gravel, loose, slightly damp. HNU = 0.7 ppm.
94	--	--		Drlled through a big cobble. Drill was shaking strongly.
95		400/16		Very tight sample. Mostly silty fine to medium light gray ill sorted Sand. Minor yellowish brown Sand, slightly damp. HNU = 0.5 ppm.

ENVIROPRO, INC. (818) 998-7197
8475 Canoga Avenue Canoga Park, CA 91311

Field Drilling Record

Project Name: H R Textron - Pacoima Project #: 12102

Location: 10445 Glenoaks Blvd., Pacoima Sheet: 7 of 8

Boring #: TH 2 Date: 5-1-86 Field Geologist: George Pavlov

Checked by Geologist: Harry Kues Lic. #: 264

Drill Co. Datum Exploration Drilling technique: Hollow stem auger B-61HD

Boring Diameter: 8" Sampler Standard penetrometer

Authorized Signature:

Depth (Ft.) of Sample	Sample C=Chem. G=Geo.	Blows	Graphic Log	Descriptive Data, i.e. Color; Moisture; Grain Size; Sorting, etc.
100	C,G	200/12		At the opening of the sampler few crushed pebbles. Next 10" medium olive gray Sand. The upper 2" yellowish brown medium Sand, very little moisture. HNU = 0.5 ppm.
105	C,G	200/12		Gray medium to coarse silty Sand with gravel, tight, slightly damp. HNU = 0.5 ppm.
110	C,G	200/12		Light gray fine to coarse Sand, with some gravel, tight, ill sorted, damp. HNU = 0.7 ppm.
115	C,G	200/10		Light gray silty medium Sand with gravel, loose, damp. HNU = 0.4 ppm.

ENVIROPRO, INC. (818) 998-7197
8475 Canoga Avenue Canoga Park, CA 91311

Field Drilling Record

Project Name: H R Textron - Pacoima Project #: 12102

Location: 10445 Glenoaks Blvd., Pacoima Sheet: 8 of 8

Boring #: TH 2 Date: 5-1-86 Field Geologist: George Pavlov

Checked by Geologist: Harry Kues Harry Kues Lic. #: 264

Drill Co. Datum Exploration Drilling technique: Hollow stem auger B-61HD

Boring Diameter: 8" Sampler Standard penetrometer

Authorized Signature:

Depth (Ft.) of Sample	Sample C=Chem. G=Geo.	Blows	Graphic Log	Descriptive Data, i.e. Color; Moisture; Grain Size; Sorting, etc.
120	C,G	200/ - 100/ 4 4		Light Yellowish gray silty fine Sand intermixed with gravelly particles from 3 mm to 40 mm, loose, slightly damp. HNU = 0.5 ppm.

2166-04746

WORK PLAN AND TIMETABLE

FOR

SITE ASSESSMENT AND
REMEDIAL INVESTIGATION
OF CHEMICALS' RELEASE
FROM UNDERGROUND TANK
at the Pacokma, California, Facility

Submitted to

Mrs. Betty J. Seldner
Director, Environmental Management
H R Textron Inc.
25200 West Rye Canyon Road
Valencia, CA 91355

February 28, 1986

By

Enviropro, Inc.
11927 Estrada Lane
Northridge, California 91326
(818) 366-5682

Project Manager

Michael Uziel Ph.D.

Project No. 12102

350040

ENVIROPRO, INC. • 11927 Estrada Lane • Northridge, CA 91326 • (818) 366-5682
ENVIRONMENTAL-HAZARDOUS WASTE AND CHEMICAL TECHNOLOGY

February 28, 1986

Mrs. Betty Seldner
Director, Environmental Management
H R Textron Inc.
25200 West Rye Canyon Road
Valencia, CA 91355

Dear Mrs. Seldner:

Enclosed is Enviropro, Inc.'s work plan and timetable for site assessment and remedial investigation for the facility at Pacoima, California. The work will lead to a site remedial action.

The plan covers the California Regional Water Quality Control Board and the technical requirements for definition of the problem and its solution.

Please call me at (818) 366-5682 for questions and discussion.

Very truly yours,

M. Uziel

ENVIROPRO, INC.

Michael M. Uziel, Ph.D.

TABLE OF CONTENTS

Section	Title	Page
1.	EXECUTIVE SUMMARY	1
2.	INTRODUCTION	2
3.	THE WORK PLAN'S GOAL AND OBJECTIVES	5
	3.1 Goal	5
	3.2 Objectives	5
4.	WORK PLAN FOR SITE ASSESSMENT AND REMEDIAL INVESTIGATION	7
	4.1 Define the Local Geology and Hydrogeology	7
	4.2 Chemical Investigation of Soil and Ground Water	9
	4.2.1 Background Water Quality	9
	4.2.2 Background Level of Pollutants Controls	9
	4.2.3 Chemical Pollutants and Indicator Compounds	10
	4.3 The Extent of the Plume	11
	4.4 Other Technical Investigations	18
5.	MATERIALS AND METHODS	18
	5.1 Method of Approach to Data Collection	18
	5.2 Drilling Techniques and Sampling	19
	5.2.1 Drilling and Well Construction Methods and Equipment	19
	5.2.2 Sampling Equipment and Procedures	21
	5.2.3 Lithological Logs and Geological Sample Preservation	24
	5.3 Analytical Chemistry	25
	5.3.1 Field Techniques	25
	5.3.2 Laboratory Analysis	25
	5.3.3 Analytical Procedures	26
	5.4 Safety Plan	28

TABLE OF CONTENTS (Continued)

Section	Title	Page
6.	DEVELOPMENT OF DESIGN CRITERIA FOR REMEDIAL ACTION	28
	6.1 Determination of Cleanup Levels	28
	6.2 Technical Alternatives for Remedial Action	29
7.	MONITORING PLANS	29
8.	PROJECT TIMETABLE	29
9.	REFERENCES	31
10.	APPENDICES	
	A Previous Data by Others	
	B Information on Plume Fingerprinting Techniques	
	C Project Forms 1. Chain of Custody Document	

1. EXECUTIVE SUMMARY

The plan proposed in this document is intended to fully identify, clarify, and solve current soil contamination conditions at H R Textron Inc., 10445 Glenoaks Boulevard, Pacoima, California 91331, so as to enable the company to correct the problem in a methodologically, technically, and economically sound manner. Based on H R Textron's management authorization, it addresses the need for a site assessment and remedial investigation as well as the requests of the California State Regional Water Quality Control Board, Los Angeles Region (RWQCB). The State Engineer in charge of this project is Mr. David Bacharowski.

In July 1984, H R Textron reported a leak of chlorinated solvents and petroleum-based hydrocarbons, mainly oil, grease, and cutting oils to the RWQCB. The leak, originating from a 1000 gallon underground tank, was discovered while undergoing a routine underground leak detection program in response to California law. As a result of a preliminary investigation by others, the RWQCB has requested full remedial site assessment and correction of the problem. This document provides the plan and timetable designed to achieve this goal and correct the problem. The plan calls for a detailed study that will provide the data, appropriate technology and

its correct use, and accomplish the following:

- o Determine the chemical nature of the plume
- o Definition of the vertical and lateral extent of the chemical plume in the vadose zone
- o Determine if the plume has reached ground water
- o Definition of the hydrogeology of the site
- o Definition of the chemical nature and extent of the chemical plume in water, if it has reached ground water
- o Determine the history, class, contents, and exact location of the two landfills situated adjacent to, and possibly under, the site
- o Determine the relation of these two landfills (known to possibly contain industrial waste), to the local hydrogeology
- o Determine the significance, if any, of the soil contamination in perspective of the hydrogeology and the two landfills
- o Evaluate the remedial action options
- o If necessary, plan remedial action; design, construct, and operate a treatment process or implement a remedial program that will solve the problem in the most technical and economical manner possible, to the satisfaction of the RWQCB and H R Textron
- o If necessary, plan a post-remedial action monitoring plan for conformation of remediation, quality control, and protection of the environment.

2. INTRODUCTION

Guidelines for the Leak Detection Program for underground tanks were published in November 1983, by the Los Angeles

Region California Regional Water Quality Control Board (RWQCB) after analysis of questionnaires returned by local industries. The Program requires selected firms to determine if their underground tanks are leaking. The work generally includes location of the tanks, test drilling, soil sampling and installation of appropriate monitoring wells, sampling and analysis of ground water and/or soil, and formal procedures for reporting the results to the RWQCB. Another option available to industry is removal of the tanks followed by soil testing and reporting to the RWQCB. Current California state regulations require an underground tank leak detection program from all owners of underground tanks containing hazardous chemicals. Similar regulations are being phased in on the federal level.

H R Textron Inc. originally owned two underground tanks at its facility located at 10445 Glenoaks Boulevard in Pacoima, California. The tanks (currently only one in use) and their previous contents are described in Table 2.1.

TABLE 2.1

Underground Steel Tanks Used at H R Textron Inc.
10445 Glenoaks Boulevard, Pacoima, California

Tank No.	Material Stored	Tank Volume Gallons	Tank Status
1.	Spill over storage: water and stodddard solvent	6,000	In use
2.	Waste cutting oils and solvents	2,000	Removed

H R Textron, in response to the RWQCB request and guidelines, had performed exploratory drilling, soil sampling, and analysis around the tanks. Chemical analysis of soil found that tank No. 1 had no leaks. This concluded the L.D.P. for this tank. H R Textron has to comply with the City of Los Angeles' regulation regarding monitoring of this tank. This routine work is outside of the scope of this study. H R Textron is in contact with the Los Angeles Fire Department regarding tank No. 1. Soil tests around tank No. 2 detected the presence of chlorinated organic solvents, petroleum-based hydrocarbons, and "oil and greases" that apparently leaked from the tank or fill pipes into the soil. As a result of this detection, additional soil testing, down to 50 ft. were performed. The chemical test results showed various concentrations of solvents and oils in the soil varying in

relation to the tank location. The locations of the soil borings and copy of the soil chemical analysis are presented in Appendix A. The results of preliminary investigations were reported in a report by Earth Tech. dated July 1984, and additional work by Leighton and Associated dated July 30, 1985. The type and concentration of the solvents reported in the soil have prompted the RWQCB to request a site assessment and remedial investigation. Ground water is believed to be deep at this location.

This document is submitted in response to, and in cooperation with the request by the California Regional Water Quality Control Board - Los Angeles Region (RWQCB) for remedial investigation and site assessment at H R Textron Inc. at 10445 Glenoaks Boulevard, Pacoima, California 91331.

3. THE WORK PLAN'S GOAL AND OBJECTIVES

3.1 Goal

The plan proposed in this document is intended to identify and clarify current soil and ground water contamination at H R Textron Inc., and to enable the company, if necessary, to correct the problem, and protect the ground water in a methodologically, technically, and economically sound manner.

3.2 Objectives

The objectives of the proposed work are as follows:

3.2.1 Based on available literature, define the local geology and hydrogeology, including depths of shallow and deep aquifers and location of aquiclude or aquitards.

3.2.2 Prepare a detailed chemical analysis plan.

3.2.3 Determine the type and extent of the soil contamination (plume) in the saturated zone under the previously leaky tank and in its vicinity.

3.2.4 Determine the history, class, contents, and location of the two landfills situated adjacent to, and possibly under, the site.

3.2.5 Determine the relation of these two landfills (known to possibly contain industrial waste) to local hydrogeology.

3.2.6 Explore soil contamination originating from the tank to determine whether chemicals have reached ground water.

3.2.7 Decide whether soil contamination originating from the tank's chemicals have reached the underlying landfills.

3.2.8 Evaluate the technology and economics of alternative remedial action options including (but not limited to): no action, on-site treatment, soil removal, or a combination of options.

3.2.9 Prepare the best cleanup plan for the contaminants plume in the soil.

3.2.10 Design and test the proposed cleanup technology.

Since ground water is estimated to be very deep (100 ft. - 200 ft.) in this area, it is assumed at this time that contamination did not reach the ground water. This is supported by the two 50 ft. exploratory borings that did not meet ground water, and that demonstrated the contamination's exponential disappearance between 40 ft. and 50 ft. If, however, our literature and/or field studies show contamination originating at tank No. 2 close to ground water, monitoring wells will be installed and ground water sampled and analyzed.

4. WORK PLAN FOR SITE ASSESSMENT AND REMEDIAL INVESTIGATION

4.1 Define the Local Geology and Hydrogeology

The movement of pollutants in the soil and with the ground water, and their environmental impact, depends in part on the geology and hydrogeology of the site. This section will concentrate on the identification and definition of the local geology and hydrogeology, including depths of shallow and deep aquifers and location of aquicludes or aquitards. The work will focus especially on zones that may be potentially invaded by the soil contamination. The work will focus also on the

dynamically complex ground water conditions that are influenced by:

- o The general southeast direction of ground water flow
- o The close by Hansen Dam, and its spreading grounds operated by the Los Angeles County Flood Control District (L.A.F.C.D.)
- o The Verdugo Fault located south of the site.

Enviropro, Inc. is especially qualified to evaluate this complex setting since Mr. Harry Kues, R.E.G., the senior hydrogeologist on this project, used to serve as the chief hydrogeologist of Los Angeles County Flood Control District.

Hydrogeological investigations will start by assembling available studies in the area and its vicinity. A good understanding of the nature of the aquifers in this area can, no doubt, be obtained from such studies. The study will also assemble, if available, all material (geological profiles, maps, logs, etc.) from selected existing pumping water wells in the vicinity.

As our work progresses, hydrogeological data from past studies will be collected, accumulated, analyzed, and presented to H R Textron and the RWQCB. This data may be sufficient to avoid the need for extensive field work.

The hydrogeological studies will be summarized in the

following ways:

- o maps and cross-sections of the aquifers in the area;

4.2 Chemical Investigation of Soil and Ground Water

The impact of the soil and ground water contamination depends on the hydrogeology of the site and the general area as discussed elsewhere in this plan, and on the chemical nature of the contaminants. The following factors will be studied:

4.2.1 Background Water Quality

The background water quality, as related to agricultural and human consumption, will be investigated. This data should be available from local utilities and land owners. Simple analysis of a few local parameters may be necessary for a complete picture.

4.2.2 Background Level of Pollutants' Controls

To fully evaluate the influence of chemicals contributed by the H R Textron tank leak, the background of pollutants (if any) in the soil and ground water must be assessed. These could be chemicals originating from other industries in the area and/or from agricultural sources such as fertilizers, pesticides, and herbicides, many of which are on the EPA priority pollutants' list. Our chemical investigation will establish the background level by performing a priority pollutants' scan on

selected "control" samples of soil and ground water using a gas chromatography/mass spectrometry (Ref. 1) scan for organics. We will also test for common agricultural pollutants (Ref. 2, 3) such as ammonia, nitrates, and phosphates.

4.2.3 Chemical Pollutants and Indicator Compounds

The determination of the chemical pollutants to be analyzed will be based on the following:

- Materials historically stored in the underground tanks
- Materials detected in soil
- Materials detected in the background control samples (previous section)
- Materials characteristic to the landfills adjacent to the site.

As a first step, Enviropro, Inc. will obtain a historical list of materials used at H R Textron and the material safety data sheets for each chemical. Mixtures of substances with their trade name identifications will be discussed with the manufacturers and chemically identified. This list will be compared with a complete GC/MS scan of selected soil samples obtained with the following relationship to the chemical plume:

- Control - obviously outside the plume
- At the plume
- At the landfills

The data is expected to produce a profile of both background and plume materials' distribution. Certain

chemicals will be prominent in concentration and/or mobility. As this profile becomes apparent, selected chemicals will be chosen as "Indicator Compounds," and used to trace the plume or background composition. The depth of sampling and number of samples will depend on the geological and hydrological characteristics of the formation of the first three samples (which may be sufficient). Unless agreed otherwise, all soil samples will be routinely tested by VOA, a GC/MS technique (EPA Test No. 8240) and G.C. FID Technique (EPA 8015). As the study progresses and indicator compounds become apparent or obvious, we will propose to the RWQCB to substitute some of the VOA or other tests with equivalent but less encompassing gas chromatography tests. The detailed specifications for the above mentioned chemical tests are presented in Section 5. These indicator compounds may be used later in routine monitoring and quality control.

4.3 The Extent of the Plume

The vertical and lateral extent of the contamination plume will be determined, and a plot plan showing lines of equal contaminant concentration will be prepared.

Since the present extent of the plume in the soil has not been completely determined, we are planning a step-wise approach to avoid unnecessary study and expense. Our first step will be to utilize available data and techniques in an optimal manner. The data

available from the existing few exploration borings start to define the general lateral direction of plume movement and some of its chemical distribution. However, as described later, additional field work is necessary to define the plume. Then, since different chemical compounds move in different fashions, both vertically and laterally, we will attempt to correlate chemical and physical properties with each known material's mode of movement. At this time we plan to correlate parameters such as (but not limited to) density, solubility, molecular polarity (dipole moment), and adsorption coefficients in various soils. This preliminary correlation will define data gaps and unanswered questions.

The next step will be to trace and fingerprint the plume with proven vadose zone gas monitoring methods. Tracing and fingerprinting techniques will be those developed, proven in the field, and published by Petrex, for example (See Appendix B). These surveys rapidly define the vapor phase plumes in the soil as they relate to subsurface interphase movements and concentrations of organic solvents such as chlorinated solvent present in the soil under this site. This technique is especially suitable for the present study since the contaminated soil regions are close to the surface, and therefore are easily and economically accessible. This rapid method of

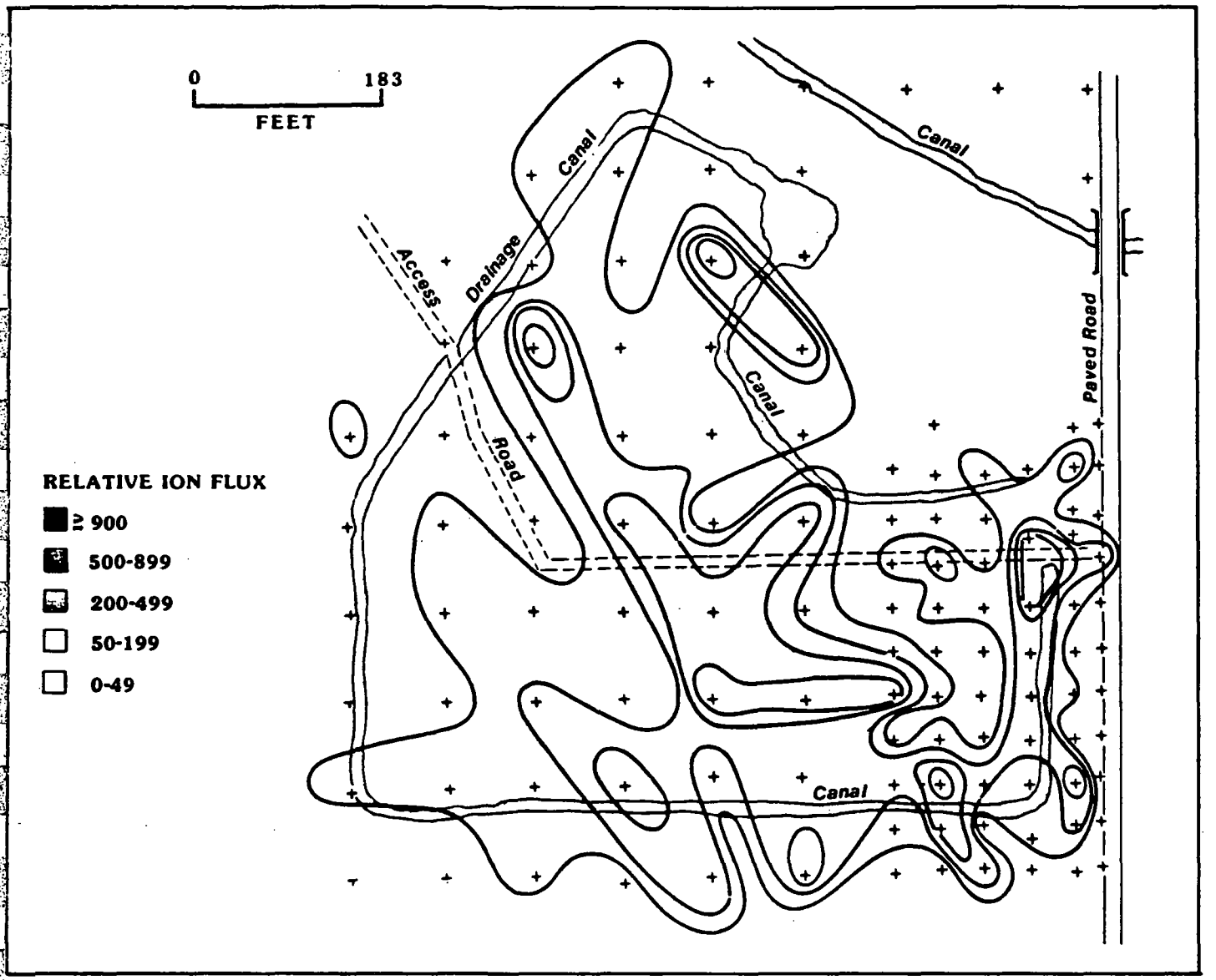
detecting and delineating the apparent extent of soil contamination is a testing technique that reliably traces contaminants via their presence in soil gas. The measurement of diffusing chemical concentrations in shallow soil permits the estimate of the direction, extent, and chemical composition of the plume without the considerable time and expense of drilling. Figure 4.1 shows a sample relationship and correlation between a plume delineation obtained with this technique and one obtained by conventional, direct sampling and analysis.

In using this tracing and "fingerprinting" method, the first step will be to establish quality control and a correlation using a standard curve with regression analysis (if necessary) between direct soil sampling and the analysis using the vadose zone monitoring technique. This will be done by an analysis of vadose zone gases next to a direct soil sampling and analysis. This step will be followed by the implementation of vadose zone monitoring probes as described in Figure 4.2. The results of this vadose zone monitoring will guide the location of necessary confirming soil borings for direct soil sampling and analysis for vertical and lateral delineation of the plume.

We intend to implant the probes in the following sequence:

A. Implant probe No. 11 and 12 about 5-10 ft.

PETREX ENVIRONMENTAL
CASE HISTORY #4



PCE surface flux as determined by a Petrex survey in and around a landfill in southeastern U.S. (See survey objectives below). Survey was followed by remedial investigation which verified anomalies.

Depth to ground water-10 feet.

PETREX Survey Objectives:

a) Determine zones of highest PCE flux in the landfill area.

b) Determine the extent of PCE migration.

c) Define migration pathways.

SURVEY DESIGN: 175 collectors placed on a variable grid pattern (50 - 125 feet).
TURNKEY COST: $18,000. Client placed and retrieved collectors - $13,000.

Figure 4.1 Sample correlation between vadose zone gas monitoring and direct monitoring for TCE solvent plume delineation

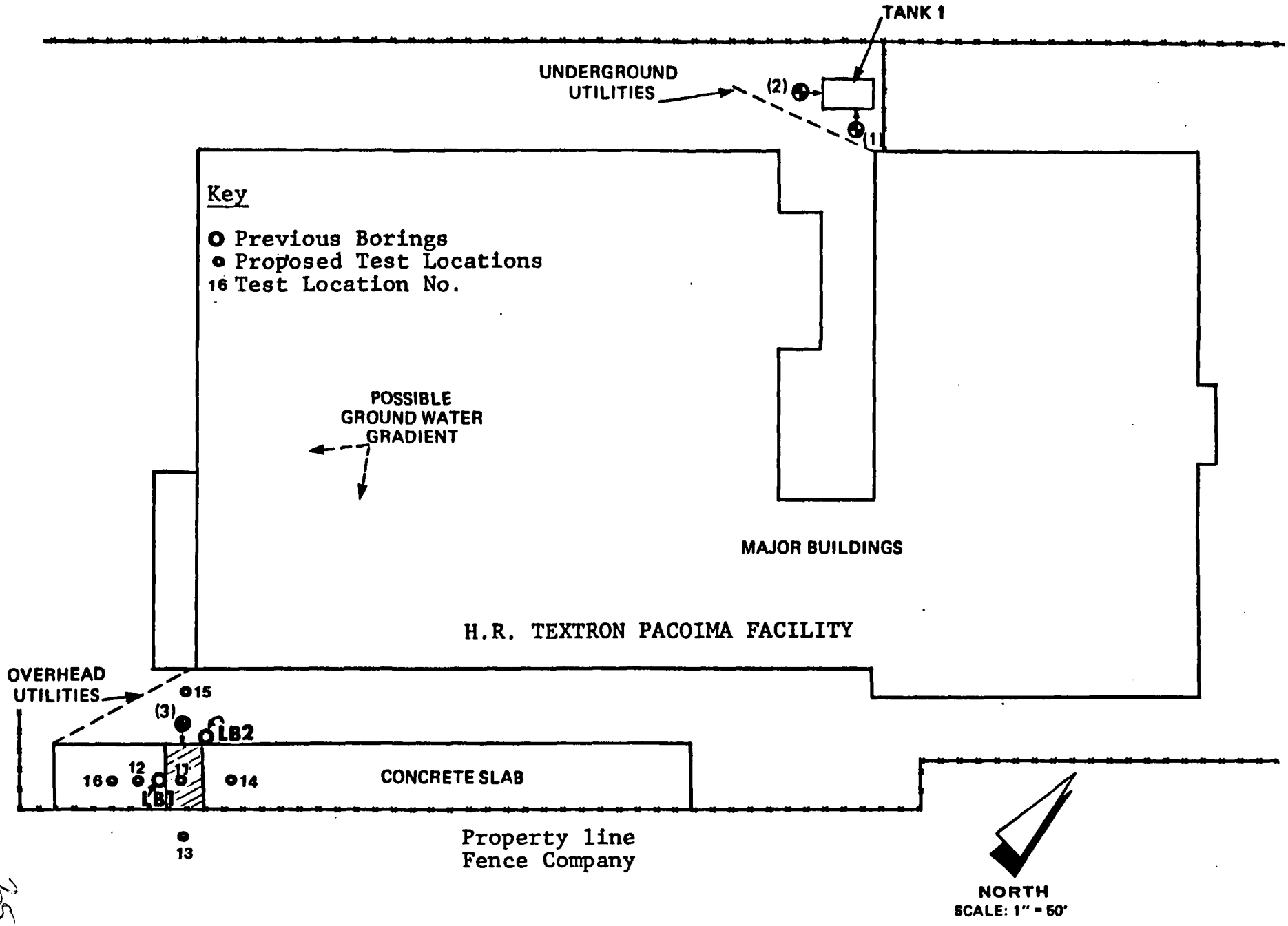


Figure 4.2 Preliminary approximate location of proposed plume exploration by soil gas sampling or borings

below the bottom of the excavation and obtain soil sample at that depth. Compare results of the direct soil tests with the probe results.

B. If "A" is successful (i.e. the probes do work), proceed to test probes in locations 13-15. If test results in "A" are not successful, proceed to direct soil boring at the proposed location of the probes.

C. If the probe exploration in "A" and "B" is successful, decide on implementation of additional probes or proceed to confirming test borings and soil sampling, if necessary.

Enviropro, Inc. recognizes the fact that the plume under study contains two major chemical groups, with different physical chemistry:

- o Low molecular weight volatile organic solvents, such as chlorinated hydrocarbons
- o High molecular weight, non-volatile, lubricating and cutting oils

In general, the non-water soluble hydrophobic and high molecular weight oils have much lower mobility than the chlorinated solvents. Therefore, it is assumed that the volatile fraction of the plume will have greater lateral mobility and the vapor detection technique will trace these indicator compounds. The lateral extent of the oil plume is expected to be within the solvent plume. This, however, will be confirmed by direct field measurements. We also would like to emphasize that there is no guarantee in the success of the soil gas technique.

However, it is a worthwhile exploration technique to guide and minimize the expensive drilling and direct soil sampling. We expect to implant the soil probes at about 5-10 ft. below surface, or as dictated by field conditions.

After the plume's lateral extent is identified and estimated by the vadose gas zone monitoring technique, the minimal basic network of exploration boreholes will be installed, as necessary. It is hoped that the gas monitoring technique will minimize the number of these exploratory holes and will guide their strategic installation, greatly benefiting both the project's progress to completion and economy. At the present, we do not know the exact location of the exploratory borings. Their distribution will be guided by the results of the soil gas monitoring exploration, the better definition of the landfill's location under the site, and better understanding of the geohydrology as related to the Hansen Dam, the recharge ponds, and the Verdugo fault. We intend, however, to perform at least one exploratory boring to sample the landfill. At this time, we intend to perform it on the adjacent property to the southeast, as close to the previous tank as necessary.

4.4 Other Technical Investigations

In continued definition of the problem and its recommended solution, Enviropro, Inc. is planning to perform the following work:

- Study selected other remedial investigations in the area in order to benefit from accumulated hydrogeological data.
- Study the potential chemical impact of the landfills, both under the site, and on the soil and ground water.

5. MATERIALS AND METHODS

5.1 Method of Approach to Data Collection

Enviropro, Inc. believes that reliable data gathering, quality control, and quality assurance are essential to gaining correct and complete knowledge of a problem and to the conclusions about its study. This leads to technically accurate design of the remedial action in an economical way. Recent studies by the EPA and the Council for Environmental Quality have shown that many remedial investigations, followed by lengthy and expensive remedial actions, were ineffective; they had to be repeated with loss to the paying party and the environment. The lengthy and expensive part in such environmental undertakings is the remedial action. Therefore, a careful step-by-step approach should be taken to correctly define the many dynamic unknowns in this type of investigation. A little extra effort in the

study phase results in greater benefits to the client and the environment.

5.2 Drilling Techniques and Sampling

5.2.1 Drilling and Well Construction Methods and Equipment

A. Boring or monitoring wells shall not penetrate a competent (approximately 5 ft. thick) clay layer, or aquiclude or aquitard below the zone of saturation. This will be ensured by the field geologist.

B. Such penetration in a clean or contaminated zone will be done only after special design and prior approval, in writing, by the RWQCB registered geologist, and RWQCB attorney.

C. The preferred drilling is with a hollow stem continuous-flight auger. No lubricants or any other drilling aides should be introduced. The auger will be equipped with a removable plug attached to the leading drill bit. This plug shall be installed during drilling and removed during soil sampling.

D. If lithological conditions do not permit the use of this equipment (C above), air rotary with double casings should be used.

E. Drill cuttings, or any water associated with drilling or cleaning, should be collected, analyzed, and disposed legally.

F. All drilling and sampling equipment will be

washed with detergent, introduced with water pressure of 800 PSI minimum and 100°C, and then rinsed with a water jet at 800 PSI minimum at 100°C.

G. Monitoring wells, if any, will be drilled to accept a casing of 4 inch inside diameter.

H. Monitoring wells will be cased with threaded PVC casings that have been cleaned with TSP and brushed on both sides. Rinsing will be accomplished with hot, high pressure water. Screen and gravel pack size and length will be determined by the project geologist for the specific well application, and based on the formation lithology.

I. Gravel pack will be protected on top with 2-4 ft. of impervious seal (Bentonite or other material) in the annular space.

J. The remaining annular space will be protected with cement/Bentonite grout.

K. Monitoring well tops will be protected with PVC screw caps and a steel box flush with the surface, or a steel surface pipe with hinge locking. The well should be protected from unauthorized access or vandalism by a lock or other means. Enviropro, Inc. prefers the above ground completion of well heads, since this provides for better environmental and client protection. The final design will be determined with the help of H R Textron's architect.

L. Wells, if any, will be developed by pumping or bailing immediately following well construction. This is done to prevent cross-contamination and down-migration of high density solvents.

5.2.2 Sampling Equipment and Procedures

A. Soil Sampling Above the Saturated Zone

Soil sampling will be performed with a split spoon sampler equipped with stainless steel liners. The sampler and liners will be washed with TSP, high pressure water (800 PSI @ 100°C), and steam, as described earlier. Before the field work, the liners will be cleaned in the laboratory by additional oven treatment at temperatures to be determined after physical/chemical evaluation of the MSDS for materials used by H R Textron. Sampler's plastic valves should be new and should be cleaned by detergent and D.I. water rinse. Undisturbed soil samples for chemical analysis will be obtained 1 ft. below the drill bit.

After removal from the sampler, the 1.5" x 6" s.s. sample tubes will be wrapped with aluminum foil to prevent escape of vapors from the ends, and then be placed in a "zip lock" plastic bag, sealed, and labled on the outside with the sample I.D. number and other details. Stick-on labels should not be placed on the sample tube or inside the bag.

The labeled bag should be placed inside an

additional "zip lock" bag sealed, and placed in a sealed glass jar.

Samples should be stored in a new styrofoam container with sufficient ice or dry ice to keep the temperature no higher than 4°C. Samples should not come in contact with the dry ice. Water samples should not be stored on dry ice to prevent the breakage of containers due to water expansion when freezing.

The chain of custody document should be completed, indicating sampling dates and the handling chain of people and/or organization(s).

Samples should be shipped to the laboratory by an Enviropro, Inc. company employee or a reliable carrier; they should not be in transit more than the ice pack "lifetime."

If a commercial carrier is used for sample transport, the laboratory should be notified by phone of the projected sample arrival time, and sample arrival should be confirmed with Enviropro, Inc. by a telephone call from the laboratory. This procedure should be followed-up by the project manager or his authorized representative. The carrier should sign the chain of custody document.

B. Soil Sampling Below the Saturated Zone

Such soil sampling, if any, and procedures will be the same as A. above with the following exceptions:

- Before the introduction of the sampler into a

hollow stem auger, it will be completely wrapped with a plastic bag. This will form a front leading seal and side seal (of the split spoonline) when the sampler is introduced into the potentially contaminated zone. The front seal will be broken when the sampler is forcefully introduced into the formation. An undisturbed core of 18", at least, should be obtained and the middle 6" segment be used for analysis.

C. Water Sampling

If water sampling wells are installed in this project, water will be obtained after well development followed-up by pumping of at least eight well volumes. Then a sample should be taken by a teflon or stainless steel bailer, cleaned as described above for the drilling equipment. At least four bailer volumes should be discarded before obtaining samples. A special stainless steel or teflon sampling pump could also be used following thorough cleanup of pump and lines. Water samples for VOA analysis should be collected by a special new VOA bottle equipped with teflon septa, as specified by EPA procedures. VOA bottles should be protected from sunlight by amber glass or aluminum foil. Other water will be collected by 1 gallon amber glass bottles.

Samples will be preserved on ice (no dry ice) and shipped to the laboratory as described earlier for soil samples.

D. Quality Assurance and Quality Control

D.1 Field Control

Clean soil and clean water of known composition will be sampled, using the identical techniques as those used for cleaning and sampling. These samples will be sent to the laboratory with every batch of soil and/or ground water samples.

D.2 Transit Blank

Clean soil and clean water of known composition will accompany every storage and shipment to check if cross-contamination occurred in storage and transit.

D.3 Laboratory Blank

The laboratory, as a routine procedure, will be requested to run a laboratory blank and report the results.

D.4 Blind Duplicate

The laboratory will be supplied with one or more duplicate sample(s) that will not be identified as such. Enviropro, Inc. will compare its analytical results with these duplicate(s) and the reported laboratory QA/QC data.

D.5 Duplicate Samples

Duplicate samples will be provided to the California State RWQCB, if requested, for duplicate analysis and quality assurance.

5.2.3 Lithological Logs and Geological Sample Preservation

Lithological logs will be prepared in the field by

an on-site geologist and will be passed on his observations. The field geologist will also collect soil samples to be preserved in a transparent glass vial. The soil samples will be transported to Enviropro, Inc. and stored for future reference. At the office, the field logs will be examined against the soil samples, corrections made, if necessary, and the logs approved by a registered engineering geologist. Soil samples will be discarded two months after submittal of report containing the logs, unless requested otherwise in writing by the RWQCB or the client.

5.3 Analytical Chemistry

5.3.1 Field Techniques

Soil and water samples will be analyzed in the field by using the following quick indicators:

1. HNU photoionization detector with a 11.7 eV probe, sensitive to chlorinated hydrocarbons
2. pH
3. Electrical conductivity

After the control GC/MS priority pollutant scan is complete and the complete contaminant spectrum is fully identified, we will consider employing a field gas chromatograph for "real time" analysis during explorations.

5.3.2 Laboratory Analysis

All laboratory work will be performed by state approved laboratories. Duplicate and/or control samples may be sent to different laboratories for quality control. The

original laboratory reports and chain of custody documents will be presented in the appendix to our report. Lab results will be summarized in the body of the reports. The following data will be presented:

- Laboratory performing the work
- Analytical technique used
- Analytical result
- Detection limit
- Quality control used with the analysis

5.3.3 Analytical Procedures

All analytical procedures used will be EPA approved procedures per EPA Manual: Test Methods for Evaluating Solid Waste, U.S. EPA publication No. SW846. Quality assurance and quality control procedures specified in this manual will be used by the selected laboratory.

The following procedures described in Table 5.1 will be used:

TABLE 5.1

Analytical Procedures

No.	Procedure Name In This Text	Type of Analysis(2	EPA Procedure No.(1)
1.	VOA in Water Purgables	GC/MS(2)	624
2.	VOA in Soil	GC/MS	8240
3.	BNA in Water	GC/MS	625
4.	BNA in Soil	GC/MS	8270
5.	Halogenated Volatile Organics	GC	8010 (soil) 601 (water)
6.	Non-Halogenated Volatile Organics	GC	8015 (soil)
7.	Aromatic Volatile Organics	GC	8020 (soil) 602 (water)
8.	Priority Pollutant Scan by GC/MS	GC/MS	8240 + 8270 soil 624 + 625 water
9.	Oil and Grease	I.R.	413.2
10.	Petroleum Hydrocarbons	I.R.	418.1

(1) Reference No. 1
(2) GC = Gas Chromatography, GC/MS = Gas Chromatography Mass Spectrometry

At the outset of the work, we plan to use a complete GC/MS scan on several samples, to assess the type of compounds present in the soil. Based on this GC/MS analysis and the Petrex GC/MS analysis, <u>if successful</u>, we will narrow the analytical investigative work significantly. At that time we will recommend use of one or more of the techniques presented in Table 5.1.

As our knowledge of the plume's composition increases, we plan to use GC techniques instead of GC/MS, providing that no loss of sensitivity and detection limit is

encountered.

5.4 Safety Plan

Considerable emphasis is placed on safety. The site-specific safety program during drilling and sampling includes the following:

A. Hard hat
B. Shoes with safety toe and sole
C. Tyvek suit
D. Rubber gloves
E. Disposable charcoal respirators for organic solvent fumes and acids.

An industrial hygienist will review the site-specific safety program after the first control samples are available. A job site safety meeting will be held with the drill crew and all other field personnel prior to commencement of the project. All safety items will be checked by the industrial hygienist.

6. DEVELOPMENT OF DESIGN CRITERIA FOR REMEDIAL ACTION

6.1 Determination of Cleanup Levels

Based on federal and state law, the cleanup level will be determined according to the chemical contaminants' toxicity, hydrogeochemical mobility, and persistance. The significance of the contamination, in view of the two landfills under and adjacent to the site, will also be evaluated. A documentation of the above, with case histories, will be prepared for the evaluation of H R Textron Inc. and the California RWQCB. A cleanup level and method

will then be negotiated with the regulatory agencies.

6.2 Technical Alternatives for Remedial Action

The alternatives for remedial action will be discussed in detail after the problem is defined, evaluated, and understood.

Enviropro, Inc. will consider all possible alternatives, including, but not limited to, the following:

- No action
- Soil removal and legal disposal
- In situ biological treatment
- In situ chemical, physical treatment
- Land farming (on-site)
- Combination of two or more of the above

All above and possible other options will be evaluated as required by federal guidelines.

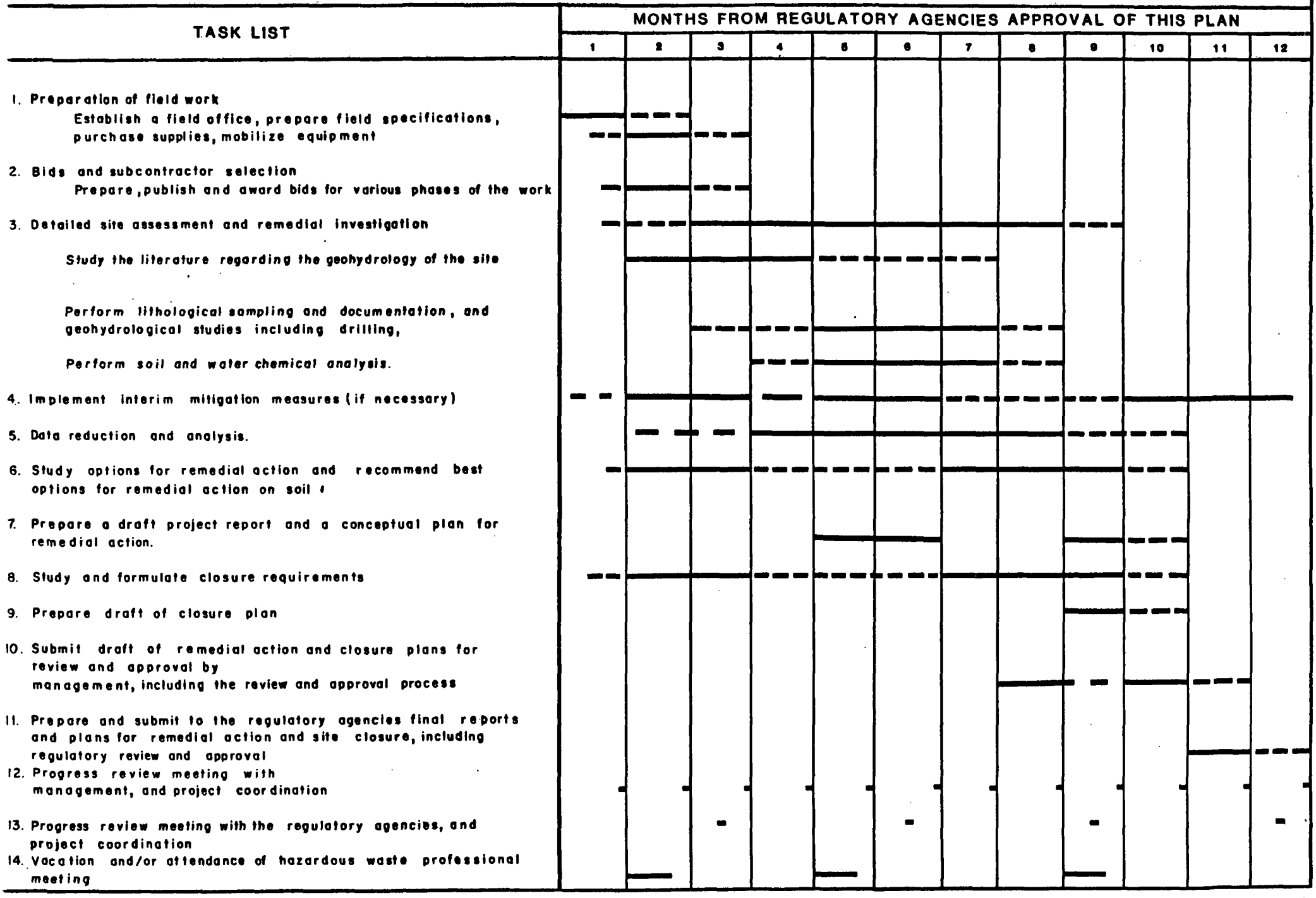
7. MONITORING PLANS

Since there is no known ground water contamination, the need for monitoring plans for soil and/or ground water will be determined at the end of the study. Such a plan will be part of the remedial action and closure plan.

8. PROJECT TIMETABLE

The proposed project timetable is illustrated in Table 8.1.

FIGURE 8.1 PROJECT TIME TABLE AND TASK SCHEDULE



9. REFERENCES

1. Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods. U.S. E.P.A. Publication No. SW846, second edition, 1982.

2. Methods for Chemical Analysis of Water and Wastes. U.S. E.P.A. Office of Technology. Transfer U.S. E.P.A. Publication No. 625/6-74-003, 1974.

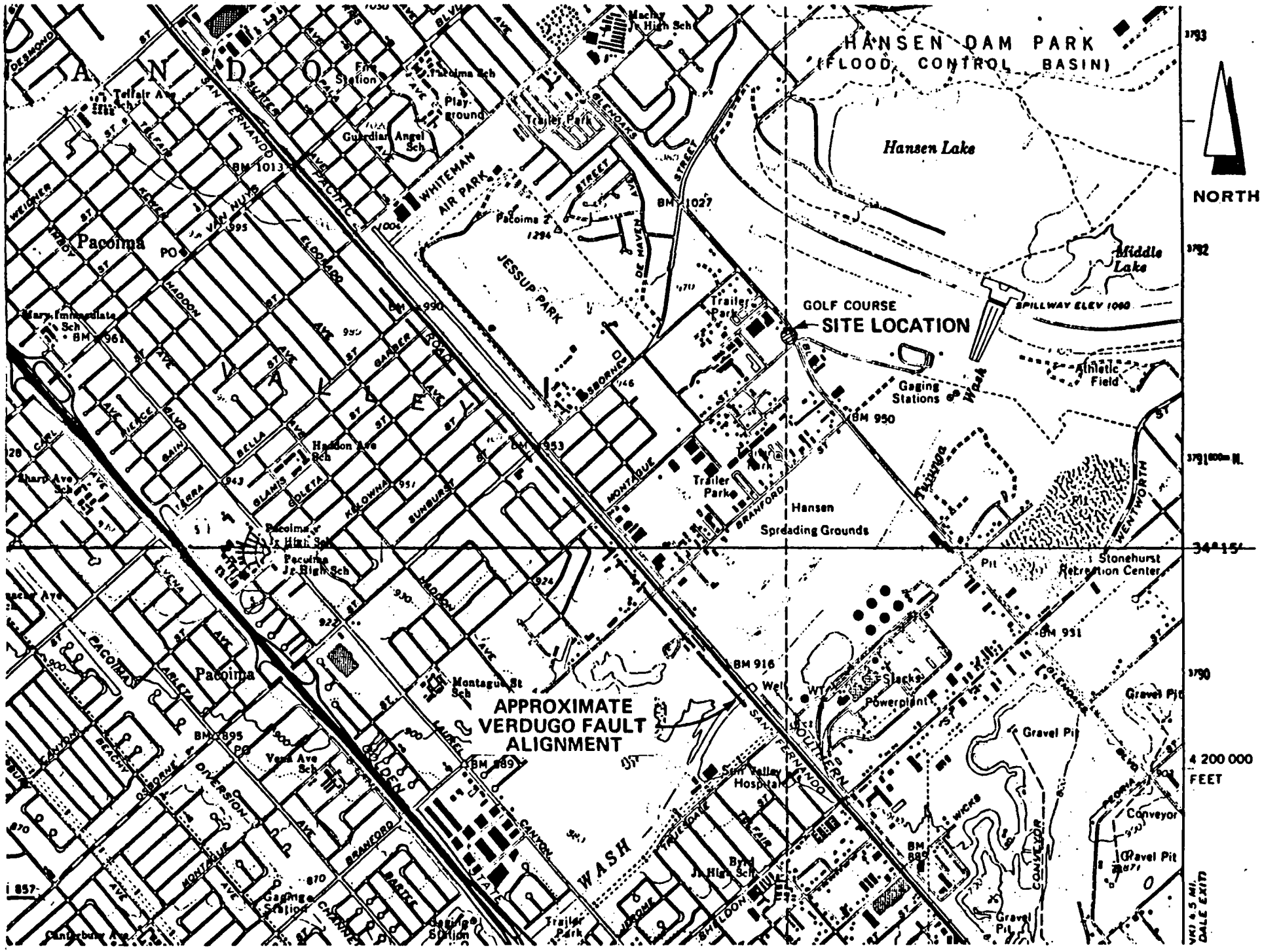
3. Standard Methods for the Examination of Water and Waste Water. Published by APHA, AWWA, WPCF, latest edition.

4. Hydraulics of Wells by Dean F. Peterson Jr., Orson N. Israelsen, and Vaughn E. Hansen. Bulletin 351. Agricultural Experiment Station, Utah Agricultural College, Loga, Utah.

5. Water Well Standards: State of California, Bulletin 74-81, Dec. 1981. California DWR.

APPENDIX A

Previous Data by Others



SCALE: 1" = 2000'

FIGURE 1. SITE LOCATION

PRELIMINARY

Table 2. Summary of Soil Sampling Activities

Boring Number	Date Drilled	Total Vertical Depth (Feet)	Angle of Hole from vertical (degree)	Number of Soil Samples Recovered	Sample Depth Range (ft) and Volatile Concentration Detected (mg/L) by OVA			Method of Abandonment	Comments
					No.	Depth	Concentration		
B-1	5/22/84	40	15	4	1	15-16	<1.0		o Drilled from $12:50_{pm}$-$2:35_{pm}$
					2	20-21	<1.0	A	o No groundwater encountered
					3	29-30	<1.0		
					4	39-40	<1.0		o Soil placed in drums No. 1,2,3,4
B-2	5/22/84 and 5/23/84	44	15	3	1	14-15	1.1		o $2:5_{pm}$-$3:05_{pm}$ (5/22/84) $6:20_{am}$-$7:30_{am}$ (5/23/84)
					2	22-23	<1.0	A	o No groundwater encountered o Sample attempted at 43-44 foot; no recovery made.
					3	32-33	<1.0		o Soil placed in drums No.5,6
B-3	5/23/84	43	15	4	1	14-15	600		o $8:40_{am}$-$10:00_{am}$ (5/23/84)
					2	21-22	710	B	o No groundwater encountered
					3	32-33	>1000		o Strong odor noted at first sample depth, crew put on protective gear
					4	42-43	4.0		o Soil placed in drums No.7,8,9

Abandonment Methods

A. Boring filled with clean sand and bentonite from the bottom to a depth of 20 feet. Remaining hole filled with soil and bentonite. All material wetted as it was placed. Cold asphalt patch placed at top.

B. Boring filled with clean sand and bentonite from top to bottom. Material wetted as it was placed. Cold asphalt patch placed at top.

PRELIMINARY

PRELIMINARY

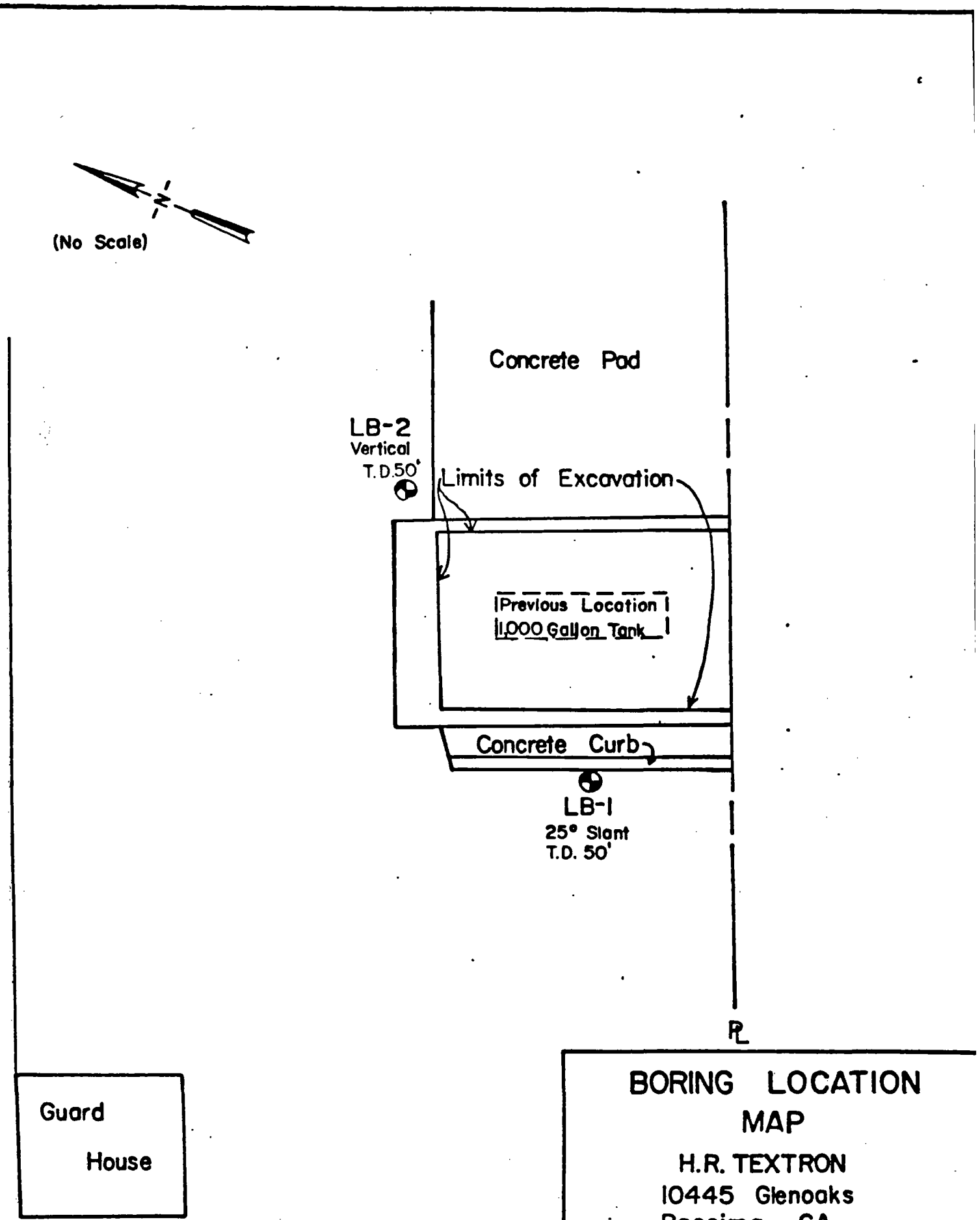
Table 4. Chemical Analysis of Sample Composite #3

I			
Priority Pollutants	Tetrachloroethylene (Trace Amount) BDL?		
Non-Priority Pollutants	Stoddard Solvent 2400 μg/g 1,1,1 Trichlor?		—
II			Acceptable ppb?
Oil & Grease	23,400	μg/g	—
pH	5.90		6-10 is accepta
Al	7,260	μg/g	—
Cu	8.0	μg/g	—
Fe	10,500	μg/g	—
Mn	164	μg/g	—

PRELIMINARY

Table 3. Soil Sample Compositing and Testing

(1) Original Soil Sample No.	(2) Composite Sample No.	(3) First Analysis	(4) Second Analysis
84-602-1-1-1			
-1-2-1		Volatile Organics	
-1-3-1	1	Base/Neutral	—
-1-4-1			
84-602-2-1-1			
-2-2-1	2	Volatile Organics	—
-2-3-1		Base/Neutral	
84-602-3-1-1	3	Volatile Organics	GAS Chromatograph Scan Identify 4 major Peaks
-3-2-1		Base/Neutral	
-3-3-1		Oil and Grease	
-3-4-1		pH, Al, Fe, Cu	



BORING LOCATION MAP

H.R. TEXTRON
10445 Glenoaks
Pacoima, CA

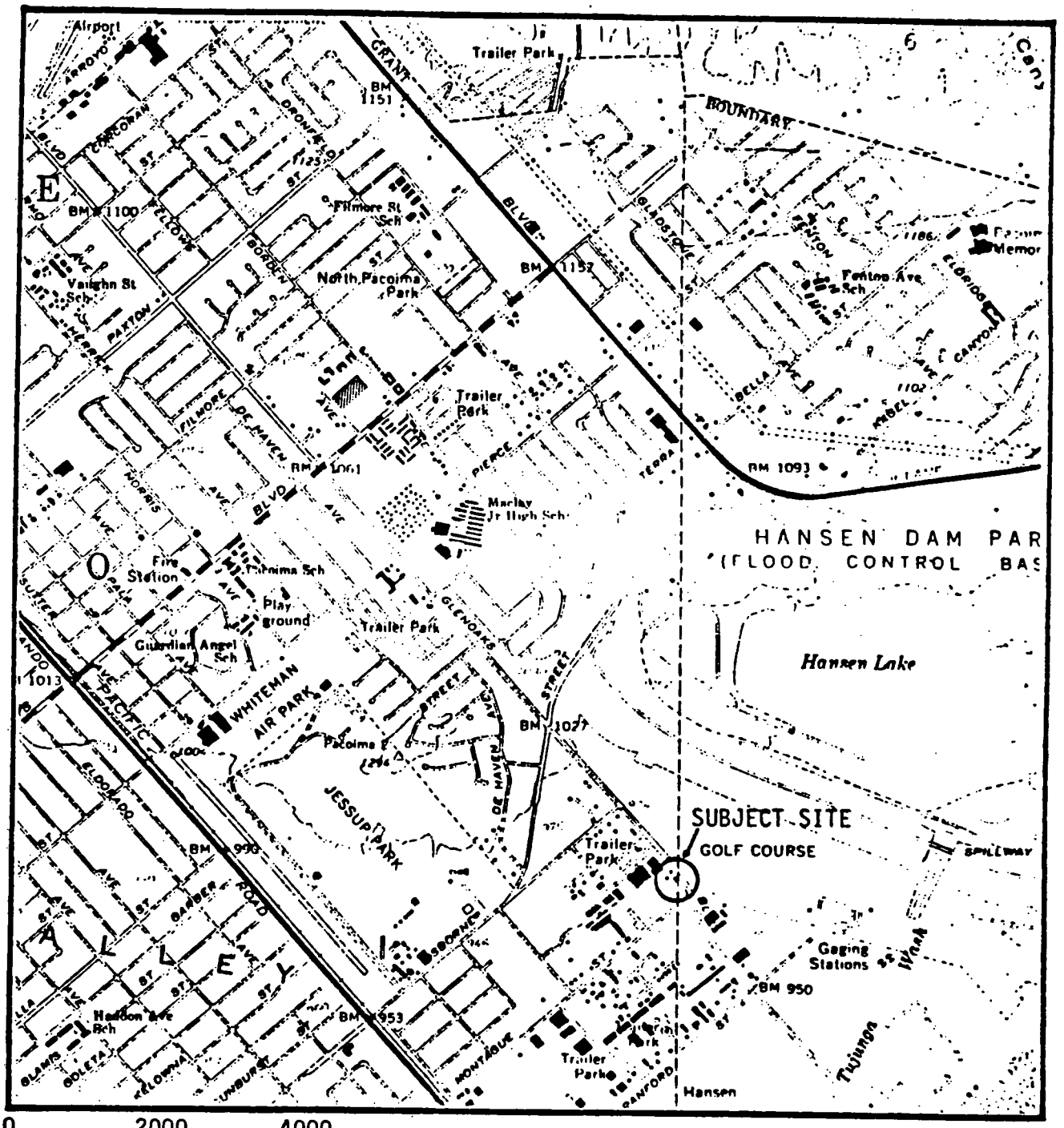
Project No: 7841189-02

Leighton & Associates

Plate No:

7841189-01

INDEX MAP



0 2000 4000
scale feet

H. R. TEXTRON
10445 GLENOAKS BOULEVARD
CITY OF PACOIMA
(Subject Site Shown in Yellow)

Base Map: USGS San Fernando Quadrangle

LEIGHTON and ASSOCIATES
INCORPORATED

Site Description and Background

The subject site is located west of the Verdugo Hills in the northwesterly portion of the San Fernando Valley. The Textron plant consists of a large manufacturing building and smaller adjacent storage and support buildings occupying the majority of the site. The remaining portion of the site is covered with asphaltic concrete pavement. Drainage of the site is by sheet flow to concrete swales and directed to offsite gutters and streets.

On May 22, 1984, two borings were drilled at Tank Site 1. One boring was made at Tank Site 2 on May 23, 1984 (see Plot Plan). No obvious contamination was detected at Tank Site 1. Obvious contamination was found at Tank Site 2. Analysis of soil samples taken at the tank site indicated contamination from Stoddard solvent, oil and grease, heavy metals, and trace amounts of tetrachloroethylene. Results of the analysis are included in Appendix A.

Onsite Sampling and Analysis

Tank 2 was removed on January 30, 1985. Stained soil below the tank was removed to a depth of 6± feet. Two relatively undisturbed samples were taken at this elevation. To obtain these samples, our field representative was protected by a disposable suit, rubber gloves, and a full-face respirator. The soil samples were taken in 3-inch long brass tubes, capped at both ends with teflon caps, properly identified, and placed on ice. Readings with a photoionization detector indicated contamination in the northeasterly portion of the excavation at about 48 parts per million (ppm) at 6± feet below the existing ground. More soil was then removed to a depth of 8± feet below the existing grade. Two more samples were obtained as previously described. The photoionization detector readings at this location were 38 ppm at that elevation. On January 31, 1985, soil was removed to a depth of 12 feet below existing ground. The onsite representative of the Regional Quality Control Board indicated that the depth of removal was acceptable pending further sampling and analysis. One soil sample was taken at that depth. The photoionization detector reading was 70 ppm in the excavation at that depth.

Analyses were conducted on the soil samples taken at 8± feet and 12± feet for volatile organics, total hydrocarbons, and oil and grease content. The results of the laboratory analyses are presented in Appendix A.

Summary of Analysis

The results of laboratory analyses indicate that the major contaminants present vary with depth as follows:

Contaminants	8 ft (ppm)	12 ft (ppm)
trichloroethane	120 to 210	230
tetrachloroethylene	11 to 14	8
cyclohexane compounds	20 to 100	10 to 100
oil and grease	11,000 to 18,000	11,000
total petroleum hydrocarbons	9,100 to 14,000	7,300

The cyclohexane compounds as well as oil and grease and petroleum hydrocarbons are probably indicative of the constituents of Stoddard solvent previously contained by the tank.

Conclusions and Recommendations

General Conclusions

The following conclusions are presented, based upon our field observations and results of laboratory analysis on selected soil samples.

1. 1, 1, 1 trichlorethane contamination appeared to increase slightly with depth.

2. Tetrachlorethylene contamination appeared to decrease with depth.

3. Cyclohexane compound contamination appeared to be constant with depth.

4. Total hydrocarbon contamination appeared to decrease with depth. Oil and grease contamination appeared to be constant with depth.

5. Removal of obviously contaminated (stained) soil to clean material in the northeasterly portion of the excavation was conducted as requested by the representative of the Regional Water Quality Control Board. Soils removed from the excavation were properly disposed of in an appropriate Class II landfill.

6. Depth to ground water below the site is unknown at this time. No water was observed in the 43-foot boring drilled on May 23, 1984, nor was water encountered in the excavation of January 31, 1985.

Recommendations

1. If the excavation is to remain open for an extended period of time, berms should be constructed around the perimeter to prevent runoff from entering the excavation. Further, the surface of the excavation should be covered to prevent rain from entering.

2. Backfill of the excavation should be made with clean, granular soils. The upper 3 feet of the backfill should be compacted to a minimum of 90 percent of maximum density as determined by ASTM Test Method D1557-78, Method C. Placement and compaction of the backfill should be observed and tested by the soils engineer prior to paving.

3. The excavation should be paved with an impermeable material such as asphaltic concrete or concrete to prevent water from entering the backfilled excavation.

RECEIVED
FEB 04 1985
LEIGHTON & ASSOC.

BROWN AND CALDWELL
ANALYTICAL LABORATORIES

LOG NO: P85-01-392

Received: 30 JAN 85
Reported: 01 FEB 85

Leighton & Associates
25530 Avenue Stanford
Valencia, CA 91355

ATTN: Dale Radford

REPORT OF ANALYTICAL RESULTS

G NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
-392-1	TANK 2 SAMPLE #3 @ 8'	30 JAN 85
-392-2	TANK 2 SAMPLE #4 @ 8'	30 JAN 85

ETER	01-392-1	01-392-2
rgeable Priority Pollutants (VOCS)		
action	01.30.85	01.30.85
1-Trichloroethane, mg/kg	210	120
ichloroethane, mg/kg	2	0.6
-Dichloroethylene, mg/kg	<0.6	0.3
lein, mg/kg	<6	<3
rylonitrile, mg/kg	<6	<3
trachloroethylene, mg/kg	11	14
hloroethylene, mg/kg	0.6	0.9
ene, mg/kg	<0.6	2
ther Purgeable Priority Pollutants,	<0.6	<0.3
-Quantified Results **		
C9H16 Compound, mg/kg	20	20
yclohexane Compound, mg/kg	20	20
yl Methyl Cyclohexane, mg/kg	100	100
methyl Cyclohexane, mg/kg	30	30
ylene Isomers, mg/kg	---	4
Quantification based upon comparison of otal ion count of the compound with that of the rest internal standard	296 Sum	312 Sum

CC Andy Spacone 2-8-85

ward Wilson, Laboratory Director

CC: [illegible] 2-8-85

BROWN AND CALDWELL

ANALYTICAL LABORATORIES

LOG NO: P85-03-237

Received: 15 MAR 85
Reported: 29 MAR 85

Dale Radford 805-257-0150
Leighton & Associates
25530 Avenue Stanford
Valencia, CA 91355

Project: 7850358-01 TEXTRON

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
03-237-1	MW-1 @ 6' SAMPLE #1	14 MAR 85

PARAMETER	03-237-1	
Purgeable Priority Pollutants		
Extraction	03/28/85	PPM
Acrolein, mg/kg	<3	"
Acrylonitrile, mg/kg	<3	
Other Purgeable Priority Pollutants, (VOCs)	<0.3	
Hydrocarbons by IR, mg/kg	88	

Edward Wilson, Laboratory Director

cc: Youngsih

BROWN AND CALDWELL

ANALYTICAL LABORATORIES

LOG NO: P85-05-105

Received: 06 MAY 85
Reported: 28 MAY 85

Dale Radford
Leighton & Associates
25530 Avenue Stanford
Valencia, CA 91355

Requisition: TEXTRON
Project: 7841189-02

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES — Pacoima ppm	DATE SAMPLED
05-105-1	#3 at 12'	06 MAY 85
05-105-2	#4 at 12'	06 MAY 85

PARAMETER	05-105-1	05-105-2
Purgeable Priority Pollutants		
Extraction	05/21/85	05/21/85
1,1,1-Trichloroethane, mg/kg	16	18
Acrolein, mg/kg	<3	<6
Acrylonitrile, mg/kg	<3	<6
Tetrachloroethylene, mg/kg	0.6	6
Other Purgeable Priority Pollutants,	<0.3	<0.6
Semi-Quantified Results **		
First Alkyl Cyclohexane, mg/kg	---	100
Second Alkyl Cyclohexane, mg/kg	---	200
A Terpene, mg/kg	---	40
Ethyldimethyl Cyclohexane, mg/kg	---	100
Ethyl Methyl Cyclohexane Isomer, mg/kg	---	90
Oil & Grease by Infrared, mg/kg	19,000	9900

** Quantification based upon comparison of total ion count of the compound with that of the nearest internal standard.

Edward Wilson, Laboratory Director

GEOTECHNICAL BORING LOG

Date 5/30/85 Drill Hole No. LB-1 23° SLANT Sheet 1 of 2

Project TEXTRON, PACOIMA Job No. 7841189-02

Drilling Co. CAL-TEST Type of Rig HOLLOW STEM AUGER

Hole Diameter 8" Drive Weight 140 lbs. Drop 12 in.

Elevation Top of Hole Ref. or Datum

Logged by DER

Sampled by DER

Depth Feet	Graphic Log	OIL AND GREASE (mg/kg)	Tube Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0							SP	ALLUVIUM: BROWN - DARK BROWN SAND, MEDIUM TO COARSE, MOIST, GRAVEL TO 2"
5								
10		27	1	80/6"				
15								
							SM	19' AS ABOVE, BECOMING SILTY SAND
20		15,000	2	40				20' VERY STRONG ORGANIC ODOR, BROWN SILTY SAND, FINE TO COARSE, VERY WET, GRAVEL TO 1/2"
25							SM	26' AS ABOVE, BECOMING FINER, SILTIER SAND, STRONG ORGANIC ODOR
30								

GEOTECHNICAL BORING LOG

Date 5/30/85 Drill Hole No. LB-1 Sheet 2 of 2

Project TEXTRON, PACOIMA 23" SLANT Job No. 7841189-02

Drilling Co. CAL - TEST Type of Rig HOLLOW STEM AUGER

Hole Diameter 8" Drive Weight 140 lbs. Drop 12 in.

Elevation Top of Hole Ref. or Datum

Logged by DER

Sampled by DER

Depth Feet	Graphic Log	OIL AND GREASE (mg/kg)	Tube Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
30		10,000	3	41			SM	32' BROWN TO LIGHT BROWN SILTY SAND, ODOR OF ORGANICS AND HYDROCARBONS, VERY MOIST
35								
40		20,000	4	80			SM	41' AS ABOVE, BECOMING GRANULAR SILTY SAND, FINE TO COARSE. NO ORGANIC OR HYDROCARBON ODOR
45							SM	45' BROWN SILTY SAND, FINE TO COARSE, GRANULAR, MOIST, DENSE
50		30	5	80/6"				TOTAL DEPTH = 50 FEET 5 DENOTES UNDISTURBED SAMPLE ORGANIC ODOR FROM 20' TO 40' IN CUTTINGS AND SAMPLES NO WATER ENCOUNTERED

GEOTECHNICAL BORING LOG

Date 5/30/85 Drill Hole No. LB-2 VERTICAL Sheet 1 of 2

Project TEXTRON, PACOIMA Job No. 7841189-02

Drilling Co. CAL-TEST Type of Rig HOLLOW STEM AUGER

Hole Diameter 8" Drive Weight 140 lbs Drop 12 in.

Elevation Top of Hole Ref. or Datum

Logged by DER

Sampled by DER

Depth Feet	Graphic Log	Oil and Grease (mg/kg)	Tube Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0							SP	ALLUVIUM: TAN TO GREY SAND, FINE TO COARSE, LOOSE, GRANULAR, SLIGHTLY MOIST, GRAVEL TO 1"
5								
10		45	6	32			SP/SM	10' GREY SAND, FINE TO COARSE, GRANULAR, SLIGHTLY MOIST, NO ODOR OF CONTAMINATION
								13' RED-BROWN SAND, FINE TO COARSE GRANULAR, GRANULAR, SLIGHTLY MOIST, POROUS
15								
20		<20	7	38			SM	20' AS ABOVE, BECOMING FINER, NO ORGANIC ODOR
							SM	23' BROWN TO LIGHT RED BROWN SILTY SAND, FINE TO COARSE
25								
30								

GEOTECHNICAL BORING LOG

Date 5/30/85 Drill Hole No. LB-2 Sheet 2 of 2

Project TEXTRON, PACOIMA Job No. 7851189-02

Drilling Co. CAL-TEST Type of Rig HOLLOW STEM AUGER

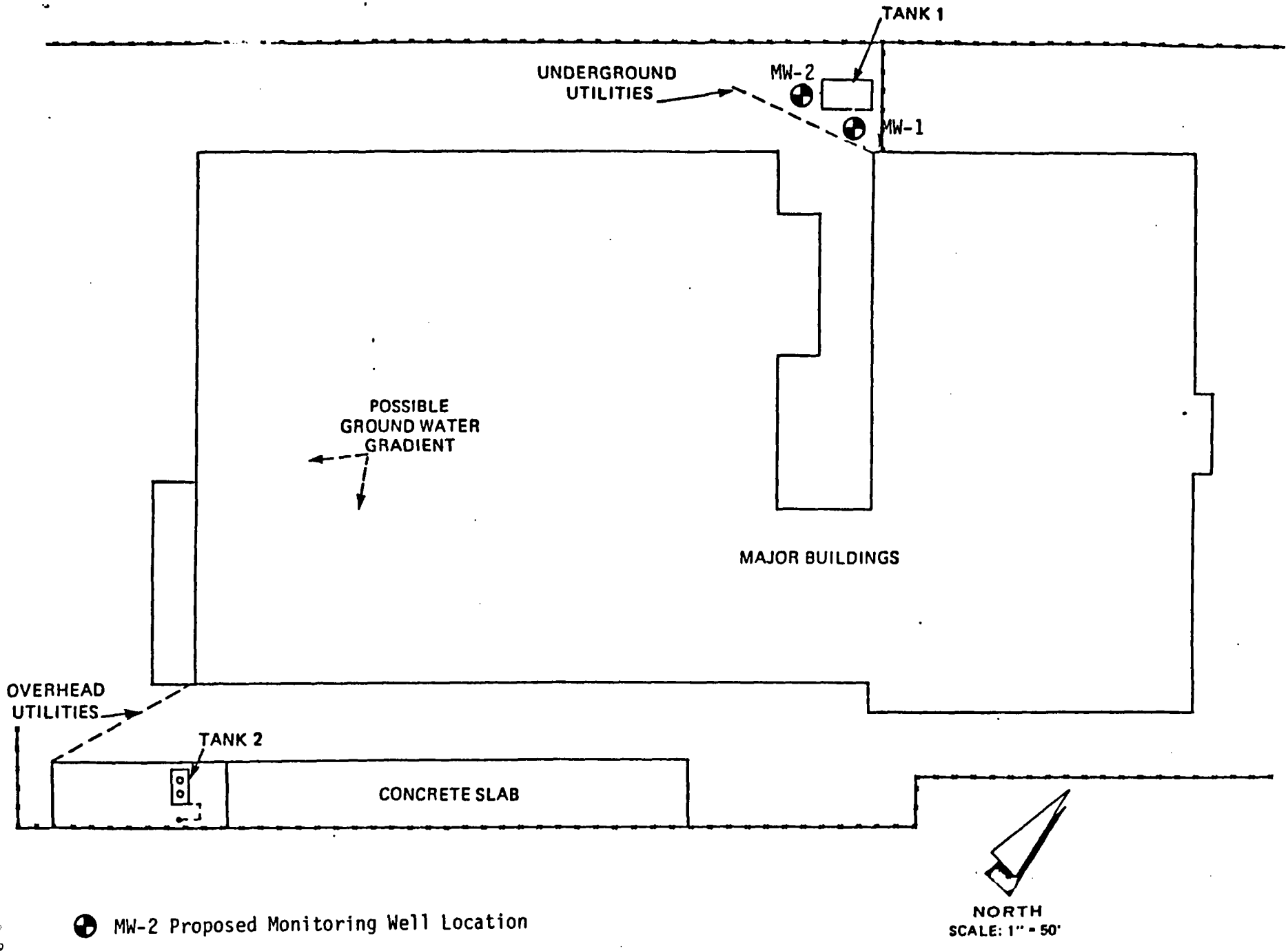
Hole Diameter 8" Drive Weight 140 lb. Drop 12 in.

Elevation Top of Hole Ref. or Datum

Logged by DER

Sampled by DER

Depth Feet	Graphic Log	OIL AND GREASE (mg/kg)	Tube Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
30		<20	8	43			SM/ML	30' BROWN SILTY SAND/SANDY SILT, FINE TO MEDIUM, NO ODOR OF CONTAMINATION
35							SM	36' BROWN SILTY SAND, FINE TO COARSE, BECOMING GRANULAR
							SM	39' AS ABOVE, BECOMING GRAVELLY TO 3"
40		<20	9	42				41' NO ODOR OF CONTAMINATION
45								
50		<20	10	80/10"				TOTAL DEPTH = 50 FEET 10 DENOTES UNDISTURBED SAMPLE NO ODOR OF CONTAMINATION NO WATER ENCOUNTERED



MW-2 Proposed Monitoring Well Location

BROWN AND CALDWELL

ANALYTICAL LABORATORIES

LOG NO: P85-05-105

Received: 06 MAY 85
Reported: 31 MAY 85

Dale Radford
Leighton & Associates
25530 Avenue Stanford
Valencia, CA 91355

Requisition: TEXTRON
Project: 7841189-02

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
5-105-1	#3 at 12' - NORTH EASTERLY PORTION	06 MAY 85
5-105-2	#4 at 12' - SOUTH WESTERLY PORTION	06 MAY 85

PARAMETER	05-105-1	05-105-2
Purgeable Priority Pollutants		
Extraction	05/21/85	05/21/85
1,1,1-Trichloroethane, mg/kg	16	18
Acrolein, mg/kg	<3	<6
Acrylonitrile, mg/kg	<3	<6
Tetrachloroethylene, mg/kg	0.6	6
Other Purgeable Priority Pollutants,	<0.3	<0.6
Semi-Quantified Results **		
First Alkyl Cyclohexane, mg/kg	---	100
Second Alkyl Cyclohexane, mg/kg	---	200
Terpene, mg/kg	---	40
Ethyldimethyl Cyclohexane, mg/kg	---	100
Ethyl Methyl Cyclohexane Isomer, mg/kg	---	90

** Quantification based upon comparison of total ion count of the compound with that of the nearest internal standard.

Oil & Grease by Infrared, mg/kg	19,000	9900

Edward Wilson, Laboratory Director

LOG NO: P85-05-380

Received: 30 MAY 85
Reported: 12 JUN 85

Dale Radford
Leighton & Associates
25530 Avenue Stanford
Valencia, CA 91355

Purchase Order: 7841189-02

Project: TEXTRON PCMA

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
05-380-1	LB-1 @ 10'	30 MAY 85
05-380-2	LB-1 @ 20'	30 MAY 85
05-380-3	LB-1 @ 30'	30 MAY 85
05-380-4	LB-1 @ 40'	30 MAY 85
05-380-5	LB-1 @ 50'	30 MAY 85
05-380-6	LB-2 @ 10'	30 MAY 85

PARAMETER	LB1/10' 05-380-1	LB1/20' 05-380-2	LB1/30' 05-380-3	LB1/40' 05-380-4	LB1/50' 05-380-5	LB2/10 05-380-6
Purgeable Priority Pollutants						
Extraction	06/05/85	06/05/85	06/06/85	06/06/85	06/06/85	06/06/85
1,1,1-Trichloroethane, mg/kg	<0.3	55	87	100	<0.3	<0.3
Acrolein, mg/kg	<3	<3	<3	<3	<3	<3
Acrylonitrile, mg/kg	<3	<3	<3	<3	<3	<3
Tetrachloroethylene, mg/kg	<0.3	3	4	2	<0.3	<0.3
Toluene, mg/kg	<0.3	3	3	1	<0.3	<0.3
Other Purgeable Priority Pollutants,	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Semi-Quantified Results **						
A C9 unsaturated hydrocarbon, mg/kg	---	30	30	40	---	---
Dimethyl Cyclooctane, mg/kg	---	---	20	20	---	---
Dimethylcyclohexane, mg/kg	---	8	9	8	---	---
Trimethylcyclohexane, mg/kg	---	60	50	60	---	---

LOG NO: P85-05-380

Received: 30 MAY 85
Reported: 12 JUN 85

Dale Radford
Leighton & Associates
25530 Avenue Stanford
Valencia, CA 91355

Purchase Order: 7841189-02

Project: TEXTRON PCMA

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
05-380-7	LB-2 @ 20'	30 MAY 85
05-380-8	LB-2 @ 30'	30 MAY 85
05-380-9	LB-2 @ 40'	30 MAY 85
05-380-10	LB-2 @ 50'	30 MAY 85

PARAMETER	05-380-7 (20')	05-380-8 (30')	05-380-9 (40)	05-380-10 (50')
Oil & Grease by Infrared, mg/kg	<20	<20	<20	<20
Hydrocarbons by IR, mg/kg	<20	<20	<20	<20
Purgeable Priority Pollutants				
Extraction	06/06/85	06/06/85	06/06/85	06/06/85
Acrolein, mg/kg	<3	<3	<3	<3
Acrylonitrile, mg/kg	<3	<3	<3	<3
Other Purgeable Priority Pollutants,	<0.3	<0.3	<0.3	<0.3

Edward Wilson, Laboratory Director

RECEIVED
JUN 19 1985
LEIGHTON & ASSOC.

BROWN AND CALDWELL
ANALYTICAL LABORATORIES

LOG NO: P85-05-380

Received: 30 MAY 85
Reported: 12 JUN 85

Corrected Report

Dale Radford
Leighton & Associates
25530 Avenue Stanford
Valencia, CA 91355

Purchase Order: 7841189-02

Project: TEXTRON PCMA

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
05-380-1	LB-1 @ 10'	30 MAY 85
05-380-2	LB-1 @ 20'	30 MAY 85
05-380-3	LB-1 @ 30'	30 MAY 85
05-380-4	LB-1 @ 40'	30 MAY 85
05-380-5	LB-1 @ 50'	30 MAY 85
05-380-6	LB-2 @ 10'	30 MAY 85

PARAMETER	LB1/10' 05-380-1	20' 05-380-2	30' 05-380-3	40' 05-380-4	50' 05-380-5	LB2/ 05-380-6
Oil & Grease by Infrared, mg/kg	27	15,000	10,000	20,000	30	45
Hydrocarbons by IR, mg/kg	27	14,000	9800	20,000	30	41

LOG NO: P85-05-380

Received: 30 MAY 85
Reported: 12 JUN 85

Dale Radford
Leighton & Associates
25530 Avenue Stanford
Valencia, CA 91355

Purchase Order: 7841189-02

Project: TEXTRON PCMA

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
05-380-1	LB-1 @ 10'	30 MAY 85
05-380-2	LB-1 @ 20'	30 MAY 85
05-380-3	LB-1 @ 30'	30 MAY 85
05-380-4	LB-1 @ 40'	30 MAY 85
05-380-5	LB-1 @ 50'	30 MAY 85
05-380-6	LB-2 @ 10'	30 MAY 85

PARAMETER	05-380-1	05-380-2	05-380-3	05-380-4	05-380-5	05-380-6
Xylene Isomers, mg/kg	---	4	3	3	---	---
Ethylcyclohexane, mg/kg	---	20	10	20	---	---
Ethyl Methyl Cyclohexane Isomer, mg/kg	---	300	300	300	---	---

** Quantification based upon comparison of total ion count or the compound with that of the nearest internal standard.

BROWN AND CALDWELL

ANALYTICAL LABORATORIES

LOG NO: P85-05-105

Received: 06 MAY 85
Reported: 28 MAY 85

Dale Radford
Leighton & Associates
25530 Avenue Stanford
Valencia, CA 91355

Requisition: TEXTRON
Project: 7841189-02

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES — Pacoima ppm	DATE SAMPLED
05-105-1	#3 at 12'	06 MAY 85
05-105-2	#4 at 12'	06 MAY 85

PARAMETER	05-105-1	05-105-2
geable Priority Pollutants		
Extraction	05/21/85	05/21/85
1,1,1-Trichloroethane, mg/kg	16	18
Acrolein, mg/kg	<3	<6
Acrylonitrile, mg/kg	<3	<6
Tetrachloroethylene, mg/kg	0.6	6
Other Purgeable Priority Pollutants,	<0.3	<0.6
Semi-Quantified Results **		
First Alkyl Cyclohexane, mg/kg	---	100
Second Alkyl Cyclohexane, mg/kg	---	200
A Terpene, mg/kg	---	40
Ethyldimethyl Cyclohexane, mg/kg	---	100
Ethyl Methyl Cyclohexane Isomer, mg/kg	---	90
Oil & Grease by Infrared, mg/kg	19,000	9900

** Quantification based upon comparison of total ion count of the compound with that of the nearest internal standard.

Edward Wilson, Laboratory Director

APPENDIX B

Information on Plume Fingerprinting Techniques

ENVIROPRO, INC. • 11927 Estrada Lane • Northridge, CA 91326 • (818) 366-5682
ENVIRONMENTAL-HAZARDOUS WASTE AND CHEMICAL TECHNOLOGY

Mr. David Bacharowski
California Regional Water Quality
Control Board, Los Angeles Region
107 S. broadway, Room 4027
Los Angeles, California 90012-4596

January 28, 1986

Dear Mr. Bacharowski:

Enclosed are three papers on the Petrex technique we plan to use at H R Textron in Pacoima. It seems that this technique, proven in the field, that uses Gas Chromatography Mass Spectrometry is superior. It has a detection limit down to part per trillion range, higher sensitivity and wider qualitative detection spectrum. It provides a fast, accurate, and cost-effective method for delineation of the lateral extent of a solvent plume.

I have enclosed the following papers for your evaluation:

1. K. Voorhees, J. Hickey, R. Klusman: "Analysis of Ground Water Contamination by a New Surface Static Trapping/Mass Spectrometry Technique," Analytical Chemistry, 1984, 56, 2602 (American Chemical Society). The authors are all from the Department of Chemistry and Geochemistry, Colorado School of Mines, Golden, Colorado.

2. R. Bisque: "Migration Rates of Volatiles from Buried Hydrocarbon Sources Through Soil Media," Petrex, presented at NWWA/API Conference, November 5-7, 1984, Houston, Texas.

3. Kent J. Voorhees, Ph.D.: "Application of a New Technique for the Detection and Analysis of Small Quantities of Contaminents in the Soil," Petrex technical paper.

From the data presented in the above papers, it seems that the technique works well in the field with practical value in evaluating the problem at higher speed and at less cost. Please note that the data shows good detection of chlorinated hydrocarbons (the Rocky Mountain Arsenal study), and therefore, highly suitable to the study on hand. Since the chlorinated hydrocarbons and volatiles mobility is higher than oils, they are excellent indicator compounds for a conservative lateral plume delineations.

Oils that have high molecular weight and lower mobility will be within this plume. Their lateral mobility and extent will be later on determined by confirming soil borings and testing.

I hope that the enclosed material will assist you in final evaluation of our work plan. Please call me for any questions.

Very truly yours,

M. Uziel

ENVIROPRO, INC.

Michael M. Uziel, Ph.D.

MMU/wp
cc: Mrs. Betty Seldner
H R Textron, Inc.

TABLE 1. Volatile Priority Pollutants Detectable by Petrex System

Acrolein	1,2-Dichloroethane
Acrylonitrile	1,1-Dichloroethylene
Benzene	trans-1,2-Dichloroethylene
Bis(chloromethyl)ether	1,2-Dichloropropane
Bromodichloromethane	cis-1,3-Dichloropropene
Bromoform	trans-1,3-Dichloropropene
Bromomethane	Ethylbenzene
Carbon tetrachloride	Methylene chloride
Chlorobenzene	1,1,2,2-Tetrachloroethane
Chloroethane	1,1,2,2-Tetrachloroethene
2-Chloroethyl vinyl ether	Toluene
Chloroform	1,1,1-Trichloroethane
Chloromethane	1,1,2-Trichloroethane
Dibromochloromethane	Trichloroethylene
Dichlorodifluoromethane	Trichlorofluoromethane
1,1-Dichloroethane	Vinyl Chloride

TABLE 2. Base-Neutral Extractable Priority Pollutants Detectable by Petrex System

Acenaphthene	2,4-Dinitrotoluene
Acenaphthylene	2,6-Dinitrotoluene
Anthracene	Hexachlorobutadiene
Benzidine	Hexachloroethane
Bis(2-chloroethoxy)methane	Naphthalene
Bis(2-chloroethyl)ether	Nitrobenzene
Bis(2-chloroisopropyl)ether	N-Nitrosodimethylamine
2-Chloronaphthalene	N-Nitrosodiphenylamine
Chrysene	N-Nitrosodi-n-propylamine
1,2-Dichlorobenzene	Phenanthrene
1,3-Dichlorobenzene	1,2,4-Trichlorobenzene
1,4-Dichlorobenzene	

TABLE 3. Acid Extractable Priority Pollutants Detectable by Petrex System

p-Chloro-m-cresol	2-Nitrophenol
2-Chlorophenol	4-Nitrophenol
2,4-Dichlorophenol	Phenol
2,4-Dimethylphenol	2,4,6-Trichlorophenol
4,6-Dinitro-o-cresol	
2,4-Dinitrophenol	

Also detectable - Petroleum hydrocarbons with vapor pressures exceeding 10^{-3} - 10^{-4} torr.

Presented at the NWWA/API Conference entitled
"Petroleum Hydrocarbons and Organic Chemicals in Ground Water: Prevention, Detection, Restoration"

November 5 -7, 1984
Houston, Texas

Migration Rates of Volatiles from Buried Hydrocarbon Sources through Soil Media

By Ramon E. Bisque
PETREX
4565 Highway 93 North
Golden, Colorado

Trace volatiles from gasoline, diesel fuel, and crude oil samples introduced at depth in undisturbed soil media were collected at the surface to determine upward migration rates. Soil media varied from tight clay containing ten percent free water (100 C) to dry colluvial materials. In all cases trace emanations were detectable at the surface within hours from depths of three meters. Numerous individual compunds from these mixtures were identified and monitored.

The tests demonstrate an effective method for detecting and identifying leaks of hydrocarbons from buried sources. Leaks can be located by gridding the suspect area with collectors and comparing relative flux rates. Appropriate grid spacing depends on the depth and volume of the leaks.

One liter of these three test substances introduced at 3 meters depth continues to be detectable at the surface two months after placement. The trace volatiles were collected on activated charcoal and analysis accomplished by Curie point mass spectrometry.

The collection-detection system used in the tests described in this paper has been used in one hundred and seventy commercial surveys for oil and gas exploration in 25 states. Trace volatiles reaching the surface from deep oil and gas accumulations were collected on activated charcoal glued to a Curie point wire placed in a small vial just below the soil surface. The mass spectra of these volatiles were computer-analyzed by multivariate statistics and used as a signature or "fingerprint" for differentiating hydrocarbon sources. (Bisque, R.E. 1983, Klusman, R.W. and Voorhees, K.J. 1983.) Although these surveys have demonstrated the potential of this approach and provide voluminous data relating to variation of hydrocarbon "fingerprints" from geologically buried sources, they provide no hint of migration rates.

In anticipation of broad application in detecting buried leaks of hydrocarbons and other volatiles, the tests described herein were performed to establish a time frame for upward migration and provide data on which to base sampling techniques.

Background readings in and around the test area were taken for ten days prior to tests and throughout the test period. For the particular compounds observed, background levels varied from a few tens of ion counts per day to two or three hundred ion counts. Lower background levels values were measured in dry porous colluvial material and the higher levels in a well developed soil horizon over a sedimentary sandstone. In contrast local readings at the surface after introduction of hydrocarbons at depth went as high as several tens of thousands of ion counts per day.

Gasoline, diesel fuel and a crude oil were tested separately, each from a depth of three meters. Clean holes were power drilled with a three inch auger and sealed until the hydrocarbon samples were introduced. Collectors were placed around the holes prior to drilling and several removed after the drilling procedure to detect any changes in background levels. (Fig. 1)

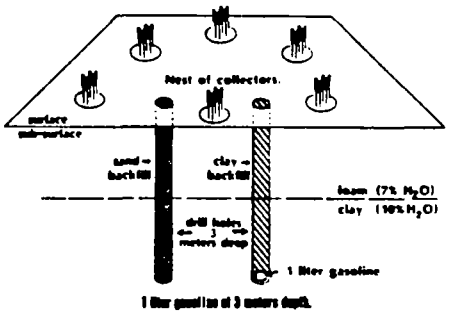


Figure 1. Hydrocarbons were introduced at depth via three inch augered holes after background flux was monitored for ten days.

The hydrocarbon fluids were introduced to the bottom of the hole through a plastic hose, the hose was allowed to drain thoroughly from a few inches above the bottom and back filling began as the hose was slowly lifted. Collectors had been placed along radii out to three meters from the hole. These were removed periodically and subjected to mass spectrometric analysis to follow the build up and attenuation of hydrocarbon flux at the surface.

The shape of the curves showing build-up and attenuation of total flux were essentially the same for all the tests. Presence of the anamoly was readily apparent within the first twenty-four hour period, peak flux resulted on the third day and attenuation was rapid into day five. (Fig 2)

The "stain" of molecules in the soil was still detectable after 60 days. Relative ratios of the component molecules, the "fingerprint", permits differentiation of the three types of hydrocarbon sources.

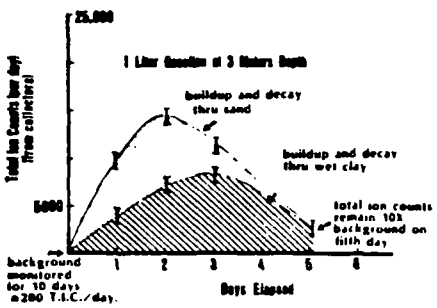


Figure 2. Build-up and attenuation of volatiles from gasoline through a sand column and through undisturbed wet clay soil. See also appended figures (Fig. 4 and 5).

Usually six to ten compounds of these mixtures need be determined to derive a diagnostic fingerprint or signature (i.e., mass spectrum). The technique developed by Klusman and Voorhees collects these compounds on activated charcoal, analyzes them simultaneously by mass spectrometry and identifies the source by quantitatively comparing the fingerprint with a standard fingerprint. Standard fingerprints can be derived from previous similar situations, derived from a contrived test situation or constructed on an empirical basis.

For surveys conducted soon after a leak occurs and before equilibrium is established, fingerprints may vary considerably depending on soil type and soil moisture conditions. These differences subside as equilibrium is approached.

The geometry of these tests would indicate that a surface grid spacing of the collectors would have to be less than the *hole depth (depth of leak) to insure detection of the anamoly.* This requirement is much less stringent for a source that would be replenished as in the case of a continuous leak. In the latter situation a plume would develop and concentrations near the source would be considerably higher.

The shape and extent of the plume would be influenced by ground water movement. In the absence of ground water the depth of unconsolidated soil material might also be influential if the source provided enough fluid to reach bedrock. In the latter case, pooling or flow on the bedrock surface can occur. In either case, grid sampling and comparison of relative flux rates will provide a map indicating the location of the source and the direction of flow. Drilling costs can be reduced significantly and in some cases eliminated.

The strong vertical migration effect observed in these tests (Fig. 3) is consistent with observations in oil and gas exploration.

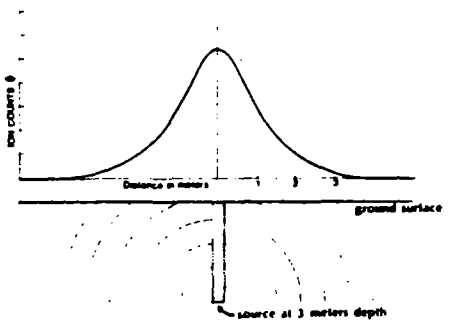


Figure 3. Hypothetical diffusion pattern (below) and measured surface flux anomaly (above) demonstrating the "vertical migration" effect.

Surface anamolies mapped over deep petroleum accumulations are confined to limited areas that are not consistent with models incorporating spherical diffusion fronts. This effect has been observed and discussed by others who have examined results of geochemical methods for petroleum exploration (Davidson, M. J., 1982).

In summary results of controlled field tests are consistent with interpretations made from geochemical exploration surveys and also demonstrate that volatiles from shallow hydrocarbon sources reach the surface in a matter of hours or minutes. Because of strong vertical migration these volatiles provide a means of locating leaks and /or guiding drilling programs designed to retrieve samples for detailed chemical analysis.

References

1) Klusman, R. W. and Voorhees, K. J., 1983. A New Development in Petroleum Exploration Technology, Mines Magazine, Vol. 73, No. 3, p. 6-10.

2) Bisque, R. E., 1983. New Geochemical Technique Used in The Denver Basin. Western Oil Reporter, June, 1983, p. 23.

3) Davidson, M. J., 1982. Toward A General Theory of Vertical Migration. Oil and Gas Journal, June, pp. 288-300.

Appendex

Inquires regarding the relative build-up and attenuation of individual components in the gasoline and crude oil experiments have suggested that we append these two Figures. Although these comparisons will differ with changes in soil composition, moisture, temperature, etc., these measurements serve to demonstrate that there are significant differences in the behavior of various components.

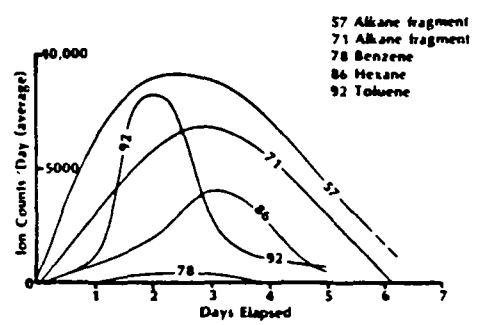


Figure 4. Relative flux build-up and attenuation for selected gasoline components. (See Fig. 2 of paper)

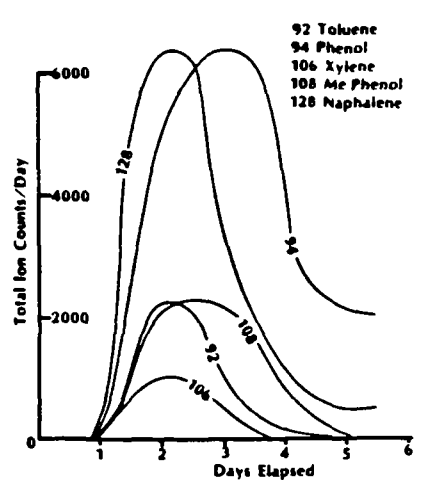


Figure 5. Relative flux build-up and attenuation for selected crude oil components. (See fig 2 of paper)

Reprinted from Analytical Chemistry, 1984, 56, 2602.
Copyright © 1984 by the American Chemical Society and reprinted by permission of the copyright owner.

Analysis of Groundwater Contamination by a New Surface Static Trapping/Mass Spectrometry Technique

Sir: The common method of analyzing for organic groundwater contamination is to drill a well into the aquifer, remove a water sample and then use a procedure such as purge and trap followed by GC/MS analysis (*1*). This approach, when used as a reconnaissance mode, is very expensive.

It is widely recognized that organic compounds in subsurface water can migrate into bed rock as well as undergo vertical migration to the earth's surface (*2*). The quantities of these compounds at the surface are often too low for direct detection; however, a trapping procedure provides a viable approach.

Recently, we developed a technique using a static collection device for surface geochemical exploration for petroleum (*3*). The static collection device consisted of a ferromagnetic wire to which charcoal had been glued with an inorganic cement. The wire was placed in a support in a 25–35 cm deep hole in the soil and covered by an aluminum can and the dirt backfilled. After equilibrating with the volatiles from petroleum occurrences for about 1 week, the wires were removed and transported to the laboratory for analysis by Curie-point pyrolysis/mass spectrometry in conjunction with pattern recognition. The ferromagnetic wire served as a heat source to desorb the adsorbed compounds when placed in the high frequency field of the Curie-point pyrolyzer. In this paper we described how the static trapping/MS technique has also been successfully applied to the surface detection of low levels of tetrachloroethylene and other contaminates in groundwater.

EXPERIMENTAL SECTION

Sampling Site. A site of known tetrachloroethylene (PCE) contamination at an industrial site near Denver, CO, was used for the study. The PCE and other chemicals had been introduced into the groundwater (averaging 13.4 m below surface) by seepage from a waste storage reservoir which had been used in the 1960s. A number of shallow wells had been drilled in the area to assess groundwater movement and PCE contamination.

Sample Collector. A 358 °C Curie-point wire was used as the support for the static collector. The static trap was prepared by applying sodium silicate solution to about 1 cm of the roughened end of the wire followed by coating with fine activated charcoal (*4*). The wires were cleaned by heating to the Curie point under vacuum. A sealed culture tube was used to store and transport the wire to and from the field. In the field, the wires were placed at predetermined sites. Figure 1 illustrates the trapping device. Integration time for this study was 3 days, at which time the samples were removed and transported back to the laboratory for analysis. The loading on the wires was followed by removing duplicate samples at 1-day intervals. Three unexposed wires transported to and from the field were used as blanks.

Mass Spectrometry Analysis. The adsorbed compounds were desorbed with a Fisher Curie-point pyrolyzer (1.5 kW, 1.1 MHz) in series with an Extranuclear Laboratories SpectrEL quadrupole mass spectrometer. Low-energy electron ionization (15 eV) was used to minimize fragmentation. A scan rate of 1200 amu/s and a scan range of 10–240 amu were used in all analyses. Data were collected on a DEC 1123 computer and stored on disk. Identification of individual species was made based on molecular weight and isotope distribution. Since a major portion of the compounds in the study contained chlorine, high confidence is placed on the identifications.

The process of mapping fluxes of single or groups of compounds was completely computerized. The sample sites on a map were first digitized as X–Y coordinates. The X–Y data were then merged with selected mass spectral peak ion counts. A file was constructed which was subsequently run through a plotting routine to produce the flux maps for each compound. The merging procedures were done on the DEC 1123 computer while digitizing and map construction were done on a DEC 1091 mainframe computer. All data were transferred between two computers on a hard line utilizing the NIH transfer program CLINK.

RESULTS AND DISCUSSION

The contamination of the groundwater occurred from leakage of a waste storage pond. Figure 2 illustrates an idealized cross section of the pond and sampling locations. The depth of the water table averaged 13.4 m. Movement of the groundwater is to the northeast. Soil is predominantly clay. The sampling scheme was chosen to traverse the sus-

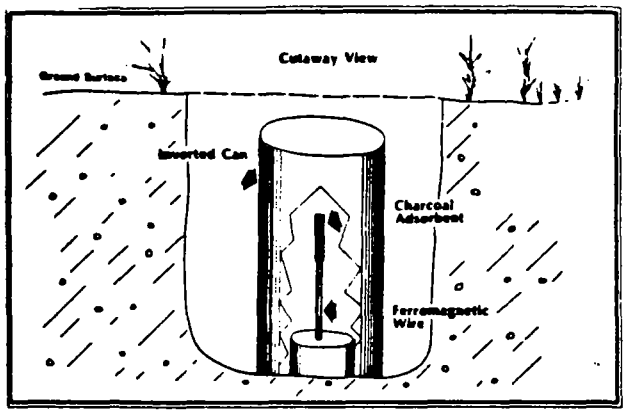


Figure 1. Schematic of trapping device.

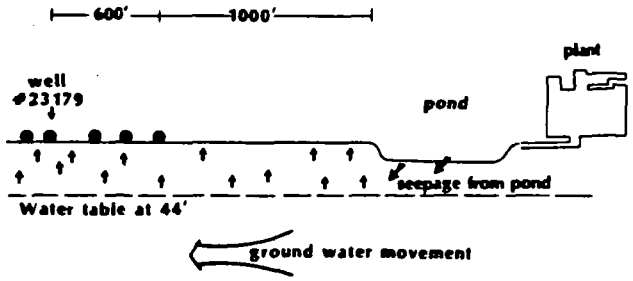


Figure 2. Idealized cross section of pond and sampling site; ●, monitoring wells.

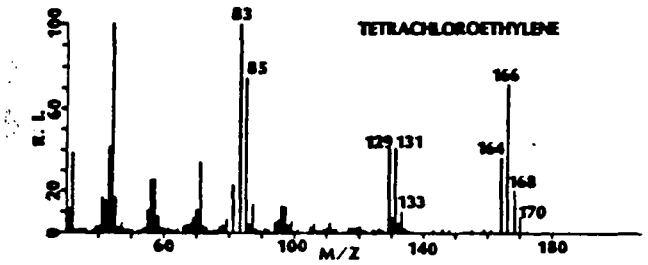


Figure 3. Typical mass spectrum of collected gases.

Table I. Compounds Identified by Trapping/MS Analysis for a Denver Industrial Site

benzene	dichlorobenzene
toluene	chloroform
xylene	trimethylbenzene
phenol	naphthalene
trichloroethylene	carbon tetrachloride
tetrachloroethylene	

pected east to west edge as well as the north edge of the contaminated groundwater plume. A total of 25 samples were taken on spacings ranging from 30.6 to 61 m.

Figure 3 shows a typical mass spectrum of the trapped vapors from site 3. The major compound in this spectrum is PCE. The molecular ions plus major fragment ions are present, clearly defining the PCE. Table I summarizes the compounds which were observed in the 25 samples. Figure 4 shows the flux data for PCE using the m/z 164 peak.

The fluxes for PCE in the area studied ranged from 0 to 12 300 ion counts. Although absolute concentrations are not given, ion counts for each site are proportional to the surface fluxes. The decrease in ion counts was sharp on the plume edges. For example, site 28 had 380 counts while the adjacent sample 27, had 10 171 ion counts.

A qualitative comparison of the data obtained from the static trapping technique above well 23179 to the GC/MS purge and trap analysis of water from well 23179 is shown in

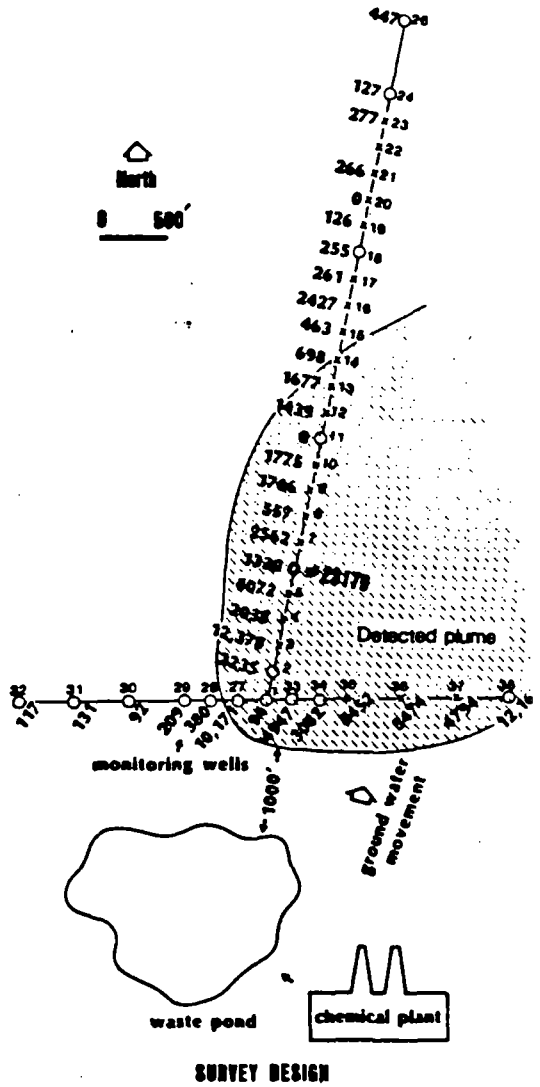


Figure 4. Tetrachloroethylene surface flux data: ×, sample locations; hached area, PCE plume; O, monitoring wells.

Table II. Compounds Identified by Static Trapping/MS and in Well Water by GC/MS

trapping above well 23179	ion counts	well 23179 GC/MS	concn, ppb
		dichloroethylene	12
toluene (m/z 92)	1052	toluene	<2
xylene (m/z 106)	853	xylene	4.3
		benzene	22.1
trichloroethylene (m/z 130)	352	trichloroethylene	9.5
tetrachloroethylene (m/z 164)	616	tetrachloroethylene	75.2
chloroform*		chloroform	3440
carbon tetrachloride (m/z 152)	110	carbon tetrachloride	<3

*Other compounds interferred with m/z 83 and 85; identification could not be made.

Table II. The major difference in compounds identified between the two methods for well 23179 is the absence of chloroform using the static trapping method. Even at 15 eV, the chloroform molecular ions fragment with the loss of 35 amu to m/z 83, 85, and 87. No molecular ions were observed for chloroform. Many of the other trapped compounds, primarily from soil background, have major peaks in the m/z

83–87 range and therefore make identification based on isotope distribution in the fragment ions difficult in some samples. In samples from other sites, the isotope distribution for the m/z 83, 85, and 87 were not obscured by the presence of other compounds, therefore allowing for the identification of the chloroform. Figure 3 clearly shows the m/z 83, 85, and 87 peaks in the proper ratios. All other chlorinated compounds occurred in regions of the spectrum where no background interference was observed.

This study clearly shows that the approach of using the static collection device with Py-MS offers a cost efficient new approach to the analysis of low level vapors originating from soil and groundwater contamination. Most compounds were identified with a high degree of confidence. However, the potential use of the collection device followed by analysis with tandem mass spectrometry or GC/MS would add another dimension to the analyses and should increase the compound identification confidence to that of the standard GC/MS well water analysis (*5*). These avenues are presently being explored.

Registry No. C, 7440-44-0; tetrachloroethylene, 127-18-4; water, 7732-18-5.

LITERATURE CITED

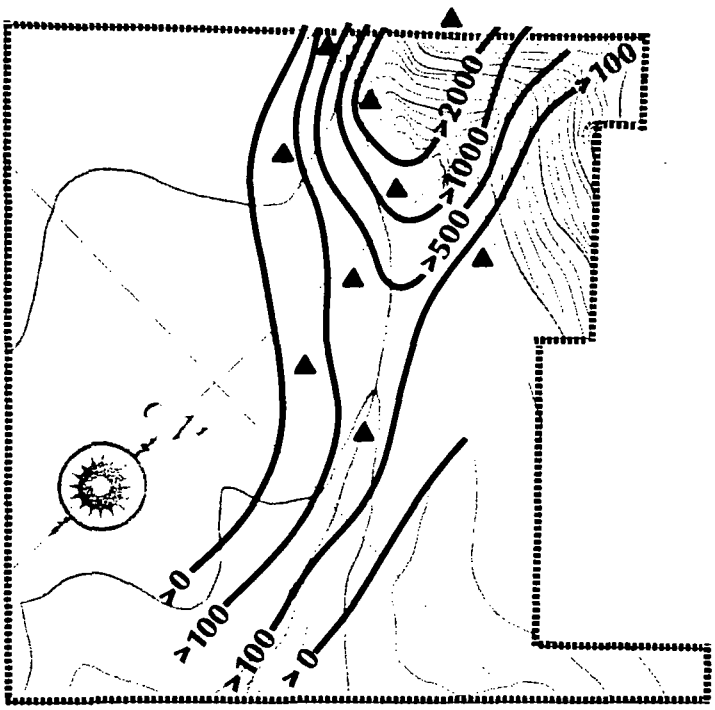
(1) Fishman, M. J.; Erdmann, D. E.; Garbarino, J. R. *Anal. Chem.* **1983**, *55*, 1–2R.
(2) Buono, A.; Packard, E. M. *Water-Resour. Invest.* (*U.S. Geol. Surv.*) **1982**, *No. 82-45*.
(3) Voorhees, K. J.; Hickey, J. C.; Klusman, R. W. "Integrative Gas Geochemical Technique for Petroleum Exploration"; American Chemical Society Meeting, Seattle, WA, 1983.
(4) Colenutt, B. A.; Thornburn, S. *Chromatographia* **1979**, *12*, 12.
(5) Keith, L. H.; Crummett, W.; Deegan, John, Jr.; Libby, R. A.; Taylor, G. K.; Wentler, G. *Anal. Chem.* **1983**, *55*, 2210.

Kent J. Voorhees*
James C. Hickey
Ronald W. Klusman

Department of Chemistry and Geochemistry
Colorado School of Mines
Golden, Colorado 80401

RECEIVED for review May 3, 1984. Accepted July 2, 1984.

PETREX ENVIRONMENTAL
CASE HISTORY #2



Contamination level of TCE (ppb) based on drill hole sampling and independent chemical analysis of groundwater. (Above)

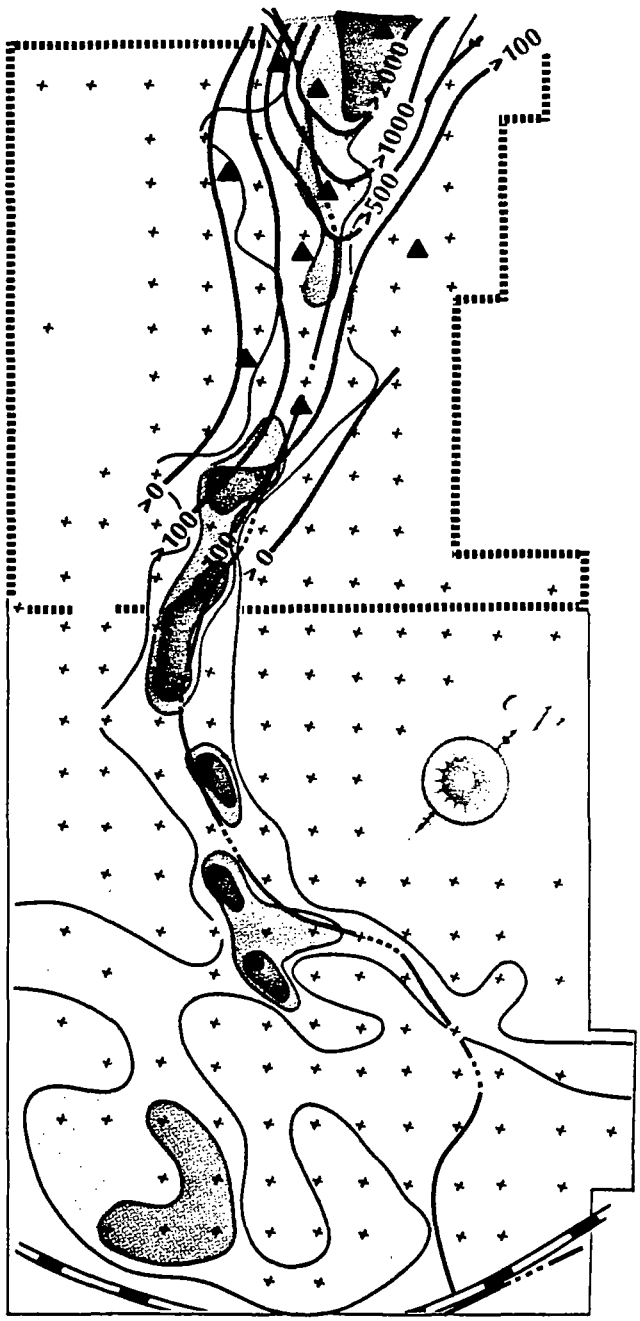
▲ Monitoring Wells
TCE Contamination in ppb.
Area of defined hydrogeologic control

PETREX Survey Objectives:

1. Determine the pattern of TCE surface vapor flux over an area of contamination previously defined by drilling and groundwater analysis.
2. Determine the direction and extent of migrating TCE plume outside this area.
3. Provide a basis for future evaluation of remedial action.

SURVEY DESIGN: Regular grid-280 Samples on 100' spacing.

TURNKEY SURVEY COST:$28,000



Relative TCE flux in soil derived from **PETREX** *survey (Overlain on groundwater contamination data). Map extended to show* **PETREX** *survey and subsequent monitoring wells drilled on* **PETREX** *data confirming TCE contamination in groundwater. (Above)*

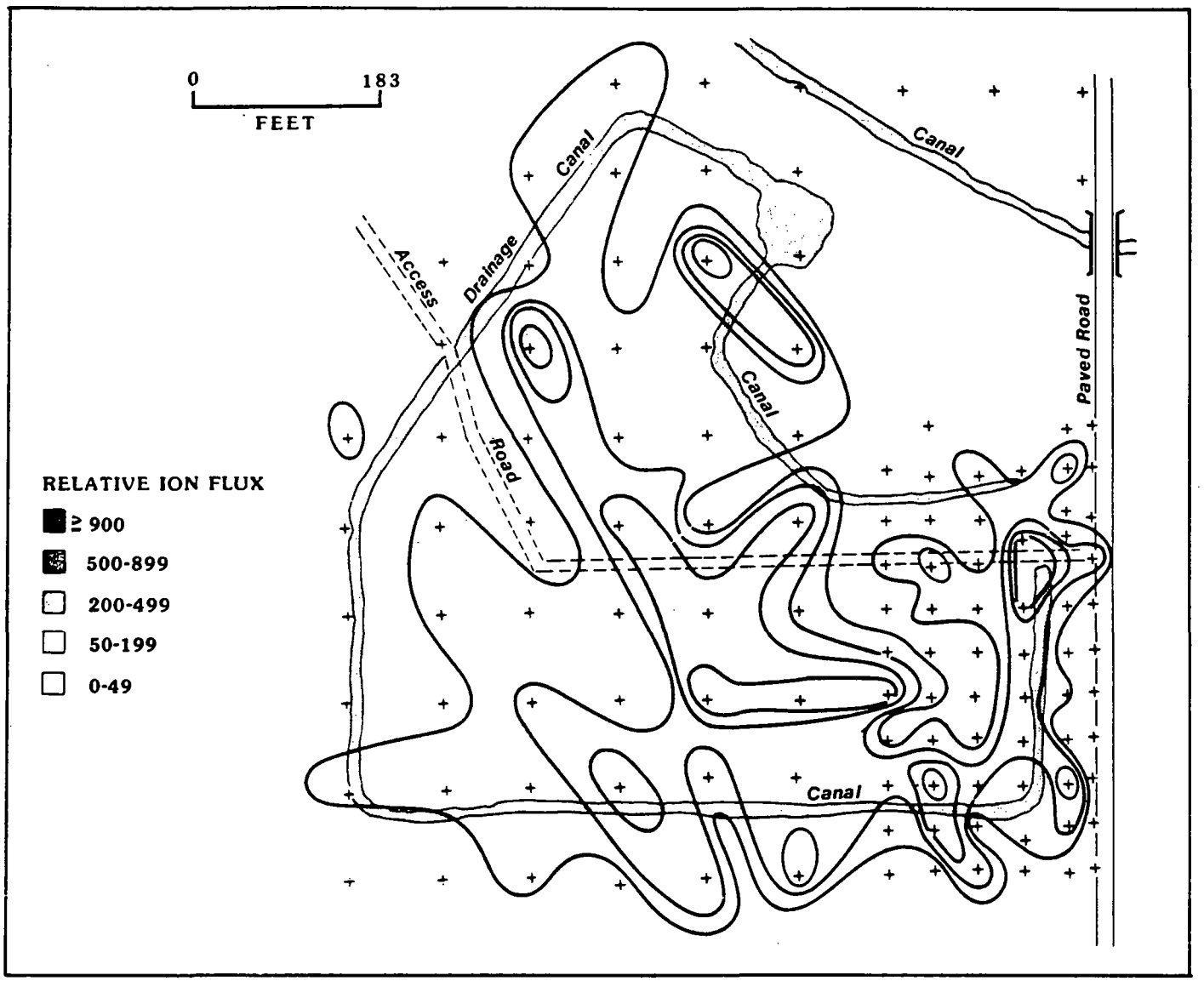
Relative TCE flux
High ■
Med. □
Low □

+ **PETREX** Collector Locations
▲ Groundwater monitoring wells prior to **PETREX** survey.
● Groundwater monitoring wells drilled after **PETREX** survey confirming TCE contamination in groundwater.

PETREX
K-V FINGERPRINT TECHNIQUE©

4565 Highway 93 North • Golden, Colorado 80403 • (303) 279-7646 or 279-7641 • Telex 45-704

PETREX ENVIRONMENTAL
CASE HISTORY #4



PCE surface flux as determined by a Petrex survey in and around a landfill in southeastern U.S. (See survey objectives below). Survey was followed by remedial investigation which verified anomalies.

Depth to ground water-10 feet.

PETREX Survey Objectives:

a) Determine zones of highest PCE flux in the landfill area.

b) Determine the extent of PCE migration.

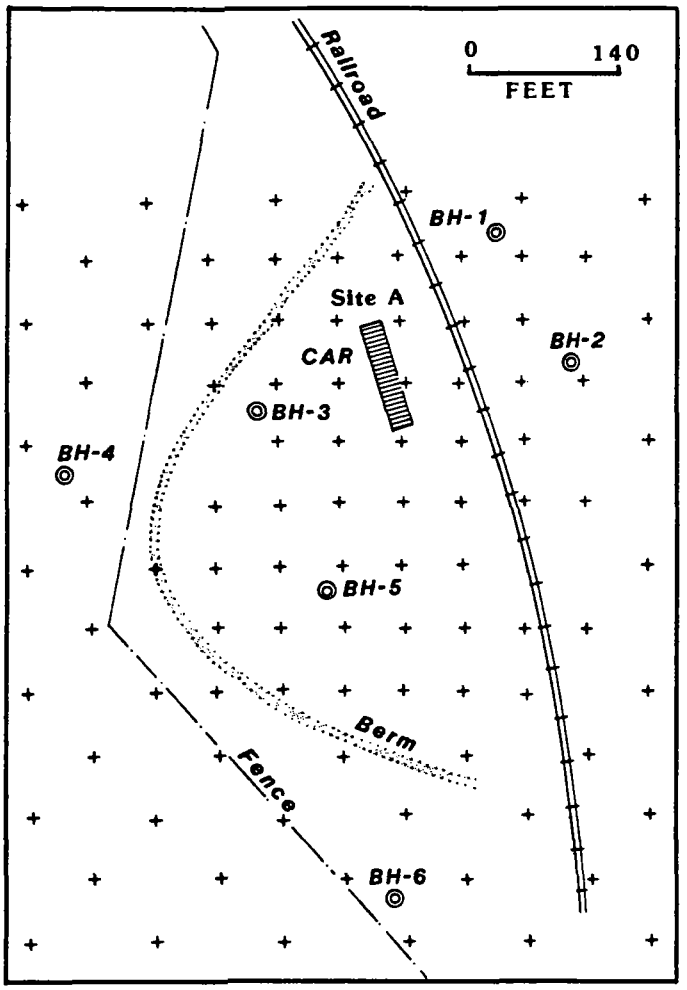
c) Define migration pathways.

SURVEY DESIGN: 175 collectors placed on a variable grid pattern (50 - 125 feet).
TURNKEY COST: $18,000. Client placed and retrieved collectors - $13,000.

PETREX
K-V FINGERPRINT TECHNIQUE©

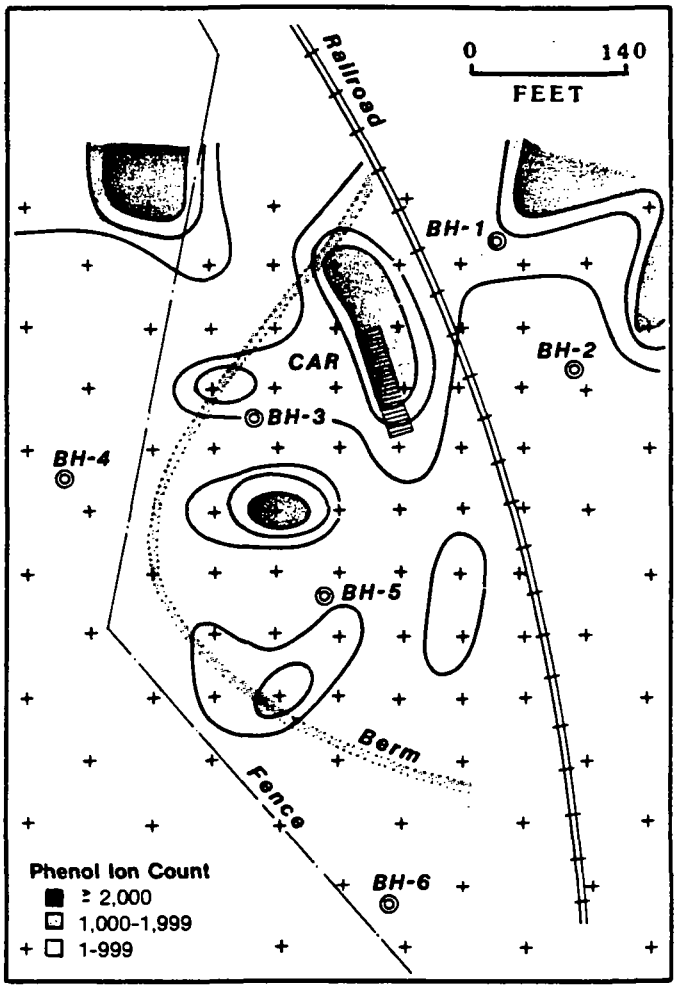
4565 Highway 93 North • Golden, Colorado 80403 • (303) 279-7646 or 279-7641 • Telex 45-704

PETREX ENVIRONMENTAL
CASE HISTORY #3



In the early 1970's a railroad tank car containing 30,000 gallons of phenol was overturned in an accident causing a rupture and a partial spill. The tank car was buried at site A.

Bore holes were drilled at the sites marked BHI through BH6 prior to the Petrex survey.



The Petrex survey shows highest flux at the burial site and in several pockets in the near vicinity. The high zone to the east of the track was explained by the client as being the spot where the tank car first overturned. It was moved to the west for burial.

PETREX Survey Objectives:

a) Confirm the location of burial.

b) Determine the extent of migration of phenol in the area.

Depth to water table - 10 feet

SURVEY DESIGN: 100 Petrex collectors placed in a variable spaced grid (50 feet - 100 feet).

TURNKEY COST: $10,000

PETREX

K-V FINGERPRINT TECHNIQUE©

4565 Highway 93 North • Golden, Colorado 80403 • (303) 279-7646 or 279-7641 • Telex 45-704

Application of a New Technique for the Detection and Analysis of Small Quantities of Contaminants in the Soil

Prepared by

Kent J. Voorhees, Ph.D.
PETREX
Golden, Colorado

A static collection device for the trapping of volatiles has been applied to the detection of various organic contaminants in soil.[1] The collection device consists of a few mg of charcoal glued on a ferromagnetic wire located within a collection chamber, as shown in Figure 1. The entire device is placed in an 8 to 12 inch hole and buried. The device is usually left in the ground for several days to assure integrative data collection.

Analysis of the trapped compounds utilizes Curie-point mass spectrometry in conjunction with multivariate statistics. Figure 2 illustrates a schematic of the mass spectrometer system. The Curie-point pyrolysis device provides a clean reproducible method for desorption of the trapped compounds. The mass spectrometer generates a fingerprint of the absorbed materials. Analysis of the fingerprints has been approached in two ways: 1) use of gas flux data for individual masses, and 2) multivariate statistics. Most of the data reported in these studies have been developed using only the gas flux data.

Two studies have been conducted at Rocky Mountain Arsenal. The first study was designed to test the trapping ability of the device and the analysis scheme for various known chemicals. In this study a series of samplers were placed in areas of known contamination. A railroad yard, an area used for temporary storage, an area where chemicals had been pumped down a deep well, an area with known ground water contamination, an area thought to be free from chemicals (background), and a site adjacent to a chemical plant were chosen as the test sites. The mass spectra from these sites are shown in Figures 3 - 5. Figure 3a represents the sample taken in the clean area. The flux at this area was very low and is typical of other samples analyzed from background areas. Figure 3b is the spectrum from the railroad yard. This spectrum contains hydrocarbons characteristic of diesel fuel as well as phenol from the railroad ties and some unexplained aromatics. Figure 4a is spectrum from the area with known ground water contamination (water table ~43'). The major peaks in this spectrum come from tetrachloroethylene, trichloroethylene and possibly dichlorethylene. Figure 4b is the spectrum from the site north of the chemical plant. The interesting peaks in this spectrum result from chlorinated methyl phenols. Figure 5a shows the data from the deep well site. Phenol, naphthalene and series of chlorinated ethylenes are easily identified in this spectrum. Finally, Figure 5b shows the spectrum of the area used for temporary storage. Although a series of hydrocarbons is present in the spectrum, no

[1] Patent pending

chlorinated compounds, phenols or aromatics are prevalent. The spectrum is actually very characteristic of the flux pattern observed in an area with underground petroleum accumulations.

This study demonstrated that a wide variety of compounds can be trapped and desorbed from the static collection device. The study also showed that significantly different fingerprints are observed in areas with different pollution sources.

A followup study was conducted in the area of known ground water contamination. A series of 25 samples were placed along two lines (NE-SW and E-W) with the goal of defining the contamination. Figure 6 summarizes the results of the study. Each sample site is represented by an X. Monitoring wells, drilled to the water table (water table ~43'), are marked on the Figure with solid dots. Areas where tetrachlorethylene were observed are identified in red. In addition the areas where dichlorobenzene were observed are shown in blue.

Comparison of the surface data to the Rocky Mountain Arsenal Laboratory well water study shows comparable results. This study clearly shows that ground water contamination can be monitored from the surface.

We believe the described status collection device offers a new approach to the analysis of low level vapors originating from soil contamination. The approach described in this report utilized a direct MS approach. Use of the same collection device with GC/MS or with MS/MS should provide expanded capabilities permitting analysis of very minor constituents.

In addition to work described in the previous examples, another study to detect various hydrazines was conducted at Rocky Mountain Arsenal under the direction of Bill Trautman. Wires were provided to Dr. Trautman who placed, retrieved and returned them to Petrex for analysis. Analyses were conducted as previously described. The spectra were examined for the presence of hydrazine, methylhydrazine, dimethyl hydrazine, phenyl hydrazine and the oxidation products of these species. Because of the heavy natural background from petroleum deposits in the area, none of these species could be unequivocally identified.

In some of the spectra the ratio of nitrogen to oxygen, M/Z 28 to M/Z 32, did not follow a strict atmospheric ratio. In an attempt to correlate nitrogen with possible oxidation products of the hydrazine, the ion counts were summarized (Table 1). Without knowing the site history these data are presented without interpretation. Dichlorobenzene was observed in samples 2, 3, 6, 7, 8, 9, 13 and 20. In addition a peak at M/Z 136 was observed in samples 1, 2, 6, 7, 15, 19, 20 and 21. Based on the presence of a M/Z 121 peak in samples containing the 136 peak, the 136 species is probably trimethyl phenol.

In summary, no direct evidence of hydrazines was found in the collectors retrieved by Bill Trautman. It is possible the hydrazines are in such low concentration as to require GC/MS or MS/MS analysis. Such avenues can be explored if Rocky Mountain Arsenal staff desires.

TABLE 1

Summary of Ion Counts for M/Z 28

Sample #	Ion Counts	Sample #	Ion Counts
1	1,783	12	1,792
2	3,113	13	2,919
3	2,923	14	2,015
4	2,603	15	2,420
5	-	16	832
6	2,089	17	2,638
7	1,758	18	1,254
8	3,342	19	1,965
9	1,994	20	2,446
10	2,690	21	1,952
11	1,700		

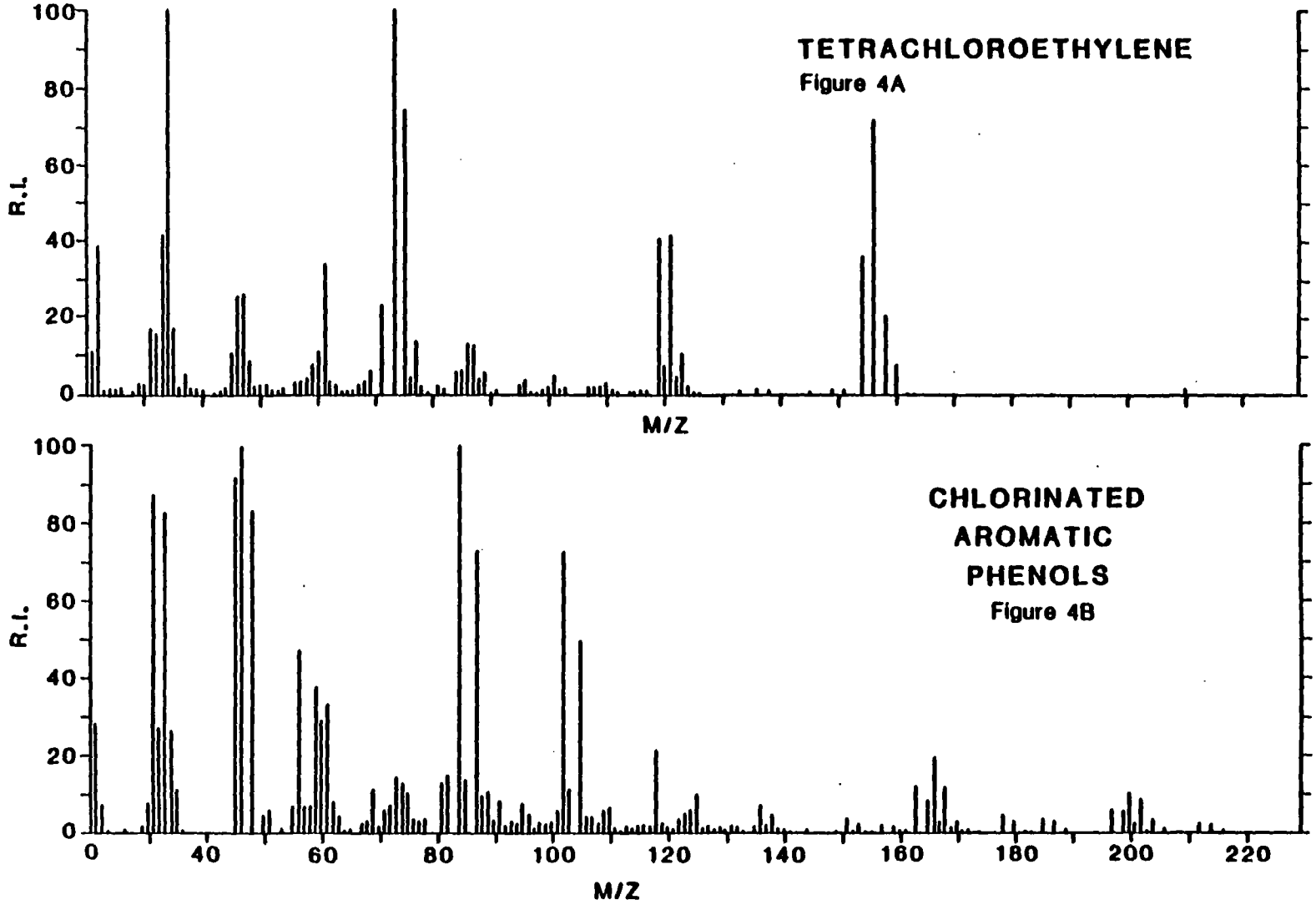
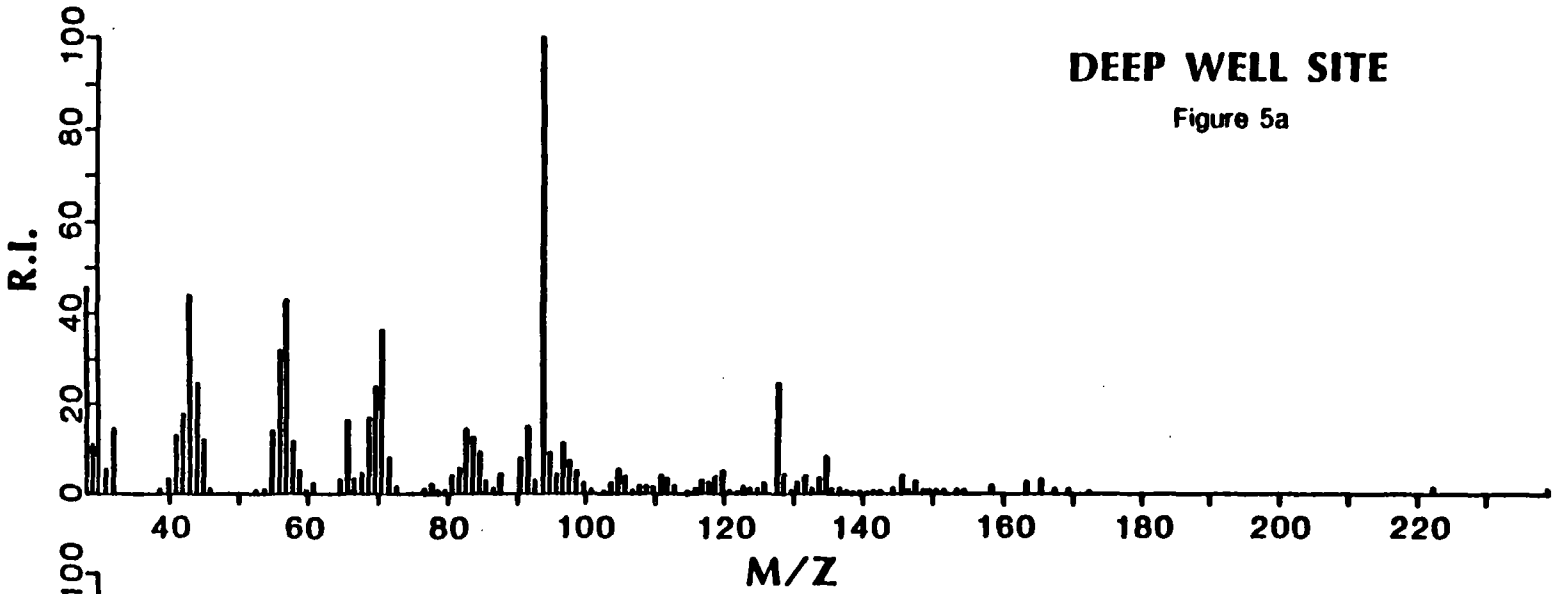


FIGURE 4. Selected Mass Spectra of Collected Compounds



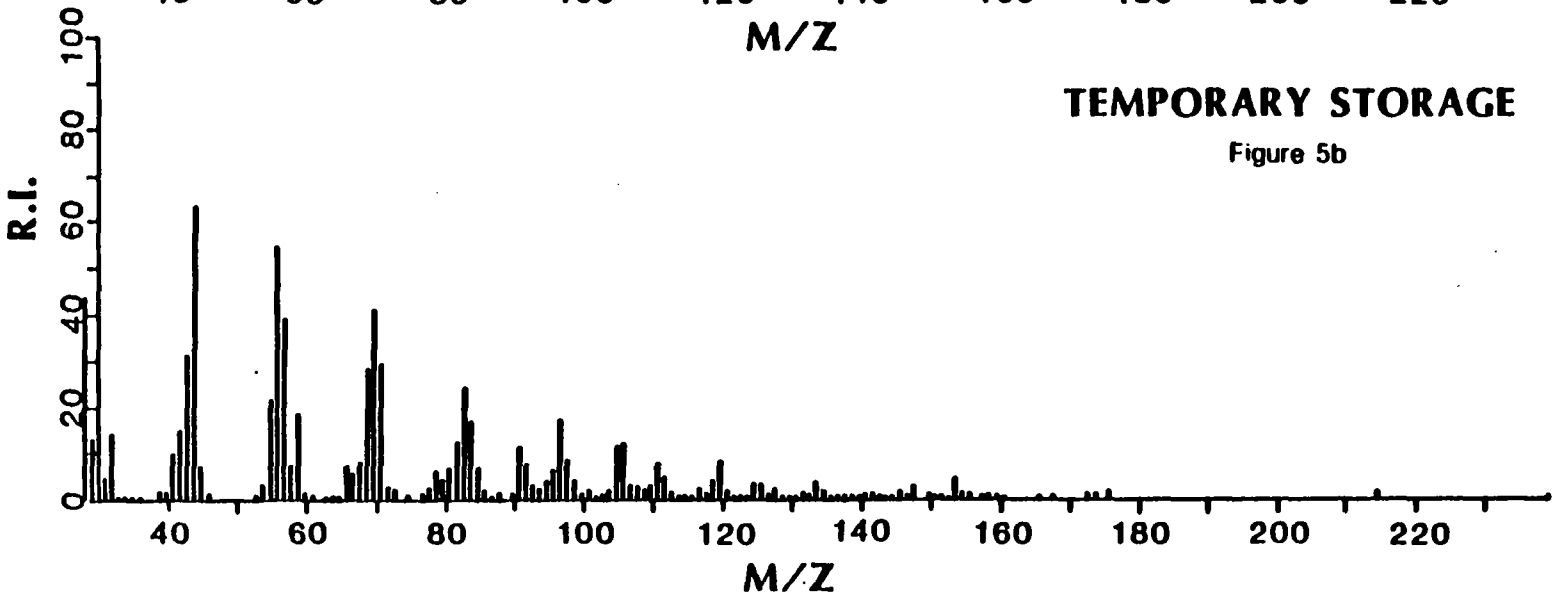


FIGURE 5. Selected Mass Spectra of Collected Compounds

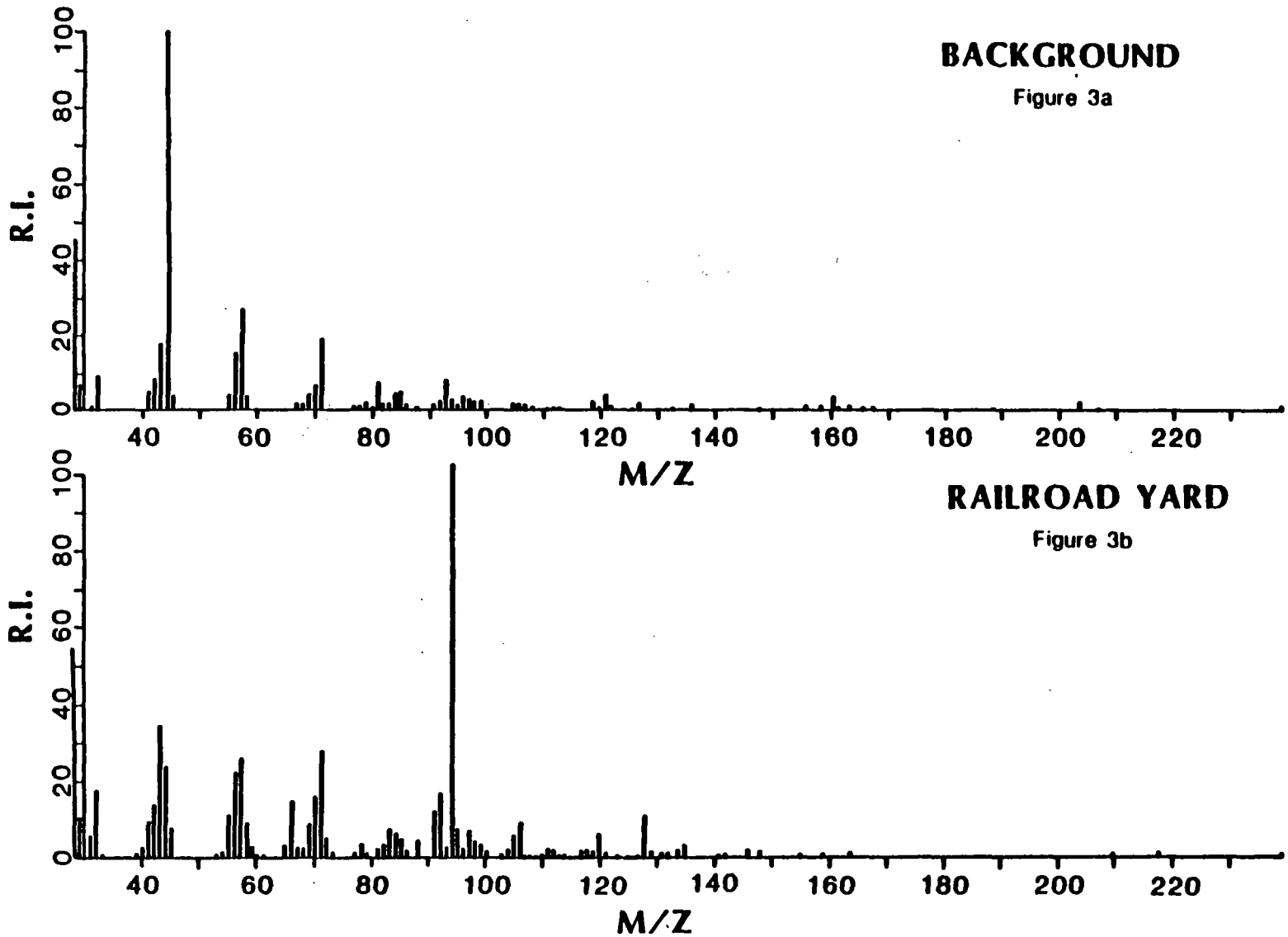


FIGURE 3. Selected Mass Spectra of Collected Compounds

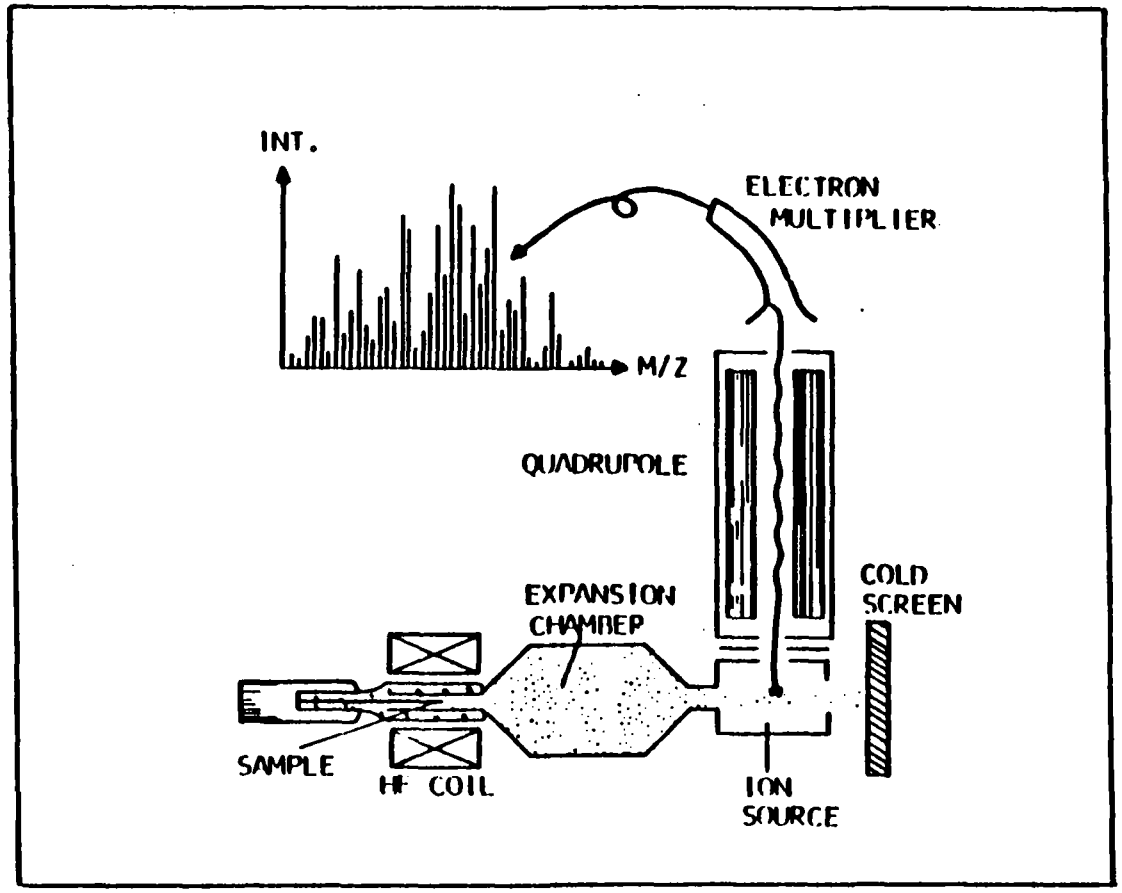
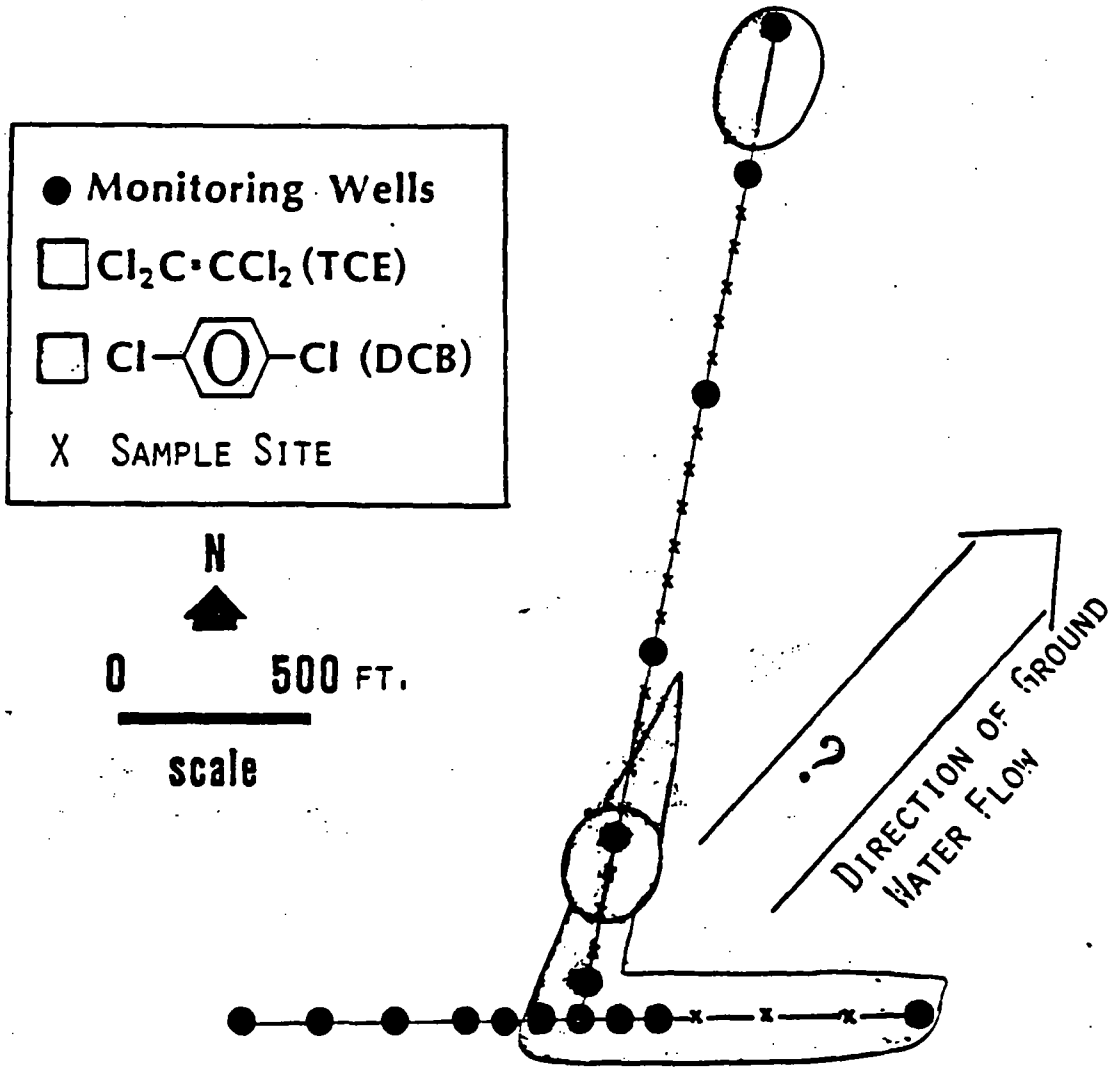


FIGURE 2. Desorption Apparatus
and Mass Spectrometer



TCE & DCB DISTRIBUTION

Rocky Mountain Arsenal

FIGURE 6. Map of TCE and DCB Distributions

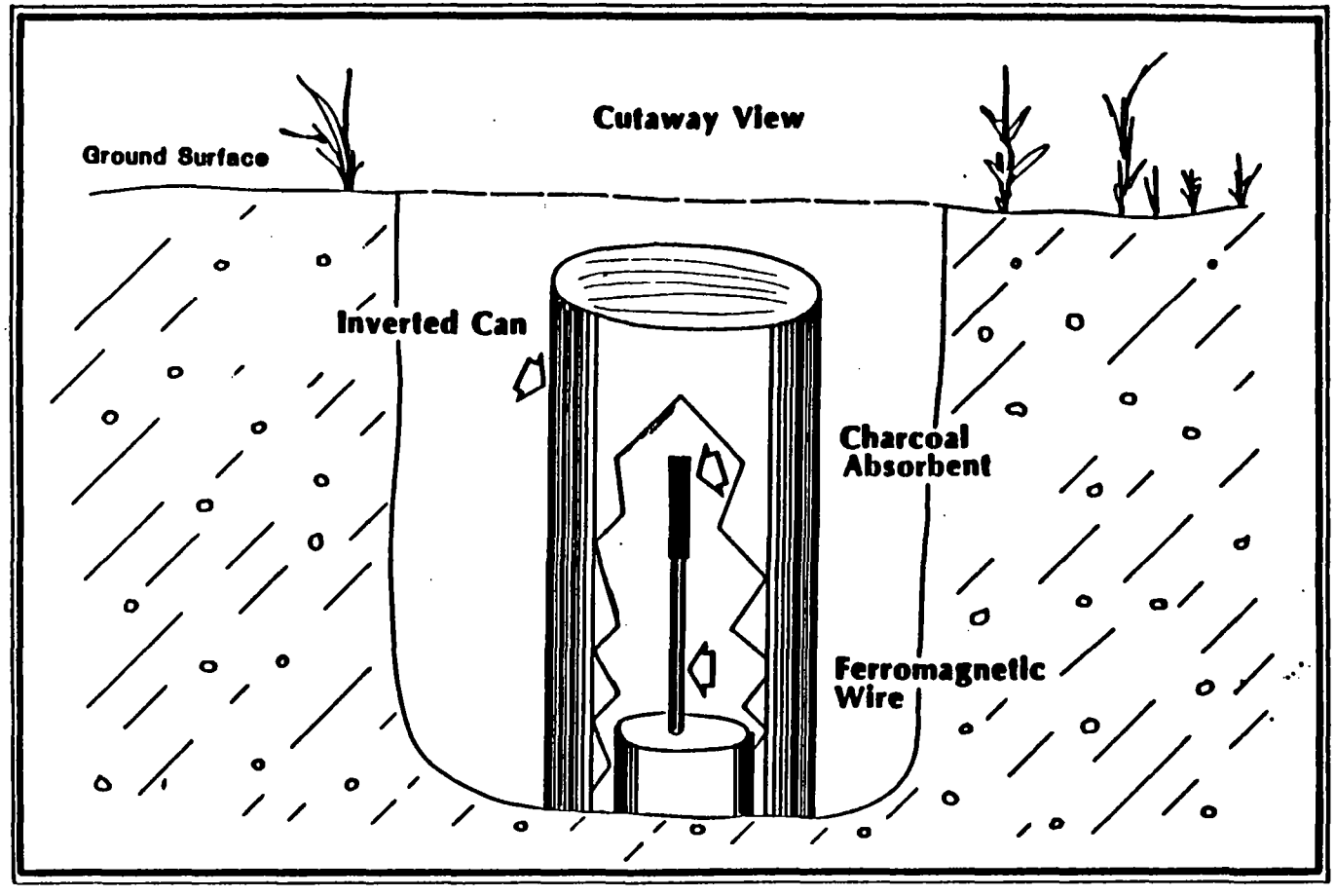
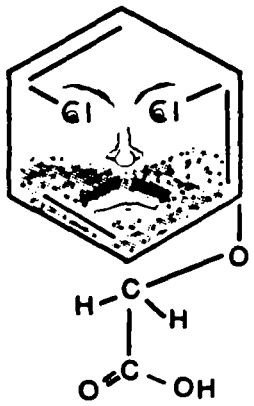


FIGURE 1. Collection Device

WANTED...



•••KNOWLEDGE OF THE WHEREABOUTS

RECENTLY ESCAPED CONFINEMENT

PETREX

K-V FINGERPRINT TECHNIQUE©

While others are worrying about those chemicals that got away you can use a PETREX survey to define their whereabouts and provide a basis for action.

Call today
Have a map within 30 days.

Bury **PETREX** collectors in and around the suspect area, retrieve them a week later and mail them back to our laboratory for analysis. We will send you a map defining the extent of contamination and displaying the relative fluxes of volatile contaminants within the area. Repeat the survey at a later date to ascertain movement of chemicals or introduction of other compounds.

Combining an integrative collection technique with ultra sensitive mass spectrometric determinations **PETREX** can reach into the parts per billion and parts per trillion range to define the perimeter of contamination.

Minimize expensive drilling in the routine monitoring and searching out of waste seepage. Using a grid of collectors, placed just below the soil surface **PETREX** can map the extent of chemical anomalies, determine the direction of movement and monitor subsequent migration.

The **PETREX** collection-detection system can be used in various ways to:

- ✓ A) Determine the presence or absence of specified compounds
- B) Define the area affected by surface spills
- ✓ C) Define the movement of volatile contaminants in ground water
- D) Conduct pre-construction background surveys for potential contaminants
- E) Detect underground leaks in pipes, tanks
- F) Detect faults and fractures
- ✓ G) Monitor defined contamination to detect movement
- H) Monitor underground storage reservoirs
- ✓ I) "Fingerprint" contaminated areas to provide a base for detection of new contaminants which might be introduced subsequently

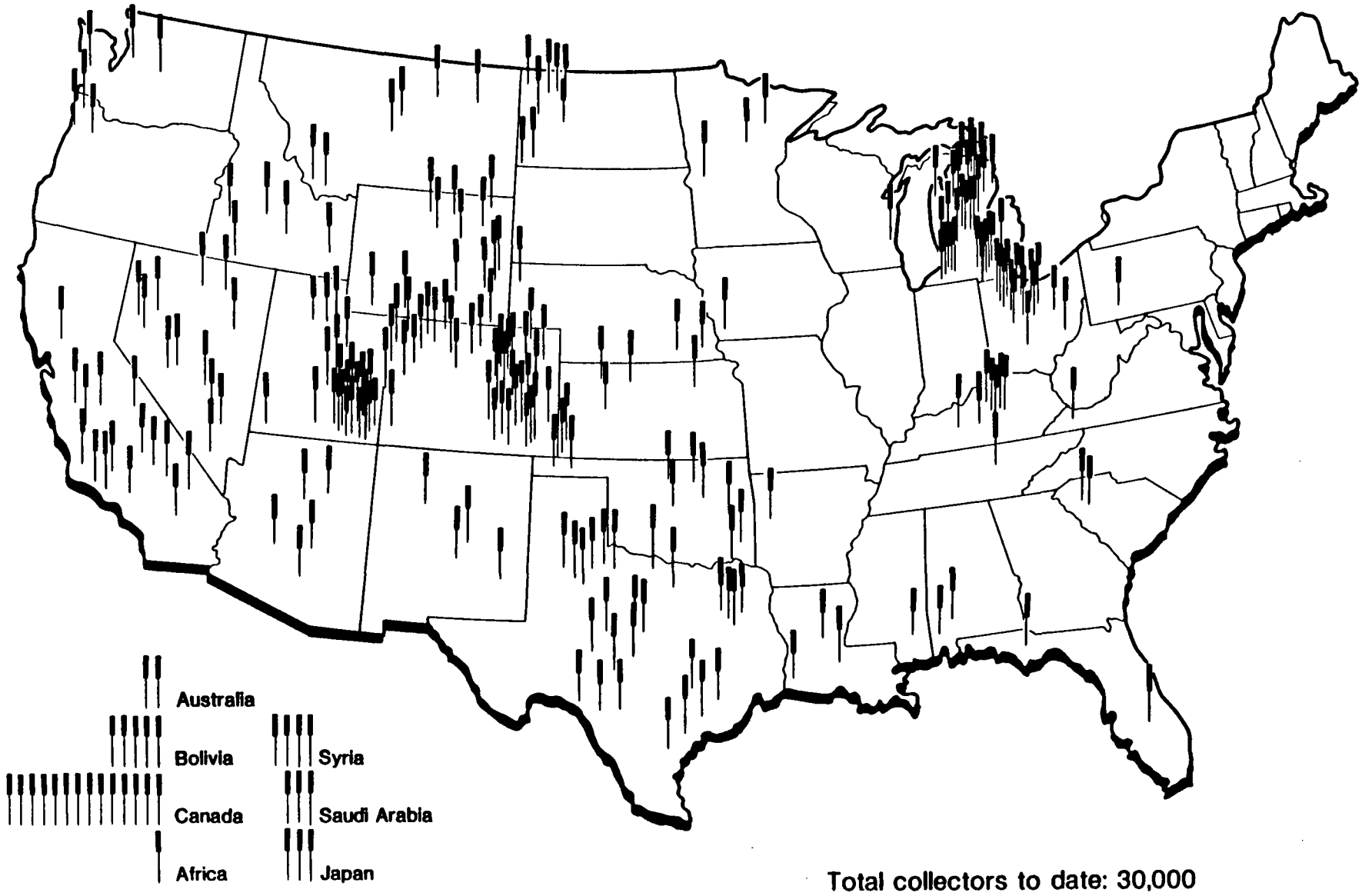
"See reverse side for cost details."

4565 Highway [illegible] North • Golden, Colorado 80403 • (303) 279-7646 or [illegible] • Telex 45-704

PETREX

K·V FINGERPRINT TECHNIQUE©

PETREX surveys since MAY, 1983



Total collectors to date: 30,000

APPENDIX C

Project Forms

1. Chain of Custody Document

ENVIROPRO, INC. 11927 ESTRADA LANE NORTHRIDGE, CA 91326 (818) 366-5682

CHAIN OF CUSTODY DOCUMENT

Sample Name: _____ Sample(s) No. _____

Analysis Requested: _____

PLEASE PRINT

No.	Date	Action detail	Name	Company (name, address, Tel.)	Signature

2166-04746

HR TEXTRON

HR Textron Inc.
a Subsidiary of Textron Inc.

25200 West Rye Canyon Road
Valencia, Calif. 91355
805 259 4030
TWX 910 336 1435 TELEX 65 1492

November 14, 1986

Mr. Dave Bacharowski
California Regional Water Quality
Control Board
107 South Broadway, Suite 4027
Los Angeles, CA 90012-4596

Dear Dave:

Amid the stacks of paper and tests I found the enclosed data.

This may be the test you requested for the area where the Pacoima tank was excavated.

We'll get our plans together after the first of the year and hope we can find the proper in-situ treatment.

Sincerely,

Betty Seldner

Betty Seldner

BS:dsh

cc: Mimi Mackey, Leighton & Associates

350043

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TV1-5

TENTATIVELY IDENTIFIED COMPOUNDS

	COMPOUND NAME	FRACTION	CONCENTRATION UG/KG (PPB)
1	NONE FOUND	VOA	

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH1-6.5
ANALYSIS TYPE: EPA METHOD 8240 (624)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	Scan	Estimated Conc(J)
1.		None Found	VOA		
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH1-11
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V20
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.00G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH1-11
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V20
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.00G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH1-11
ANALYSIS TYPE: EPA METHOD 8240 (624)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	Scan	Estimated Conc(J)
1.		None Found	VOA		
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH1-12.5
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V19
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.00G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH1-12.5
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V19
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.00G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH1-12.5
ANALYSIS TYPE: EPA METHOD 8240 (624)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	Scan	Estimated Conc(J)
1.		None Found	VOA		
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH1-15.5
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V14
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.01G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH1-15.5
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V14
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.01G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH1-15.5
ANALYSIS TYPE: EPA METHOD 8240 (624)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	Scan	Estimated Conc(J)
1.		None Found	VOA		
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH1-20
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V22
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.00G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH1-20
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V22
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.00G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH1-20
ANALYSIS TYPE: EPA METHOD 8240 (624)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	Scan	Estimated Conc(J)
1.		NONE FOUND	VOA		
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH1-30
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V17
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.00G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH1-30
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V17
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.00G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH1-30
ANALYSIS TYPE: EPA METHOD 8240 (624)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	Scan	Estimated Conc(J)
1.		None Found	VOA		
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH1-40
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V16
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.00G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH1-40
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V16
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.00G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH1-40
ANALYSIS TYPE: EPA METHOD 8240 (624)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	Scan	Estimated Conc(J)
1.		None Found	VOA		
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-10
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V18
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.00G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-10
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V18
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.00G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-10
ANALYSIS TYPE: EPA METHOD 8240 (624)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	Scan	Estimated Conc(J)
1.		None Found	VOA		
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-15
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V21
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.00G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-15
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V21
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.00G		

CAS #	COMPOUND	CONC. UG/KG (PPB)	DETECTION LIMIT
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-15
ANALYSIS TYPE: EPA METHOD 8240 (624)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	Scan	Estimated Conc(J)
1.		NONE FOUND	VOA		
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-20
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V15
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.00G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-20
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V15
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.00G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-20
ANALYSIS TYPE: EPA METHOD 8240 (624)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	Scan	Estimated Conc(J)
1.		None Found	VOA		
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-30
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V23
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.00G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-30
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V23
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.00G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-30
ANALYSIS TYPE: EPA METHOD 8240 (624)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	Scan	Estimated Conc(J)
1.		None Found	VOA		
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-40
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V4
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.04G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	12.	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-40
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V4
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.04G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-40
ANALYSIS TYPE: EPA METHOD 8240 (624)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	Scan	Estimated Conc(J)
1.		None Found			
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-45
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V3
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.00G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-45
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V3
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.00G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-45
ANALYSIS TYPE: EPA METHOD 8240 (624)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	Scan	Estimated Conc(J)
1.		NONE FOUND	VOA		
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-55
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V10
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.01G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-55
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V10
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.01G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-55
ANALYSIS TYPE: EPA METHOD 8240 (624)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	Scan	Estimated Conc(J)
1.		None Found	VOA		
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-65
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V2
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.03G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-65
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V2
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.03G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-65
ANALYSIS TYPE: EPA METHOD 8240 (624)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	Scan	Estimated Conc(J)
1.		None Found	VOA		
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-75
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V1
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	0.99G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-75
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V1
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	0.99G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-75
ANALYSIS TYPE: EPA METHOD 8240 (624)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	Scan	Estimated Conc(J)
1.		None Found	VOA		
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-85
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V8
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.01G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-85
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V8
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.01G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-85
ANALYSIS TYPE: EPA METHOD 8240 (624)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	Scan	Estimated Conc(J)
1.		None Found	VOA		
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-95
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V7
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	0.99G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	59.	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-95
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V7
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	0.99G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-95
ANALYSIS TYPE: EPA METHOD 8240 (624)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	Scan	Estimated Conc(J)
1.		None Found	VOA		
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-105
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V9
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	0.990		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	62.	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	8.	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-105
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V9
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	0.99G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-105
ANALYSIS TYPE: EPA METHOD 8240 (624)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	Scan	Estimated Conc(J)
1.		None Found	VOA		
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-115
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V13
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.01G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-115
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V13
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.01G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-115
ANALYSIS TYPE: EPA METHOD 8240 (624)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	Scan	Estimated Conc(J)
1.		None Found	VOA		
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-120
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V12
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.03G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	62.	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	6.	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-120
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V12
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.03G		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH2-120
ANALYSIS TYPE: EPA METHOD 8240 (624)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	Scan	Estimated Conc(J)
1.		None found	VOA		
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

Data Reporting Qualifiers

Value - If the result is a value greater than or equal to the Detection Limit (DL), the value is reported.

ND - Indicates that the compound was analyzed for but not detected. The minimum DL for the sample with the ND is reported based on necessary concentration or dilution actions.

TR - Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified DL but greater than zero.

J - Indicates an estimated value. This flag is used when estimating a concentration for tentatively identified compounds where a 1:1 response factor is assumed.

LOG NO: P85-05-380

Received: 30 MAY 85
Reported: 12 JUN 85

Dale Radford
Leighton & Associates
25530 Avenue Stanford
Valencia, CA 91355

Purchase Order: 7841189-02

Project: TEXTRON PCMA

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
05-380-1	LB-1 @ 10'	30 MAY 85
05-380-2	LB-1 @ 20'	30 MAY 85
05-380-3	LB-1 @ 30'	30 MAY 85
05-380-4	LB-1 @ 40'	30 MAY 85
05-380-5	LB-1 @ 50'	30 MAY 85
05-380-6	LB-2 @ 10'	30 MAY 85

PARAMETER	05-380-1	05-380-2	05-380-3	05-380-4	05-380-5	05-380-6
Purgeable Priority Pollutants						
Extraction	06/05/85	06/05/85	06/06/85	06/06/85	06/06/85	06/06/85
1,1,1-Trichloroethane, mg/kg	<0.3	55	87	100	<0.3	<0.3
Acrolein, mg/kg	<3	<3	<3	<3	<3	<3
Acrylonitrile, mg/kg	<3	<3	<3	<3	<3	<3
Tetrachloroethylene, mg/kg	<0.3	3	4	2	<0.3	<0.3
Toluene, mg/kg	<0.3	3	3	1	<0.3	<0.3
Other Purgeable Priority Pollutants,	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Semi-Quantified Results **						
A C9 unsaturated hydrocarbon, mg/kg	---	30	30	40	---	---
Dimethyl Cyclooctane, mg/kg	---	---	20	20	---	---
Dimethylcyclohexane, mg/kg	---	8	9	8	---	---
Trimethylcyclohexane, mg/kg	---	60	50	60	---	---

LOG NO: P85-05-380

Received: 30 MAY 85
Reported: 12 JUN 85

Dale Radford
Leighton & Associates
25530 Avenue Stanford
Valencia, CA 91355

Purchase Order: 7841189-02

Project: TEXTRON PCMA

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
05-380-7	LB-2 @ 20'	30 MAY 85
05-380-8	LB-2 @ 30'	30 MAY 85
05-380-9	LB-2 @ 40'	30 MAY 85
05-380-10	LB-2 @ 50'	30 MAY 85

PARAMETER	05-380-7 (20')	05-380-8 (30')	05-380-9 (40)	05-380-10 (50')
Oil & Grease by Infrared, mg/kg	<20	<20	<20	<20
Hydrocarbons by IR, mg/kg	<20	<20	<20	<20
Purgeable Priority Pollutants				
Extraction	06/06/85	06/06/85	06/06/85	06/06/85
Acrolein, mg/kg	<3	<3	<3	<3
Acrylonitrile, mg/kg	<3	<3	<3	<3
Other Purgeable Priority Pollutants,	<0.3	<0.3	<0.3	<0.3

Edward Wilson, Laboratory Director

RECEIVED
JUN 19 1985
LEIGHTON & ASSOC.

BROWN AND CALDWELL
ANALYTICAL LABORATORIES

LOG NO: P85-05-380

Received: 30 MAY 85
Reported: 12 JUN 85

Corrected Report

Dale Radford
Leighton & Associates
25530 Avenue Stanford
Valencia, CA 91355

Purchase Order: 7841189-02

Project: TEXTRON PCMA

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
05-380-1	LB-1 @ 10'	30 MAY 85
05-380-2	LB-1 @ 20'	30 MAY 85
05-380-3	LB-1 @ 30'	30 MAY 85
0 80-4	LB-1 @ 40'	30 MAY 85
05-380-5	LB-1 @ 50'	30 MAY 85
05-380-6	LB-2 @ 10'	30 MAY 85

PARAMETER	05-380-1 (LB1/10')	05-380-2 (20')	05-380-3 (30')	05-380-4 (40')	05-380-5 (50')	05-380-6 (LB2/)
Oil & Grease by Infrared, mg/kg	27	15,000	10,000	20,000	30	45
Hydrocarbons by IR, mg/kg	27	14,000	9800	20,000	30	41

LOG NO: P85-05-380

Received: 30 MAY 85
Reported: 12 JUN 85

Dale Radford
Leighton & Associates
25530 Avenue Stanford
Valencia, CA 91355

Purchase Order: 7841189-02

Project: TEXTRON PCMA

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
05-380-1	LB-1 @ 10'	30 MAY 85
05-380-2	LB-1 @ 20'	30 MAY 85
05-380-3	LB-1 @ 30'	30 MAY 85
05-380-4	LB-1 @ 40'	30 MAY 85
05-380-5	LB-1 @ 50'	30 MAY 85
05-380-6	LB-2 @ 10'	30 MAY 85

PARAMETER	05-380-1	05-380-2	05-380-3	05-380-4	05-380-5	05-380-6
Xylene Isomers, mg/kg	---	4	3	3	---	---
Ethylcyclohexane, mg/kg	---	20	10	20	---	---
Ethyl Methyl Cyclohexane Isomer, mg/kg	---	300	300	300	---	---

** Quantification based upon comparison of total ion count or the compound with that of the nearest internal standard.

BROWN AND CALDWELL

ANALYTICAL LABORATORIES

LOG NO: P85-05-105

Received: 06 MAY 85
Reported: 28 MAY 85

Dale Radford
Leighton & Associates
25530 Avenue Stanford
Valencia, CA 91355

Requisition: TEXTRON
Project: 7841189-02

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES — Pacoima ppm	DATE SAMPLED
05-105-1	#3 at 12'	06 MAY 85
05-105-2	#4 at 12'	06 MAY 85

PARAMETER	05-105-1	05-105-2
geable Priority Pollutants		
Extraction	05/21/85	05/21/85
1,1,1-Trichloroethane, mg/kg	16	18
Acrolein, mg/kg	<3	<6
Acrylonitrile, mg/kg	<3	<6
Tetrachloroethylene, mg/kg	0.6	6
Other Purgeable Priority Pollutants,	<0.3	<0.6
Semi-Quantified Results **		
First Alkyl Cyclohexane, mg/kg	---	100
Second Alkyl Cyclohexane, mg/kg	---	200
A Terpene, mg/kg	---	40
Ethyldimethyl Cyclohexane, mg/kg	---	100
Ethyl Methyl Cyclohexane Isomer, mg/kg	---	90
Oil & Grease by Infrared, mg/kg	19,000	9900

** Quantification based upon comparison of total ion count of the compound with that of the nearest internal standard.

Edward Wilson, Laboratory Director

RECEIVED
FEB 04 1985
LEIGHTON & ASSOC.

BROWN AND CALDWELL
ANALYTICAL LABORATORIES

LOG NO: P85-01-392

Received: 30 JAN 85
Reported: 01 FEB 85

Pacoima

Leighton & Associates
25530 Avenue Stanford
Valencia, CA 91355

ATTN: Dale Radford

REPORT OF ANALYTICAL RESULTS

NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
2-1	TANK 2 SAMPLE #3 @ 8'	30 JAN 85
2-2	TANK 2 SAMPLE #4 @ 8'	30 JAN 85

ETER	01-392-1	01-392-2
geable Priority Pollutants (VOCS)		
ion	01.30.85	01.30.85
richloroethane, mg/kg	210	120
ichloroethane, mg/kg	2	0.6
-Dichloroethylene, mg/kg	<0.6	0.3
lein, mg/kg	<6	<3
lonitrile, mg/kg	<6	<3
rachloroethylene, mg/kg	11	14
hloroethylene, mg/kg	0.6	0.9
ene, mg/kg	<0.6	2
er Purgeable Priority Pollutants,	<0.6	<0.3
-Quantified Results **		
9H16 Compound, mg/kg	20	20
clohexane Compound, mg/kg	20	20
yl Methyl Cyclohexane, mg/kg	100	100
methyl Cyclohexane, mg/kg	30	30
lene Isomers, mg/kg	---	4
quantification based upon comparison of tal ion count of the compound with that of the arest internal standard	296 Sum	312 Sum

[illegible] 2-8-85

ward Wilson, Laboratory Director

[illegible]

2166-04746

Gen. 30

CITY OF LOS ANGELES

RECEIPT

№ 532058

RECEIVED FROM Betty J. Seldner

ADDRESS 25200 W. Rye Cyn Rd Valencia

RECEIVED FOR WHAT PURPOSE

1- Install leak alert system near 6,000 gal. fuel slab overflow tank @ 10445 Glenoaks Blvd., Pacoima Ca 91331

Date 6-24-86

Amount $137.00

Fund L.A.F.D.

Department F.P.B.

Received By B. Stewart

350044

F.280

FIRE DEPARTMENT — CITY OF LOS ANGELES

L3850

APPLICATION FOR PERMIT

Reg. No. [redacted]

Date

Name of Owner HR Textron	Doing Business As HR Textron
Address of Owner 25200 West Rye Canyon Road, Valencia, CA 91355	Owner's Phone 805-253-5227
Address of Installation 10445 Glenoaks Blvd., Pacoima, CA 91331	Phone at Installation 818-896-2411
Mail Permit to Betty J. Seldner, 25200 West Rye Canyon Road, Valencia, CA 91355	
Signature of Applicant Betty J. Seldner	Title Director, Environmental Management .
	Contractor's Phone 213-638-9344 Kleinfelder

Do Not Write Below This Line

NO.	ITEM	FEE
1	Install Leak Alert System near 6,000 gallon fuel slab overflow tank	140.00 $137.00

Total Fee	Approved ☐	Disapproved ☐	Date	Inspector

F 280

FIRE DEPARTMENT — CITY OF LOS ANGELES 13450

APPLICATION FOR PERMIT

Reg. No. [redacted]

Date

Name of Owner: HR Textron	Doing Business As: HR Textron
Address of Owner: 25200 West Rye Canyon Road, Valencia, CA 91355	Owner's Phone: 805-253-5227
Address of Installation: 10445 Glenoaks Blvd., Pacoima, CA 91331	Phone at Installation: 818-896-2411
Mail Permit to: Betty J. Seldner, 25200 West Rye Canyon Road, Valencia, CA 91355	
Signature of Applicant: Betty J. Seldner	Title: Director, Environmental Management. Contractor: Kleinfelder	Contractor's Phone: 213-638-9344

Do Not Write Below This Line

NO	ITEM	FEE
1	Install Leak Alert System near 6,000 gallon fuel slab overflow tank	140.00 $137.00

Total Fee	Approved ☐	Disapproved ☐	Date	Inspector

Data Chart for Tank System Tightness Test

L-1

RETEST: NO ____ YES X - System test of ____ indicated leakage.

petro Tite TANK TESTER

PLEASE PRINT

DATE: 4-7-86

1. OWNER Property ☑ Tank(s) ☑	H. R. TEXTRON INC. (Name) 10445 GLENOAKS BLVD (Address) PACOIMA (Representative) CALIF. (Telephone)
2. OPERATOR	MR. EV MILLER (SAME) (Name) (Address) (Telephone)
3. REASON FOR TEST (Explain Fully)	TO DETERMINE TIGHTNESS OF: 1 -- UNDERGROUND ISOLATED TANKS. ✓ -- [redacted]
4. WHO REQUESTED TEST AND WHEN	BETTY SELDNER (Name) (Title) (Company or Affiliation) (Date) (805) 259-4030 (Address) (Telephone)
5. WHO IS PAYING FOR THIS TEST?	H. R. TEXTRON INC (Company, Agency or Individual) 23200 WEST RYE CANYON (Person Authorizing) VALENCIA (Title) CALIF. (Telephone) 91355 (Billing Address) MS. BETTY SELDNER (City) 18318 (State) (Zip) (Attention of:) (Order No.) (Other Instructions)

6. TANK(S) INVOLVED

Identify by Direction	Capacity	Brand/Supplier	Grade	Approx. Age	Steel/Fiberglass
#1 WEST	5,000	N/A	WASTE	UNKNOWN	STEEL

7. INSTALLATION DATA

Location	Cover	Fills	Vents	Siphones	Pumps
WEST OF OFFICE	BLACK TOP	1-4"	1-2IN	NONE	NONE
North inside driveway, Rear of station, etc.	Concrete, Black Top, Earth, etc.	Size, Titefill make, Drop tubes, Remote Fills	Size, Manifolded	Which tanks?	Suction, Remote, Make if known

8. UNDERGROUND WATER

BELOW TANK Test well ____ Probe ____

Depth to the Water table = Other-- PER CUSTOMER

Is the water over the tank? ☐ Yes ☒ No

9. FILL-UP ARRANGEMENTS

Tanks to be filled 0700 hr. 4-7-86 Date Arranged by MR EV MILLER. (Name) (Telephone)

Extra product to "top off" and run TSTT. How and who to provide? Consider NO Lead.

TANK FULL UPON ARRIVAL.

Terminal or other contact for notice or inquiry ____ (Company) (Name) (Telephone)

10. CONTRACTOR, MECHANICS, any other contractor involved

H. D. HOWARD INC.
ROB

11. OTHER INFORMATION OR REMARKS

TEST RESULTS: Advised-- MR EV MILLER

VISITORS:

Additional information on any items above. Officials or others to be advised when testing is in progress or completed. Visitors or observers present during test etc.

12. TEST RESULTS

Tests were made on the above tank systems in accordance with test procedures prescribed for petro Tite as detailed on attached test charts with results as follows:

	Tank Identification	Tight	Leakage Indicated	Date Tested
#1	WEST	YES	WITHIN N.F.P.A. TOLERANCE	4-7-86

13. CERTIFICATION

This is to certify that these tank systems were tested on the date(s) shown. Those indicated as "Tight" meet the criteria established by the National Fire Protection Association Pamphlet 329.

(SEE ATTACHED REPORT.)

July 1, 1980
Date
39; 511; 624;
29; 641; 994.
Serial No. of Thermal Sensor

H. HOWARD ~~[illegible]~~
D. HOWARD R. UNDERWOOD
J. MORGAN ✓ M. BELL
J. HARRY
Technicians

H. D. Howard, Inc.
TANK TESTING
P.O. BOX 3613
GRANADA HILLS, CA 91344
Tester or Company

James P. Morgan
By: Signature
#414810073
Address

14. H.R. TESTRON INC. | 16445 GLENOAKS BLVD | PACOIMA, | CALIF. | 4-7-86

Name of Supplier Owner or Dealer | Address No. and Street(s) | City | State | Date of Test

15. TANK TO TEST

#1 WEST OF OFFICE

Identify by position

WASTE TANK (WATER TEST)

Brand and Grade

16. CAPACITY

Nominal Capacity 5000 Gallons

By most accurate capacity chart available 5000 Gallons

Is there doubt as to True Capacity? ☐ NO.

See Section "DETERMINING TANK CAPACITY"

From

- ☐ Station Chart
- ☐ Tank Manufacturer's Chart
- ☐ Company Engineering Data
- ☐ Charts supplied with petro tite
- ☒ Other PER CUSTOMER

17. FILL-UP FOR TEST

	Stick Readings to ¼ in.	Gallons	Total Gallons ea. Reading
Stick Water Bottom before Fill-up	NA	N-A	
Inventory	Tank Full upon arrival		
DELIVERY---	Top off	From water	Hose.
TOP OFF----			
Product in full tank (up to fill pipe)			5.000

Fill up STICK BEFORE AND AFTER EACH COMPARTMENT DROP OR EACH METERED DELIVERY QUANTITY

Tank Diameter 95" STEEL

18. SPECIAL CONDITIONS AND PROCEDURES TO TEST THIS TANK ISOLATED TANK TEST, TANK TOP EXPOSED ALL PIPELINE ISOLATED, AIR BLED FROM 2" AND 8" RISER IN TANK TOP.

See manual sections applicable. Check below and record procedure in log (28).

☐ Water in tank ☐ High water table in tank excavation ☐ Line(s) being tested with LVLLT

VAPOR RECOVERY SYSTEM

☐ Stage I

☐ Stage II N-A

19. TANK MEASUREMENTS FOR TSTT ASSEMBLY

Bottom of tank to Grade*	167 "
Add 30" for 4" L	30 "
Add 24" for 3" L or air seal	— "
Total tubing to assemble Approximate	197 "

20. EXTENSION HOSE SETTING

Tank top to grade*	72 "
Extend hose on suction tube 8" or more below tank top	12 "

*If Fill pipe extends above grade, use top of fill.

21. TEMPERATURE/VOLUME FACTOR (a) TO TEST THIS TANK

Is Today Warmer? ☐ Colder? ☐ ___ °F Product in Tank ___ °F Fill-up Product on Truck ___ °F Expected Change (+ or −)

22. Thermal-Sensor reading after circulation 13527 digits 63/64 Nearest °F

23. Digits per °F in range of expected change 324 digits

24. 5.000 (total quantity in full tank (16 or 17)) × .000115 (coefficient of expansion for involved product) = .575 (volume change in this tank per °F) gallons

25. .575 (volume change per °F (24)) ÷ 324 (Digits per °F in test Range (23)) = .00177469135 (Volume change per digit. Compute to 4 decimal places.) This is test factor (a) .0018

OBSERVED GRAVITY --------

OBSERVED TEMPERATURE ---- WATER TEST

RECTED API GRAVITY ----------

C. E. ---------- .000115

H. D. Howard, Ins.
TANK TESTING
P.O. BOX [illegible]3
GRANADA HILLS, CA 91344

petro tite TANK TESTER

HEATH CONSULTANTS INCORPORATED
100 TOSCA DRIVE
STOUGHTON, MA [illegible]

26. LOG OF TEST PROCEDURES H.D. Tex Tron 10945 Glenoak Blvd Pacoima Calif			30. HYDROSTATIC PRESSURE CONTROL		31. VOLUME MEASUREMENTS (V) RECORD TO .001 GAL.			34. TEMPERATURE COMPENSATION USE FACTOR (a)			38. NET VOLUME CHANGES EACH READING	39. ACCUMULATED CHANGE
27. DATE 7-7-82 TIME (24 hr)	28. Record details of setting up and running test. (Use full length of line if needed.) 1 WEST OF OFFICE WASTE TANK.	29. Reading No.	Standpipe Level in Inches: Beginning of Reading	Level to which Restored	32. Product in Graduate: Before Reading	After Reading	Product Replaced (−) / Product Recovered (+)	35. Thermal Sensor Reading	36. Change Higher + Lower − (c)	37. Computation (c) × (a) = Expansion + Contraction − .0018	Temperature Adjustment: Volume Minus Expansion (+) or Contraction (−) ø33(V) − ø37(T)	At High Level record Total End Deflection / At Low Level compute Change per Hour (NFPA criteria)
	ISOLATED WATER TEST, 5000 GAL'S											
0830	ARRIVED AT SITE; TOOK TANK BURIAL MEASUREMENTS; CHECKED FOR WATER; TOOK INVENTORY OF PRODUCT ON HAND; PREPARED AREA FOR TESTING.											
N/A	TOP OFF DELIVERY TRUCK ARRIVED; ASSISTED DRIVER IN FILLING TANK.											
	Tank Filled upon Arrival (Water)											
0820	SET UP TEST STAND AND STARTED CIRCULATING PUMP. BLED AIR From 2" and 8" Riser on Top of Tank (Tank Exposed)											
0915	FIRST SENSOR READING	1	---	42.0	---	.530	---	13527	63/64	324	.0018	
0930	HIGH LEVEL TEST STARTED	2	41.8	"	.530	.510	-.020	531	+4	+.007	-.027	
0945	" " " CONT'D	3	41.5	"	.510	.490	-.020	533	+2	+.004	-.024	
1000	" " " "	4	41.6	"	.490	.465	-.025	530	-3	-.005	-.020	
1015	" " " "	5	41.8	"	.465	.450	-.015	541	+11	+.020	-.035	
1030	" " " "	6	41.5		.450	.430	-.030	538	-3	-.005	-.035	
1045	" " " "	7	41.5		.430	.400	-.030	528	-10	-.018	-.012	
1100	" " " "	8	41.7		.400	.390	-.010	513	-15	-.027	-.017	
1101	DROP TO LOW LEVEL TEST	—	—	42.0/12.0	—	—	—	—	—	—	—	—
1115	START LOW LEVEL TEST	9	12.5	"	.390	.415	+.025	526	+13	+.023	+.002	
1130	CONT LOW LEVEL TEST	10	12.0	"	.415	.415	±.000	526	±0	±.000	±.000	
1145	" " " "	11	12.1	"	.415	.420	+.005	535	+9	+.016	-.011	-.023
1200	" " " "	12	12.0	"	.420	.420	±.000	539	+4	+.007	-.007	TIGHT
1215	" " " "	13	12.0	"	.420	.420	±.000	542	+3	+.005	-.005	

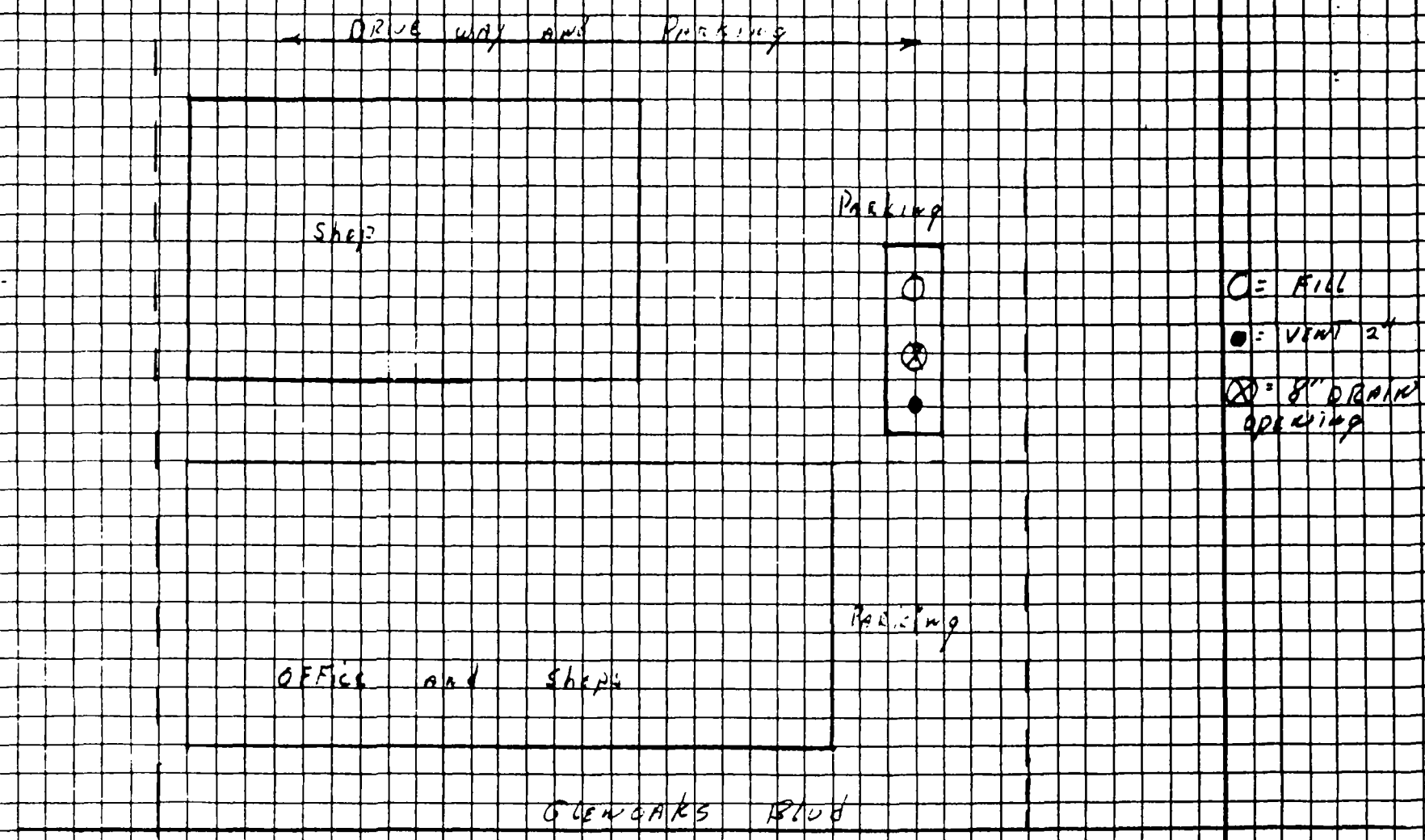
TEST CONCLUDED, TANK FOUND TO BE TIGHT, AT LOW LEVEL READING OF -.023 GAL'S PER HR.

H. D. Howard, Inc.
TANK TESTING
P.O. BOX 3613
GRANADA HILLS CA 91344

James P. Morgan

M. R. Textron Inc.
10445 Glenoaks Blvd
LOCATION: Pacoima Calif

DATE: 4-7-86



(Not to scale.)

H. D. Howard, Inc.
TANK TESTING
P.O. BOX 3613
GRANADA HILLS, CA 91344

S
E W
N

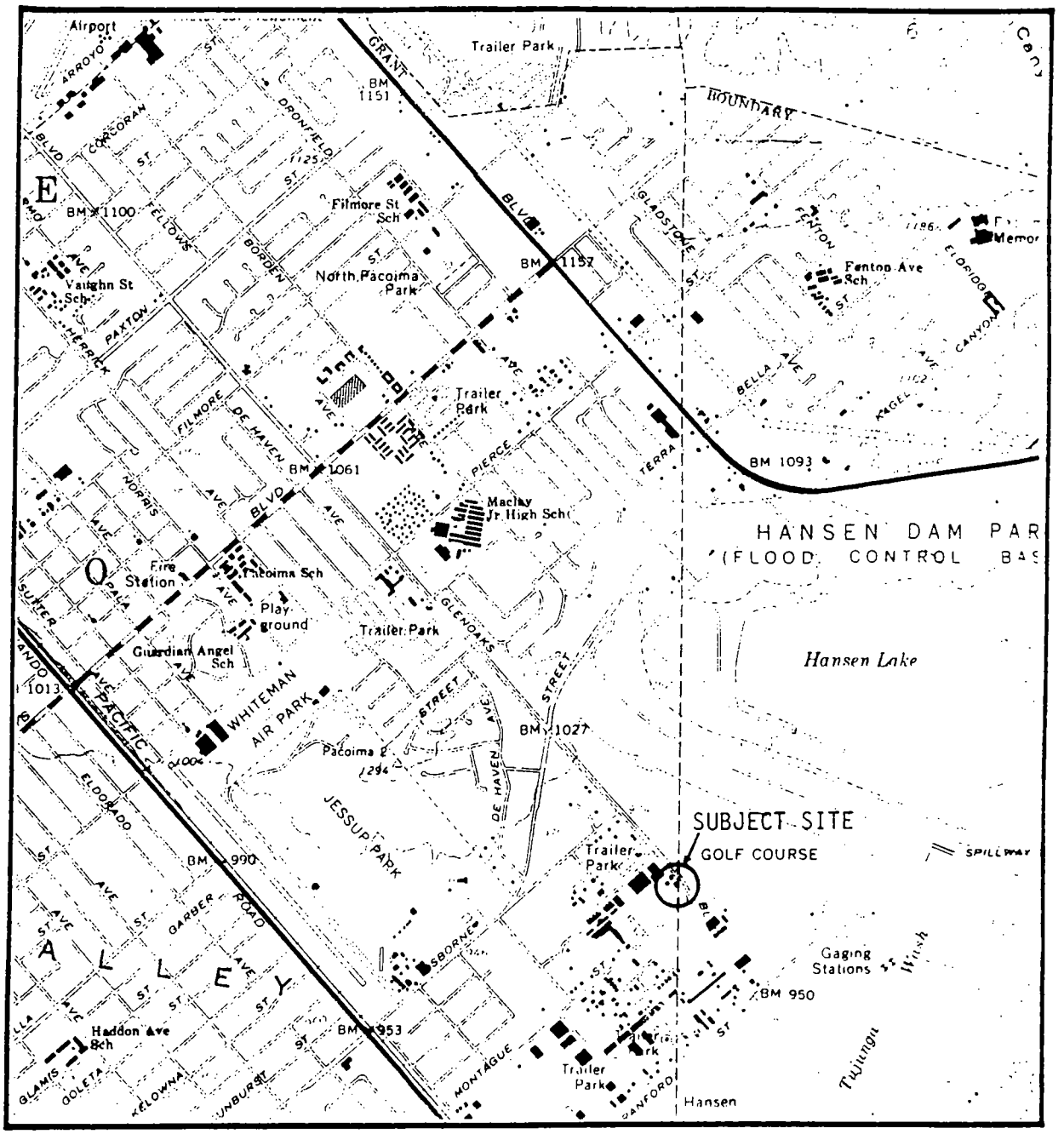
Form 568

petro tite
LINE TESTER
TANK TESTER

HEATH CONSULTANTS INCORPORATED
180 TOSCA DRIVE
STOUGHTON, MA. 02072 (617) 344-1400

7841189-01

INDEX MAP



0 2000 4000
scale feet

H. R. TEXTRON

10445 GLENOAKS BOULEVARD

CITY OF PACOIMA

(Subject Site Shown in Yellow)

Base Map: USGS San Fernando Quadrangle

LEIGHTON and ASSOCIATES
INCORPORATED

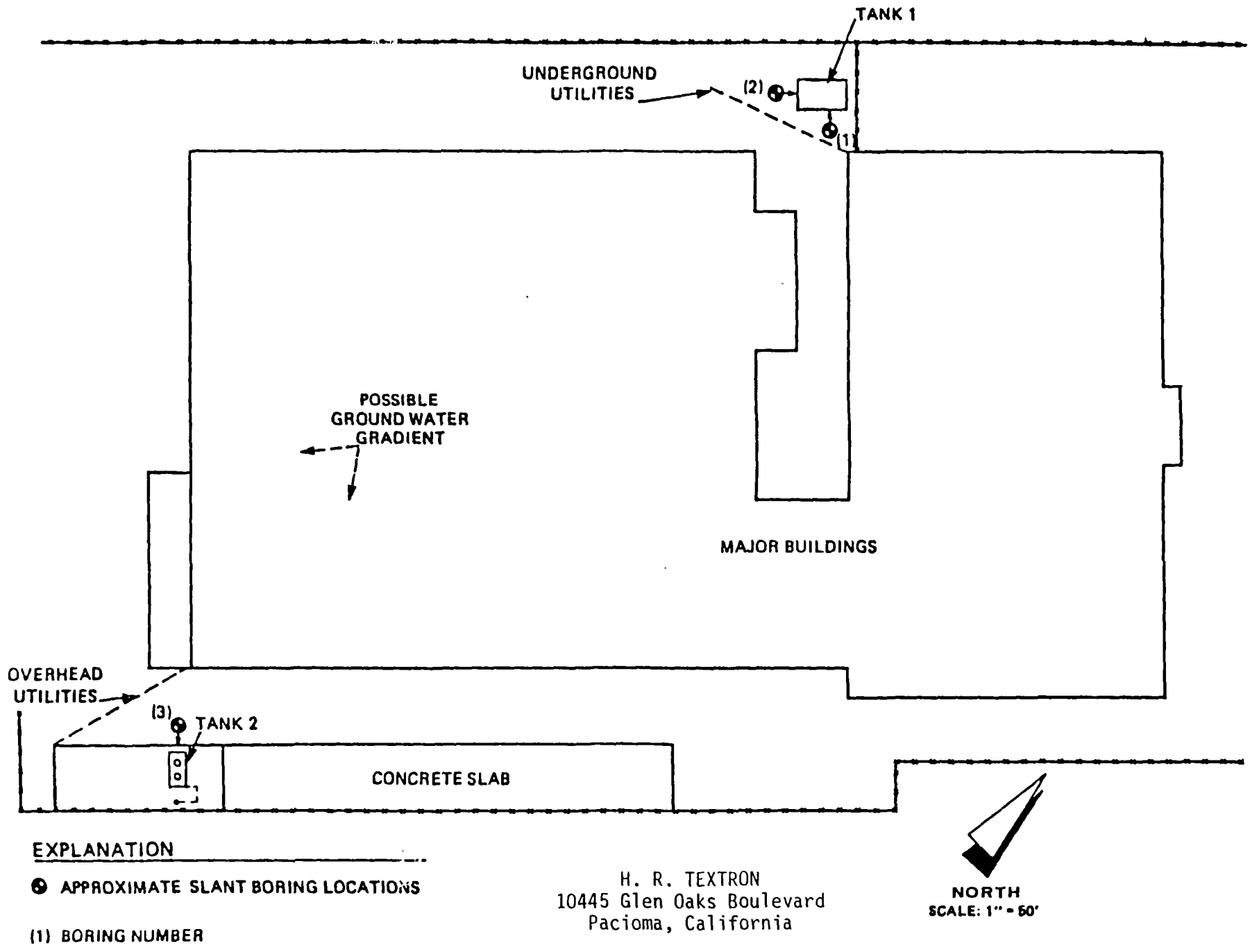


PLATE 1

PLATE 1. PLOT PLAN SHOWING SOIL BORING LOCATIONS

2166-04746

PACOIMA REMEDIATION 1987

RESPONSE TO QUESTION 7 PAGE 9

35-00445

HR TEXTRON

HR Textron Inc.
a Subsidiary of Textron Inc.

25200 West Rye Canyon Road
Valencia, Calif. 91355
805/259-4030
TWX 910/336/1438 TELEX 65/1492

April 10, 1987

Mr. Hank Yacoub
Supervising Water Resource
Control Engineer
California Regional Water
Quality Control Board
107 South Broadway, Suite 4027
Los Angeles, CA 90012-4596

Dear Mr. Yacoub:

Enclosed is the chemical storage questionnaire requested by your agency.

When I spoke with Jon Bishop he suggested I include the following information:

On January 30, 1985, HR Textron excavated a 2,000 gallon underground tank from 10445 Glenoaks Boulevard, Pacoima. The tank had been leaking and several yards of dirt were excavated and sent to a landfill.

All permits were obtained and Mr. Dave Bacharowski of your agency was present. Mr. Bacharowski has the complete file on the Glenoaks site.

HR Textron also has a 6,000 gallon overflow tank at that location that is still in the ground. It has been tested (pipes and tank separately) and is sound. A leak-alert system has been installed. Again, Mr. Bacharowski has the complete file.

The water table at the site is approximately 200 feet deep and HR's oil and grease contaminated soil goes to a depth of approximately 40 feet.

350045

HR TEXTRON

Mr. Hank Yacoub
April 10, 1987
Page Two

The site is built adjacent to an old municipal landfill that was closed in 1954.

If you have any questions, please call me at 805-253-5227.

Very truly yours,

Betty J. Seldner
Director, Environmental Management
and Communications

BJS:sle
Enclosure

25200 WEST RYE CANYON ROAD • VALENCIA, CALIFORNIA 91355 • (805) 259-4030 • TWX 910-336-1438 • TELEX 65/1492

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

CHEMICAL STORAGE AND USE QUESTIONNAIRE

I. COMPANY NAME: HR Textron

II. FACILITY ADDRESS: 10445 Glenoaks Boulevard, Pacoima, CA 91331

III. CHEMICAL STORAGE AND USE AT THE SITE. Complete sections A-G for all chemicals in current use or that have been used in the past, use additional sheets if necessary.

A. CHEMICAL NAME: Hydraulic Oil B. COMMON/TRADE NAME: DTE 24-26

C. METHOD OF STORAGE: UNDERGROUND TANK___ ABOVE GROUND TANK___
BARRELS x OTHER(specify)_____

D. QUANTITY STORED: (10) - 55 gallon drums

E. WASTE DISPOSAL METHOD: SEWERED___ HAULED x ONSITE DISPOSAL___

F. IS THE WASTE TREATED PRIOR TO DISPOSAL: YES___ NO x
If yes, method of treatment:_____

G. IS THE WASTE STORED PRIOR TO DISPOSAL: YES x NO___

==========

A. CHEMICAL NAME: Mineral Oil B. COMMON/TRADE NAME: Vactra 2 & 4

C. METHOD OF STORAGE: UNDERGROUND TANK___ ABOVE GROUND TANK___
BARRELS x OTHER(specify)_____

D. QUANTITY STORED: (7) 55 gallon drums

E. WASTE DISPOSAL METHOD: SEWERED___ HAULED x ONSITE DISPOSAL___

F. IS THE WASTE TREATED PRIOR TO DISPOSAL: YES___ NO x
If yes, method of treatment:_____

G. IS THE WASTE STORED PRIOR TO DISPOSAL: YES x NO___

A. CHEMICAL NAME: Oil B. COMMON/TRADE NAME: Velocite 8

C. METHOD OF STORAGE: UNDERGROUND TANK___ ABOVE GROUND TANK___
BARRELS x OTHER(specify)_____

QUANTITY STORED: (1) 55 gallon drum

E. WASTE DISPOSAL METHOD: SEWERED___ HAULED x ONSITE DISPOSAL___

F. IS THE WASTE TREATED PRIOR TO DISPOSAL: YES___ NO x
If yes, method of treatment:_____

G. IS THE WASTE STORED PRIOR TO DISPOSAL: YES x NO___

==========

A. CHEMICAL NAME: 1-1-1 Trichloroethane B. COMMON/TRADE NAME: Rho Chem Trich

C. METHOD OF STORAGE: UNDERGROUND TANK___ ABOVE GROUND TANK x
BARRELS___ OTHER(specify)_____

D. QUANTITY STORED: (1) 600 gallon tank

E. WASTE DISPOSAL METHOD: SEWERED___ HAULED x ONSITE DISPOSAL___

F. IS THE WASTE TREATED PRIOR TO DISPOSAL: YES___ NO x
If yes, method of treatment:_____

G. IS THE WASTE STORED PRIOR TO DISPOSAL: YES x NO___

==========

A. CHEMICAL NAME: Ethyl Alcohol B. COMMON/TRADE NAME: Ethyl Alcohol

C. METHOD OF STORAGE: UNDERGROUND TANK___ ABOVE GROUND TANK___
BARRELS x OTHER(specify)_____

D. QUANTITY STORED: (1) 55 gallon drum

E. WASTE DISPOSAL METHOD: SEWERED___ HAULED x ONSITE DISPOSAL___

F. IS THE WASTE TREATED PRIOR TO DISPOSAL: YES___ NO x
If yes, method of treatment:_____

G. IS THE WASTE STORED PRIOR TO DISPOSAL: YES x NO___

A. CHEMICAL NAME: Oil B. COMMON/TRADE NAME: Mobilarma 245

. METHOD OF STORAGE: UNDERGROUND TANK___ ABOVE GROUND TANK___
BARRELS x OTHER(specify)_____

D. QUANTITY STORED: (1) 55 gallon drum

E. WASTE DISPOSAL METHOD: SEWERED___ HAULED___ ONSITE DISPOSAL___

F. IS THE WASTE TREATED PRIOR TO DISPOSAL: YES___ NO___
If yes, method of treatment:_____

G. IS THE WASTE STORED PRIOR TO DISPOSAL: YES___ NO___

==========

A. CHEMICAL NAME: Transmission Fluid B. COMMON/TRADE NAME: Mobil Fluid 350

C. METHOD OF STORAGE: UNDERGROUND TANK___ ABOVE GROUND TANK___
BARRELS x OTHER(specify)_____

D. QUANTITY STORED: (4) 55 gallon drums

E. WASTE DISPOSAL METHOD: SEWERED___ HAULED x ONSITE DISPOSAL___

F. IS THE WASTE TREATED PRIOR TO DISPOSAL: YES___ NO x
If yes, method of treatment:_____

G. IS THE WASTE STORED PRIOR TO DISPOSAL: YES x NO___

==========

A. CHEMICAL NAME: Cutting Oil B. COMMON/TRADE NAME: Mobilmet Alpha, Mobilmet Gamma, Mobilmet Omicron

C. METHOD OF STORAGE: UNDERGROUND TANK___ ABOVE GROUND TANK x
BARRELS x OTHER(specify)_____

D. QUANTITY STORED: (2) 1,000 gallon tanks (5) 55 gallon drums

E. WASTE DISPOSAL METHOD: SEWERED___ HAULED x ONSITE DISPOSAL___

F. IS THE WASTE TREATED PRIOR TO DISPOSAL: YES___ NO x
If yes, method of treatment:_____

G. IS THE WASTE STORED PRIOR TO DISPOSAL: YES x NO___

A. CHEMICAL NAME: Auto Engine Oil B. COMMON/TRADE NAME: Delvac 1110 & 1310

METHOD OF STORAGE: UNDERGROUND TANK___ ABOVE GROUND TANK___
BARRELS x OTHER(specify)___

D. QUANTITY STORED: (4) 55 gallon drums

E. WASTE DISPOSAL METHOD: SEWERED___ HAULED x ONSITE DISPOSAL___

F. IS THE WASTE TREATED PRIOR TO DISPOSAL: YES___ NO x
If yes, method of treatment:___

G. IS THE WASTE STORED PRIOR TO DISPOSAL: YES x NO___

==========

A. CHEMICAL NAME: Lube Oil B. COMMON/TRADE NAME: Exelene 5631

C. METHOD OF STORAGE: UNDERGROUND TANK___ ABOVE GROUND TANK___
BARRELS x OTHER(specify)___

D. QUANTITY STORED: (9) 55 gallon drums

E. WASTE DISPOSAL METHOD: SEWERED___ HAULED x ONSITE DISPOSAL___

F. IS THE WASTE TREATED PRIOR TO DISPOSAL: YES___ NO x
If yes, method of treatment:___

G. IS THE WASTE STORED PRIOR TO DISPOSAL: YES x NO___

==========

A. CHEMICAL NAME:___ B. COMMON/TRADE NAME:___

C. METHOD OF STORAGE: UNDERGROUND TANK___ ABOVE GROUND TANK___
BARRELS___ OTHER(specify)___

D. QUANTITY STORED:___

E. WASTE DISPOSAL METHOD: SEWERED___ HAULED___ ONSITE DISPOSAL___

F. IS THE WASTE TREATED PRIOR TO DISPOSAL: YES___ NO___
If yes, method of treatment:___

G. IS THE WASTE STORED PRIOR TO DISPOSAL: YES___ NO___

A. CHEMICAL NAME: Water Soluble Oil B. COMMON/TRADE NAME: SuperKool 7857

METHOD OF STORAGE: UNDERGROUND TANK___ ABOVE GROUND TANK___
BARRELS x OTHER(specify)_____

D. QUANTITY STORED: (7) 55 gallon drums

E. WASTE DISPOSAL METHOD: SEWERED___ HAULED x ONSITE DISPOSAL___

F. IS THE WASTE TREATED PRIOR TO DISPOSAL: YES___ NO x
If yes, method of treatment:_____

G. IS THE WASTE STORED PRIOR TO DISPOSAL: YES x NO___

==========

A. CHEMICAL NAME: Oil B. COMMON/TRADE NAME: Quenchant Oil

C. METHOD OF STORAGE: UNDERGROUND TANK___ ABOVE GROUND TANK___
BARRELS x OTHER(specify)_____

D. QUANTITY STORED: (1) 55 gallon drum

E. WASTE DISPOSAL METHOD: SEWERED___ HAULED x ONSITE DISPOSAL___

F. IS THE WASTE TREATED PRIOR TO DISPOSAL: YES___ NO x
If yes, method of treatment:_____

G. IS THE WASTE STORED PRIOR TO DISPOSAL: YES x NO___

==========

A. CHEMICAL NAME: Oil B. COMMON/TRADE NAME: Pella A Tonna 68 ~~Tellus 32~~

C. METHOD OF STORAGE: UNDERGROUND TANK___ ABOVE GROUND TANK___
BARRELS x OTHER(specify)_____

D. QUANTITY STORED: (6) 55 gallon drums

E. WASTE DISPOSAL METHOD: SEWERED___ HAULED x ONSITE DISPOSAL___

F. IS THE WASTE TREATED PRIOR TO DISPOSAL: YES___ NO x
If yes, method of treatment:_____

G. IS THE WASTE STORED PRIOR TO DISPOSAL: YES x NO___

A. CHEMICAL NAME: Oil B. COMMON/TRADE NAME: W & B 2190

METHOD OF STORAGE: UNDERGROUND TANK___ ABOVE GROUND TANK___
BARRELS x OTHER(specify)_____

D. QUANTITY STORED: (1) 55 gallon drum

E. WASTE DISPOSAL METHOD: SEWERED___ HAULED x ONSITE DISPOSAL___

F. IS THE WASTE TREATED PRIOR TO DISPOSAL: YES___ NO x
If yes, method of treatment:_____

G. IS THE WASTE STORED PRIOR TO DISPOSAL: YES x NO___

==========

A. CHEMICAL NAME: Cutting Oil B. COMMON/TRADE NAME: Mentor 28

C. METHOD OF STORAGE: UNDERGROUND TANK___ ABOVE GROUND TANK___
BARRELS x OTHER(specify)_____

D. QUANTITY STORED: (4) 55 gallon drums

E. WASTE DISPOSAL METHOD: SEWERED___ HAULED x ONSITE DISPOSAL___

IS THE WASTE TREATED PRIOR TO DISPOSAL: YES___ NO x
If yes, method of treatment:_____

G. IS THE WASTE STORED PRIOR TO DISPOSAL: YES x NO___

==========

A. CHEMICAL NAME: EDM Oil B. COMMON/TRADE NAME: Dielectric 200

C. METHOD OF STORAGE: UNDERGROUND TANK___ ABOVE GROUND TANK___
BARRELS x OTHER(specify)_____

D. QUANTITY STORED: (4) 55 gallon drums

E. WASTE DISPOSAL METHOD: SEWERED___ HAULED x ONSITE DISPOSAL___

F. IS THE WASTE TREATED PRIOR TO DISPOSAL: YES___ NO x
If yes, method of treatment:_____

G. IS THE WASTE STORED PRIOR TO DISPOSAL: YES x NO___

A. CHEMICAL NAME: Water Soluble Oil B. COMMON/TRADE NAME: M.P. Plus

METHOD OF STORAGE: UNDERGROUND TANK___ ABOVE GROUND TANK___
BARRELS x OTHER(specify)_____

D. QUANTITY STORED: (6) 55 gallon drums

E. WASTE DISPOSAL METHOD: SEWERED___ HAULED x ONSITE DISPOSAL___

F. IS THE WASTE TREATED PRIOR TO DISPOSAL: YES___ NO x
If yes, method of treatment:_____

G. IS THE WASTE STORED PRIOR TO DISPOSAL: YES x NO___

==========

A. CHEMICAL NAME: Oil B. COMMON/TRADE NAME: Arrowclean 125

C. METHOD OF STORAGE: UNDERGROUND TANK___ ABOVE GROUND TANK___
BARRELS x OTHER(specify)_____

D. QUANTITY STORED: (2) 55 gallon drums

E. WASTE DISPOSAL METHOD: SEWERED___ HAULED x ONSITE DISPOSAL___

F. IS THE WASTE TREATED PRIOR TO DISPOSAL: YES___ NO x
If yes, method of treatment:_____

G. IS THE WASTE STORED PRIOR TO DISPOSAL: YES x NO___

==========

A. CHEMICAL NAME: Stoddard Solvent B. COMMON/TRADE NAME: Rho Chem

C. METHOD OF STORAGE: UNDERGROUND TANK___ ABOVE GROUND TANK x
BARRELS___ OTHER(specify)_____

D. QUANTITY STORED: (1) 1,000 gallon tank

E. WASTE DISPOSAL METHOD: SEWERED___ HAULED___ ONSITE DISPOSAL___

F. IS THE WASTE TREATED PRIOR TO DISPOSAL: YES___ NO___
If yes, method of treatment:_____

G. IS THE WASTE STORED PRIOR TO DISPOSAL: YES___ NO___

IV. FACILITY INFORMATION

A. STANDARD INDUSTRIAL CODE(SIC): 3728

B. GENERATOR NUMBER(EPA/STATE): CAD041162330

C. BRIEF DESCRIPTION OF OPERATIONS: Manufacturer Aerospace Components

D. HISTORY: DATE OPERATIONS BEGAN: 1966
PRIOR OWNERS: Gary O'Brien and Wm. Tolson
Current: 425 Duran Way, Mill Valley, CA 94941

V. THIS QUESTIONNAIRE SHALL BE SIGNED BELOW AS FOLLOWS:

A. In the case of corporations, by a principal executive officer at the level of vice-president of his duly authorized representative if such representative is responsible for the overall operation of the facility, or

B. In the case of a partnership, by a general partner, or

C. In the case of a sole proprietorship, by the proprietor, or

D. In the case of a municipal, State, or other public facility, by either a principal executive officer, ranking elected official, or other duly authorized employee.

This questionnaire has been completed under penalty of perjury and, to the best of my knowledge, is true and correct.

Signature: [signature] Date: April 10, 1987

Printed Name: A. J. Grillo

Title: Vice President Administration Phone: 253-5890

Contact Name: Betty J. Seldner

Title: Director, Environmental Management Phone: 253-5227

HYDRAULIC RESEARCH TEXTRON

Hydraulic Research Division of Textron Inc.
25200 West Rye Canyon Road
Valencia, Calif. 91355
805/259-4030

7/01

New Material - Pacoima Facility

OILS		ON HAND	NEED	CRITICAL	DATE ORDERED
MOBIL ✓	D.T.E 26 Hydr. oil.	2 DR			FP-400°F C-III B
✓	D.T.E 24 Hydr. oil.	8			FP-400°F. C III B
✓	VACTRA 2 —	2	Refined mineral oil for Lubs		FP-330°F. C III B
✓	VACTRA 4	2	" " " "		FP-350°F C III B
✓	EXTRA HEAVY	3			
✓	VELOCITE 8 spindle oil.	1			FP-320°F C III B
✓	MOBILARMA 245	1			
✓	MOBILFLUID 350 power transmission fluid	3			FP-370°F. C III B
✓	MOBILMET 160 metal process oil.	1			FP-355°F. C III B
✓	MOBILMET ALPHA cutting oil fluid	4			FP-395°F C III B
✓	MOBILMET GAMMA cutting		1000 GAL TANK		FP-435°F. C III B
✓	MOBILMET OMICRON cutting		1000 GAL TANK.		FP-365°F. AVOID STRONG OXIDIZERS
✓	DELVAC 1110	2			
✓	DELVAC 1310 Auto Engine oil.	2			FP-405°F. (C III B)
Estuart ✓	EXELENE 5631	9	LUB. OIL		FP-350°F AVOID STRONG OXIDIZERS
✓	SUPERKOOL Grinding oil water sol. 7357	7			FP-360°F. (C III B)
✓	QUENCHANT OIL.	1			FP-420°F. (C III B)
SHELL ✓	PELLA "A"	3			
	TONNA 68	1			
	TELLUS 32 Hydr.	2			FP-380°F (C III B)
EXXON ✓	MENTOR 28 cutting oil	4			FP-255°F (C III B)
✓	W & B 2190	1			
electrotool	DIELECTRIC 200 EDM	4			FP-300°F (C III B)
Denwalt ✓	M.P PLUS 2 Soluble oil.	6			FP-375°F (C III B)
	ARROWFRESH 30 Water Sol	1			
✓	ARROWCLEAN 125	2			
moog	[redacted]				
Rho chem ✓	Stoddard Solvent II		1000 GAL TANK		FP-100°-110°F. (C-II)*
Rho-chem ✓	111, Trichloroethane		600 GAL TANK		FP-none
	Alcohol, Ethyl.	1			FP-56°F (BP-78°F)

FC 1187 (REV. 11/76)

LEGEND

* EXEMPT AMOUNTS of Class II Combustibles = 120 gal x 2 for non-public areas = 240 gallons within building

73 drums

RACK SPACE FOR 80 drums. Existing.

~~Pacoima~~ 4/1/87

WASTE MATERIAL LIST

	Gallons	55 gal drums	
Hydraulic Oils / Cutting oils -	1500	27	Recycle
Freon, TF	550	10	Recycle
Stodard Solvent	770	14	Recycle
1.1.1 Trichlorethane	370	7	Recycles
Alcohol	110	2	Recycle
Soluble oils.	1800	tanks	
Lab Packs for chromic acid., paints, epoxy's, Q Tips, kimwipes contaminated w/ Alodine		18	landfill.

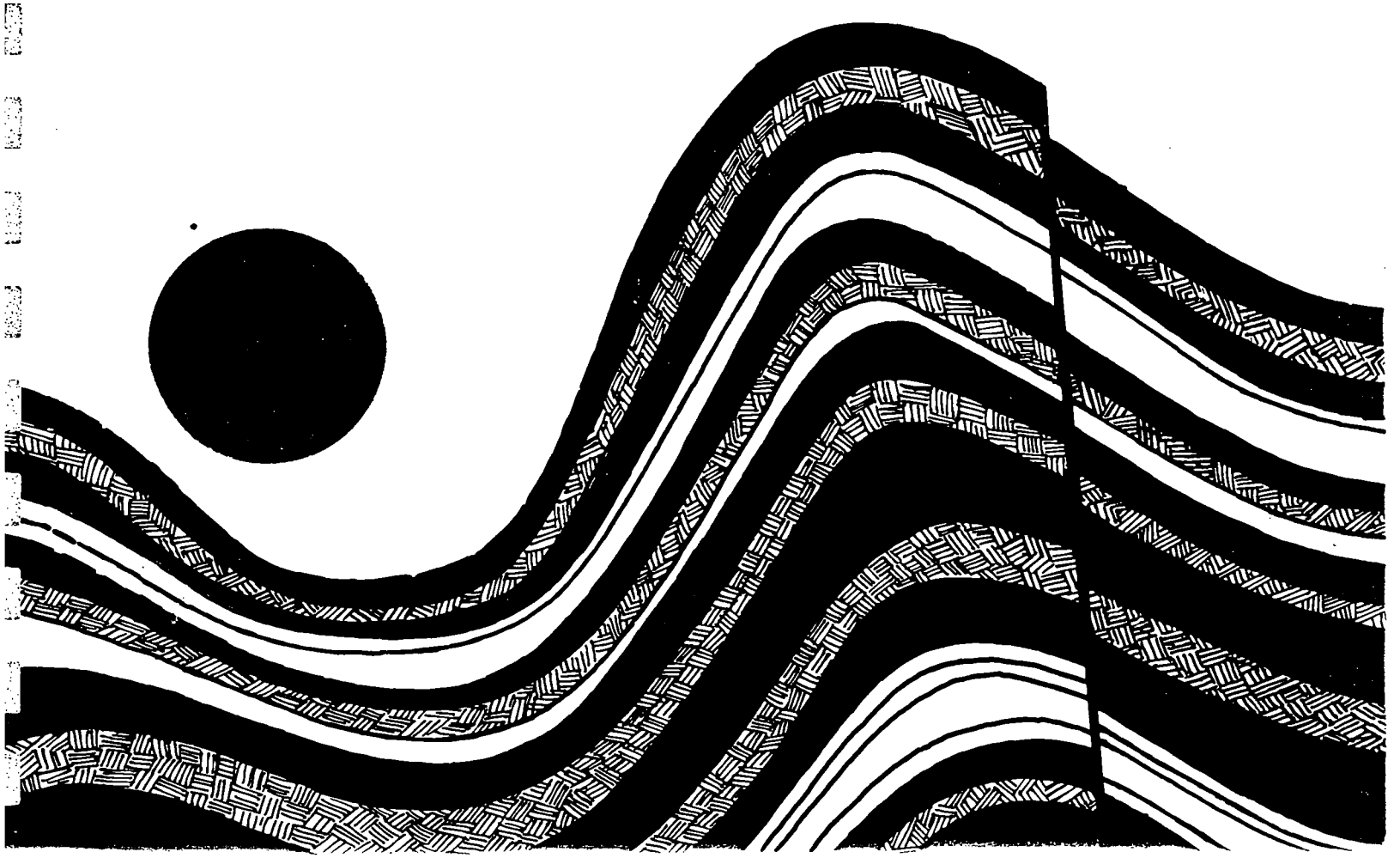
4-2-87 New material - Call John ag orichas x335 ~~will call me~~

+ Trade Names 100 drums for Space

SS

Facsimile
May 5, 87

Leighton and Associates



LEIGHTON and ASSOCIATES
INCORPORATED

SOIL ENGINEERING GEOLOGY GEOPHYSICS GROUND WATER HAZARDOUS WASTES

May 5, 1987

Project No. 7841189-03

TO: H. R. Textron
25200 West Rye Canyon Road
Valencia, California 91355

ATTENTION: Ms. Betty Seldner

SUBJECT: Proposed Work Plan for Phase II Evaluation of Horizontal Extent of Contamination Resulting from the Leakage of a Former Underground Tank, H. R. Textron Pacoima Facility, 10445 Glenoaks Boulevard, Pacoima, California.

Introduction

As requested, we have prepared this work plan to perform a Phase II Study to evaluate the horizontal extent of contamination resulting from the leakage of a former underground tank within the H. R. Textron Pacoima Facility located at 10445 Glenoaks Boulevard, Pacoima, California. Previous field investigations have documented that the contaminated soils, resulting from a leak in a removed 1000 gallon tank, are composed primarily of oil and grease and are present onsite at an approximate depth of 35 to 45 feet. The vertical and lateral extent of this contaminated zone is unknown at this time within the saturated zone. This work plan is designed to obtain the data necessary to prepare a remediation plan for the site.

350046

The scope of work was developed based on a review of the following provided information:

- The Earth Technology Corporation boring drilled May 23, 1984.
- Leighton and Associates, Inc., 1985, soil sampling and testing at Tank 2, 10445 Glenoaks Boulevard, Pacoima, California (consultant's report dated March 6, 1985 performed under Project No. 7841189-01).
- Leighton and Associates, Inc., 1985, soil sample analysis, H. R. Textron, 10445 Glenoaks, Pacoima, California (consultant's letter dated July 30, 1985 performed under Project No. 7841189-02).
- Leighton and Associates, Inc. records pertaining to site geology and hydrology of the local area.
- Personal communication between Leighton and Associates, Inc. and Ms. Betty Seldner of H. R. Textron.

Background

A total of five exploratory borings have been previously drilled around the tank excavation as shown on Plate 1. Selected soil samples have been chemically analyzed for total petroleum hydrocarbons, oil, grease, and volatile organics as summarized on Table 1. A generalized cross-section through the excavation is illustrated on Plate 2.

The vicinity of the subject tank excavation is underlain by alluvium composed of sands, silty sands, and sandy silts. Contamination was encountered in Borings B-3 and LB-1 between 35 to 45 feet. The exact lateral and vertical extent of contamination is presently unknown.

Scope of Work

The following tasks are proposed to be performed by Leighton and Associates, Inc., to assist H. R. Textron in evaluating the vertical and horizontal extent of contamination at the former underground tank locations.

Task 1 - Exploratory Borings and Soil Sampling

Three exploratory borings will be drilled utilizing a hollow-stem drill rig at the locations shown on Plate 1. Relatively undisturbed soil samples will be collected at 5-foot intervals beginning at 6 inches below grade in the borings. The anticipated depth of the first boring (LB-3), which will be drilled at a 20 degree angle adjacent to the location of previously drilled LB-1, will be 50 to 60 feet (47 to 56 vertical depth) below ground surface or 10 feet below field detected contamination as measured on a Century OVA Portable Organic Vapor Detector (FID). Laboratory analysis from soil samples collected in borings previously drilled, as shown on Plate 1, have documented that contamination was not encountered in the northeast and eastern boundaries of the excavation (i.e.; Borings LB-2 and TH-1). Therefore, the remaining two borings will be located on the south side of the excavation to define the lateral extent of soil contamination. These borings will be terminated at approximately the same depth of 50 feet below grade. The actual location of the two subsequent soil borings will be determined by the depth of field determined contamination observed in Boring LB-3. A Century OVA Portable Organic Vapor Detector (FID) will be used to evaluate contamination in the field prior to laboratory analysis. Based on field FID readings in Boring LB-3, subsequent borings will step out the approximate distance from the depth of contamination in Boring LB-3 (i.e.; if the elevated levels of oil and grease contamination are determined to exist to a depth of 40 feet below grade, the two additional borings to define the lateral extent of contamination out from the previous tank excavation will be located 40 feet away from the edge of the previous tank excavation). Should the contamination be at a shallower or greater depth, the location of the four additional borings will be positioned either closer to the excavation or farther from the previous excavation.

The sampling procedure of the soils entail driving a California Modified split-spoon sampler ahead of the base of the hollow-stem auger. The sampler is equipped with six, 3-inch long by 2-1/2-inch diameter brass rings. The sampler will be driven into the soil ahead of the hollow-stem auger using a 140-pound weight dropped from a height of 30 inches. Samples collected in the field will be sealed with teflon tape, capped, tapped, and properly labeled in an ice-cooled chest and transported to a state-certified laboratory.

Task 2 - Chemical Analysis

The soils samples will be visually examined as well a monitored for the presence of volatile organic vapors utilizing a Century OVA Portable Volatile Organic Detector (FID). Based upon these observations and measurements, five soil samples will be analyzed for their oil and grease content (EPA Test Method 413.2) and aromatic hydrocarbons (EPA Test Method 8020) to document the vertical extent of contamination. The analyses will be performed at a state-certified Department of Health Services laboratory.

All soils excavated from the borings will be stock piled in a central area located onsite. Following a determination as to the level of soil contamination, Leighton and Associates, Inc. may recommend to H. R. Textron to spread the cuttings from drilling into a 1/2 to 1 foot layer onsite for onsite treatment and thereby render the soil useable for other purposes and not require offsite disposal.

Task 3 - Preparation of Report

Upon completion of field work and the receipt of the laboratory analysis of soil samples, a site assessment report with data, conclusions, and recommendations will be forwarded to H. R. Textron. This report will describe the vertical and lateral extent as well as the level of contamination detected. The recommendations for a remedial plan will be developed and submitted to H. R. Textron for review and approval prior to submittal to the California Regional Water Quality Control Board - Los Angeles.

Proposed Remediation

Based on our findings and conclusions, we are exploring the option to isolate the contaminated soil in-place by capping the surface with a 6-inch thick concrete pad to prevent the potential of downward migration due to rainfall. In addition, the contaminated soils will be monitored by strategically placing permanent BAT System Vadose Monitors. This option will be modified based on our findings during this field program.

If you have any questions regarding our work plan, please do not hesitate to contact Mimi Maki at this office. We appreciate this opportunity to be of service.

Respectfully submitted,

LEIGHTON AND ASSOCIATE, INC.

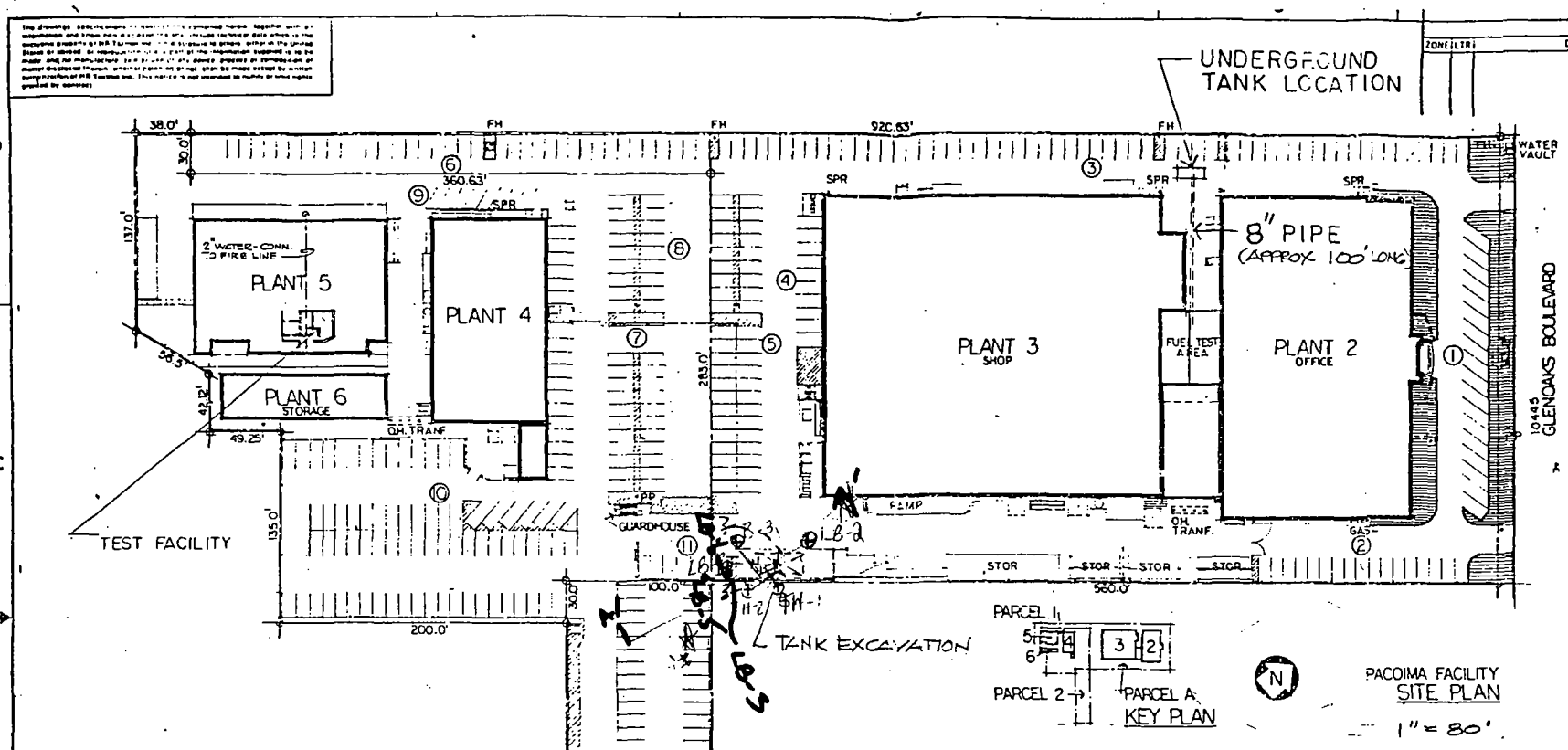
Bruce R. Hilton, CEG1151
Chief Engineering Geologist

Thomas E. Mills
Director, Environmental Services

LMM/TM/BH/ka

Attachments: Table 1 - Summary of Laboratory Results
Plot Plan
Cross-Section A-A'

Distribution: (2) Addressee
(1) California Regional Water Quality Control Board - Los Angeles Region, Attention: Mr. Salomon



BUILDING AREAS		LAND AREAS		
PLANT 2	33,325 SF	PARCEL A	186,099 SF	4.27 ACRES
PLANT 3	51,345 SF	PARCEL 1	106,800 SF	2.45 ACRES
PLANT 4	12,000 SF	PARCEL 2	37,300 SF	.86 ACRES
PLANT 5	12,240 SF			
PLANT 6	3,775 SF			
TOTAL	112,995 SF	TOTAL	330,199 SF	7.58 ACRES

CODE INFORMATION		CONST. TYPE	OCCUP	PERMIT DATE
ZONING: M2-1	PLANT 2	III B	G-1	12/23/55
FIRE DISTRICT: 2-100'	PLANT 3	IV	G-1	12/20/66
REQ'D PARKING:	PLANT 4	III B	G-1	9/11/58
PLANTS 2 & 3 = 170 CARS	PLANT 5	III B	G-1	
PLANTS 4 5 6 = 56	PLANT 6	IV	G-1	
TOTAL = 226 CARS				

PARKING SUMMARY	
1	18 SPACES
2	17
3	58
4	10
5	22
6	37
7	47
8	33
9	8
10	75
11	7
12	68
TOTAL	400 SPACES

Legend

B3 Boring drilled by the Earth Technology Group 5-23-84

TH-2 Borings drilled by Envirpro 4-29-86

LB-2 Borings drilled by Leighton & Associations 5-30-85

Proposed Boring Location

A A' Location of Cross Section

4. SURFACE TEXTURE SHALL BE ✓
3. CHAMFERS SHALL BE CONCENTRIC WITHIN ____ DIA
2. APPLY FSCM NO 81873 TO SPARES ONLY.
1. IDENTIFY WITH PART NO AND LATEST REV LTR
NOTE: UNLESS OTHERWISE SPECIFIED

UNDERGROUND FUEL OVERFLOW TANK AND PIPE

WEIGHT			
STRESS			4.9.86
Q A			1.[illegible]
VAL ENGRG			1.22.86
MATL	DASH NO	NEXT ASSEMBLY	USED ON
	APPLICATION		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES DO NOT SCALE
TOLERANCES: ANGLES ± 0° 30' .XX ± .01 .XXX ± .005
REMOVE ALL BURRS
BREAK CORNERS .005-.010
INTERNAL RADII .005-.010
INTERPRET DRAWING PER DOD-STD-100
MATERIAL | HEAT TREAT | FINISH

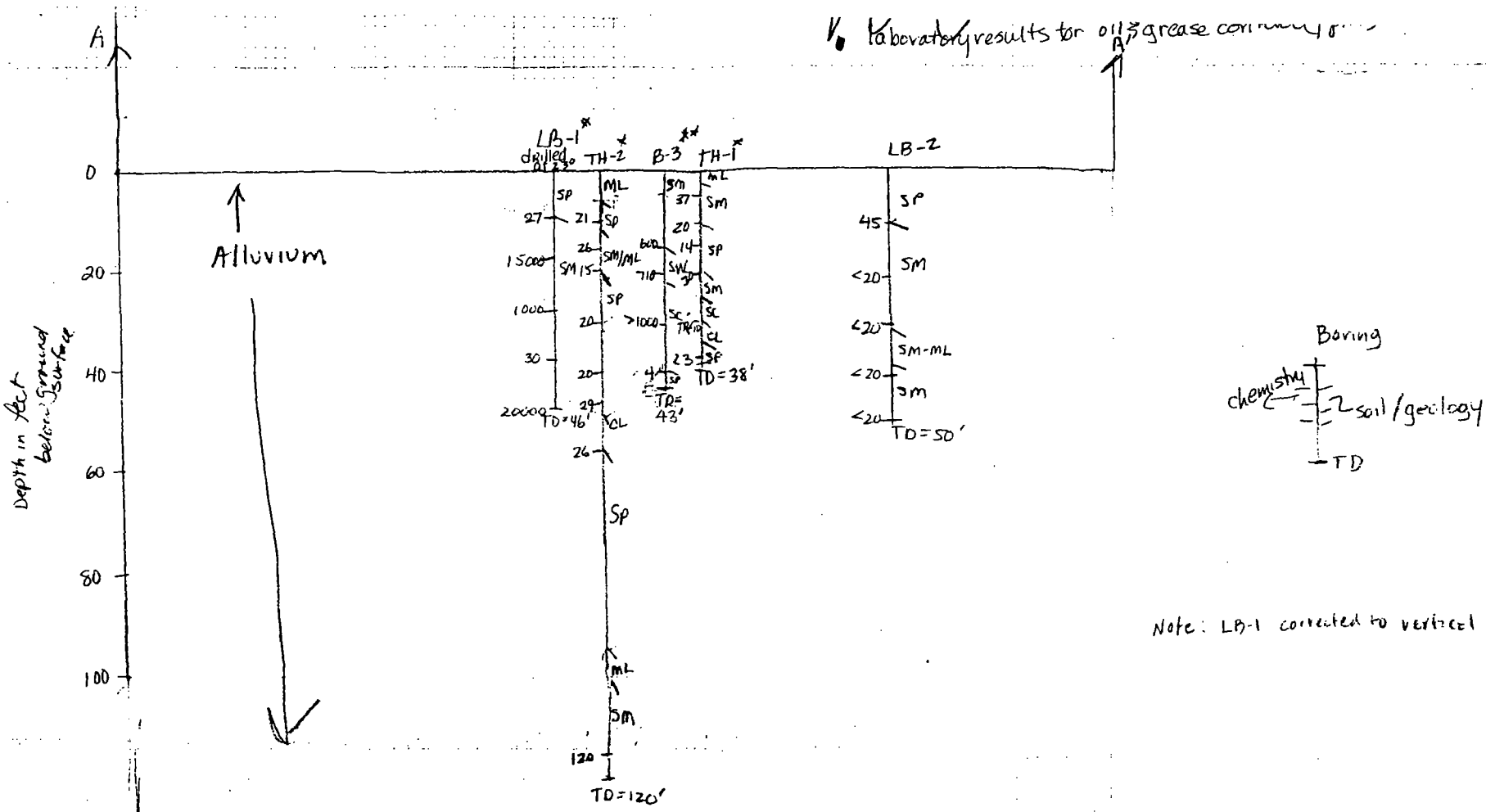
CONTRACT NO
DRAWN WP
CHECKED
APPROVED
DESIGN APPROVED
APPROVED
ENGRG RLSE
RELEASE DATE

HR TEXTRON
HR Textron Inc. a Subsidiary of Textron Inc. Valencia, Calif.

PACOIMA PLANT
12137 MONTAGUE ST.
PACOIMA, CA.

SIZE D | FSCM NO 81873 | DRAWING NO 1603-F
SCALE | WEIGHT | SHEET

3500(9)



Note: LB-1 corrected to vertical

* Oil and grease concentrations based on laboratory analysis (ppm)

** Volatile organics field measurements based on FID analysis (ppm)

Scale 1" = 20'

7841189-03

Cross-Section A-A' Through Tank Excavation Showing Chemical and Geologic Conditions

Geologist Bit

May 1, 1987

35048

May 5, 1987

TABLE 1 - Summary of Laboratory Results

Boring	Sample Depth (feet)	Oil and Grease (ppm)	Hydro-Carbons (ppm)	1,1,1-Trichlorothane (ppm)	Perchloroethane (ppm)	Toluene (ppm)
LB-1	10'(9.2)*	27	27	<0.3	<0.3	<0.3
LB-1	20'(18.4)*	15,000	14,000	55	3	3
LB-1	30'(27.6)*	10,000	9800	87	4	3
LB-1	40'(36.8)*	30	30	100	2	1
LB-1	50'(46)*	20,000	20,000	<0.3	<0.3	<0.3
LB-2	10'	45	41	<0.3	<0.3	<0.3
LB-2	20'	<20	<20	<0.3	<0.3	<0.3
LB-2	30'	<20	<20	<0.3	<0.3	<0.3
LB-2	40'	<20	<20	<0.3	<0.3	<0.3
LB-2	50'	<20	<20	<0.3	<0.3	<0.3
TH-1	6.5'		37ppm	ND		ND
TH-1	11'		20	ND		ND
TH-1	12.5'		20	ND		ND
TH-1	15.5'		14	ND		ND
TH-1	20'		30	ND		ND
TH-1	30'		TR<10	ND		ND
TH-1	40'		23	ND		ND
TH-2	10'		21	ND		ND
TH-2	15'		26	ND		ND
TH-2	20'		15	ND		ND
TH-2	30'		20	ND		ND
TH-2	40'		26	ND		ND
TH-2	45'		29	ND		ND
TH-2	55'		26	ND		ND
TH-2	65'		21	ND		ND
TH-2	75'		23	ND		ND
TH-2	85'		18	ND		ND
TH-2	95'		120	ND		ND
TH-2	105'		37	ND		ND
TH-2	115'		33	ND		ND
TH-2	120'		56	ND		ND

*Corrected to vertical depth

STATE OF CALIFORNIA

GEORGE DEUKMEJIAN, *Governor*

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
LOS ANGELES REGION

107 SOUTH BROADWAY, SUITE 4027
LOS ANGELES, CALIFORNIA 90012-4596
(213) 620-4460

August 27, 1987

Ms. Betty Seldner
Director, Environmental Management
H.R. Textron Inc.
25200 West Rye Canyon Road
Valencia, CA 91355

UNDERGROUND TANK LEAK INVESTIGATION - H.R. TEXTRON INC. 10445 GLENOAKS BLVD. (FILE NO. 83-8) (ID # 913310270)

Reference is made to your consultants' Leighton and Associates, report dated May 5, 1987 containing a proposed workplan for phase II evaluation of the extent of contamination for your facility at 10445 Glenoaks Boulevard, Pacoima, California.

We have reviewed the workplan and have no objections to you implementing it, provided that all work is completed as specified in your proposal and complies with the modifications and requirements listed below as discussed in a telephone conversation on June 15, 1987 between Ms. Mimi Macki of Leighton and Associates and Mr. E.G. Solomon of this Board's staff.

1. The three proposed borings shall be drilled to ground water and ground water monitoring wells shall be constructed to conform to Title 23 California Administrative Code, Subchapter 16, Section 2647 and 2648.

2. Soils excavated shall be effectively treated or disposed of at a legal site.

3. Depending on the results of the FID, all contaminated soil samples shall be analyzed.

4. You must use the proper EPA testing methods for the analysis of organics as follows:

Soil	Groundwater
EPA 8240 or 8010/8020	EPA 624 or 601/602
EPA 413.2	EPA 413.2

350049

A final report containing the results of your workplan is due to this Regional Board by October 8, 1987. If you have any questions concerning this matter, please call Mr. E. G. Solomon at (213) 620-5647.

Hank H Yacoub

HANK H. YACOUB
Supervising Water Resource
Control Engineer

extension granted by Solomon until Dec 8, 1987

EGS:sml

cc: Ms. Mimi Macki, Leighton & Associates
Captain Jonathan A. Hall, Los Angeles City Fire Department, Fire Prevention Bureau

LEIGHTON and ASSOCIATES
INCORPORATED

GEOTECHNICAL and ENVIRONMENTAL ENGINEERING CONSULTANTS

T R A N S M I T T A L

TO: HR Textron
25200 West Rye Canyon Road
Valencia, California 91355

Date: October 30, 1987

Project No. 40841189-04

ATTENTION: Mr. William Moses

Transmitted:	The Following:	For:
____ Herewith	____ Draft Report	X Your Use
X Via Carrier	X Final Report	____ As Requested
____ Client Pick Up	____ Extra Report	
	____ Other	

SUBJECT: Revised Work Plan for Evaluation of Vertical and Horizontal Extent of Contamination Resulting from the Leakage of a Former Underground Tank, HR Textron Pacoima Facility, 10445 Glenoaks Boulevard, Pacoima, California

Copy given to Marty Bell 10-30-87 [illegible]

Date of Report: October 30, 1987

LEIGHTON AND ASSOCIATES, INC.

By: LMM/TM/BH/lh

Copies to: (2) Addressee
(1) California Regional Water Quality Control Board - Los Angeles Region
Attention: Mr. E. G. Soloman

350050

25020 WEST AVENUE STANFORD, SUITE 190, VALENCIA, CA 91355
Telex 249208 LAGEO UR
(805) 257-0150 • (818) 881-6031
FAX (714) 250-9194

LEIGHTON and ASSOCIATES
INCORPORATED
GEOTECHNICAL and ENVIRONMENTAL ENGINEERING CONSULTANTS

October 30, 1987

Project No. 40841189-04

TO: HR Textron
25200 West Rye Canyon Road
Valencia, California 91355

ATTENTION: Mr. William Moses

SUBJECT: Revised Work Plan for Evaluation of Vertical and Horizontal Extent of Contamination Resulting from the Leakage of a Former Underground Tank, HR Textron Pacoima Facility, 10445 Glenoaks Boulevard, Pacoima, California

REFERENCES:
1. "Proposed Work Plan for Phase II Evaluation of Horizontal Extent of Contamination Resulting from the Leakage of a Former Underground Tank, HR Textron Pacoima Facility, 10445 Glenoaks Boulevard, Pacoima, California," Project No. 7841189-03, dated May 5, 1987, by Leighton and Associates, Inc.
2. "Underground Tank Leak Investigation - HR Textron, Inc., 10445 Glenoaks Boulevard (File No. 83-8) (ID #913310270), August 27, 1987, Letter by California Regional Water Quality Control Board

Introduction

As requested, we have prepared this revised work plan to evaluate the vertical and horizontal extent of contamination resulting from the leakage of a former underground tank within the HR Textron Pacoima Facility located at 10445 Glenoaks Boulevard, Pacoima, California. Previous field investigations have documented that soils were contaminated with oil and grease and trace levels of volatile organics. The soil zone from 35 to 45 feet below grade contained the highest detected concentration. The vertical and lateral extent of the contamination in the unsaturated zone is unknown at this time. We have reviewed the letter from the California Regional Water Quality Control Board (CRWQCB) of Los Angeles dated August 27, 1987, referenced above, and present this revised work plan.

25020 WEST AVENUE STANFORD. SUITE 190. VALENCIA. CA 91355
Telex 249208 LAGEO UR
(805) 257-0150 • (818) 881-6031
FAX (714) 250-9194

The revised scope of work was developed and based on a review of the following information:

- The Earth Technology Corporation borings drilled May 23, 1984.
- Leighton and Associates, Inc., 1985, soil sampling and testing at Tank 2, 10445 Glenoaks Boulevard, Pacoima, California (consultant's report dated March 6, 1985 performed under Project No. 7841189-01).
- Leighton and Associates, Inc., 1985, soil sample analysis, HR Textron, 10445 Glenoaks, Pacoima, California (consultant's letter dated July 30, 1985 performed under Project No. 7841189-02).
- Leighton and Associates, Inc. records pertaining to site geology and hydrogeology of the local area.
- Personal communication between Leighton and Associates, Inc. and HR Textron.
- CRWQCB's response letter to Leighton and Associates' proposed work plan dated August 27, 1987, and modified in conversations between E.G. Solomon of CRWQCB and Leighton and Associates.

Background

A total of five exploratory borings have been previously drilled around the tank excavation as shown on Plate 1. Selected soil samples have been chemically analyzed for total petroleum hydrocarbons, oil, grease, and volatile organics and those results are summarized in Table 1.

A generalized cross-section through the excavation is illustrated on Plate 2. The vicinity of the subject tank excavation is underlain by alluvium composed of sands, silty sands, and sandy silts. Soil contamination was encountered in Borings B-3 and LB-1 between 35 to 45 feet. The exact lateral and vertical extent of soil contamination around the removed tank is presently unknown.

Scope of Work

The following tasks are proposed to be performed by Leighton and Associates, Inc., to assist HR Textron in evaluating the vertical and horizontal extent of contamination at the former underground tank locations.

Task 1 - Monitoring Well Installation

Drill, sample, and install one, 6-inch diameter Monitoring Well (MW-1) at the location shown on Plate 1. The proposed location of Monitoring Well MW-1 is located down gradient from the tank excavation and adjacent to Boring LB-1. The proposed monitoring well will be terminated 20± feet below ground water, assuming that depth to ground water is 200± feet. The proposed drilling method will be a triple wall percussion hammer rig. This method is quicker, less expensive, and minimizes the need for disposal over the conventional method of rotary mud drilling, and has less impact on existing contamination conditions. Relatively

undisturbed soil samples will be collected at 10-foot intervals beginning at 6 inches below grade in the boring. All cuttings and soil samples will be monitored for volatile organic vapors and methane with a Century 128 OVA portable organic vapor detector and volatile organics only with a HNU Photoionization Detector (PID). A Century OVA Portable Organic Vapor Detector (FID) will be used to evaluate contamination in the field in order to select samples for laboratory analyses.

The sampling procedure of the soils entail driving a California Modified split-spoon sampler ahead of the base of the triple walled casing. The predecontaminated sampler is equipped with six, 3-inch long by 2-1/2-inch diameter brass rings. The sampler will be driven into the soil ahead of the triple wall percussion hammer rig using a 140-pound weight dropped from a height of 30 inches. Samples collected in the field will be sealed with teflon tape, capped, placed in a zipped locked bag, and properly labeled and stored in an ice-cooled chest and transported to Chemical Research Laboratory, a Department of Health Services certified laboratory.

All cuttings generated by the percussion hammer rig will be stored onsite in 20-cubic yard hazardous waste storage bins for onsite treatment at a later date. Upon completion of installation, the monitoring well will be surveyed for horizontal and vertical control.

Upon completion of the monitoring well installation, the monitoring well will be developed prior to collecting the ground water sample. The monitoring well will be developed to a particulate volume less than 10 mg/l using an Emhoff cone and to the stabilization of the pH and conductivity of the water. All removed water will be containerized onsite in Baker Tanks prior to onsite treatment and disposal by HR Textron if required. A typical monitoring well detail is provided on Plate 3. At the completion of development of Monitoring Well MW-1, ground water will be collected for chemical analysis. At the conclusion of the sampling of the ground water, all available information will be analyzed to evaluate present site conditions. Should no contamination be detected in the ground water sample from Monitoring Well MW-1, the emphasis of further exploratory drilling will be focused on defining the horizontal extent of the soil contamination to develop remediation of the contaminated soil. If ground water contamination is encountered, additional monitoring wells will be installed and will require obtaining permission from adjacent landowners prior to drilling.

Task 2 - Chemical Analysis

The soils samples will be visually examined as well monitored for the presence of volatile organic vapors utilizing a Century OVA Portable Volatile Organic Detector (FID). Based upon these observations and measurements, all soil samples with OVA measurements greater than 50 ppm will be analyzed for their oil and grease content (EPA Test Method 413.2) and volatile organics (EPA Test Method 8240) to document the vertical extent of contamination. The analyses will be performed at Chemical Research Laboratory, a Department of Health Services certified laboratory. Water samples will be collected from Monitoring Well MW-1 and will be analyzed for oil and grease and volatile organics by EPA Test Methods 413.2 and 624. Trip and field blanks will also be collected during soil and water sampling for quality assurance/quality control purposes.

Task 3 - Preparation of Report

Upon completion of field work and the receipt of the laboratory analysis of the soil samples, a site assessment report with data, conclusions, and recommendations will be forwarded to HR Textron. This report will describe the vertical extent of contamination as well as the level of contamination detected. The recommendations for additional borings and for monitoring wells will be developed and submitted to HR Textron for review and approval prior to submittal to the California Regional Water Quality Control Board - Los Angeles.

Proposed Schedule

- October 30, 1987 - Submit revised work plan to CRWQCB-LA for review.
  November 3 rec'd verbal approval
- November 20, 1987 - Initial drilling of Monitoring Well MW-1. Begin field work within 7 to 10 days of written approval of work plan from CRWQCB. California Regional Water Quality Control Board approval received November 13, 1987.
- January 4, 1988 - Chemical analyses - 3 to 4 weeks turnaround for hard copy of laboratory results.
- Data analyses - ongoing.
- February 1, 1988 - Report preparation - 3 to 4 weeks after receipt of chemical analyses, draft copy to HR Textron for review.
- February 8, 1988 - HR Textron review due to Leighton and Associates, Inc.
- February 18, 1988 - Final report - one week following receipt of changes for HR Textron.

If you have any questions regarding our work plan, please do not hesitate to contact Mimi Maki at this office. We appreciate this opportunity to be of service.

Respectfully submitted,

LEIGHTON AND ASSOCIATE, INC.

Marianne L. Maki

Marianne L. Maki
Senior Geologist

Thomas E. Mills

Thomas E. Mills
Director, Environmental Services

Bruce R. Hilton

Reviewed by: Bruce R. Hilton, CEG 1151
Chief Engineer

LMM/TM/BH/lh

Attachments: Table 1 - Summary of Laboratory Results
Plate 1 - Plot Plan
Plate 2 - Geologic Cross-Section A-A'
Plate 3 - Well Construction Detail

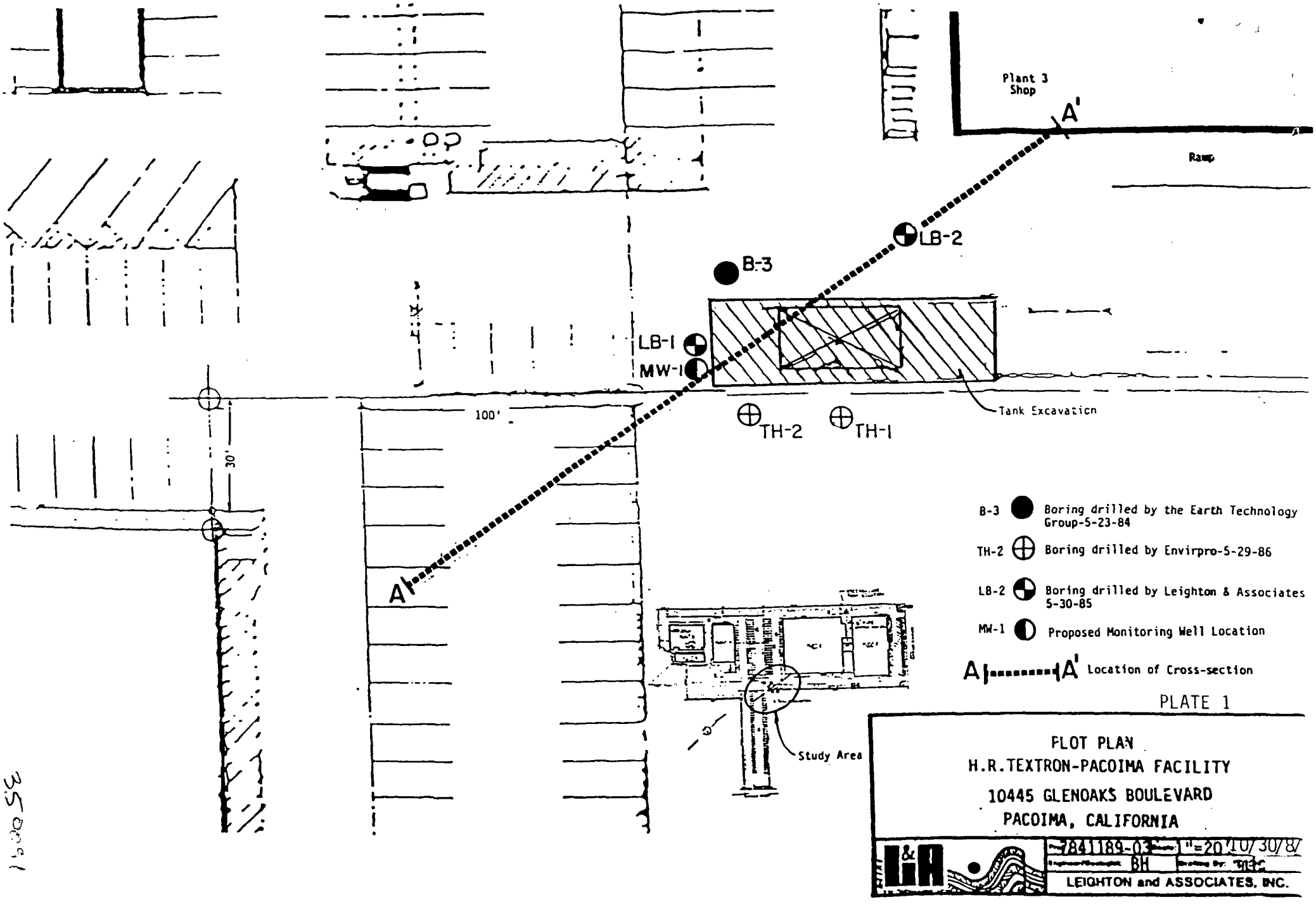
Distribution: (2) Addressee
(1) California Regional Water Quality Control Board
Los Angeles Region
Attention: Mr. E.G. Soloman

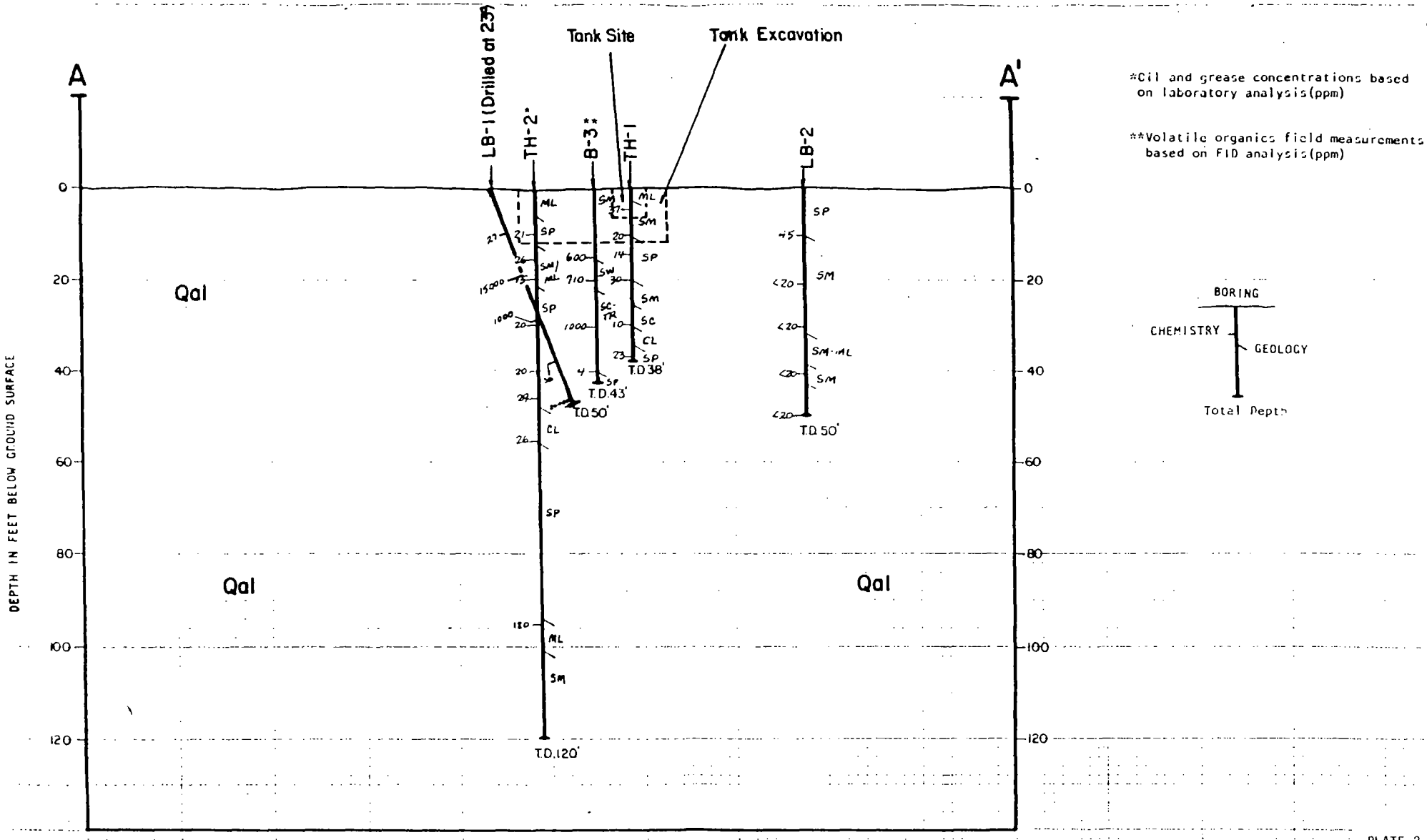
TABLE 1

SUMMARY OF LABORATORY RESULTS

Boring	Sample Depth (feet)	Oil and Grease (ppm)	Hydro-Carbons (ppm)	1,1,1-Trichlorothane (ppm)	Perchloroethane (ppm)	Toluene (ppm)
LB-1	10'(9.2)*	27	27	<0.3	<0.3	<0.3
LB-1	20'(18.4)*	15,000	14,000	55	3	3
LB-1	30'(27.6)*	10,000	9800	87	4	3
LB-1	40'(36.8)*	30	30	100	2	1
LB-1	50'(46)*	20,000	20,000	<0.3	<0.3	<0.3
LB-2	10'	45	41	<0.3	<0.3	<0.3
LB-2	20'	<20	<20	<0.3	<0.3	<0.3
LB-2	30'	<20	<20	<0.3	<0.3	<0.3
LB-2	40'	<20	<20	<0.3	<0.3	<0.3
LB-2	50'	<20	<20	<0.3	<0.3	<0.3
TH-1	6.5'		37ppm	ND		ND
TH-1	11'		20	ND		ND
TH-1	12.5'		20	ND		ND
TH-1	15.5'		14	ND		ND
TH-1	20'		30	ND		ND
TH-1	30'		TR<10	ND		ND
TH-1	40'		23	ND		ND
TH-2	10'		21	ND		ND
TH-2	15'		26	ND		ND
TH-2	20'		15	ND		ND
TH-2	30'		20	ND		ND
TH-2	40'		26	ND		ND
TH-2	45'		29	ND		ND
TH-2	55'		26	ND		ND
TH-2	65'		21	ND		ND
TH-2	75'		23	ND		ND
TH-2	85'		18	ND		ND
TH-2	95'		120	ND		ND
TH-2	105'		37	ND		ND
TH-2	115'		33	ND		ND
TH-2	120'		56	ND		ND

*Corrected to vertical depth


Plant 3
Shop
A'
Ramp
LB-2
B-3
LB-1
MW-1
100'
30'
TH-2
TH-1
Tank Excavation
A
Study Area
B-3 Boring drilled by the Earth Technology Group-5-23-84
TH-2 Boring drilled by Envirpro-5-29-86
LB-2 Boring drilled by Leighton & Associates 5-30-85
MW-1 Proposed Monitoring Well Location
A A' Location of Cross-section
PLATE 1
PLOT PLAN
H.R.TEXTRON-PACOIMA FACILITY
10445 GLENOAKS BOULEVARD
PACOIMA, CALIFORNIA
7841189-03
1"=20'
10/30/87
BH
LEIGHTON and ASSOCIATES, INC.



N7°E

PLATE 2

CROSS-SECTION A-A' THROUGH TANK EXCAVATION SHOWING CHEMICAL AND GEOLOGIC CONDITIONS

LEIGHTON and ASSOCIATES, INC

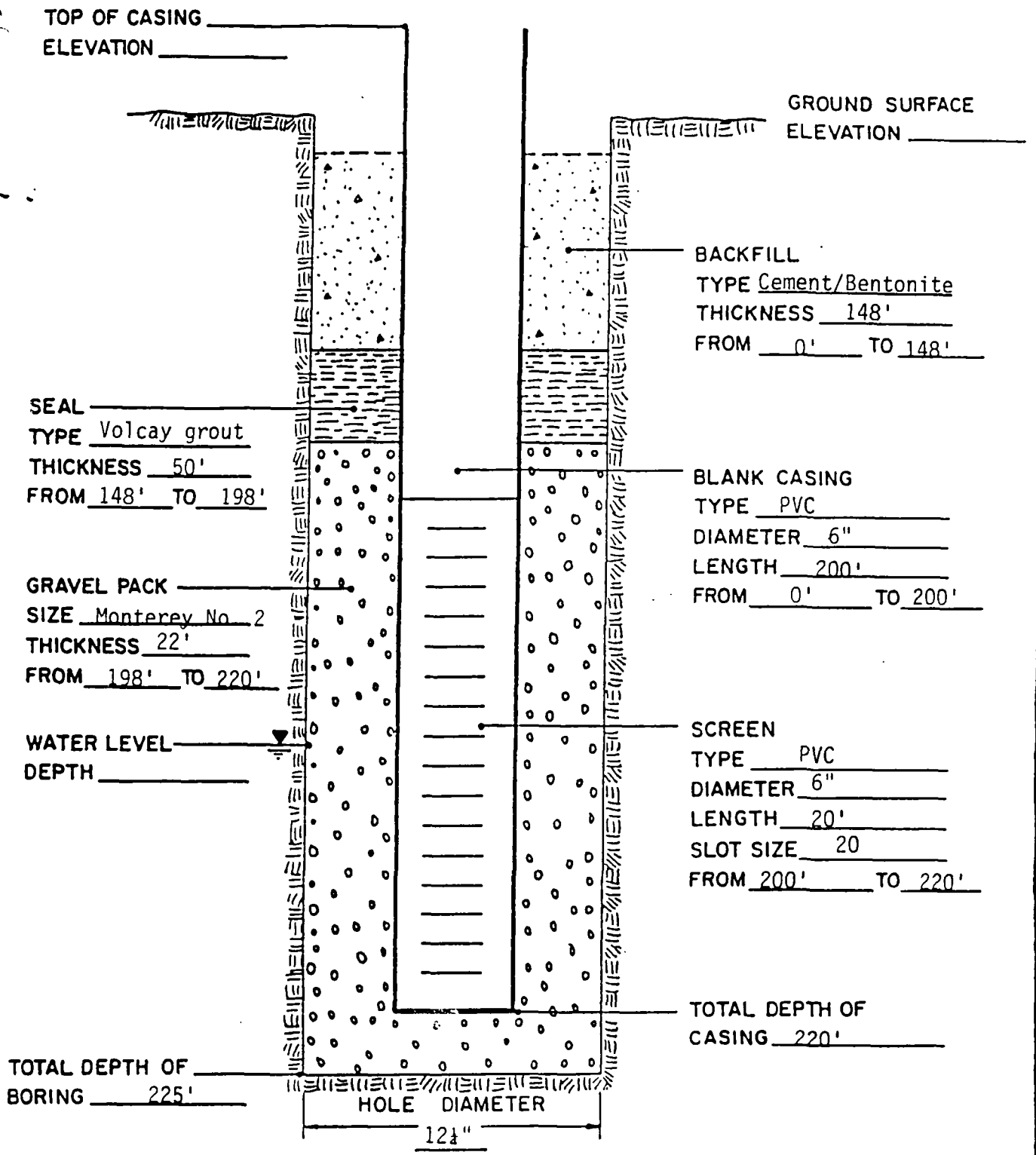


PLATE 3

LEIGHTON and ASSOCIATES

Project No.
40841189-04

WELL CONSTRUCTION DETAIL

Well No. MW-1

2166-04746

PACOIMA REMEDIATION 1988

RESPONSE TO QUESTION 7 PAGE 9

2166-04746

LEIGHTON AND ASSOCIATES

Geotechnical and Environmental Engineering Consultants

350052

LMM

Privileged and Company
Private Attorney
Client Communication
and Work Product

RULES AND REGULATIONS

HR TEXTRON'S PACOIMA FACILITY

February 3, 1988

LEIGHTON AND ASSOCIATES

ATTACHMENT A

PAC0117

RECEIVED
JAN 13 1988
LEIGHTON & ASSOCIATES

DIVISION 31 - ATMOSPHERIC TANKS

GENERAL PROVISIONS

L.A. City Fire Code

SEC. 57.31.01 SCOPE:

The provisions of this Division shall regulate all atmospheric tanks which are incorporated as an integral part of a transfer or process system used for handling or storing hazardous substances. Such provisions provide necessary safeguards to carry out the purpose and intent of this Division. Whenever the term "tank" is used in this Division, it shall mean "atmospheric tank".

SEC. 57.31.02 DEFINITIONS:

The following words and phrases whenever used in this Division shall be defined as follows:

Aboveground Tank - Any atmospheric tank installed above the surface of the ground and used for the storage, handling, or processing of a hazardous substance.

Hazardous Substance - All of the following liquid, solid, and gaseous substances, unless the State Department of Health Services, in consultation with the State Water Resources Control Board, determines the substance could not adversely affect the quality of the waters of the State:

1. Substances on the list prepared by the Director of the Department of Industrial Relations pursuant to Section 6382 of the Labor Code;

2. Hazardous substances, as defined in Section 25316 of the Health and Safety Code;

3. Any substance or material which is classified as a Class I, II, or IIIA liquid.

Underground Tank - Any atmospheric tank which is partially or entirely below the surface of the ground and is used to store or process a hazardous substance including any connected piping and appurtenances.

SEC. 57.31.03 PERMITS REQUIRED:

A. No person shall erect, install, relocate, add to, alter, or abandon any tank unless a valid Permit as required by Division 5 of this Article has been issued.

B. No person shall use or operate any atmospheric tank unless a valid Permit as required by Division 4 of this Article has been issued.

UNDERGROUND TANKS

SEC. 57.31.30 SCOPE:

In addition to applicable requirements of this Division, the following sections shall regulate underground atmospheric tanks and appurtenances used for the storage or processing of hazardous substances.

EXCEPTION:

The provisions of these Sections shall not include structures such as sumps, separators, storm drains, catch basins, oil field gathering lines, refinery pipelines, intrastate or interstate pipelines, lagoons, evaporation ponds, well cellars, separation sumps, lined or unlined pits, aboveground storage tank spill containment areas, or final interceptors in industrial waste pretreatment systems.

SEC. 57.31.31 DEFINITIONS:

The following words and phrases whenever used in these sections shall be defined as follows:

CA 149

Existing Facility - Any underground tank containing a hazardous substance which was installed or placed in service prior to January 1, 1984.

Facility - Any underground tank or group of underground tanks containing hazardous substances which are located at a single site.

New Facility - Any underground tank containing a hazardous substance which was installed or placed in service on or after January 1, 1984.

Primary Tank - The portion of an underground tank which comes into immediate contact on its inner surface with the hazardous substance being contained.

Secondary Containment - A system of containment external to, and separate from, the primary tank. One secondary containment may serve as secondary containment for more than one primary tank.

Single-Walled - The construction of tank walls consisting of one thickness of material. Laminated, coated or clad materials shall be considered as single-walled.

Unauthorized Release - Any emission or escape of any hazardous substance which does not conform to the provisions of this Division, unless such release is in accordance with the release regulations of the South Coast Air Quality Management District and California Air Resources Board, with a National Pollutant Discharge Elimination System (NPDES) Permit, or with waste discharge requirements established by a Regional Water Quality Control Board.

SEC. 57.31.32 NEW UNDERGROUND TANK REQUIREMENTS:

Every new underground tank shall be provided with and meet the following minimum requirements.

A. Secondary containment in accordance with Section 57.31.33.

B. Construction, corrosion protection, and testing of underground tanks in accordance with Section 57.31.34.

SEC. 57.31.33 SECONDARY CONTAINMENT:

A. Every new facility shall be designed and constructed with secondary containment.

B. Secondary containment shall be compatible with any hazardous substance contained within a primary tank or within several primary tanks served by a single secondary containment. Hazardous substances shall not be intermixed

so as to cause a fire, explosion, or the production of toxic or poisonous gas. Hazardous substances which are not compatible with each other shall have separate primary tank and secondary containment systems.

C. Secondary containment shall be large enough to contain at least 100 percent of the volume of the primary tank.

D. Secondary containment which includes multiple primary tanks shall be capable of containing at least 150 percent of the volume of the largest primary tank.

E. When there is a possibility of water intruding into the space between the primary tank and secondary containment by precipitation, infiltration, or other means, the facility shall be designed and constructed with the capability to monitor and remove such water intrusion.

SEC. 57.31.34 CONSTRUCTION, CORROSION PROTECTION, AND TESTING OF UNDERGROUND TANKS:

The construction, corrosion protection, and testing of underground tanks shall comply with the requirements of L.A.F.D. Standard No. 37.

SEC. 57.31.35 REQUIREMENTS FOR EXISTING UNDERGROUND TANKS:

Every existing underground tank shall meet the following minimum requirements by January 1, 1985.

A. Facility inspection evaluation in accordance with Section 57.31.36.

B. Integrity testing in accordance with Section 57.31.37.

C. Soils investigation in accordance with Section 57.31.38.

D. Monitoring systems in accordance with Section 57.31.39.

E. Facility inspection and records in accordance with Section 57.31.40.

SEC. 57.31.36 FACILITY INSPECTION FOR CONTINUED USE:

The continued use of, and permit approval for, an underground tank or facility is subject to modification or termination by the Chief whenever there has been any unauthorized release, or when necessary to comply with the minimum requirements of this Article.

In determining whether continued storage in such underground tank is suitable, the Chief shall consider the following criteria:

1. The age of the underground tank and facility.

2. The method of containment.

3. The method of monitoring.

4. The feasibility of any required retrofit.

5. The amount and type of hazardous substance stored.

6. The severity of any potential unauthorized release.

SEC. 57.31.37 INTEGRITY TESTING OF EXISTING UNDERGROUND TANKS:

Existing underground tanks and piping shall be tested for tightness by an approved method capable of detecting a minimum leak rate of .05 gallons per hour or less. A soils investigation analysis may be required to determine precontamination or the adequacy of past hazardous substance containment and the appropriate monitoring systems to be installed. Whenever a leak is detected, the Chief shall be notified in accordance with Section 57.31.47 B of this Article.

SEC. 57.31.38 SOILS INVESTIGATION:

To determine whether or not an unauthorized release has occurred at a facility, the Chief may require a soils analysis by soil boring, soil samples, or other approved method. The soils analysis along with documentation of the sequence of custody of the soil analysis shall be submitted to the Chief in writing and certified by a California Registered Engineering Geologist or a California Certified Geologist.

SEC. 57.31.39 MONITORING SYSTEMS:

Every underground tank shall be provided with a monitoring system designed and constructed to be capable of detecting the release of any hazardous substance.

EXCEPTION:

Existing underground tanks which are in a concrete vault and the exterior surface of the tanks are accessible to visual inspection. Visual inspections shall be conducted at intervals specified by the Chief.

A. When a secondary containment system is used, the monitoring device shall be capable of detecting leakage into the space between the primary tank and secondary containment.

B. Secondary containment systems, other than double-walled tanks, which may be subject to the intrusion of water or other liquids shall be provided with a means of detection and removal.

C. All methods of monitoring, detection, and leak interception shall be certified by a California Registered Engineer and be approved by the Chief.

D. Monitoring systems shall be connected to alarms which shall be both visual and audible.

E. A monitoring system annunciator panel, when required, shall be installed in locations where responsible personnel are normally in attendance during operation of the facility. These panels shall not be installed in closets or storage rooms, nor in other isolated areas.

F. Written operating instructions and test procedures shall be located on the monitoring system annunciator panel giving a step-by-step explanation of the procedures to be used when an unauthorized release occurs or when testing the monitoring systems.

SEC. 57.31.40 FACILITY INSPECTION AND RECORDS:

The owner, operator, or permittee of a facility shall conduct or cause to be conducted monthly inspections and tests of the facility, including the monitoring systems of that facility. Records of these inspections and tests shall be maintained for at least three years and shall be available for inspection by the Chief.

SEC. 57.31.41 LOCATION OF UNDERGROUND TANKS:

A. Tanks which are located in areas where they may become buoyant due to a rise in the water table, or in areas which are subject to flooding, shall be anchored in a manner to prevent their floating or unsafe movement.

B. Tanks shall be so located with respect to existing building foundations and supports that the loads carried by these foundations and supports cannot be transmitted to the tank. The distance from any part of a tank to the nearest wall or any basement, pit, or cellar shall not be less than one foot and not be less than three feet from any property line that may be built upon.

C. Underground tanks shall be separated from each other by at least one foot.

SEC. 57.31.42 INSTALLATION OF UNDERGROUND TANKS:

A. Excavations shall be made with proper precautions for existing foundations and/or load bearing supports.

B. Tanks shall be set on a firm foundation of at least 12 inches of noncorrosive inert backfill material such as clean sand or pea gravel well tamped in place on the tops, sides, and ends of tanks.

C. Tanks located in protected areas where they are not, and will never be, subjected to vehicular or other superimposed loads may be installed with a cover of not less than two feet of earth when approved by the Chief.

D. Tanks located where subjected to traffic shall be installed at least three feet below the lowest grade or shall be covered with at least 18 inches of noncorrosive inert backfill material such as clean sand or pea gravel well tamped in place plus six inches of reinforced concrete slab that extends one foot beyond the extremity of the tank and is designed to sustain the vehicular and other superimposed loads in accordance with Chapter 9 of the L.A.M.C. (Building Code).

E. The fill box or opening shall be safeguarded against spills or unauthorized release where asphaltic or concrete paving is not provided.

F. Underground tanks which have a remote fill shall be equipped with automatic closing devices installed in the fill line to prevent filling the tank more than 95 percent. In addition to such closing device, there shall be an audible alarm set at 90 percent capacity. The remote fill and alarm shall be labeled and located in a manner approved by the Chief.

SEC. 57.31.43 VENTING OF UNDERGROUND TANKS:

A. Every underground tank having only one fill opening shall be equipped with a vent pipe of not less than one and one-fourth inch nominal inside diameter. Tanks requiring vapor recovery systems shall have no less than one vent pipe with a nominal inside diameter of not less than two inches. Vent pipes shall have the capacity to prevent back-pressure development in tanks from exceeding 2.5 PSIG.

B. All Class I liquid vent pipes shall be 18 inches above the highest point of any roof of any building within 15 feet of the point of termination. Vent pipes shall terminate 12 feet above the adjacent ground level and not less than 10 feet from building openings. They shall discharge only upward or horizontally to disperse vapors away from exposures and hazardous locations.

C. Every vent pipe shall run without sag or trap from the top of the tank to which it is connected and shall be so located and directed that flammable vapors will not accumulate or travel to an unsafe location, enter building openings, or be trapped under eaves.

D. Vent pipes running in a semi-horizontal direction shall be installed to provide one-fourth inch of fall for each one foot of horizontal run toward the tank.

E. Vent lines from two or more underground tanks may be manifolded into one main vent line provided the manifold is located not less than eight feet above the topmost point of every fill pipe for such tanks. The internal cross sectional area of the line above the manifold shall equal the combined cross sectional areas of all pipes so manifolded. Tanks containing Class I liquids shall not be manifolded with tanks containing Class II or III liquids, nor shall tanks which contain noncompatible hazardous substances be manifolded.

F. Vent pipes shall be located and supported in an approved manner.

G. Vent pipes shall be unobstructed and only approved pressure relief valves or approved ball check valves shall be installed inside the tank.

SEC. 57.31.44 INSTALLATION INSPECTION:

Underground tanks, secondary containment, monitoring systems, and piping shall not be covered until the installation has been inspected and approved by the Chief.

SEC. 57.31.45 SUCTION DELIVERY SYSTEM EXEMPTION:

Suction delivery piping systems may be excluded from the requirement for secondary containment when the following are provided:

A. Vent piping, product return piping, and vapor recovery piping are equipped with an approved ball valve back flow protection installed inside the tank which prevents the contents of the tank from entering the piping under pressure.

B. Vent piping, product piping, product return piping, and vapor recovery piping systems run directly to tank without sag or trap and with one-fourth inch fall for each one foot of horizontal run.

C. The product suction pump is in an approved location.

SEC. 57.31.46 PRESSURE DELIVERY SYSTEM EXEMPTION:

Pressure delivery piping systems may be excluded from the requirement for secondary containment when the following are provided:

A. An approved leak detection system shall be provided for the product piping which shall automatically shut-off the pumps when a leak is detected.

B. Vent piping, product return piping, and vapor recovery piping are equipped with approved ball valve back flow protection which prevents the contents of the tank from entering the piping under pressure.

C. Vent piping, product return piping, and vapor recovery piping systems run directly to tank without sag or trap and with one-fourth inch fall for each one foot of horizontal run.

SEC. 57.31.47 UNAUTHORIZED RELEASE:

A. No person shall cause or allow the storage of hazardous substances in a manner which causes an unauthorized release of hazardous substances or poses a significant risk of such unauthorized release.

B. Reporting - Any person who has knowledge of an unauthorized release of a hazardous substance shall notify the Chief immediately. A written report to the Chief shall be submitted by the owner, operator, or permittee within 10 days after the escape of a hazardous substance from a primary tank when such unauthorized release:

1. Has the potential to enter groundwater.

2. Could endanger life or property.

3. Has been contained by secondary containment.

The written report shall provide information to the Chief relating to the ability of the permittee to contain and dispose of the hazardous substance, the estimated time it will take to achieve this, and the degree of hazard created. The Chief may verify that the hazardous substance is being contained and appropriately disposed of, and if at any time it is determined that the permittee is not adequately containing and disposing of such hazardous substance, shall have the power and authority to initiate and direct an emergency response in order to protect the public health and/or safety. The permittee shall be liable for reimbursement to the Department for all emergency response costs incurred.

C. Cleanup - The owner, operator, or permittee shall be responsible to take all necessary steps to ensure the containment and cleanup of any unauthorized release of hazardous substance. If an unauthorized release has entered or has the potential to enter groundwater, the Chief shall immediately notify the California Regional Water Quality Control Board so that they shall assume lead agency status for the investigation and abatement of the release.

...

...

SEC. 57.31.48 GROUND LEVEL SERVICE OPENINGS:

All service openings at ground level over or leading to the primary tank or secondary containment shall be so designed as to be liquid tight and not allow any drainage or contamination to enter through such opening and shall be installed a minimum of one inch above adjacent ground level.

SEC. 57.31.49 FILL BOX:

Every fill box shall have a product identification label attached. The fill box fixture shall have a capacity of not more than five gallons and all metallic components shall be appropriately grounded. The fill box or cap shall be capable of being locked.

SEC. 57.31.50 SECURITY OF ACCESS:

Access to a facility shall be secured by fences and/or locks or other equivalent protection approved by the Chief.

SEC. 57.31.51 TEMPORARILY OUT OF SERVICE:

Any underground storage tank which is temporarily out of service shall be monitored and inspected in the same manner as if it were in service.

SEC. 57.31.52 ABANDONMENT OF UNDERGROUND TANKS:

All abandonment work required by this Section shall be inspected by the Chief.

A. Whenever an underground tank is out of service for a period of 90 days or when there is not a valid Permit to operate, the tank shall be abandoned within 30 days after notice has been given by the Chief.

B. The abandonment of underground tanks, piping and appurtenances shall be accomplished by removing them from the ground. An alternate method may be approved by the Chief when removal from the ground would cause an unsafe condition or would be impractical.

C. The owner, operator, or permittee of any underground tank which is to be abandoned, or the agent designated by such person to perform the abandonment work, shall notify the Chief of the time and place of such abandonment no later than 4:00 p.m., two working days or 48 hours prior to the proposed date of abandonment operations.

D. Before any underground tank is transported, it shall be inerted in such a manner as to render it free of flammable vapors.

E. The permittee shall establish to the satisfaction of the Chief that no unauthorized release of hazardous substance has occurred.

F. Secondary containment, monitoring, and detection systems shall be abandoned in a method approved by the Chief.

SEC. 57.31.53 REPAIR OF UNDERGROUND TANKS:

Underground tanks may be repaired one time in a method approved by the Chief and in accordance with the following provisions:

A. Before such repair, a soils investigation shall be conducted to determine if an unauthorized release has occurred.

B. A Permit shall be issued in accordance with Division 5 of this Article.

C. After such repair, the tank shall be tested in a method approved by the Chief.

SEC. 57.31.54 REINSTALLATION:

No person shall reinstall any used or refurbished underground tank unless the same shall have been inspected and precision tested in accordance with L.A.F.D. Standard No. 10 of this Article.

DIVISION 32
(None)

...
...
...
...
...
...
...
...
...
...
...
...
...
...
...
...
...
...
...
...
...
...
...
...
...
...

LEIGHTON AND ASSOCIATES

L.A. City (Municipal) Code 1/21/88

SEC. 64.30. INDUSTRIAL WASTEWATER DISPOSAL:

A. GENERAL PROVISIONS. (Amended by Ord. No. 157,676, Eff. 6/12/83.)

1. Policy. It is the policy of the City of Los Angeles to assure that the highest and best use of the Publicly Owned Treatment Works (P.O.T.W.) is for the collection, treatment and disposal of domestic wastewater, and that the highest and best use of the storm drain system is for the collection and disposal of storm water. The use of either of these systems for industrial wastewater is a privilege which is subject to the requirements of this Section.

2. Objectives. This Section sets forth uniform requirements for direct and indirect dischargers to the P.O.T.W., the storm drain system, and the Waters of the State. Through a permit and inspection program administered under the jurisdiction of the Board, the City seeks to comply with all applicable State and federal laws.

As a part of the permit and inspection program provided herein the Board and the Director shall have the power, jurisdiction, and supervision over places of discharge of wastewater into the P.O.T.W., the storm drain system, and the Waters of the State necessary to adequately enforce and administer all laws and lawful standards and orders, or special orders, to assure the implementation of the following objectives:

(a) Prevent any discharge into the P.O.T.W. which may interfere with the operation thereof;

(b) Prevent any discharge into the P.O.T.W. which will pass through the P.O.T.W., inadequately treated, into receiving waters, land or the atmosphere or otherwise be incompatible with the P.O.T.W.;

(c) Prevent any discharge which may interfere with the operation of the storm drain system or pollute the Waters of the State;

(d) Protect the P.O.T.W., the storm drain system, and the Waters of the State from damage by any pollutants;

(e) Provide the opportunity to recycle and reclaim sludges from the P.O.T.W., and wastewater from the P.O.T.W. and the storm drain system;

(f) Provide for recovery of costs, including administration, implementation and enforcement of the program established herein, associated with the discharge of wastewater to the P.O.T.W., the storm drain system, and Waters of the State;

(g) Protect the life, health, and safety of operating and maintenance personnel;

(h) Preserve hydraulic capacity in the P.O.T.W.;

(i) Insure the health, safety and welfare of the public.

3. Scope. This Section provides for the regulation of dischargers to the P.O.T.W., the storm drain system and Waters of the State through the issuance of Industrial Wastewater Permits containing specific discharge requirements and through enforcement of general discharge prohibitions; authorizes monitoring and enforcement activities; imposes reporting requirements on specific permittees; and sets fees for the recovery of program costs. This Section shall apply to all dischargers within the City of Los Angeles and to all persons outside the City of Los Angeles who discharge to the City's P.O.T.W. Except as otherwise provided

herein, the Director of the Bureau of Sanitation under the jurisdiction of the Board of Public Works shall administer, implement and enforce the provisions of this Section.

B. REGULATIONS:

1. Discharge Prohibitions:

(a) Except as expressly allowed in an Industrial Wastewater Permit, no person shall discharge, permit the discharge, cause the discharge or contribute to the discharge of the following to the P.O.T.W., the storm drain systems or Waters of the State. (Amended by Ord. No. 160,481, Eff. 12/8/85.)

(1) Gasoline, mercury, total identifiable chlorinated hydrocarbons, kerosene, naphtha, benzene, toluene, xylene, ethers, alcohols, ketones, aldehydes, peroxides, chlorates, perchlorates, bromates, carbides, hydrides, solvents, pesticides or jet fuel.

(2) Any liquids, solids or gases which by reason of their nature or quantity are flammable, reactive, explosive, corrosive, or radioactive, or by interaction with other materials could result in fire, explosion or injury.

(3) Any solid or viscous materials which could cause obstruction to the flow or operation of the P.O.T.W. or the storm drain system.

(4) Any toxic pollutants in sufficient quantity to injure or interfere with any wastewater treatment process, including private pretreatment systems, to constitute a hazard or cause injury to human, animal, plant or fish life, or to exceed any limitation set forth in this Section. (Amended by Ord. No. 160,481, Eff. 12/8/85.)

(5) Any noxious or malodorous liquids, gases, or solids in sufficient quantity either singly or by interaction with other materials to create a public nuisance, hazard to life, or to prevent entry of any person to the P.O.T.W. or the storm drain system.

(6) Any material of sufficient quantity to interfere with any P.O.T.W. treatment plant process or to render any product thereof unsuitable for reclamation and reuse.

(7) Any material in sufficient quantity to cause the P.O.T.W. to be in noncompliance with sludge use or disposal criteria, guidelines or regulations in connection with Section 405 of the Act, the Solid Waste Disposal Act, the Clean Air Act, the Toxic Substances Control Act, or State criteria applicable to the sludge management method being used.

(8) Any material which will cause the P.O.T.W. to violate its NPDES Permit, applicable Federal and State statutes, rules or regulations.

(9) Any wastewater containing pigment which is not removed in the ordinary P.O.T.W. treatment process and which creates a visual contrast with the material appearance of the P.O.T.W. discharge observable at the point of P.O.T.W discharge, provided that in no event shall any wastewater containing pigment be discharged to either the storm drain system or to Waters of the State.

(10) Any wastewater having a heat content in such quantities that the temperature of the wastewater at the introduction into any P.O.T.W. treatment plant exceeds 40 degrees Centigrade (104

degrees Fahrenheit), provided that in no event shall any wastewater having a temperature in excess of 37.8 degrees centigrade (100 degrees Fahrenheit) be discharged to the storm drain system or to Waters of the State.

(11) Any pollutants, including oxygen demanding pollutants, released at a flow rate or pollutant concentration which will cause or contribute to interference, as that term is defined in Section 64.00.

(12) Any storm water collected and discharged to the P.O.T.W., except as specifically authorized by the Director.

(13) Single pass cooling water in excess of 200 gallons per day discharged to the P.O.T.W. However, the blowdown or bleedoff from cooling towers or other evaporative coolers may be accepted in the P.O.T.W.

(14) Any wastewater which constitutes a hazard or causes injury to human, animal, plant or fish life or creates a public nuisance.

(15) Recognizable portions of the human or animal anatomy.

(16) Floatable material which is readily removable.

(b) Except as expressly allowed in an Industrial Water Permit, no person shall discharge, permit the discharge, cause the discharge or contribute to the discharge to the P.O.T.W., the storm drain system, or the Waters of the State any material of sufficient quantity which, by interaction with other materials, interfere with the P.O.T.W. treatment plant process or renders any product thereof unsuitable for reclamation and reuse, causes the P.O.T.W. to be in non-compliance as that term is used with respect to provisions listed in paragraph (7) above, or which constitutes a hazard to or which may cause injury to human, animal, plant or fish life. In the event of such discharge, assuming violation of no other provision hereof, the violator shall be subject only to imposition of further permit conditions, orders, permit suspension or revocation. (Amended by Ord. No. 160,481, Eff. 12/8/85.)

2. Specific Pollutant Limitations.

(a) No person shall introduce wastewater to the P.O.T.W. that exceeds the following limitations:

Arsenic	3 mg/L
Cadmium	15 mg/L
Copper	15 mg/L
Cyanide (Total)	10 mg/L
Cyanide (Free)	2 mg/L
Dissolved Sulfides	.1 mg/L
Lead	5 mg/L
Nickel	12 mg/L
pH Range	5.5-11
Silver	5 mg/L
Total chromium	10 mg/L
Zinc	25 mg/L
Dispersed oil and grease (Total)	600 mg/L
Floatable oil and grease	None Visible
Temperature	140° F

The above limitations shall not apply where more restrictive limitations are imposed by permit or National Categorical Pretreatment Standards.

(b) **Radioactive Wastes.** No person shall discharge radioactive wastes except in accordance with the State of California Administrative Code, Title 17, Public Health, Regulations of the Bureau of Radiological Health.

(c) **Infectious Wastes.** No person shall discharge infectious waste, unless such waste is ground in a grinder which meets the Board's fineness of grind requirements as set forth in paragraph (d) of this Subdivision 2 and is discharged into the P.O.T.W. Entry to the grinding mechanism shall be restricted to a 6-inch by 9-inch opening. The material shall be segregated from other solid wastes and shall be contained in plastic bags or other suitable disposable containers which shall not exceed five (5) gallons capacity and shall be colored red for identification. Container and contents shall be weighed and recorded prior to disposal. These records shall be made available to the Board for inspection.

Recognizable portions of the human or animal anatomy shall not be ground or discharged to the P.O.T.W.

(d) **Commercial Food Wastes.** No person shall discharge commercial garbage, food market wastes, or food plant wastes to the P.O.T.W. except after suitable grinding. The following fineness of grind requirements for all types of grinders shall be met at all times.

(1) At least 40% shall pass a No. 8 sieve.

(2) At least 65% shall pass a No. 3 sieve.

(3) 100% shall pass a ½-inch screen.

(e) **Sharps.** No person shall discharge sharps unless ground in an approved grinder capable of meeting the Board's fineness of grind requirements set forth in paragraph (d) of this subdivision, and discharged to the P.O.T.W. Sharps shall be ground by an approved grinder not exceeding five (5) horsepower.

3. **Septic Tanks, Leach Fields, Seepage Pits, and Cesspool Connections (Private Sewage Disposal Systems).** No person who owns, uses or maintains a private sewage disposal system shall cause the discharge of industrial wastewater to said system without an Industrial Wastewater Permit. **(Amended by Ord. No. 160,388, Eff. 10/21/85.)**

4. **National Categorical Pretreatment Standards (NCPS).** Upon the promulgation of mandatory NCPS for any industrial subcategory, the NCPS, if more restrictive than limitations imposed under this Section, shall apply. The Director may impose a phased compliance schedule to insure that affected industries meet the NCPS. Failure to meet the phased compliance schedule may result in permit revocation. Those dischargers subject to NCPS shall comply with all reporting requirements in accordance with the General Pretreatment Regulations for Existing and New Sources of Pollution (Title 40, Code of Federal Regulations, Part 403.)

5. **Dilution.** No discharger shall use any water to dilute any pollutant to achieve compliance with the discharge limitations contained in this Section.

6. **Containment of Uncontrolled Discharges.** Upon written notification by the Director, dischargers shall provide spill containment for uncontrolled discharges of prohibited material or other substances

regulated by this Section. Facilities to contain spills shall be provided and maintained at the discharger's own cost and expense. Dischargers so notified shall provide detailed spill containment plans, including facilities and operating procedures, to the Director for review. Such plans shall be approved by the Director before commencement of construction of the facility. Construction shall be completed within the time period designated by the Director. Review and approval of spill containment plans and operating procedures shall not relieve the discharger from the responsibility to modify its facility as necessary to meet the requirements of this Section.

7. **Notification of Uncontrolled Discharges.** In the event of an uncontrolled discharge, the discharger shall immediately notify the Director of the incident by telephone. The notification shall include location of discharge, type of material, concentration and volume, and corrective actions taken.

Within ten (10) days following the uncontrolled discharge, the discharger shall submit to the Director a detailed written report describing the cause of the discharge, corrective action taken, and measures to be taken to prevent future occurrences. Such notification shall not relieve the discharger of liability or fines incurred as a result of this uncontrolled discharge.

8. **Notice to Employees; Notification to Director of Uncontrolled Discharge.** A legible, understandable and conspicuously placed notice shall be permanently posted on the discharger's bulletin board or other prominent place advising employees to call the Director, in the event of an uncontrolled discharge, as soon as possible or within one hour of the discharge, and to provide at least the information listed below. In the event of a substantial number of the discharger's employees use a language other than English as a primary language, the notice shall be worded in both English and the language or languages involved. The notice shall set forth the current phone number of the Director, and shall identify the following as the minimum necessary information which is to be provided to the Director:

(a) Time, location, type, concentration and volume of discharge.

(b) Corrective action taken. Employers shall insure that all employees in a position to cause or allow an uncontrolled discharge to occur are advised of this notification procedure.

C. ADMINISTRATION.

1. **Industrial Wastewater Permit.**

(a) **Application.** No person shall discharge industrial wastewater to the P.O.T.W., the storm drain system, or the Waters of the State without permission as provided in an Industrial Wastewater Permit. The permit shall not be issued until determination has been made by the Board that the wastewater to be discharged shall not violate any provisions of this Code, the Board's Rules and Regulations, the water quality objectives for receiving waters established by the California Water Quality Control Board, Los Angeles Region, or any applicable federal or state statutes, rules or regulations. Such determination shall be made from the information set forth in the application for permit.

A separate permit shall be required for each point of discharge to the P.O.T.W., the storm drain system, and to the Waters of the State. In connection therewith, the applicant may be required to furnish the following:

(1) The name and address of the applicant;

(2) The name and address of the discharger;

(3) The address or location of the premises where the discharge will take place;

(4) The Standard Industrial Classification (SIC) of the discharger;

(5) Information with respect to constituents and characteristics of wastewater proposed to be discharged, including, but not limited to, those referred to in Subsection B of this Section. Sampling and analysis shall be performed in accordance with procedures established by the EPA pursuant to Section 304(g) of the Act and contained in 40 CFR, Part 136, as amended, and by laboratories certified by the State of California. In the absence of a State certification process, the Director may certify a laboratory to perform necessary sampling and analysis;

(6) Time and duration of the proposed discharge or discharges;

(7) Average daily and 5-minute peak wastewater flow rates, including daily, monthly and seasonal variations, if any;

(8) Site plans, floor plans, mechanical and plumbing plans and details to show all sewers and storm drains, connections and appurtenances by their size, location and elevation.

(9) Description of activities, facilities and plant processes on the applicant's premises, including all pollutants which could be discharged.

(10) Detailed plans showing pretreatment facilities, sampling facilities, uncontrolled discharge containment facilities, and operating procedures.

(11) Identification of the nature and concentration of any pollutant located at the premises of the discharger (and/or applicant if different) if that pollutant is prohibited from discharge under Subdivision 1 of Subsection B of this Section, or any proposed discharge which is regulated as provided in Subdivision 2 of Subsection B of this Section, plus a statement specifying whether the specific limitations set forth is said Subdivision 2 are being met, and, if not, what additional Operation and Maintenance (O & M) or pretreatment is proposed by the discharger to cause compliance;

(12) The shortest time schedule by which the discharger shall provide the necessary additional pretreatment, if additional pretreatment or O & M will be required to meet the regulations in Subsection B of this Section. Any completion date in such a proposed schedule shall not be later than the compliance date established by the applicable regulation.

The schedule shall provide for reporting increments in progress in the form of dates for commencement and completion of major events leading to the construction and operation of additional pretreatment necessary for the discharger to meet the applicable regulation (e.g., hiring an engineer, completing preliminary and

final plans, executing contract for major components, commencing construction, completing construction.

After permit issuance, progress reports shall be submitted subject to the same limitations set forth in subparagraph (7) of paragraph (a) of Subdivision 2 of this Subsection C, except that time limits specified pursuant to this Section for reporting, commencement and completion of major events leading to the construction and operation of additional pretreatment required for the discharger to meet the applicable regulations may be extended by mutual consent of the discharger and the Director, and provided however, that in no event shall any such date be extended beyond the compliance date established by the applicable regulation.

(13) Each product of the discharger by type, amount, and rate of production;

(14) Type and amount of raw materials processed by the discharger (average and maximum per day);

(15) Number of employees, hours of operation of plant, and hours of operation of the proposed pretreatment system;

(16) Copies of any current City Business License, NPDES Permit, South Coast Air Quality Management District Permit, Regional Water Quality Control Board Permit and State Department of Health Services Permit for the subject premises;

(17) The name, business address, and motor vehicle driver's license number of the Authorized Representative;

(18) Any other information deemed by the Director to be necessary to evaluate the permit application.

The application shall be signed under penalty of perjury by the Authorized Representative of the discharger. After evaluation and acceptance of the data furnished, the Board may issue an Industrial Wastewater Permit subject to the terms and conditions imposed by the Director pursuant to paragraph (c) of this Subdivision as set forth below. Granting of the permit shall not relieve the discharger from the responsibility for compliance with all provisions of this Section. By acceptance of a permit the applicant thereby delegates authority to the Director to enter the premises of the applicant as necessary for purposes of inspection and maintenance with respect to any wastewater discharge therefrom.

(b) **Exemptions.**

An Industrial Wastewater Permit is not required for the following dischargers or discharges to the P.O.T.W.

(1) Restaurants with a seating capacity less than 150.

(2) Bleed-off or blowdown from cooling towers, evaporation condensors or other recirculating water devices with rated capacity of 25 tons or less.

(3) Self-service laundries with washing machines of 20 pounds maximum capacity, with further allowance that the facility may also have a maximum of two machines with maximum 50-pound capacity of each.

(4) Discharges from establishments wherein the industrial wastewater discharge is less than 200 gallons per day (gpd) and

pretreatment is not required.

(c) **Permit Conditions.** Industrial Wastewater Permits shall be subject to all provisions of this Code, all other applicable statutes, rules and regulations, and fees and charges established by the City. The Director shall have authority to impose permit conditions including the following:

(1) Limits on the average and maximum wastewater constituents and characteristics;

(2) Limits on average and maximum rate and time of discharge;

(3) Limits regarding the discharge of specific pollutants;

(4) Requirements for installation and maintenance of inspection and sampling facilities and uncontrolled discharge containment facilities;

(5) Requirements, which may include specific sampling locations, frequency of sampling, times of sampling, number, types, test standards and reporting schedules, for monitoring programs;

(6) Compliance schedules;

(7) Requirements for submission of technical or discharge reports;

(8) Requirements for maintaining and affording City access to plant records relating to discharges;

(9) Requirements for notification of the City of any new introduction of wastewater constituents or any substantial change in the volume or character of the wastewater constituents;

(10) Requirements for notification of slug discharges;

(11) Other conditions deemed appropriate by the Director to ensure compliance with this Section.

(d) **Change of Ownership or Location.** An Industrial Wastewater Permit shall not be transferable, by operation of law or otherwise, either from one location to another, or from one person to another. For purposes of this subdivision, statutory mergers or name changes shall not constitute a transfer or a change in ownership. Following a change in ownership, and upon application for a new Industrial Waste Permit, an interim permit may be issued by the Director for a period of no more than 180 days pending the issuance of such new permit.

(e) **Delayed Commencement of Discharge.** All permitted discharges must commence within 180 days from the effective date of the permit or the permit is deemed void.

(f) **Change of Wastewater Characteristics.** No wastewater discharge shall be commenced in which there has been a change of characteristics which causes it to be different from that expressly allowed under the permit issued, without notification to and approval by the Board. Upon such notification, the Board, in its discretion, may require that a new application be filed and new permit obtained before any wastewater discharge involving the changed characteristics takes place.

2. **Reporting Requirements.**

(a) **Adoption of New City Specific Pollutant Limitations.** Within 180 days after promulgation of a new City Specific Pollutant Limitation and notification thereof by the Board to specific dischargers affected thereby, any discharger subject to such limitations shall submit to the

Director a report containing:

(1) The name and address of the discharger;

(2) The address or location of the premises where the discharge does or will take place;

(3) The nature, average production rate, and Standard Industrial Classification of the operations carried out by the discharger;

(4) The average and maximum flow of the discharge in gallons per day;

(5) The nature and concentration of pollutants in the discharge from each regulated process and identification of applicable limitations. The concentration shall be reported as a maximum or average as provided in applicable limitations. If equivalent concentration limits have been calculated in accordance with the limitation, this adjusted concentration limit shall also be submitted;

(6) A statement, reviewed by an Authorized Representative and certified under penalty of perjury by a person with primary responsibility for the operation which contributes to the discharge, indicating whether the limitations are being met, and, if not, what operation and maintenance improvements or additional pretreatment is required for compliance;

(7) The shortest schedule under which any additional pretreatment or operation and maintenance improvements required as a result of the new limitations or requirements imposed pursuant to paragraph (a) of Subdivision 1 of Subsection C of this Section will be completed.

(i) The completion date in such a schedule shall not be later than the compliance date established for the applicable limitation.

(ii) The schedule shall provide for reporting increments of progress in the form of dates for the commencement and completion of major events leading to the construction and operation of any additional pretreatment necessary (e.g., hiring an engineer, completing preliminary and final plans, executing contracts for major components, commencing construction, completing construction).

(iii) The discharger shall also submit a written progress report to the Director, not later than 14 days following each increment of progress date in the schedule and the final date for compliance. That report shall state whether the discharger is in compliance with the scheduled increment of progress. If compliance was not achieved, the report shall state the date by which the discharger expects to comply with the scheduled increment of progress, the reason for the failure to comply, and the steps being taken by the discharger to maintain the established compliance schedule.

(iv) The time limit specified in this paragraph for operation or maintenance improvements or additional pretreatment may be extended by the Board.

(b) **Adoption of Federal Pretreatment Regulations.** For reporting requirements, see Subdivision 4 of Subsection B of this Section 64.30.

(c) **Additional Reporting Requirements.** The Director may impose additional reporting requirements by permit conditions or otherwise.

3. **Monitoring Facilities.** The Director may require to be provided,

operated and maintained at the discharger's expense, separate and secured monitoring facilities to allow inspection, sampling, and flow measurement of the discharge. The monitoring facilities ordinarily shall be situated on the discharger's premises and in said event the Director shall be granted total and unrestricted access thereto and use thereof by the discharger as a condition of that discharger's permit; however, at its discretion the Board may allow monitoring facilities to be constructed off-premises.

4. **Monitoring and Sampling — Pre-Notification.** Any discharger may be required by the Director, by permit or otherwise, to engage in periodic monitoring and sampling of this discharge. Where a discharger is required to monitor or sample, the discharger shall notify the Director by telephone at least 48 hours in advance of any monitoring or sampling to be done. Notification shall include the date, time and location of proposed monitoring or sampling. Monitoring and sampling shall be carried out during a period of normal operations. Prior to the commencement of any sampling or monitoring, the Director may request that the discharger furnish to the Director a split sample and all supporting data (i.e., methodology, flow measuring data, strip chart recordings, and other pertinent information). The Director reserves the right to refuse any data developed from the monitoring or sampling activity if the discharger fails to comply with the pre-notification procedure.

Each discharger shall submit to the Director, certified under penalty of perjury by the discharger, its monitoring and sampling reports or other requested data.

Samples shall represent the normal wastewater flow to the P.O.T.W. over a 24-hour period. Composite samples shall be collected according to flow, with at least one sample collected hourly. Samples may be collected either manually or by automatic integrated sampling equipment approved by the Board.

The handling, storage, and analysis of all samples taken for the determination of the characteristics of wastewater discharged shall be performed by laboratories certified by the State of California and in accordance with the procedures established by the EPA pursuant to Section 304(a) of the Act and contained in 40 CFR, Part 136, as amended. In the absence of a State certification process, the Director may certify a laboratory to perform any necessary sampling and analysis.

5. **Inspection and Sampling.**

(a) Whenever it is necessary to make an inspection to enforce any of the provisions of or perform any duty imposed by this Section or other applicable law, or whenever the Director has reasonable cause to believe that there exists upon any premises any violation of the provisions of this Section or other applicable law, or any condition which makes such premises hazardous, unsafe, or dangerous, the Director is hereby authorized to enter such property at any reasonable time and to inspect the same and perform any duty imposed upon the Director by this Section or other applicable law; provided that:

(1) If the property is occupied, the Director shall first present proper credentials to the occupant and request entry explaining the

reasons therefor; and

(2) If the property is unoccupied the Director shall first make a reasonable effort to locate the owner or other persons having charge or control of the property and request entry, explaining the reasons therefor. If such entry is refused or cannot be obtained because the owner or other person having charge or control of the property cannot be found after due diligence, the Director shall have recourse to every remedy provided by law to secure lawful entry and inspect the property.

(b) Notwithstanding the foregoing, if the Director has reasonable cause to believe that wastewater discharge conditions on or emanating from the premises are so hazardous, unsafe or dangerous as to require immediate inspection to safeguard the public health or safety, the Director shall have the right to immediately enter and inspect the property, and may use nay reasonable means required to effect such entry and make such inspection, whether the property is occupied or unoccupied and whether or not formal permission to inspect has been obtained. If the property is occupied, the Director shall first present proper credentials to the occupant and demand entry, explaining the reasons therefor and the purpose of the inspection.

(c) No person shall fail or refuse, after proper demand has been made upon that person as provided in paragraph (b) of this Subdivision 5, to promptly permit the Director to make any inspection provided for by said paragraph (b). Any person violating this subdivision shall be guilty of a misdemeanor.

(d) The applicant, by accepting any permit issued pursuant to this Section, does thereby consent and agree to the entry upon the premises, described in the permit, by Department personnel for the following purposes as required by this Section or other applicable laws. The City shall be afforded access at all reasonable times: (a) for the purposes of inspection, sampling, flow measurement, examination of records in the performance of other authorized duties; (2) to set up on the discharger's property such devices as are necessary to conduct sampling inspections, compliance monitoring, flow measuring or metering operations; (3) to inspect and copy any records, reports, test results or other information required to carry out the provisions of this Section; and (4) to photograph any waste, waste container, vehicle, waste treatment process, discharge location, or violation discovered during an inspection.

(e) Where a discharger has instituted security measures requiring proper identification and clearance before entry onto the premises, the discharger shall make all necessary arrangements with its security guards in order that, upon presentation of such identification, City personnel shall be permitted to enter the premises without delay for the purpose of performing their authorized duties.

6. **Public Access to Information.** Information and discharge data provided to the City by the discharger shall be available to the public without restriction, except where there is a claim of confidentiality by the discharger. All other information which is submitted by the discharger to the City shall be available to the public, at least to the ex-

tent provided by 40 CFR 2.302. With the exception of governmental agencies, any person requesting this information from the City shall be required, prior to receipt of the requested information, to pay the reasonable costs of said data gathering, reproduction and transmission incurred by the City.

7. **Confidentiality.** Any information and discharge data submitted to the City pursuant to this Section may be claimed by the discharger to be confidential. Any such claim must be asserted at the time of submission of the information or data to the City. The claim may be asserted by stamping the words "confidential business information" on each page containing such information or by other means, however, if no claim is asserted at the time of submission, the City may make the information available to the public without further notice. If such a claim is asserted, the information will be treated in accordance with the procedure in 40 CFR Part 2 (Public Information).

8. **Falsifying Information.** No person shall knowingly make any false statement, representation or certification in any application, record, report, plan or other document filed with the Director or required to be maintained pursuant to this Section, or tamper with or knowingly render inaccurate any monitoring device required under this Section.

9. **Rules and Regulations.** The Board shall adopt rules and regulations consistent with this Section to effectuate its purpose and intent.

D. FEES AND CHARGES.

1. **Purpose and Disposition.** It is the purpose of this Subsection to provide for the recovery of City costs associated with the discharge of wastewater to the P.O.T.W., storm drain system, and to the Waters of the State. With the exception of Wastewater Sampling and Analysis Fees, all fees and money collected by the City pursuant to the provisions of this Section shall be deposited into the Sewer Construction and Maintenance Fund established by Section 64.19.2 of this Code. Monies required hereunder to be deposited into that Fund shall be expended for the purposes set forth in said Section and to provide for any appropriate refunds relative to such fees.

2. **Application Fees.** The Board shall require payment of an initial fee of $94.00 for each application for an Industrial Wastewater Permit. No permit shall be deemed valid until the initial fee has been duly paid and received by the City. **(Amended by Ord. No. 159,562, Eff. 1/17/85.)**

3. **Inspection Fee.** In accordance with the following schedule, a fee for inspection and control shall be paid annually in advance by each permittee in possession of a valid Industrial Wastewater Permit except where such permittee is also required to pay a quality surcharge fee, in which case a combined inspection and quality surcharge fee shall be paid quarterly in arrears:

(Fees Amended by Ord. No. 160,655, Eff. 2/17/86.)

Class 1	$ 55.00
Class 2	$110.00
Class 3	$165.00
Class 4	$220.00
Class 5	$275.00
Class 12	$660.00

4. **Quality Surcharge Fee.** A fee for quality surcharge for wastewater discharged into the P.O.T.W. shall be paid quarterly in arrears by such permittee in possession of a valid Industrial Wastewater Permit where the wastewater of said permittee is treated in a P.O.T.W. treatment plant.

The quality surcharge fee shall be determined pursuant to the following formula:

$$C = V\,[a\,(SS-250) + b\,(BOD-230)]\,k$$

where:

"C" is the quality surcharge fee.

"V" is the average daily volume of wastewater discharged in gallons and shall be deemed (1) the volume of water supplied to the premises, adjusted as determined by the Board to account for water not discharged into the P.O.T.W., (2) the metered volume of wastewater discharged into the P.O.T.W., in accordance with a measuring device approved by the Board, or (3) a figure determined by the Board, based upon any other equitable method.

"SS" is the suspended solids as defined in Subdivision 55 of Subsection A of Section 64.00 of this Code, expressed in milligrams per liter.

"BOD" is the biochemical oxygen demand of the wastewater as defined in Subdivision 5 of Subsection A of Section 64.00 of this Code, expressed in milligrams per liter.

"a", is the verifiable cost assessed for each pound of suspended solids, as determined by the Board.

"b", is the verifiable cost assessed for each pound of biochemical oxygen demand, as determined by the Board.

"k" is $\frac{365 \times 8.34}{1.000.000}$, a dimensional constant to convert C to dollars.

If the term containing SS or BOD is negative, a value of zero shall be used for that term. The Board of Public Works, with the concurrence of the City Administrative Officer, shall ascertain the verifiable costs applicable to the value of those unit rates designated "a" and "b" in the above formula. Those costs shall be adopted by the Board as part of the formula at any time during, but not later than April 1, each fiscal year.

Upon the adoption of a schedule of verified costs by the Board as provided herein, the Board shall transmit copies of the Board order to the Mayor and to the City Council. At any time within 30 days after the receipt of the Board order, the Mayor, by writing, or the Council, by majority vote, may disapprove the Board order. If neither the Mayor nor the City Council disapproves the Board order within the 30-day period, the schedule shall become effective, and the Board shall collect charges according to the new schedule.

In determining the fee for quality surcharge, the Board may establish industry-wide averages for SS abd BOD values. The Board may group permittees into appropriate discharge volume ranges each of which shall be represented by an average discharge volume. Where sampling and volume measurements of any permittee is not practical for physical, economic or other reasons, these averages may be used

in establishing such permittee's fee for quality surcharge.

Any permittee whose fee has been determined in the above manner, who is not satisfied that the averages are applicable to his discharge, may submit appropriate engineering data to the Board for its consideration. If the Board finds that such permittee's discharge differs significantly from the averages established, it may determine the fee on a more appropriate basis.

Where ground solid wastes such as garbage, market refuse, food plant wastes and hospital wastes are discharged to the P.O.T.W., their weights shall be recorded prior to disposal or may be estimated by the Board, and a dry weight loading calculated for determination of surcharges. Food processors which grind food plant wastes to the P.O.T.W. and hospitals which grind infectious wastes to the P.O.T.W. may be required to report quarterly the total weight of material ground for surcharge determination.

5. **Wastewater Sampling and Analysis Fee.** The Board may charge a fee of $100 for each analysis performed by or on behalf of the Bureau of Sanitation or the Department of General Services, on wastewater samples taken from the discharger. Monies collected pursuant to this Subdivision 5 shall be deposited into the General Fund to the account of the Department of General Services.

6. **Due Dates.**

(a) Payment of annual inspection fees, when no quality surcharge is applicable, shall be due on one of the four dates during the year, as shown on the schedule below:

Date of Permit Issuance	Due Date of Annual Fee
January 1 through March 31	April 1
April 1 through June 30	July 1
July 1 through September 30	October 1
October 1 through December 31	January 1

(b) Payment of a combined inspection and quality surcharge fee shall be due in quarterly installments payable on the first day of the months of January, April, July and October with each such payment applicable to the immediately preceding quarter.

7. **Delinquency - Additional Charge.** If the fees are not paid on or before the last day of the month in which they are due, an additional charge equal to ten percent (10%) of the required fees, but not less than $10.00, shall be added to said fees, and such additional charges shall become a part of the fees required by this Section and be payable for said period. If said fees and additional charges are not paid on or before the 30th day immediately following the final date upon which payment of the prescribed fees may be made without an additional charge, as above provided, the permit shall be subject to revocation as provided in Subsection E of this Section 64.30. Before the Board may grant any new permit thereafter, all outstanding delinquent fees and additional charges must be paid. If the invoices for said fees are not mailed before the due date, such fees shall not become delinquent un-

til 35 days following the invoice mailing date, at which time, such fees shall become delinquent and the additional charges and time payment factors as provided above shall apply.

8. **Liability for Costs of Correction Arising from Unlawful Discharge.** Whenever any discharger introduces or causes to be introduced wastewater in violation of this Section, and such discharge, either singly or by interaction with other discharges results in damage to or is otherwise detrimental to or adversely affects the P.O.T.W., the storm drain system, or any Waters of the State, said discharger shall be liable to the City for reasonable costs necessary to correct that discharge, detriment or adverse effect, including, but not limited to, labor, material, inspection, transportation, overhead, and incidental expenses associated with the corrective action. The discharger shall additionally be liable to the City for the reasonable costs of investigation by the City arising from the unlawful discharge.

E. ENFORCEMENT.

1. ***Suspension of Industrial Wastewater Permit.*** *The Director may suspend an Industrial Wastewater Permit when such suspension is necessary in order to stop a discharge which presents an imminent hazard to the public health, safety or welfare, to the local environment, or which either singly or by interaction with other discharges, is an imminent hazard to the P.O.T.W., the storm drain system, or the Waters of the State, or places the City in violation of its NPDES permit.* **(Amended by Ord. No. 160,388, Eff. 10/21/85.)**

Any discharger notified of a suspension of that discharger's Industrial Wastewater Permit shall immediately cease and desist the discharge of all industrial wasterwater into the P.O.T.W. Any discharger notified of a suspension of that discharger's Industrial Wastewater Permit issued for a private sewage disposal system shall immediately cease and desist the discharge of industrial wastewater into both the private sewage disposal system and the P.O.T.W. **(Amended by Ord. No. 160,388, Eff. 10/21/85.)**

In the event of a failure of a discharger to comply voluntarily with a suspension order, the Board may take such steps as are reasonably necessary to ensure compliance. These include, but are not limited to, immediate blockage or disconnection of the discharger's connection to the P.O.T.W., and a request to the Department of Water and Power that it discontinue water service of the affected property until full compliance with the Notice to Comply has been achieved. **(Amended by Ord. No. 160,388, Eff. 10/21/85.)**

In addition, the Director, in the event of violation of this Section, may serve the discharger with a notice of an intended order of suspension, stating the reasons therefor, the opportunity for a hearing with respect thereto, and the proposed effective date of the intended order.

Any discharger suspended or served with a notice of an intended order of suspension may file with the Secretary of the Board a request for a Board hearing with respect thereto. Filing of such request shall not stay a suspension. In the event a suspension of a permit due to imminent hazard related to continued discharge, the discharger may request a hearing, and the Board or a hearing examiner designated by the Board for that purpose, shall conduct a hearing within three days

of receipt of the request. In the event of hearing requests, for other than an imminent hazard suspension, the Board shall hold a hearing on the suspension within 14 days of receipt of the request. At the close of the hearing the Board shall make its detrermination whether to terminate, or conditionally terminate the suspension imposed by the Director, or the Board may cause the permit to be revoked. Except in the case of a hearing within three days being required as above provided, reasonable notice of the hearing shall be given to the suspended discharger in the manner provided for in Subdivision 5 of Subsection E of this Section.

In the event that the Board fails to meet within the time set forth above or fails to make a dtermination within 72 hours after the close of the hearing, the order of suspension shall be stayed until a Board determination is made with respect to the action of the Director.

The Director shall reinstate the Industrial Wastewater Permit upon proof of compliance which ends the emergency nature of the hazard created by the discharge that had been cause for the Director to initiate the suspension, provided that the Director is satisfied that all discharge requirements of this Section, the Board's Rules and Regulations, and any Board order will be implemented.

2. **Revocation of Industrial Wastewater Permit.** The Board may revoke an Industrial Wastewater Permit upon a finding that the discharger has violated any provision of this Section or the Board's Rules and Regulations. No revocation shall be ordered until a notice and hearing on the question has been held by the Board as provided in Subdivisions 4 and 5 of this Subsection E of Section 64.30.

3. **Additional Emergency Remedial Measures.** The Director shall have full power and authority to take any necessary precautions including but not limited to, decontamination, sewer closure, packaging, diking, and transportation of materials, in order to protect life, protect property, or prevent further damage resulting from a condition that is likely to result in a discharge which presents an imminent hazard to the public health, safety or welfare; or which either singly or by interaction with other discharges, is an imminent hazard to the P.O.T.W.; or which places the City in violation of its NPDES permit. In the pursuit of such an operation, City personnel, any party contracting with the City, or duly authorized representative of another governmental agency shall have immediate access to the premises. The Director may prohibit approach to the scene of such emergency by any person vehicle, vessel or thing, and all persons not actually employed in the extinguishment of the condition or the preservation of lives and property in the vicinity thereof.

5. Notice. Notice of the hearing shall be given to the discharger at least ten (10) days prior to the date of hearing. Unless otherwise provided herein, any notice required to be given by the Director under this Section shall be in writing and served in person or by registered or certified mail addressed to the addressee's last known address with request for return receipt. Where no address is known, service may be made upon the owner of record of the property upon which the alleged violation occurred or by posting the notice conspiciously on the property.

Notice shall be deemed to have been given at the time the written notice is deposited, postage prepaid, in the United States mail at Los Angeles, California.

6. Additional Legal Remedies; Attempt. Any person who attempts to commit an act which is in violation of this Section shall be guilty of a misdemeanor punishable by a fine of not more than $500.00 or by imprisonment in the County Jail for a period of not more than six (6) months, or by both such fine and imprisonment.

F. CONFLICT.

Provisions of this Section shall prevail over any other inconsistent or conflicting provisions of this Chapter.

SEC. 64.30.1. INDUSTRIAL WASTES TREATED BY COUNTY SANITATION DISTRICTS (Added by Ord. No. 147,810, Eff. 12/24/75.)

(a) For purposes of this section "industrial wastewater" shall mean all water carried wastes and wastewater of the community excluding domestic wastewater and uncontaminated water, and shall include all wastewater from any producing, manufacturing, processing, institutional, commercial, agricultural, or other operation where the wastewater discharged includes

4. **Board Hearing - Appointment of Hearing Examiner.** With respect to permit revocation or suspension hearings, the Board may conduct the hearing or may appoint one or more examiners or designate one or more of its members to serve as hearing examiners and to conduct a hearing with respect to any appeal or protest filed. At such hearing the discharger may appear personally or through counsel, cross-examine witnesses and present evidence in the discharger's behalf.

The hearing examiner or examiners, if other than the Board, shall submit a written report and recommendations to the Board together with a brief summary of the evidence considered and conclusions reached with respect thereto. The Board, after considering evidence presented at such a hearing, and any report submitted to it with respect to such a hearing, or after any hearing which it conducts, shall adopt findings supported by evidence, and may adopt, reject, or modify in whole or in part, make its decision, and issue its order. If the Board's order is to revoke the discharger's Industrial Wastewater Permit, the order may be effective forthwith, or at a later specified date. The discharger shall be notified in writing of the Board's action.

Any discharger whose Industrial Wastewater Permit has been revoked shall immediately cease and desist all discharge of any wastewater covered by the Permit. The Board may disconnect or permanently block the discharger's connection if such action is necessary to ensure compliance with the order of revocation.

After revocation of a discharger's Industrial Wastewater Permit, there shall be no further discharge of industrial wastewater by that discharger into the P.O.T.W., the storm drain system, or the Waters of the State unless there has been a new application filed, all fees and charges that would be required upon an initial application and all delinquent fees, charges, penalties and other sums owed by the discharger and/or the applicant to the City have been paid to the City, and a new Industrial Wastewater Permit has been issued. Any costs incurred by the City, including administrative costs and investigative fees, in revoking the Permit and disconnecting the connection if necessary, shall also be paid for by the discharger before issuance of a new Industrial Wastewater Permit.

LEIGHTON AND ASSOCIATES

ATTACHMENT C

(k) Not later than 60 calendar days after receipt of an adequate notification or application under Section 66305(c) or (e), the Department may request representative samples of wastes which the producer of the waste shall maintain for that period of time. The quantity of sample submitted shall be adequate to conduct verification tests.

(*l*) If a producer's waste changes so that the prior notification or application as nonhazardous no longer adequately assesses the waste by the criteria which may render it hazardous, the producer shall then manage the waste as hazardous.

NOTE: Authority cited: Sections 208, 25141 and 25150, Health and Safety Code. Reference: Section 25141, Health and Safety Code.

HISTORY:

1. Amendment filed 1-18-85; effective upon filing pursuant to Government Code Section 11346.2(d) (Register 85, No. 6).

66310. Variances.

(a) The Department may grant a variance from the provisions of this chapter if a hazardous waste is:

(1) Insignificant as a potential hazard to human health and safety, livestock, or wildlife because of its small quantity, low concentration or physical or chemical characteristics; or

(2) Handled, stored or disposed of pursuant to regulations of another governmental agency in a manner which is consistent with the hazardous waste management provisions of this chapter and which will not result in a hazard to human health and safety, livestock or wildlife.

(b) An application to the Department for a variance from a provision of this chapter pursuant to Section 66310(a) shall include all of the following:

(1) The name of the producer of the waste and the address where the waste is located.

(2) A description of the waste, including its quantity, physical state, composition, source and production rate.

(3) A specification of the variance requested.

(4) An assessment of the hazardous characteristics of the waste pursuant to the criteria of Article 11.

(5) A statement on how the waste is to be managed.

(c) The Department may grant a variance requested pursuant to subsection (a)(1) or (a)(2), subject to such conditions or limitations that the Department deems necessary, if the Department finds that the waste meets the provisions of Section 66310(a)(1) or (a)(2).

LEIGHTON AND ASSOCIATES

ATTACHMENT D

South Coast
AIR QUALITY MANAGEMENT DISTRICT
9150 FLAIR DRIVE, EL MONTE, CA 91731 (818) 572-6200

Agenda #35 (11/4/87)
Agenda #28 (1/8/88)

November 17, 1987

South Coast Air Quality
Management District Board

ADOPT PROPOSED RULE 1167 - AIR STRIPPING OPERATIONS

At the January 9, 1987 meeting, the Board approved the Early-Action Plan which required staff to consider specific measures proposed by the Environmental Protection Agency that would demonstrate Reasonable Extra Efforts toward the attainment of ozone and carbon monoxide standards.

Proposed Rule 1167 - Air Stripping Operations is designed to regulate Volatile Organic Compound (VOC) emissions from all new and existing air strippers. Air stripping is used in the treatment of contaminated water; as a result, however, a cross-media pollution transfer is created (i.e., water-to-air contamination). The proposed rule will require 90 percent reduction of total VOC emissions from air stripping facilities that emit more than 1.0 pound of VOC per day. The rule is not intended to address sewage treatment facilities, as this is an entirely different situation; therefore, to forestall any confusion in the future, staff provided for a specific exemption for sewage treatment facilities from the requirements of this proposed rule.

Staff has determined that although Proposed Rule 1167 will result in an estimated VOC reduction of about 0.1 ton per day from existing facilities, future contaminated groundwater clean-up operations could result in emission increases of several orders of magnitude if no rule were in place. Staff estimates that 30 percent of all large water systems that have been tested in the Basin are contaminated with organic compounds and will likely undergo air stripping. The cost-effectiveness of the controls is about $25,000 per ton of VOC reduced.

A negative declaration was prepared for the proposed rule. The negative declaration indicates that implementation of the rule would not cause significant adverse environmental impacts

THEREFORE, IT IS RECOMMENDED THAT YOUR BOARD

-- Adopt the attached Resolution to approve the Negative Declaration for Rule 1167 - Air Stripping Operations.

-- Adopt Rule 1167 - Air Stripping Operations, as proposed, in accordance with the attached Resolution.

Respectfully,

James M. Lewis, Ph.D.
Executive Officer

LMB:RG:rl

Attachments

RESOLUTION NO. 88 - _____

A Resolution of the South Coast Air Quality Management District Board adopting Rule 1167 - Air Stripping Operations.

WHEREAS, the Board of the South Coast Air Quality Management District obtains its authority to adopt, amend, or repeal rules and regulations from Sections 40440, 40441, 40463, 40702, and 40725 through 40728 of the California Health and Safety Code; and

WHEREAS, the Board of the South Coast Air Quality Management District has determined that a need exists to adopt Rule 1167 - Air Stripping Operations; and

WHEREAS, the Board of the South Coast Air Quality Management District has determined that Rule 1167 - Air Stripping Operations, as proposed to be adopted, is written or displayed so that its meaning can be easily understood by the persons directly affected by it; and

WHEREAS, the Board of the South Coast Air Quality Management District has determined that Rule 1167 - Air Stripping Operations, as proposed to be adopted, is in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations; and

WHEREAS, a public hearing has been properly noticed in accordance with the provisions of Health and Safety Code Section 40725; and

WHEREAS, the Board of the South Coast Air Quality Management District has held a public hearing in accordance with all provisions of law;

NOW, THEREFORE, BE IT RESOLVED, that the Board of the South Coast Air Quality Management District does hereby adopt, pursuant to the authority granted by law, Rule 1167 - Air Stripping Operations, as set forth in the attached and incorporated herein by this reference.

Attachments

DATE:_____

_____
CLERK OF THE DISTRICT BOARD

October 15, 1987

PROPOSED RULE 1167 - AIR STRIPPING OPERATIONS

(a) Definitions

(1) Air Stripping is a method of treating contaminated water for the removal of volatile organic contaminants. The air stripping process involves the aeration of contaminated water with sufficient volumes of air that will allow the removal of volatile organic contaminants by volatilization from water into the passing air.

(2) Volatile Organic Compound (VOC) is any volatile compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, 1,1,1-trichloroethane, methylene chloride, trifluoromethane (FC-23), trichlorotrifluoroethane (CFC-11), dichlorodifluoromethane (CFC-12), trichlorofluoromethane (CFC-113), chlorodifluoromethane (CFC-22), dichlorotetrafluoroethane (CFC-114), and chloropentafluoroethane (CFC-115).

(b) Applicability

The provisions of this rule apply to new and existing air stripping equipment used for the treatment of water contaminated with volatile organic compounds.

(c) Requirements

After December 1, 1988, a person shall not operate an air stripping equipment unless an air pollution control device or other process is used to reduce volatile organic emissions by at least 90 percent on a mass basis, or to 1.0 pound of VOC or less per day.

(d) Exemptions

(1) The provisions of paragraph (c) shall not apply to air stripping equipment which emit 1.0 pound of VOC or less per day.

(2) The provisions of this rule shall not apply to aeration of wastewater at sewage treatment facilities.

(e) Compliance Schedule

The owner or operator of an existing air stripper who elects to install a control device or modify his operation pursuant to the requirements of this rule shall submit to the Executive Officer by June 1, 1988 application for permit to construct and operate for the system and shall be in full compliance with the requirements of this rule by December 1, 1988.

(f) Recordkeeping

The owner or operator of an air stripping equipment shall monitor contaminated water and airstream VOC concentrations as required by the Executive Officer. Such records shall be retained for a minimum of two years and shall be made available to the Executive Officer for review upon request.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
RULE DEVELOPMENT DIVISION

STAFF REPORT

PROPOSED RULE 1167 - AIR STRIPPING OPERATIONS

October 6, 1987

Prepared by: Ramiro C. Gonzalez, Jr.
A.Q. Engineer II

Reviewed by: Moustafa Elsherif
Program Manager/Air Toxics

Arthur H. Segal
A.Q. Engineering Manager

Approved by: Larry M. Bowen
Director of Rule Development

LEIGHTON AND ASSOCIATES

ATTACHMENT E

RECEIVED
JAN 20 1968
LEIGHTON & ASSOCIATES

West's

ANNOTATED - CALIFORNIA CODES

WATER CODE

Sections 7000 to 19999

Official California Water Code Classification

ST. PAUL, MINN.
WEST PUBLISHING CO.

§ 13711. Cathodic protection well

"Cathodic protection well," as used in this chapter, means any artificial excavation in excess of 50 feet constructed by any method for the purpose of installing equipment or facilities for the protection electrically of metallic equipment in contact with the ground, commonly referred to as cathodic protection.

(Added by Stats.1969, c. 482, p. 1080, § 18, operative Jan. 1, 1970.)

Historical Note

Former section 13711, was added by Stats.1968, c. 1087, p. 2001, § 3, repealed by Stats.1969, c. 482, p. 1080, § 17, operative Jan. 1, 1970, and related to similar subject matter.

Derivation: Former section 13711, added by Stats.1968, c. 1087, p. 2001, § 3.

Article 3

REPORTS

Sec.
13750. Notice of intention to dig, bore, drill, deepen, reperforate, abandon or destroy well; filing; form; contents.
13751. Report of completion.
13752. Inspection of reports.
13753. Converted wells.
13754. Misdemeanor.
13755. Construction of chapter.

Article 3 was added by Stats.1969, c. 482, p. 1080, § 18, operative Jan. 1, 1970.

§ 13750. Notice of intention to dig, bore, drill, deepen, reperforate, abandon or destroy well; filing; form; contents

Every person who hereafter intends to dig, bore, or drill a water well or cathodic protection well, or who intends to deepen or reperforate any such well, or to abandon or destroy any such well, shall file with the department a notice of intent to engage in such construction, alteration, destruction, or abandonment prior to commencing such construction, alteration, destruction, or abandonment; provided, that when such construction, alteration, destruction, or abandonment must be accomplished immediately in order to prevent damage to persons or property due to the loss of an existing water supply, such notice shall be filed with the department as soon as possible thereafter, but in any event not more than five days after commencement of such construction, alteration, destruction, or abandonment or repair.

The report shall be made on forms furnished by the department and shall contain such information as the department may require,

including, but not limited to: (a) description of the well site sufficiently exact to permit location and identification of the well; (b) proposed date of construction of the well; (c) the use for which the well is intended; (d) the work to be done and a description of type of construction; and (e) in event of late filing, the reasons therefor.

(Added by Stats.1969, c. 482, p. 1080, § 18, operative Jan. 1, 1970.)

Historical Note

Former section 13750 was added by Stats.1967, c. 323, p. 1516, § 2, amended by Stats.1968, c. 1087, p. 2091, § 4, derived from section 7078, added by Stats. 1965, see 1088, p. 2733, § 2, repealed by Stats.1969, c. 482, p. 1080, § 17, operative Jan. 1, 1970, and related to similar subject matter.

Derivation: Former section 7078, added by Stats.1965, c. 1088, p. 2733, § 2.

Former section 13750, added by Stats. 1967, c. 323, p. 1516, § 2, amended by Stats.1968, c. 1087, p. 2091, § 4.

Library References

Waters and Water Courses ⟹84, 196. C.J.S. Waters §§ 67, 222, 269.

§ 13751. Report of completion

Well Drillers Report

Every person who hereafter digs, bores or drills a water well or cathodic protection well, or abandons or destroys any such well, or who deepens or reperforates any such well, shall file with the department a report of completion of such well within 30 days after its construction or alteration has been completed.

The report shall be made on forms furnished by the department and shall contain such information as the department may require, including, but not limited to: (a) description of the well site sufficiently exact to permit location and identification of the well; (b) detailed log of the well; (c) description of type of construction; (d) details of perforation; and (e) methods used for sealing off surface or contaminated waters.

(Added by Stats.1969, c. 482, p. 1080, § 18, operative Jan. 1, 1970.)

Historical Note

Former section 13751 was added by Stats.1967, c. 323, p. 1516, § 2, amended by Stats.1968, c. 1087, p. 2092, § 5, repealed by Stats.1969, c. 482, p. 1080, § 17, operative Jan. 1, 1970, and related to a similar subject matter.

The former section was derived from former section 7076, added by Stats.1949, c. 1552, p. 2795, § 4, amended by Stats. 1957, c. 1932, p. 3401, § 227; Stats.1961, c. 80, p. 1073, § 1, and former section 7079, added by Stats.1965, c. 1088, p. 2734, § 2.

Derivation: Former section 7076, added by Stats.1949, c. 1552, p. 2795, § 4, amended by Stats.1957, c. 1932, p. 3401, § 227; Stats.1961, c. 80, p. 1073, § 1.

Former section 7079, added by Stats. 1965, c. 1088, p. 2733, § 2.

Former section 13751, added by Stats. 1967, c. 323, p. 1516, § 2, amended by Stats.1968, c. 1087, p. 2092, § 5.

§ 13752. Inspection of reports

Reports made pursuant to Section 13751 shall not be made available for inspection by the public but shall be made available to governmental agencies for use in making studies; provided, that any report shall be made available to any person who obtains a written authorization from the owner of the well.

(Added by Stats.1969, c. 482, p. 1081, § 18, operative Jan. 1, 1970.)

Historical Note

Former section 13752, was added by Stats.1967, c. 323, p. 1516, § 2, amended by Stats.1968, c. 1087, p. 2092, § 6, derived from section 7076.1, added by Stats. 1951, c. 783, p. 2275, § 1, and section 7079, added by Stats.1965, c. 1088, p. 2733, § 2, repealed by Stats.1969, c. 482, p. 1081, § 17, operative Jan. 1, 1970, and related to similar subject matter.

Derivation: Former section 7076.1, added by Stats.1951, c. 783, p. 2275, § 1.

Former section 7080, added by Stats. 1965, c. 1088, p. 2734, § 2.

Former section 13752, added by Stats. 1967, c. 323, p. 1516, § 2, amended by Stats.1968, c. 1087, p. 2092, § 6.

§ 13753. Converted wells

Every person who hereafter converts, for use as a water well or cathodic protection well, any oil or gas well originally constructed under the jurisdiction of the Department of Conservation pursuant to the provisions of Article 4 (commencing with Section 3200), Chapter 1, Division 3 of the Public Resources Code, shall comply with all provisions of this chapter.

(Added by Stats.1969, c. 482, p. 1081, § 18, operative Jan. 1, 1970.)

Historical Note

Former section 13753, added by Stats. 1967, c. 323, p. 1516, § 2, amended by Stats.1968, c. 1087, p. 2092, § 7, repealed by Stats.1969, c. 482, p. 1081, § 17, operative Jan. 1, 1970, related to similar subject matter.

The former section 13753 was derived from former section 7077, added by Stats.1949, c. 1532, p. 2795, § 2, and former section 7081, added by Stats.1965, c. 1088, p. 2734, § 2.

Derivation: Former section 7077, added by Stats.1949, c. 1532, p. 2795, § 2.

Former section 7081, added by Stats. 1965, c. 1088, p. 2734, § 2.

Former section 13753, added by Stats. 1967, c. 323, p. 1516, § 2, amended by Stats.1968, c. 1087, p. 2092, § 7.

§ 13754. Misdemeanor

Failure to comply with any provision of this article, or willful and deliberate falsification of any report required by this article, is a misdemeanor.

Before commencing prosecution against any person, other than for willful and deliberate falsification of any report required by this article, the person shall be given reasonable opportunity to comply with the provisions of this article.

(Added by Stats.1969, c. 482, p. 1081, § 18, operative Jan. 1, 1970.)

from the office of..... Porter A. Towner
Chief Counsel
DEPARTMENT OF WATER RESOURCES
State of California

March 30, 1970

".... Section 13752 (California Water Code) provides that the information in the logs and reports

> ""...shall not be made available for inspection by the public but shall be made available to governmental agencies for use in making studies; provided, that any report shall be made available to any person who obtains a written authorization from the owner of the water well.""

When a governmental agency hires you as a consultant, that agency can release the information in the log to you for use in a study, but you would be subject to the same limitations as the public agency. Publication of specific items of information from the well reports, including the well logs, without the consent of the owners, is prohibited. You may publish discussions of ground water conditions in an area described by section, township, and range, even though the conditions were established in whole or in part from studies of well reports. Reference to a specific well must be omitted if the information is derived from the report rather than an independent source.

The best way for making the information available without restriction and to use it in a public report is to obtain written releases from the owners of the wells."

2166-04746

LEIGHTON AND ASSOCIATES

Geotechnical and Environmental Engineering Consultants

LEIGHTON AND ASSOCIATES
Geotechnical and Environmental Engineering Consultants

PROGRESS REPORT NUMBER 1 FOR PHASE II SUBSURFACE CONTAMINATION INVESTIGATION AT HR TEXTRON'S PACOIMA FACILITY LOCATED AT 10445 GLENOAKS BOULEVARD, PACOIMA, CALIFORNIA

February 8, 1988

Project No. 40841189-05

Prepared for:

HR TEXTRON, INC.
25200 West Rye Canyon Road
Valencia, California 91355
Attention: Mr. William C. Moses

Corporate Headquarters: 1151 DURYEA AVENUE, IRVINE, CALIFORNIA U.S.A. 92714
Telex 249208 LAGEO UR
(714) 250-1421 • (800) 253-4567
FAX (714) 250-1114

LEIGHTON AND ASSOCIATES

Geotechnical and Environmental Engineering Consultants

February 8, 1988

Project No. 40841189-05

TO: HR Textron, Inc.
25200 West Rye Canyon Road
Valencia, California 91355

ATTENTION: Mr. William C. Moses
Director of Facilities

SUBJECT: Progress Report Number 1 for Phase II Subsurface Contamination Investigation at HR Textron's Pacoima Facility Located at 10445 Glenoaks Boulevard, Pacoima, California

In accordance with your written authorization dated December 23, 1987, we have begun the Phase II subsurface contamination investigation at HR Textron's Pacoima facility located at 10445 Glenoaks Boulevard, Pacoima, California. This Progress Report No. 1 summarizes the tasks which are completed through February 2, 1988 and presents our preliminary findings.

In addition, we are providing: (a) one set of boring logs (Appendix A) and laboratory analyses, and chain-of-custody forms (Appendix B).

Should you have any questions regarding this Phase II Progress Report No. 1, please do not hesitate to contact Mimi Maki at our Valencia Office. We appreciate this opportunity to be of service.

Respectfully Submitted,

LEIGHTON AND ASSOCIATES, INC.

Marianne L. Maki

Marianne L. Maki
Project Manager

Thomas E. Mills

Thomas E. Mills
Director, Environmental Services

George E. Heim

George E. Heim, Ph.D., CEG 212
Vice President

DM/AEV/LMM/TM/GH/kd

Distribution: (3) Addressee
(1) Regional Water Quality Control-
Los Angeles Region
Attention: Mr. Ejign G. Solomon

Corporate Headquarters: 1151 DURYEA AVENUE, IRVINE, CALIFORNIA U.S.A. 92714
Telex 249208 LAGEO UR

(714) 250-1421 • (800) 253-4567
FAX (714) 250-1114

TABLE OF CONTENTS

Section		Page
1.0	STATUS OF SCOPE OF WORK	1
1.1	Introduction	1
1.2	Task 1 - Regulatory Structure	3
1.3	Task 2 - Historical Review	14
1.4	Task 3 - Prepare Site Work Plan and Site Safety Plan	23
1.5	Task 4 - Soil Sampling at Existing Tank Excavation	23
1.6	Task 5 - Ground Water Monitoring Well Installation	24
2.0	DATA ANALYSIS AND REPORT PREPARATION	26

LIST OF ILLUSTRATIONS

Tables

Table 1 - Summary of Possible Tank Contents
Table 2 - Summary of RWQCB-LA Leak Detection/Site Assessment Programs
Table 3 - Summary of Chemical Analysis of Soil Samples from Tank #2 Excavation
Table 4 - Summary of Chemical Analysis of Soil Samples from Borings

Plates

Plate 1 - Regulatory Structure
Plate 2 - Landfill Locations
Plate 3 - Trench Sample Location Map
Plate 4 - Location of Regional Water Quality Control Board - Los Angeles Leak Detection/Site Assessment Program within a Three-Mile Radius of Pacoima Facility
Plate 5 - Location of Public Wells within a Three-Mile Radius of Pacoima Facility
Plate 6 - Geologic Map and Location of Water Wells within a Three-Mile Radius of Pacoima Facility
Plate 7 - Boring Location Plot Plan
Plate 8 - Geologic Cross Section A-A' and Total Petroleum Hydrocarbon Concentration with Depth

APPENDICES
(Under Separate Cover)

Appendix A - Boring Logs
Appendix B - Laboratory Analyses and Chain-of-Custody Forms

LEIGHTON AND ASSOCIATES

1.0 STATUS OF SCOPE OF WORK

1.1 Introduction

This investigation is being performed in a phased approach. The status of tasks to be performed during this investigation and their anticipated completion dates are as follows:

Task	Anticipated Completion Date
Task 1 - Regulatory Structure	Completed
Task 2 - Historical Review	
A. Map and Photographic Review of the Area	Essentially completed
B. Identification of Ledger Landfill	Ongoing - to be completed 2/16/88
C. Identification of hazardous material handling practices	Ongoing - to be completed by 2/16/88
D. Determination if wastes from Pacoima facility prior to HR Textron operations may have been sent to be disposed in the adjacent Ledger Landfill	Completed

E.	Review and analysis of Material Safety Data Sheets	Completed
F.	Search of regulatory agency records to identify nearby ongoing and past leak detection programs, reported accidental releases and permit violations	Ongoing - to be completed by 2/16/88
G.	Preparation of land-use maps of present and past usage in the vicinity of HR Textron facility	Ongoing - to be completed 2/16/88
H.	Regional Geologic Setting - Review of available geologic information relative to site	Ongoing - to be completed 2/16/88
I.	Collection and analysis of available information on the ground water basin underlying the site	Ongoing - to be completed 2/11/88

Task 3 - Prepare Site Work Plan and Site Safety Plan

A.	Site Work Plan	On hold
B.	Site Safety Plan	Completed

Task 4 - Soil Sampling at Existing Tank Excavation	
Soil Sampling	Completed
Chemical Analyses	Completed
Task 5 - Monitoring Well Installation	
Drilling Program	Incomplete
Chemical Analysis	Incomplete
Task 6 - Project Management, Data Analysis, and Report Preparation	Ongoing - draft progress report due to HR Textron for review on 2/26/88

1.2 Task 1 - Regulatory Structure

The structure and authorities of the government agencies involved in the review of the Pacoima site are detailed as follows and shown on Plate 1.

Lead Agency

Regional Water Quality Control Board - Los Angeles Region (RWQCB-LA)
Underground Tanks Section
Region 4 Los Angeles

The Pacoima site was referred to RWQCB-LA by the Los Angeles Fire Department due to potential ground water contamination. All site assessment and remediation plans must be submitted to them for approval. They are lead decision maker, but copy of documents are to be sent to, and at times consult with, other state and local agencies.

Other Agencies

City of Los Angeles Fire Department (LAFD)
Fire Prevention Bureau
Industrial/Commercial Unit

Under the City of Los Angeles Fire Code (Attachment A, p. 204), any person who has knowledge of an unauthorized release must notify LAFD immediately. LAFD is the referring agency for the Pacoima site. They are no longer involved and do not need to be kept informed.

City of Los Angeles
Department of Public Works
Bureau of Sanitation
Industrial Waste Control Program

Under Section 64.30, Chapter VI, Article 4 of the Los Angeles Municipal Code (Attachment B), a permit is required for discharge of industrial waste water. Even though the Pacoima facility has an industrial waste water permit, they must notify this agency before waste water is discharged into a sanitary sewer during onsite remediation.

Regional Water Quality Control Board
NPDES Section
Region 4 Los Angeles

This section issues NPDES permits for discharge of wastewater to storm drains.

State Department of Health Services
Toxic Substances Control Division
Facility Permitting Unit
Southern California Section

Under Title 22 of the California Administrative Code (Attachment C), they issue variances from regulations governing the handling storage and treatment of hazardous wastes. Depending on the remediation plan chosen for Pacoima, a permit may be required.

State Department of Health Services
Public Water Supply Branch,
Southern California Section

This office is kept informed by RWQCB-LA on all site assessment activities. Their main focus is water quality and production water wells.

State Department of Health Services
Toxic Substances Control Division
Assessment and Mitigation Unit
Southern California Section

This unit is responsible for permitting of tanks containing hazardous materials. They can get referrals for sites with heavy soil contamination, but to date, have not been involved with Pacoima.

South Coast Air Quality Management District
Engineering Division

This agency permits any air stripping operations used in site remediations. Proposed Rule 1167 (Attachment D) contains specific operating requirements. A permit to construct is required before construction begins, and once the permittee is ready to operate, an inspector will visit the site.

California Department of Water Resources
Data Section
Los Angeles Office

The State Water Code (Attachment E) requires that whenever a well is drilled, a notice of intent first be filed with this agency and upon abandoning or removing a well, a report of completion must be filed including a description of the well, well logs, description of the type of construction, details of perforation and methods for sealing off surface or contaminated waters.

Los Angeles County Health Services Department
Environmental Management Department
Hazardous Materials Unit

The agency wants to be kept informed regarding the site by receiving a copy of the final site assessment and approved remediation plans.

Los Angeles County Health Services Department
Environmental Management Department
Water and Sewage Unit

Under broad authority (no cite), they require a permit for monitoring wells.

Note: If ground water contamination is identified at the Pacoima site, the following offices must be notified:

Water Operating Division
City of Los Angeles Department of Water and Power

Water Engineering Design Division
City of Los Angeles Department of Water and Power
(This office is coordinating Superfund activities in the San Fernando Valley, per RWQCB-LA.)

List of Contacts

E.G. Solomon
Underground Tanks Section
Regional Water Quality Control Board
107 South Broadway, Room 4027
Los Angeles, California 90012-4596
(213) 620-5647

Winnie Deslate
NPDES Section
Regional Water Quality Control Board
107 South Broadway, Room 4027
Los Angeles, California 90012-4596
(213) 620-5681

Inspector Gutierrez
City of Los Angeles Fire Department
Fire Prevention Bureau
Industrial/Commercial Unit
14555 Sylvan Street
Van Nuys, California 91411
(818) 989-8561

Ivan Forbes
Senior Industrial Waste Inspector
East Valley District
Industrial Waste Control Program
Bureau of Sanitation
City of Los Angeles Department of Public Works
14401 Erwin Street Mall, Room 7
Van Nuys, California 91401
(818) 989-8494

John Hinton
Facility Permitting Unit
Toxic Substances Control Division
State Department of Health Services
107 South Broadway, Room 7011
Los Angeles, California 90012
(213) 620-2937

Nestor O. Acedera
Assessment and Mitigation Unit
State Department of Health Services
107 South Broadway, Room 7011
Los Angeles, California 90012
(213) 620-3572

Gary Yamamoto
Regional Engineer
Public Water Supply Branch
State Department of Health Services
1449 West Temple, Room 202
Los Angeles, California 90026
(213) 620-2980

Bob Pierotti
Data Section
California Department of Water Resources
849 South Broadway
P.O. Box 6598
Los Angeles, California 90055
(213) 620-4147/8

Paul Liu
Engineering Division
South Coast Air Quality Management District
9150 Flair Drive
El Monte, California 91731
(818) 572-6212

S. Saito
Los Angeles County Department of Health Services
Water and Sewage Unit
Environmental Management Department
2615 South Grand Avenue, Room 604
Los Angeles, California 90007
(213) 744-3214

Jim Nishida
Los Angeles County Department of Health Services
Hazardous Materials Unit
Environmental Management Department
2615 South Grand Avenue, Room 607
Los Angeles, California 90007
(213) 744-5130

Bruce Kuebler
Water Operating Division
City of Los Angeles Department of Water and Power
111 North Hope, Room 1420
Los Angeles, California 90012
(213) 481-4211

Walter Hoy
Water Engineering Design Division
City of Los Angeles Department of Water and Power
111 North Hope, Room 1336
Los Angeles, California 90012
(213) 481-4211

1.3 Task 2 - Historical Review

A. Historical Aerial Photography Review of the HR Textron, Pacoima Site

The search for stereographic aerial photo coverage of the HR Textron Facility at Pacoima began in late November 1987, and included inquiries with the following governmental and private sources:

1. USGS - National Cartographic Information Center
2. National Archives and Records Service
3. U.S. Dept. of Agriculture - Soil Conservation Service
4. Los Angeles County Engineering Facilities, Survey Division
5. City of Los Angeles, Bureau of Engineering
6. Los Angeles County Dept. of Public Works
7. Whittier College
8. University of California at Los Angeles

9. University of California at Santa Barbara
10. Continental Aerial Photo, Inc., Santa Ana
11. Aerial Eye, Inc.
12. Aerial Map Industries, Santa Ana
13. I.K. Curtis Services, Inc., Burbank
14. Pacific Aerographics, Santa Ana

Black and white stereographic coverage of the following years has been obtained, or are on order:

Year	Scale	
1928	1 in ≅ 1500 ft.	
1938	1 in ≅ 1650 ft.	
1945	1 in ≅ 833 ft.	
1948	1 in ≅ 2000 ft.	
1952	1 in ≅ 2000 ft.	(on order)
1957	1 in ≅ 1000 ft.	
1964	1 in ≅ 2000 ft.	(on order)
1973	1 in ≅ 2800 ft.	(on order)
1979	1 in ≅ 2600 ft.	
1986	1 in ≅ 3000 ft.	

1928 Photography

The 1928 aerial photographs indicate the development of an apparent gravel pit. There are at least four areas within the pit that are deeper than the general floor of the pit. The overall depth of the pit appears to be approximately 30 to 40 feet with four deeper portions, possibly as much as 50 feet deep. Most extensive development of the pit is in the southeast corner of the HR Textron property. The pit appears to underlie the current HR Textron buildings, including the area of the removed storage tanks. The deep portions of the pit appear to be directly beneath the HR Textron buildings.

1938 Photography

The 1938 aerial photographs indicate the early stages of landfill development. The northwestern corner of the fill appears to be larger than indicated on Plate 2. Both the 751 (Ledger Landfill) and 753 areas are being utilized.

1945 Photography

The 1945 photographs show extensive development of the landfill area. It appears that there is a small depression in the northeastern corner, northeast of the 753 landfill, approximately 300 feet from the intersection of Osborne Place and Glenoaks Boulevard.

1948 Photography

The 1948 photography shows the extent of the landfill operation to be slightly larger than indicated on Plate 2. Landfilling apparently occurred along the northwestern side from approximately the mid-point of the landfill and beyond the margin area shown on Plate 2. In addition, the photograph indicates a deep pit in the southeastern side, near the mid-point of the landfill operations and approximately 100 feet from Montague Street. The pit, near the midpoint of the 751 landfill, is estimated to be 20 to 40 feet deep.

1957 Photography

The 1957 aerial photographs show the facility development. There are some areas of dark soil.

1979 Photography

The 1979 aerial photographs show the development of the site with the existing buildings occupying the areas of Landfills 751 (Ledger Landfill) and 753.

1986 Photography

The 1986 aerial photographs show the fully developed properties in the area. All structures are placed in those areas previously occupied by the 751 and 753 landfills.

Also noted on this photography are several deep pits within a 2 mile radius of the project site. These pits were developed as sand and gravel operations.

B. Description of Ledger Landfill

A legal description of the Ledger Landfill obtained by HR Textron, Inc. was reviewed by Hale and Associates, Inc., Newhall, California for the purpose of plotting the extent of the landfill in relation to HR Textron's Pacoima facility. According to Mr. Don Hale of Hale and

Associates, additional information is necessary, in order to plot the legal boundaries of the Ledger Landfill.

Information was obtained from files at the Los Angeles City Bureau of Sanitation regarding the "Robert Ledger Landfill #47-2 (Landfill No. 751)" located at Glenoaks Boulevard and Montague Street, Sun Valley, California (see Plate 2). A summary of those records is as follows: On February 20, 1946, a variance was granted to Mr. Robert Ledger to operate a dump in an old gravel pit located on the northwest corner of Glenoaks Boulevard and Montague Street in Pacoima for a 5 year period. This variance permitted the operation of a commercial dump to accept non-combustible materials. City of Los Angeles, Public Works, in a letter dated August 29, 1947, granted permission to operate a landfill provided no burning operations were conducted. The facility was described to be a shallow pit 10 to 12 feet deep, covering an irregular area of about 5 acres. Note, the interpretation of the aerial photographs and the boring logs indicates that the pits may have been locally as deep as 40 to 50 feet. The approximate dimensions of the pit were 600 feet in length by 340 feet in width. The aerial photograph's suggest a maximum landfill area of approximately 1,400 feet by 1,000 feet. In letters and memorandums dated February 20, 1950 and July 13, 1953 from the Bureau of Street Maintenance and Department of Public Works, it was reported that the landfill operation was not fully in compliance with the Los Angeles Municipal Code. The facility was not secured. Waste water from Turbo

Products, Inc. (Pre-Textron) was observed to be discharged into the landfill in a Sanitary Engineering Division letter dated February 29, 1950. The landfill ceased operations between February, 1954 and July, 1955.

C. Identification of Hazardous Materials Handling Practices

Presently, hazardous materials at the HR Textron site for use in plant operations are stored on a concrete pad within a concrete bermed area east of the former tank excavation Number 2 as shown on Plate 3. In the past, the area did not have the pad and was not bermed prior to January 1985, and the hazardous waste was stored in two former 1,000-gallon tanks. In January 1985, these two tanks were removed. The past and present handling practices are continuing to be reviewed and our information will be presented in our draft reports.

D. Determination if Waste From Pacoima Facility, Prior to HR Textron Operations May Have Been Disposed in the Ledger Landfill

Leighton and Associates, Inc. will attempt to obtain records of the operational history of both the Pacoima facility and the Ledger Landfill.

The information search will include a review of records available through agencies and discussions with former employees and long-term residents in the area.

E. Review and Analysis of Material Safety Data Sheets

A list of hazardous materials used at the Pacoima facility was provided by HR Textron and are listed in Table 1. All Material Safety Data Sheets (MSDS) for these materials were reviewed and appropriate laboratory tests were designated to determine the potential of these contaminants to be present in the subsurface soils beneath the removed tanks and adjacent to the excavation.

F. Ongoing Search of Regulatory Agency Records for Nearby Leak Detection/Site Assessment Programs

A search of the sites of the files of the California Regional Water Quality Control Board - Los Angeles was completed for a three-mile radius of HR Textron's Pacoima facility. Summarized in Table 2 are the names and addresses of the sites, and their locations are shown on Plate 4. Additional requests for information on nearby sites with ongoing contamination studies is presently being conducted with the State of

California Department of Health Services (DHS), Southern California Air Quality Management District (SCAQMD), and the LA City Fire Department.

G. Land Use Identification

Preparation of a land use map in the vicinity of HR Textron Pacoima Facility is ongoing.

H. Regional Geological Setting

The site is located in the eastern section of the San Fernando Valley Basin. The regional geology map is presented in Plate 5. A complete description of the regional and site geology will be presented in our draft report.

I. Information on Local Ground Water Basin

Locally, the depth to ground water is approximately 200± feet below grade, as reported by the Upper Los Angeles River Area Watermaster in May, 1987.

These data were developed from several of the water wells installed in the area of the site. The location of the wells is shown on Plate 5. Plate 6 is a map showing the public wells within a 3-mile radius of the facility. A description of the local hydrogeology and water quality will be presented in our draft report.

1.4 Task 3 - Prepare Site Work Plan and Site Safety Plan

The development of a Site Work Plan was put on hold, until we determined if such a plan would be requested by the RWQCB-LA. A Site Safety Plan was prepared and finalized on January 6, 1988. A copy will be included in the draft report.

1.5 Task 4 - Soil Sampling at Existing Tank Excavation

On December 22, 1987, fourteen soil samples were collected at three locations at and up to two feet below the base of the existing excavation. The locations of these soil samples are shown on Plate 3. Three of the fourteen soil samples were chemically analyzed for EPA-Priority Pollutants plus MBAS/Phosphate to determine the presence of contaminants. This information is summarized in Table 3.

1.6 Task 5 - Ground Water Monitoring Well Installation

On January 6, 1988, Spectrum Drilling of Long Beach, California began drilling the boring (LB-3/MW-1) for Monitoring Well MW-1. The location of Monitoring Well LB-3/MW-1 was located on the downgradient side of the existing tank excavation (see Plate 7).

The boring for the proposed monitoring well was drilled and continuously sampled using a hollow stem auger rig. All augers were properly steam cleaned prior to drilling. We collected soils with a continuous core sampler for visual soil classification purposes to obtain a complete stratigraphic description of the encountered soils. At every five foot interval we would then collect a soil sample in a California Modified Sampler. Several of those samples were analyzed by EPA Method 8015 (Modified), 8010 and 8020, onsite by Chemical Research Laboratory, Inc.'s, mobile laboratory. Boring LB-3 (MW-1) was advanced to a depth of 110 feet below grade and was terminated due to refusal. A disturbed sample of this material is currently being analyzed in an attempt to identify the composition of the obstruction. Several attempts to sample or drill through this zone resulted in the damage to the continuous core sampler, and a standard split spoon soil sampler.

A second boring (LB-4) was drilled northwest of the tank excavation, as shown on Plate 4, in an attempt to drill below the 110 feet zone encountered in LB-3 (MW-1) to install the monitoring well. This boring was also terminated at a depth of 110 feet due to refusal.

Selected soil samples were chemically analyzed by Analytical Technology Laboratory, San Diego, California to quantify the level of contaminants detected by the mobile laboratory. These soil samples were analyzed for those EPA Priority Pollutant compounds detected in the soil samples from the excavation; more specifically, Total Petroleum Hydrocarbons (EPA Test Method 418.1), Oil and Grease (EPA Test Method 413.2), Volatile Organics (EPA Test Method 8240), Chromium (EPA Test Method 6010), Lead (EPA Test Method 7421), organic chlorine pesticides and PCB's (EPA Test Method 8080). The results of these laboratory analyses are presented in Table 4.

2.0 DATA ANALYSIS AND REPORT PREPARATION

We are presently completing our evaluation of the results of our investigation. The results of Leighton and Associates, Inc. ongoing Phase II investigation will be presented in a draft report detailing our findings, documenting references, oral communications, results of our field investigations, laboratory test results and conclusions. Recommendations and estimated costs for investigations (i.e., remediation of contaminated soils), will be presented for your consideration and approval. The draft Phase II report is anticipated to be submitted to HR Textron for review on February 26, 1988, with a final report summarizing the work completed through February 19, 1988, submitted to HR Textron on March 5, 1988, or five working days following receipt of your comments on the draft report.

Table 1 - Summary of Possible Tank Contents

(HR Textron, Interoffice Communication,
October 20, 1987, W.C. Moses to M.D. Bell,
Pacoima Underground Tanks)

Privileged and Company
Private Attorney
Client Communication
and Work Product

- alcohol, isopropyl
- "Arrow 30", a germicidal additive to soluble oil
- cutting oils; Mobil Gamma, Exxon Mentor 28, Mobil Omicron
- ethanol, denatured (Proprietary Solvent III)
- Freon TF
- grease, Mobil EP-2
- hydraulic oils; Bray MIL-H-5606, Mobil DTE various viscosities, Mobil Velocite 6, Mobil Velocite 10
- Kee-Chem 125, a machine cleaner

Privileged and Company
Private Attorney
Client Communication
and Work Product

- Kleen B, a detergent
- lacquer thinner
- Methyl Ethyl Ketone (MEK)
- paint thinner
- paint (lacquer and enamel)
- water soluable cutting oil, Pennwalt MP+2
- stoddard solvent
- 1,1,1 trichloroethane
- zinc chromate primer

Table 2 - Summary of Regional Water Quality Control Board-Los Angeles Region Leak Detection and Site Assessment Programs

Privileged and Company
Private Attorney
Client Communication
and Work Product

1) Advanced Packaging Techniques
   11340 Penrose Street
   Sun Valley, California 91352

2) American Etching & Manufacturing
   13730 Desmond Street
   Pacoima, California 91331

3) Chase Chemical Company
   13546 Desmond Street
   Pacoima, California 91331

4) Conrock Company
   11401 Tuxford Street
   Sun Valley, California

5) Crown Disposal Company, Inc.
   9189 DeGarmo Street
   Sun Valley, California

Privileged and Company
Private Attorney
Client Communication
and Work Product

6) Fortin Industries
9880 San Fernando Road
Pacoima, California 91331

7) General Telephone of California
401 South Brand Avenue
San Fernando, California

8) Los Angeles City Department of Public Works
11370 San Fernando Road
Pacoima, California

9) Los Angeles City Department of Water and Power
11761 Roscoe Boulevard
Sun Valley, California

10) MDC
12306 Montage Street
Pacoima, California

11) Monarch Record Manufacturing Corporation, Inc.
9245 San Fernando Road
Sun Valley, California

Privileged and Company
Private Attorney
Client Communication
and Work Product

12) Price Pfister, Inc.
13500 Paxton Street
Pacoima, California

13) Spartan Truck Equipment
12266 Branford Street
Sun Valley, California

14) Southern California Rapid Transit District
1190 Branford Street
Sun Valley, California

15) Swelldom Company
8531 Lankershim Boulevard
Sun Valley, California

16) Tempco Engineers, Inc.
8866 Laurel Canyon Boulevard
Sun Valley, California

See Plate 5 for location of the above listed sites.

TABLE 3

SUMMARY CHEMICAL ANALYSIS
OF SOIL SAMPLES FROM TANK #2 EXCAVATION
HR TEXTRON, PACOIMA, CALIFORNIA

ontaminant	#4, 14 ft. 12/22/87	#7, 14 ft. 12/22/87	#11, 11 Ft. 12/22/87	Reagent Blank 12/24/87	Field Blank 12/24/87	#3, 8 ft. 1/30/85	#4, 8 ft. 1/30/85	#5, 12 ft. 1/31/85	#3, 12 ft. 5/6/85	#4, 12 ft. 5/6/85
uel Hydrocarbons (mg/kg)										
uel Hydrocarbons EPA 8015 (modified)	300	870	ND	ND	ND					
ydrocarbon range	C20-C24	C20-C24	ND	ND	ND					
ydrocarbons quantified	diesel	diesel	ND	ND	ND					
Total Petroleum Hydrocarbons EPA 418.1 (modified) (mg/kg)	1360	2280	367	---	---	14000	9100	7300		
il and Grease EPA 413.2 (mg/kg)	3120	4010	1130			18000	11000	11000	19000	9900
Volatile Organics EPA 8240 (mg/kg)										
,1,1 - Trichloroethane						210	120	230	16	18
,1 - Dichloroethane						2	0.6	ND	ND	ND
Tetrachloroethylene						11	0.9	8	0.6	6
Trichloroethylene						0.6	2	ND	ND	ND
,1 - Dichloroethylene	ND	ND	ND	ND		ND	0.3	ND	ND	ND
oluene	0.06	0.06	ND	ND		ND	2	ND	ND	ND
All other compounds (listed) for EPA 8240 Method were not detected										
etals (mg/kg)										
hromium EPA 6010	5.8	9.2	2.2	ND						
opper EPA 6010	5.8	3.1	4.1	ND	ND					
ickel EPA 6010	3.0	1.2	0.78	ND	ND					
ead EPA 7421	1.9	31.0	2.3	ND	ND					
inc EPA 6010	18.3	10.9	13.5	ND	ND					
Additional Major Compounds										
ydrocarbon C_{10}	0.10	ND	ND	ND	ND					
ydrocarbon C_{10}	0.10	ND	ND	ND	ND					
entane	ND	ND	ND	0.50	ND					
ethyl Phenol	0.6	ND	ND	ND						
nknown	1	1	ND	ND						
lkane	0.9	ND	ND	ND						
ranched Alkane	0.9	ND	ND	ND						
ranched Alkane	0.8	ND	ND	ND						
lkane	ND	1	ND	ND						
lkane	ND	1	ND	ND						
lkane	ND	2	ND	ND						
lkane	ND	1	ND	ND						
imethyl Alkane			1	ND						
hthalate			0.3	ND						
Semi Quantified by EPA 8240 (mg/kg)										
C9H16 compound	20	20	ND	ND	30					
yclohexane compound	20	20	ND	ND	10					
thyl-Methyl Cyclohexane	100	100	ND	90	100					
1,1 - Dichloroethylene	ND	0.3	ND	ND	ND					
rimethyl Cyclohexane	30	30	ND	ND	ND					
ylene Isomers	ND	4	ND	ND	ND					
lkyl Cyclohexane	ND	ND	ND	ND	20					
st Alkyl Cyclohexane	ND	ND	ND	100	ND					
2nd Alkyl Cyclohexane	ND	ND	ND	200	ND					
Terpene	ND	ND	ND	40	ND					
thyldimethyl Cyclohexane	ND	ND	ND	100	ND					
rganochlorine Pesticides & PCBs EPA 8080 (mg/kg)										
roclor 1260	0.11	ND	ND	ND	ND					
o other compounds listed for EPA 8080 Method detected										
Semi-Volatile Organics EPA 8270 (mg/kg)										
is (2-ethylhexyl) phthalate	ND	ND	1.1	TR	ND					
i-N-Butylphthalate	ND	ND	TR	ND	ND					
otal Hydrocarbons C_{18} - C_{29}	40	60	ND	ND						

otes: ND - Not Detected
TR - Detected at an unquantifiable trace level
Blank areas indicate samples were not tested for this parameter

Privileged and Company Private Attorney Client Communication and Work Product

LEIGHTON AND ASSOCIATES

40841189-05
February 8, 1988

TABLE 4

SUMMARY OF CHEMICAL ANALYSIS
OF SOIL SAMPLES FROM BORINGS

HR Textron
Pacoima, California

SAMPLE #	DEPTH (FT)	DATE OF SAMPLE	EPA-418.1 TPH mg/kg	EPA-413.2 OIL & GREASE mg/kg	CAM WET CHROMIUM	CAM WET LEAD	EPA METHOD 8240 (mg/kg) 1,1,1-TRICHLORO-ETHANE	TRICHLORO-ETHENE	TETRA-CHLORO-ETHYLENE	TOLUENE	METHYLENE CHLORIDE	BEN-ZENE	ACE-TONE	XYLENE ISOMERS	ETHYL CYCLO-HEXANE	ETHYL METHYL CYCLO-HEXANE	1,2 DI-CHLORO-ETHANE
LB-1	10	05/30/85	27	27	NT	NT		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-1	20	05/30/85	14,000	15,000	NT	NT	55	ND	3	3	ND	ND	ND	4	20	300	ND
LB-1	30	05/30/85	9,800	10,000	NT	NT	87	ND	4	3	ND	ND	ND	3	10	300	ND
LB-1	40	05/30/85	30	30	NT	NT	100	ND	2	1	ND	ND	ND	3	20	300	ND
LB-1	50	05/30/85	20,000	20,000	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-2	10	05/30/85	41	45	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-2	20	05/30/85	ND	ND	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-2	30	05/30/85	ND	ND	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-2	40	05/30/85	ND	ND	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB-2	50	05/30/85	ND	ND	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-3A**	13	01/06/88	6	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-5A**	23	01/06/88	3	1	ND	ND	ND	ND	ND	0.13	ND	ND	ND	ND	ND	ND	ND
LB3-7A**	33	01/06/88	4	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-9A**	43	01/06/88	3	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-11A**	53	01/06/88	3	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRIP BLANK**		01/06/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FIELD BLANK**		01/07/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
QA SAMPLE**		01/07/88	ND	ND	ND	ND	ND	ND	ND	9 (ug/kg)	ND	ND	ND	ND	ND	ND	ND

Privileged and Company
Private Attorney
Client Communication
and Work Product

40841189-05
February 8, 1988

SAMPLE #	DEPTH (FT)	DATE OF SAMPLE	EPA-418.1 TPH mg/kg	EPA-413.2 OIL & GREASE mg/kg	CAM WET CHROMIUM	CAM WET LEAD	EPA METHOD 8240 (mg/kg) 1,1,1-TRICHLORO-ETHANE	TRICHLORO-ETHENE	TETRA-CHLORO-ETHYLENE	TOLUENE	METHYLENE CHLORIDE	BEN-ZENE	ACE-TONE	XYLENE ISOMERS	ETHYL CYCLO-HEXANE	ETHYL METHYL CYCLO-HEXANE	1,2-DI-CHLORO-ETHANE
LB3-13A**	63	01/06/88	4	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-15A**	73	01/07/88	7	9	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-17A**	83	01/07/88	23	19	0.2	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-19A**	93	01/07/88	9	25	ND	ND	ND	ND	ND	0.05	ND	ND	ND	ND	ND	ND	ND
LB3-S21A**	103	01/07/88	3	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S23(3)**	110	01/08/88	5	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S1B*	.5	01/06/88	---		NT	NT	120	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S2B*	3	01/06/88	---	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S3B*	13	01/06/88	ND	NT	NT	NT	ND	ND	ND	ND	150	ND	ND	ND	ND	ND	ND
LB3-S4B*	18	01/06/88	---	NT	NT	NT	ND	ND	ND	ND	150	ND	ND	ND	ND	ND	ND
LB3-S5B*	23	01/06/88	---	NT	NT	NT	ND	ND	ND	ND	80	ND	ND	ND	ND	ND	ND
LB3-S6B*	28	01/06/88	---	NT	NT	NT	ND	ND	ND	ND	100	ND	ND	ND	ND	ND	ND
LB3-S7B*	33	01/06/88	---	NT	NT	NT	ND	ND	ND	ND	100	ND	ND	ND	ND	ND	ND
LB3-S8B*	38	01/06/88	---	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S9B*	43	01/06/88	ND	NT	NT	NT	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S10B*	48	01/06/88	ND	NT	NT	NT	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S11B*	53	01/06/88	2	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S12B*	58	01/06/88	2	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S13B*	63	01/06/88	2	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S14B*	68	01/07/88	14	NT	NT	NT	700	ND	ND	ND	150	ND	ND	ND	ND	ND	ND
LB3-S15B*	73	01/07/88	2	NT	NT	NT	ND	ND	ND	ND	150	ND	ND	ND	ND	ND	ND
LB3-S16B*	78	01/07/88	15	NT	NT	NT	ND	ND	ND	ND	150	ND	ND	ND	ND	ND	ND

Privileged and Company
Private Attorney
Client Communication
and Work Product

SAMPLE #	DEPTH (FT)	DATE OF SAMPLE	EPA-418.1 TPH mg/kg	EPA-413.2 OIL & GREASE mg/kg	CAM WET CHROMIUM	CAM WET LEAD	EPA METHOD 8240 (mg/kg) 1,1,1-TRICHLORO-ETHANE	TRICHLORO-ETHENE	TETRA-CHLORO-ETHYLENE	TOLUENE	METHYLENE CHLORIDE	BEN-ZENE	ACE-TONE	XYLENE ISOMERS	ETHYL CYCLO-HEXANE	ETHYL METHYL CYCLO-HEXANE	1,2 DI-CHLORO-ETHANE
LB3-S17B*	83	01/07/88	NT	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S18B*	88	01/07/88	15	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S19B*	93	01/07/88	9	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S20B*	98	01/07/88	16	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S21B*	103	01/07/88	6	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB3-S23B*	110	01/08/88	2	NT	NT	NT	ND	ND	ND	NT	NT	ND	ND	ND	ND	ND	ND
LB4-S2A**	3	01/08/88	4	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S4A**	13	01/08/88	3	3	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S6A**	23	01/08/88	2	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S8A**	33	01/11/88	1	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S10A**	43	01/11/88	3	4	ND	ND	ND	ND	ND	ND	TR	ND	ND	ND	ND	ND	ND
LB4-S12A**	53	01/11/88	3	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S14A**	63	01/11/88	3	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S16A**	73	01/11/88	5	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trip Blank**	-	01/08/88			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Field Blank**	-	01/11/88	<.08	<.08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S18A**	83	01/11/88	6	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S20A**	93	01/12/88	3	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S22A**	103	01/12/88	3	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S23A**	108	01/12/88	2	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trip Blank**	-	01/12/88			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Field Blank**	-	01/12/88	.05	.05	ND	ND	ND	ND	ND	ND	TR	ND	TR	ND	ND	ND	TR

Privileged and Company
Private Attorney
Client Communication
and Work Product

SAMPLE #	DEPTH (FT)	DATE OF SAMPLE	EPA-418.1 TPH mg/kg	EPA-413.2 OIL & GREASE mg/kg	CAM WET CHROMIUM	CAM WET LEAD	EPA METHOD 8240 (mg/kg) 1,1,1-TRICHLORO-ETHANE	TRICHLORO-ETHENE	TETRA-CHLORO-ETHYLENE	TOLUENE	METHYLENE CHLORIDE	BEN-ZENE	ACE-TONE	XYLENE ISOMERS	ETHYL CYCLO-HEXANE	ETHYL METHYL CYCLO-HEXANE	1,2 DI-CHLORO-ETHANE
BIN-S1**	--	01/13/88	210	260	ND	ND	ND	ND	ND	0.37	ND	ND	ND	ND	ND	ND	ND
BIN-S2**	--	01/13/88	130	130	ND	ND	ND	ND	ND	0.05	ND	ND	ND	ND	ND	ND	ND
SCF*	--	01/13/88	.16	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S1B*	.5	01/08/88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S2B*	3	01/08/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S3B*	8	01/08/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S4B*	13	01/08/88	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S5B*	18	01/08/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S6B*	23	01/08/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S7B*	28	01/11/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S8B*	33	01/11/88	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S9B*	38	01/11/88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S10B*	43	01/11/88	< 16	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S11B*	48	01/11/88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S12B*	53	01/11/88	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S13B*	58	01/11/88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S14B*	63	01/11/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S15B*	68	01/11/88	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S16B*	73	01/11/88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S17B*	78	01/11/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S18B*	83	01/11/88	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S19B*	88	01/11/88	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Privileged and Company
Private Attorney
Client Communication
and Work Product

SAMPLE #	DEPTH (FT)	DATE OF SAMPLE	EPA-418.1 TPH mg/kg	EPA-413.2 OIL & GREASE mg/kg	CAM WET CHROMIUM	CAM WET LEAD	EPA METHOD 8240 (mg/kg) 1,1,1-TRICHLORO-ETHANE	TRICHLORO-ETHENE	TETRA-CHLORO-ETHYLENE	TOLUENE	METHYLENE CHLORIDE	BEN-ZENE	ACE-TONE	XYLENE ISOMERS	ETHYL CYCLO-HEXANE	ETHYL METHYL CYCLO-HEXANE	1,2 DI-CHLORO-ETHANE
LB4-S20B*	93	01/12/88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S21B*	98	01/12/88	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LB4-S22B*	103	01/12/88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TH-1	6.5	05/16/86	37	37	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-1	11	05/16/86	20	20	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-1	12.5	05/16/86	20	20	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-1	15.5	05/16/86	14	14	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-1	20	05/16/86	30	30	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-1	40	05/16/86	23	23	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	10	05/16/86	21	21	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	15	05/16/86	26	26	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	20	05/16/86	15	15	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	30	05/16/86	20	20	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	40	05/16/86	26	26	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	45	05/16/86	29	29	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	55	05/16/86	26	26	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	65	05/16/86	21	21	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	75	05/16/86	23	23	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	85	05/16/86	18	18	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	95	05/16/86	120	120	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	105	05/16/86	37	37	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TH-2	115	05/16/86	33	33	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

Privileged and Company
Private Attorney
Client Communication
and Work Product

SAMPLE #	DEPTH (FT)	DATE OF SAMPLE	EPA-418.1 TPH mg/kg	EPA-413.2 OIL & GREASE mg/kg	CAM WET CHROMIUM	CAM WET LEAD	EPA METHOD 8240 (mg/kg) 1,1,1-TRICHLORO-ETHANE	TRICHLORO-ETHENE	TETRA-CHLORO-ETHYLENE	TOLUENE	METHYLENE CHLORIDE	BEN-ZENE	ACE-TONE	XYLENE ISOMERS	ETHYL CYCLO-HEXANE	ETHYL METHYL CYCLO-HEXANE	1,2 DI-CHLORO-ETHANE
TH-2	120	05/16/86	56	56	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
B-3	composite 0-43	05/23/84		23,400	Stoddard Solvent 2400ug/kg (mg/kg)												

Note:
- LB = Leighton and Associates, Inc. borings
- TH = Enviropro, Inc. borings
- ND = Not Detected
- NT = Not Tested
- TR = Detected at an unquantifiable trace level
- * = Mobile Lab Results are not certified by the Department of Health Services, EPA Method 8010, the only detected compounds are shown in (mg/kg) All other compounds volatile chlorinated hydrocarbons and volatile aromatic hydrocarbons (EPA Method 8020) were not detected.
- ** = Analytical Technology, Inc. has a Department of Health Services certification.

Privileged and Company
Private Attorney
Client Communication
and Work Product

Privileged and Company Private Attorney Client Communication and Work Product

REGIONAL WATER QUALITY CONTROL BOARD
UNDERGROUND TANKS SECTION
NPDES SECTION

- LEAD AGENCY
- APPROVAL REQUIRED FOR SITE ASSESSMENTS AND REMEDIAL PLANS
- ISSUE NPDES PERMIT FOR DISCHARGE OF TREATED GROUND WATER TO STORM DRAIN

CITY OF LOS ANGELES
FIRE DEPARTMENT

- REFERRING AGENCY
- NO LONGER INVOLVED

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
INDUSTRIAL WASTE CONTROL SECTION

- ISSUE PERMIT FOR DISCHARGE OF TREATED GROUND WATER INTO SANITARY SEWER

STATE DEPARTMENT OF HEALTH SERVICES
TOXIC SUBSTANCES CONTROL DIVISION
FACILITY PERMITTING UNIT
ASSESSMENT AND MITIGATION UNIT
PUBLIC WATER SUPPLY BRANCH

- KEPT INFORMED BY RWQCB
- INVOLVED IF EXTENSIVE SOIL CONTAMINATION IS IDENTIFIED
- ISSUE VARIANCE FOR ON-SITE TREATMENT

SOUTH COAST AIR QUALITY
MANAGEMENT DISTRICT
ENGINEERING DIVISION

- ISSUE PERMIT FOR AIR STRIPPING OPERATIONS

CALIFORNIA DEPARTMENT
OF WATER RESOURCES
DATA SECTION

- NOTICE OF INTENT
- WELL DRILLER'S REPORT

LOS ANGELES COUNTY
HEALTH SERVICES DEPARTMENT
ENVIRONMENTAL MANAGEMENT DEPARTMENT
HAZARDOUS MATERIALS UNIT
WATER AND SEWAGE UNIT

- INFORM OF FINAL DISPOSITION
- ISSUE PERMIT FOR MONITORING WELLS

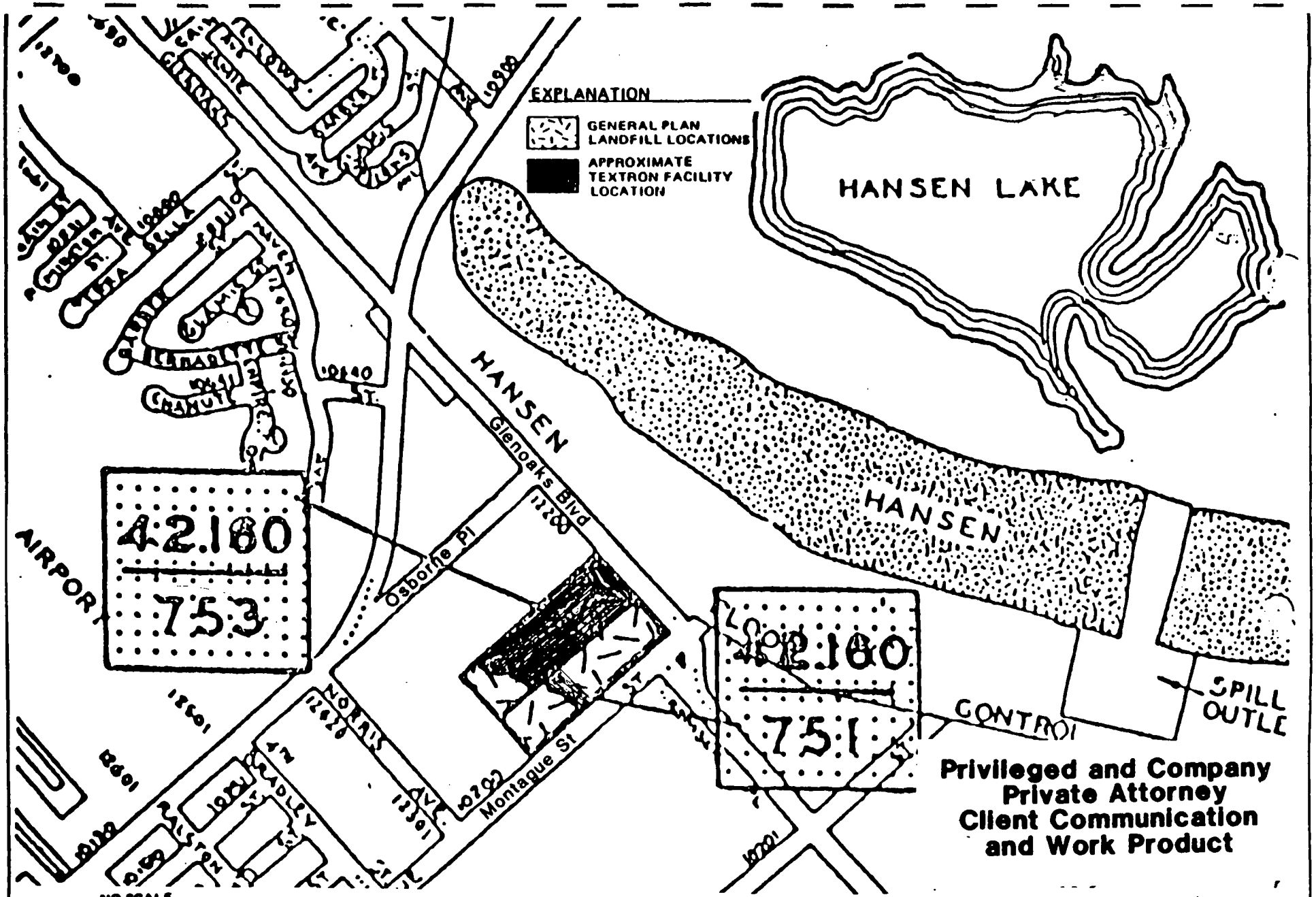
CITY OF LOS ANGELES
DEPARTMENT OF WATER AND POWER
WATER ENGINEERING DIVISION
WATER OPERATING DIVISION

- NOTIFY IF GROUND WATER CONTAMINATION IS IDENTIFIED ONSITE
- COORDINATING SUPERFUND ACTIVITIES FOR EPA IN SAN FERNANDO VALLEY (PER RWQCB)

HR TEXTRON PACOIMA, CALIFORNIA
REGULATORY STRUCTURE

PROJECT NO. 40841189-05

PLATE 1

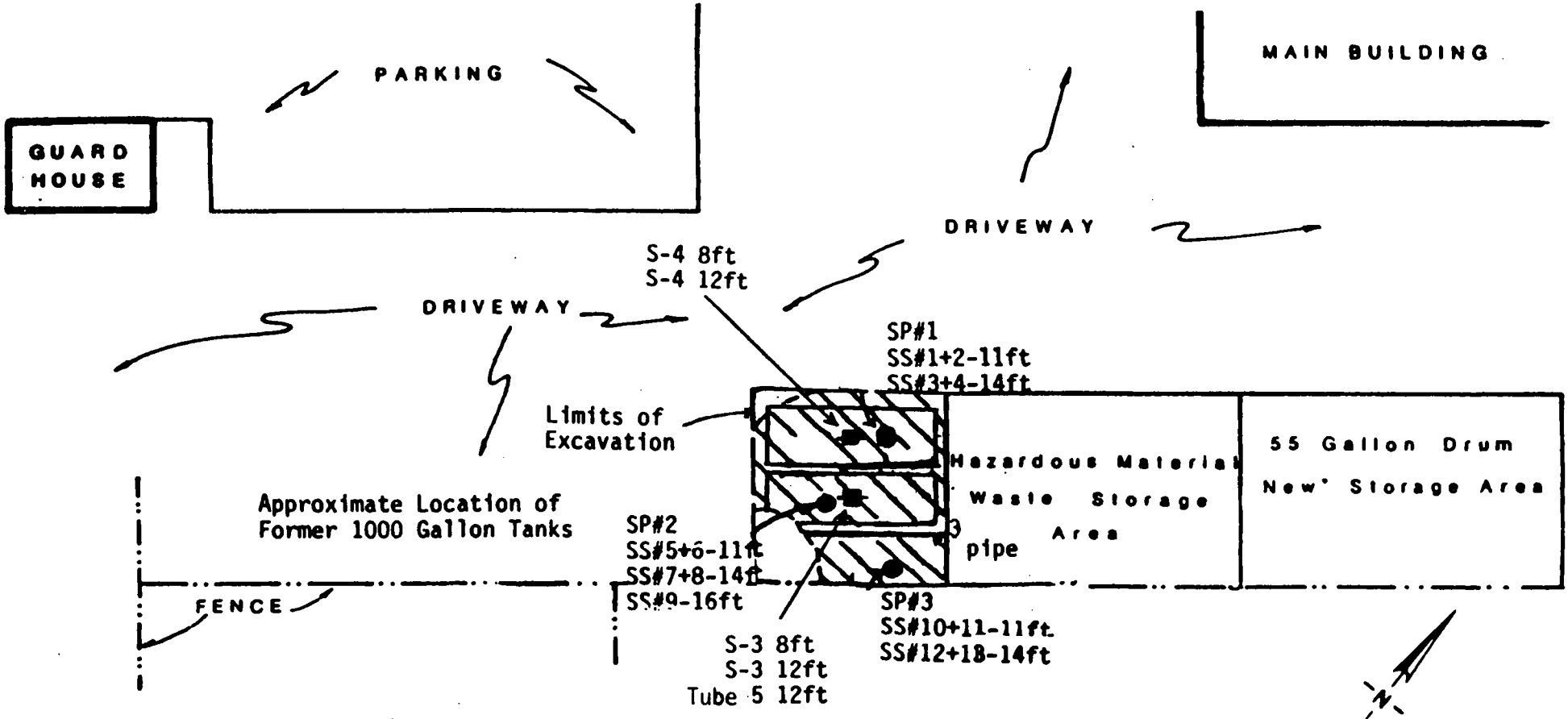


NO SCALE

Ref. From The Earth Technology Corp., 1984, Draft Workplan for Underground Leak Detection, Fig. 2 (April 2).

LANDFILL LOCATIONS
HR TEXTRON
PACOIMA, CALIFORNIA

PROJECT NO. 40841189-05
PLATE 2



LEGEND

S-3 ■ Sample Number and Depth of Sample Below Grade Samples Collected by Leighton and Associates, Inc., on 1/30/85 and 1/31/85

SP#3 ● Sample Pit Number

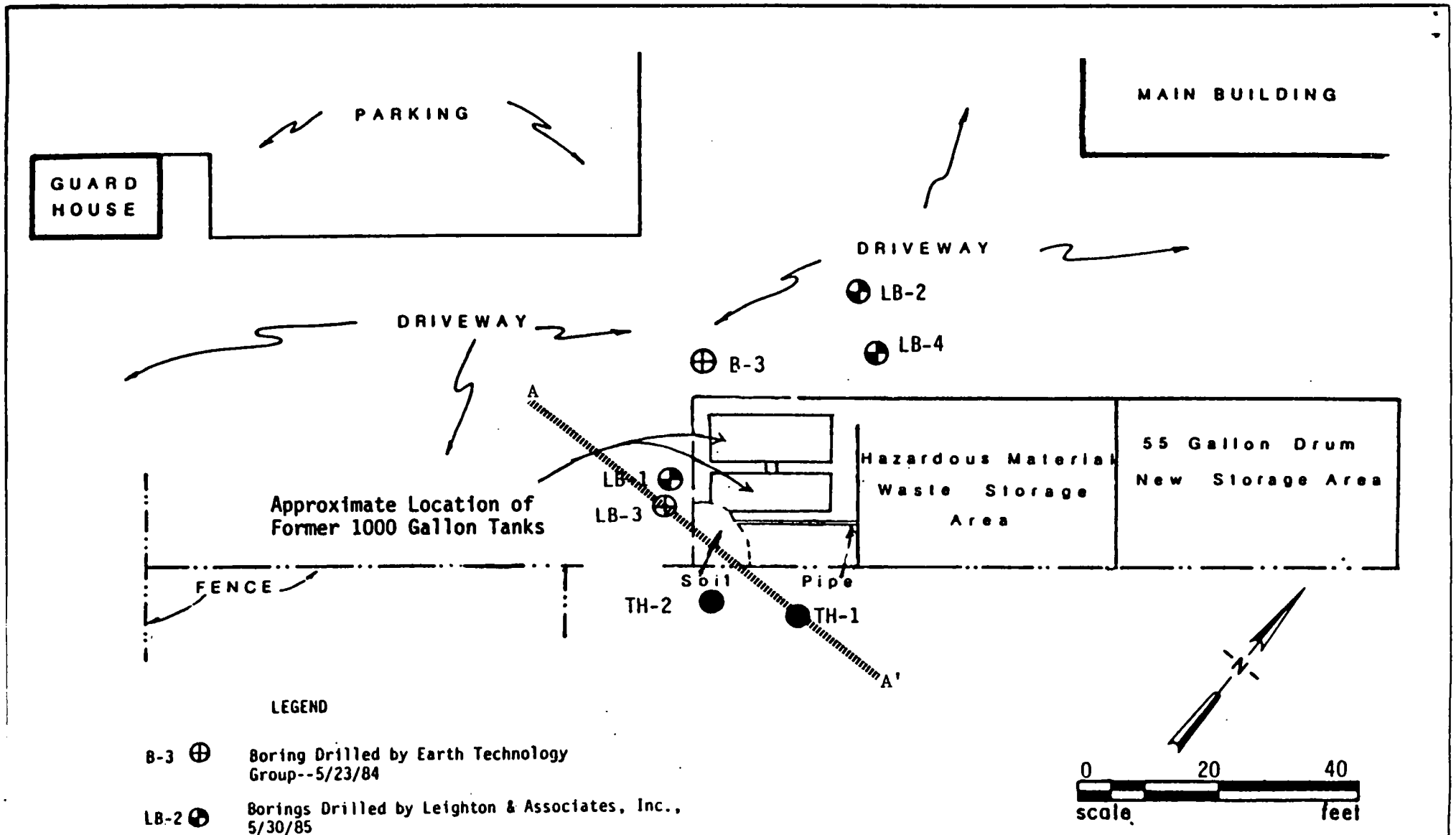
SS#1+2-11ft ● Sample Number and Depth of Below Grade. Samples Collected by Leighton and Associates, Inc. on 12/22/87

Privileged and Company Private Attorney Client Communication and Work Product

Trench Sample Location Map
HR TEXTRON

PACOIMA, CALIFORNIA

Project No. 40841189-05
Date 2/2/88
Plate 3



LEGEND

B-3 ⊕	Boring Drilled by Earth Technology Group--5/23/84
LB-2 ◕	Borings Drilled by Leighton & Associates, Inc., 5/30/85
TH-2 ●	Borings Drilled by Enviropro--5/29/86
LB-4 ◕	Borings Drilled by Leighton & Associates, Inc., 1/88

Privileged and Company Private Attorney Client Communication and Work Product

BORING LOCATION PLOT PLAN
HR TEXTRON
PACOIMA, CALIFORNIA

Project No. 40841189-05
Date 2/2/88
Plate 7

2166-04746

BUSINESS CONDUCT GUIDELINES

Guideline	Subject	Page
E-4	**Foreign Corrupt Practices Act**	51
E-5	**Safety and Health**	53
E-6	**Environmental Protection**	55
E-7	**Securities Transactions and Confidential Information**	57

Foreign Corrupt Practices Act

Each Textron employee shall be responsible for making certain that:

(1) None of the actions taken by him or any persons or entities for which he has responsibility violates any of the provisions of the Foreign Corrupt Practices Act, and

(2) The internal control and recordkeeping requirements of that Act are met by every Textron unit for which he has responsibility.

Safety and Health

Management at each Textron location shall provide safe and healthful working conditions for all employees at that location and shall establish practices and procedures to assure that work is conducted in such manner as to continue such conditions.

Environmental Protection

Sound and lawful environmental practices are the responsibility of each Textron employee. Due compliance with applicable national and local environmental regulations is required. Primary responsibility for protection of the environment, both inside and outside Textron facilities, rests with the Textron manager in charge of the facility.

Securities Transactions and Confidential Information

Textron directors, officers and employees (and members of their immediate families) shall not derive any personal gain or assist any third party to derive gain from the possession of material information which is not public.

350147

2166-04746

HR Textron Policy & Procedure Manual

SUBJECT: STANDARDS OF CONDUCT	POLICY	NUMBER: 55
		REVISION: ORIGINAL
APPROVED: [signature]	DATE: 9/4/87	PAGE 1 OF 5

HR Division conducts its business with honesty, integrity, and in accordance with the highest standards of personal and business ethics consistent with Textron Business Conduct Guidelines and in compliance with all applicable laws.

1.0 PURPOSE:

1.1 To outline HR Division's standards of conduct for its employees, agents, and representatives.

2.0 SCOPE:

2.1 HR Division

3.0 RESPONSIBILITY:

3.1 HR Senior Management

4.0 REFERENCES:

4.1 Defense Industry Initiatives on Business Ethics and Conduct
4.2 Textron Inc., Business Conduct Guidelines
4.3 Textron Inc., Draft Procedures for Voluntary Disclosure to the U.S. Government of Procurement Irregularities
4.4 Policy-Travel, Entertainment, and Business Conference Expenses
4.5 Procedure-Disciplinary Action for Non-Compliance With Established Labor Charging Practices
4.6 Procedure-Disciplinary Action for Non-Compliance With Textron Business Conduct Guideline B-4

5.0 DEFINITIONS:

5.1 None

6.0 PROVISIONS:

6.1 Conflict of Interest:

HR Division employees, agents, and representatives must avoid any business, activity, or other relationship that could lead to an actual or perceived conflict of interest. These activities must be reported to Company management, and terminated if determined by the Company to have any possibility of a Conflict of Interest.

350148

6.2 Citizenship:

HR Division employees are encouraged to actively participate in civic and political activities. Unless specifically designated, however, employees must act as private citizens and not as official Company representatives.

6.3 Payments, Contributions, Gifts, and Securities Transactions:

HR Division will fully comply with all laws relative to payments, gifts, financial security transactions, and contributions.

6.3.1 No payment, gift, or service of any kind will be given, directly or indirectly, to any civilian or military Government employee, agent, or entity or to any supplier for the purpose of receiving favored business treatment.

6.3.2 No payment, gift, or service of any kind will be accepted, directly or indirectly, by an HR Division employee, or member of an employee's immediate family, from customers, suppliers or anyone in a business relationship for the purpose of granting favored business treatment.

6.3.3 No HR Division employee will derive any personal gain, or assist another's personal gain, through financial securities transactions that make use of information obtained in the conduct of HR Division business and which is not available to the general public.

6.3.4 No contribution of HR Division funds, assets, services or anything else of value will be made, directly or indirectly, to any political party or to any person seeking public office.

6.4 Antitrust and Restrictive Trade:

HR Division will comply fully with all applicable antitrust laws and regulations and will not take any action, directly or indirectly, which furthers or supports restrictive trade practices.

6.5 Equal Employment, Safety, Health and Environment:

6.5.1 HR Division will take affirmative action to insure that equal employment and advancement opportunity is provided for all employees without regard to race, color, religion, sex or national origin.

6.5.2 HR Division will provide safe and healthful working conditions for all employees, and where necessary, furnish proper equipment to maintain personal safety.

6.5.3 HR Division will comply with applicable national and local environmental regulations and will maintain procedures for protection of the environment.

6.6 Invoicing/Overpayments and Expense Accounts:

6.6.1 HR Division invoices will be accurate with respect to sales price and conditions. Overpayments will not be solicited or accepted.

6.6.2 All employees' expenses reimbursed by HR Division will be reasonable, directly related to HR Division's business activities and accurately reported (See Policy-Travel, Entertainment, and Business Conference Expenses).

6.7 Compliance with Defense Industry Initiatives on Business Ethics and Conduct:

HR Division will comply with all provisions of the above referenced document (Reference 4.1).

6.8 Transactions with the U.S. Government:

HR Division recognizes that its contractual relationship with the U.S. Government imposes specific business conduct requirements upon its operations. HR Division will comply fully with all such requirements and with Textron Business Conduct Guideline B-4. The following requirements are considered of particular importance:

6.8.1 Compliance with the Truth in Negotiation Act and the Competition in Contracting Act.

6.8.2 The accurate and timely recording, allocation, and charging of costs, including those associated with labor charges.

6.8.3 The full disclosure of known deviations from contract requirements, including product substitution.

6.8.4 Avoiding the perception of any wrongdoing.

6.9 Voluntary Disclosure:

HR Division will voluntarily disclose to the Government any procurement irregularities deemed to be appropriate in accordance with Reference 4.3.

6.10 Relations with Agents, Representatives:

6.10.1 Agents and representatives of Textron shall be chosen carefully and shall be (1) required to sign a prescribed statement confirming their agreement to avoid improper payments, (2) compensated fairly and commensurate with the services rendered, and (3) reviewed not less than annually for continued compliance with Textron policy.

6.11 Violations and Penalties:

6.11.1 Employees knowing of any violation of this policy will report it to their Supervisor or other appropriate management authority, or may dial the Company Hot Line (805) 257-0801. The confidence of those reporting violations will be respected to the maximum extent possible.

6.11.2 Failure of any employee to comply with this policy may result in disciplinary action.

6.12 Audits:

The Internal Audit department will periodically conduct special audits for compliance with this policy.

6.13 Certification:

Every HR Division employee will be made aware of this policy and will be asked to annually certify to compliance with its provisions by signing an HR Division Report of Compliance form.

7.0 DISCUSSION:

7.1 None

8.0 DISTRIBUTION:

8.1 Standard

2166-04746

HR TEXTRON

14

STANDARD PRACTICE PROCEDURES FOR SAFEGUARDING CLASSIFIED INFORMATION

REVISION 8

Prepared by:

HUMAN RESOURCES SECURITY SECTION

Effective April 1, 1988

350149

CONTENTS

Section		Page
1.0	PURPOSE	1
2.0	SCOPE	1
3.0	REFERENCE	1
4.0	DEFINITIONS	1
4.1	Access, Accessibility	1
4.2	Alien	1
4.2.1	Immigrant Alien	1
4.2.2	Foreign National	1
4.3	Authorized Persons	1
4.4	Classified Contract	2
4.5	Classified Information	2
4.6	Closed Area	2
4.7	Compromise	2
4.8	Confidential	2
4.9	Document	2
4.10	Downgrade	2
4.11	Information	2
4.12	Restricted Data	2
4.13	SECRET	2
4.14	Special Access Program	3
4.15	Upgrade	3
5.0	GENERAL REQUIREMENTS	3
5.1	Security Supervisor	3
5.2	Time Resource Sharing	3
5.3	Security of Combinations	3
5.4	Standard Practice Procedure (SPP)	4
5.5	Special Access Programs	4
5.6	Defense Security Briefing	4
5.7	Disposition of Classified Material	5
5.8	Retention of Classified Material	5
5.9	Public Release	6
5.10	Relationships with Citizens or Residents of Communist Countries	6
5.11	Self Inspections	6

CONTENTS (Continued)

Section		Page
6.0	REPORTS	7
7.0	LOSS, COMPROMISE, OR SUSPECTED COMPROMISE OF CLASSIFIED INFORMATION	9
8.0	BADGES AND IDENTIFICATION CARDS	9
9.0	DoD SPONSORSHIP OF MEETINGS	9
10.0	HANDLING OF CLASSIFIED INFORMATION	10
10.1	Classification	10
11.0	MARKING OF CLASSIFIED INFORMATION	11
11.1	Designation	11
11.2	Paper Copies of Documents	11
11.2.1	Wholly Unclassified Material	11
11.2.2	Overall and Page Marking	11
11.2.3	Marking Components	12
11.2.4	Portion Marking	12
11.2.5	Subjects and Title of Documents	13
11.2.6	Electronically Transmitted Messages	14
11.2.7	File, Folder, or Group of Documents	14
11.2.8	Transmittal Documents	14
11.2.9	Classified Compliations	14
11.2.10	Translations	14
11.3	Marking Special Types of Material/Documents	14
11.3.1	Artwork	15
11.3.2	Charts, Maps, Drawings, and Tracings	15
11.3.3	Photographs, Films, and Recordings	15
11.3.4	Decks of Accounting Machine Punched Cards	16
11.3.5	Documents Produced by ADP Equipment	16
11.3.6	Working Papers	17
11.3.7	Miscellaneous Material	17
11.4	Additional Markings	17
11.4.1	RESTRICTED DATA Notation	18
11.4.2	FORMERLY RESTRICTED DATA Notation	18
11.4.3	Intelligence Sources and Methods Information	18
11.4.4	Dissemination and Reproduction Notice	19
11.5	Marking of Regarded Documents and Material	19
11.5.1	Upgraded Material	19

CONTENTS (Continued)

Section		Page
11.5.2	Downgraded or Declassified Material	19
11.6	Marking of Foreign Classified Material	20
11.7	Notations Concerning Downgrading and Declassifications	20
12.0	RECORD OF CLASSIFIED MATERIAL	20
12.1	Accountability Records	20
12.2	Receipt of Classified Material	21
13.0	TOP SECRET	21
14.0	STORAGE	21
15.0	ALTERNATE STORAGE LOCATIONS	22
16.0	SAFEGUARDS DURING USE	22
17.0	TRANSMISSION	23
18.0	REPRODUCTION	25
19.0	DESTRUCTION OF CLASSIFIED INFORMATION	25
20.0	SECURITY CLEARANCES	26
20.1	Personnel Security Questionnaire	26
20.2	SECRET Clearances	26
20.3	COMPANY CONFIDENTIAL Clearances	26
20.4	UPDATE of SECRET Clearances	26
20.5	Initial Security Briefings	26
21.0	FACILITY SECURITY CLEARANCES	27
22.0	PERSONNEL CLEARANCES REQUIRED IN CONNECTION WITH FACILITY CLEARANCES	27
23.0	SECURITY CLEARANCE OF NEGOTIATORS	27
23.1	Negotiator	27
24.0	SECURITY CLEARANCE OF ADDITIONAL PERSONNEL	28
25.0	PREEMPLOYMENT CLEARANCE APPLICATION	28

CONTENTS (Continued)

Section		Page
26.0	APPLICATION FOR PERSONNEL SECURITY CLEARANCE	28
26.1	New Clearances	28
27.0	CONTRACTOR'S CLEARANCE RECORD	29
28.0	ADMINISTRATIVE TERMINATION OF PERSONNEL SECURITY CLEARANCES	29
29.0	CLASSIFIED VISITOR CONTROL	30
30.0	IDENTIFICATION AND CONTROL OF VISITORS	31
31.0	VISITOR RECORD	31
32.0	LONG TERM VISITORS	31
33.0	NATO VISIT PROCEDURES	31
34.0	EMERGENCY PROCEDURES	31
35.0	SUBCONTRACTORS	36
List of Communist Countries		37
Basic Security Rules		38
Appendix 1	MARKINGS OF CLASSIFIED INFORMATION - EXAMPLE	39

1.0 PURPOSE:

1.1 To establish a procedure for safeguarding classified information at HR Textron.

2.0 SCOPE:

2.1 This procedure applies to all HR Textron employees who have or may have access to classified Department of Defense (DoD) information.

2.2 Scope is company wide.

3.0 REFERENCE:

3.1 Department of Defense Industrial Security Manual (ISM).

4.0 DEFINITIONS:

4.1 Access, Accessibility. The ability and opportunity to obtain knowledge of classified information. An individual, in fact, may have access to classified information by being in a place where such information is kept, if the security measures which are in force do not prevent him from gaining knowledge of the classified information.

4.2 Alien. Any person not a citizen or national[1] of the United States.

4.2.1 Immigrant Alien. Any person lawfully admitted in the United States under an immigration visa for permanent residence. An immigrant alien may not have access to NATO information.

4.2.2 Foreign National. All persons not citizens of, not nationals of, nor immigrant aliens to, the United States.

4.3 Authorized Persons. Those persons who have a need-to-know for the classified information involved and have been cleared for the receipt of such information. Responsibility for determining whether a person's duties require that he possess, or have access to, any classified information and whether he is authorized to receive it, rests upon the individual who has possession, knowledge, or control of the information, and not upon the prospective recipient.

[1] National: A citizen of the U.S., or a person who, though not a citizen of the U.S., owes permanent allegiance to the U.S.

4.4 Classified Contract. Any contract that requires or will require access to classified information by the contractor or his employees in the performance of the contract. (A contract may be a classified contract even though the contract document is not classified.)

4.5 Classified Information. Official information which has been determined to require, in the interests of national security, protection against unauthorized disclosure, and which has been so designated.

4.6 Closed Area. A controlled area established to safeguard classified material, which, because of its size or nature, cannot be adequately protected by the safeguards prescribed in Paragraph 14 of the ISM.

4.7 Compromise. The known or suspected exposure of classified information or material to an unauthorized person.

4.8 Confidential. Confidential refers to that national security information or material, the unauthorized disclosure of which could reasonably be expected to cause damage to the national security.

4.9 Document. Any recorded information, regardless of its physical form or characteristics, exclusive of machinery, apparatus, equipment or other items of material. The term includes, but is not limited to the following: all written material, whether handwritten, printed or typed; all photographs, negatives, exposed or printed films, and still or motion pictures; all data processing cards or tapes; maps, charts, paintings; drawings; engravings; sketches; working notes and papers; and all reproduction of the foregoing by whatever process reproduced; and sound, voice or electronic recordings in any forms.

4.10 Downgrade. To assign a lower security classification to an item of classified material.

4.11 Information. Knowledge which can be communicated by any means.

4.12 Restricted Data. All data (information) concerning (i) design, manufacture or utilization of atomic weapons; (ii) the production of special nuclear material; or (iii) the use of special nuclear material in the production of energy, but not to include data declassified or removed from the RESTRICTED DATA Category pursuant to Section 142 of the Atomic Energy Act (see Section 11y, Atomic Energy Act of 1954, as amended, and FORMERLY RESTRICTED DATA.)

4.13 SECRET. SECRET refers to that national security information or material, the unauthorized disclosure of which could reasonably be expected to cause serious damage to the national security.

4.14 Special Access Program. Any program imposing "need-to-know" or access controls beyond those normally provided for access to CONFIDENTIAL, or SECRET information. Such program includes, but is not limited to, special clearance, adjudication, or investigative requirements, material dissemination restrictions or special lists of persons determined to have a "need-to-know".

4.15 Upgrade. To determine that certain classified information requires, in the interests of national security, a higher degree of protection against unauthorized disclosure than currently provided, coupled with a changing of the classification designation to reflect the higher category.

5.0 GENERAL REQUIREMENTS

5.1 Security Supervisor. HR Textron Inc. shall appoint the Chief Security Officer, who is a U.S. citizen, who is required to be cleared as part of the facility security clearance, to supervise and direct security measures necessary for the proper application of Government furnished guidance or specifications for classification, downgrading, upgrading, and for safeguarding classified information.

The FSO, and those otherwise performing security duties, shall complete security training as deemed appropriate by the CSO. Training for the FSO will be based on the facility's involvement in the DISP, and as a minimum will consist of the following:

Satisfactory completion of the EISM correspondence course within 6 months of obtaining an FCL or assuming security responsibilities and, attendance at an Industrial Security Management Course conducted by the DoDSI within 12 months of acquiring safeguarding capability. Extensions to the 12 month requirement may be granted by the CSO when the Management Course is not available.

5.2 Time Resource Sharing. Under no circumstance shall EDP systems in-house or in a time-shared mode be used for the processing of classified information.

5.3 Security of Combinations. The Chief Security Officer shall ensure that the combinations to safes, containers, and three-position, dial-type changeable combination padlocks used to lock containers holding classified material are classified in accordance with the classification of the highest classified material stored in the containers. The combinations shall be changed at intervals of at least once every year (if NATO classified material is stored, the combination shall be changed every six months) and at the earliest practicable time following:

5.3.1 The reassignment, transfer or discharge of any person having knowledge of the combination, or when the security clearance granted to any such person is downgraded to a level lower than the category of material stored, or is suspended or revoked by proper authority.

5.3.2 The compromise or suspected compromise of the safes and containers or their combinations, or discovery of the container being left unlocked and unattended.

5.4 Standard Practice Procedure (SPP). The SPP may be revised at any time after promulgation of a revision to the ISM. However, the SPP shall be revised, as necessary, to implement the revisions applicable to HR operation within four months after a revision has been incorporated in the ISM.

5.5 Special Access Programs. HR will implement Special Access Program requirements when such requirements are included in a DD Form 254 or other appropriate contract-related document.

5.6 Defensive Security Briefing

5.6.1 All cleared employees, Type A consultants, and temporary help supplier personnel shall inform the Chief Security Officer of their intended travel to or through a Communist country, attendance at an international scientific, technical, engineering or other professional meeting, regardless of geographic location when it can be anticipated that representatives of Communist countries will participate or be in attendance, or if plans to host an unclassified visit by representatives of Communist countries at a facility engaged in classified work or research.

5.6.2 A report is sent to DISCO after completion of foreign travel or meeting. Employees who frequently travel, attend meetings or host visitors as described above, are not briefed on each such occasion provided the individual has been thoroughly briefed at least once within the preceding six (6) months and reminded of his security responsibilities. Prior to departure of personnel for travel to or through a Communist country, or to attend a meeting outside the U.S., all classified information in their custody shall be recovered and accounted for.

5.6.3 After the completion of the briefing, the individual will be asked to sign a statement identifying who furnished the briefing and attesting that he understands his responsibility for safeguarding classified information. The statement shall be retained for at least two (2) years where access has been to SECRET or CONFIDENTIAL information.

5.6.4 In the case of temporary help supplier personnel, the statement shall be forwarded to the temporary help supplier for retention.

5.6.5 Upon completion of the employee's foreign travel, the Chief Security Officer shall submit a report to DISCO which shall contain the employee's full name,

clearance status, date and place of birth, a brief description of the projects, including the category of classified information to which he had access during the past two years, the countries visited or the meeting attended, the dates of the travel and the employee's statement of the purpose and objective of the travel. In addition, the report shall include, if appropriate, a narrative statement of the circumstances surrounding all hostile intelligence efforts to obtain information from or to compromise the travel, or of any endeavor by any unfriendly interest to establish a continuing relationship with the employee.

5.6.6 If a cleared employee or a cleared immigrant alien has been assigned or takes residence outside the U.S. (including Puerto Rico, Guam, or the Virgin Islands) for a period in excess of 90 consecutive days during any 12-month period, he/she shall have their clearance terminated with DISCO without prejudice.

5.6.7 All cleared employees shall, on a recurring basis, be advised of their continuing responsibility to safeguard classified information. This periodic briefing shall include specific instruction pertaining the the employee assignment if necessary, and any specific briefing matters reviewed from the CSO.

5.7 Disposition of Classified Material. All classified documents furnished by a User Agency, including reproductions, and all classified material developed in connection with a contract, program or proposal must be returned to that agency unless specific authorization for destruction has been received or specific authorization for retention has been received.

5.7.1 Such material shall be returned or surrendered in accordance with the following schedule:

(1) If a bid, proposal, or quote is not submitted or is withdrawn: Prior to the time set for opening bids, proposals or quotes.

(2) If a bid, proposal, or quote is not accepted. Within ninety (90) days after notification that a bid or proposal has not been accepted. If further retention is necessary, a request must be made to the agency.

(3) If a successful bidder. Upon final delivery of goods or services, or upon complete termination of the contract, unless otherwise prescribed in the contract or directed by the contracting officer.

5.8 Retention of Classified Material. If it is necessary to retain classified material submitted for bid, proposal or quote, request for retention must be directed to the contracting officer and written approval received. Classified material will only be retained:

(1) When it is necessary for the maintenance of HR's essential records; or

(2) When classified information is also patentable or is proprietary data in which HR has title; or

(3) When the material will assist HR and will benefit the Government in the performance of other User Agency contracts.

5.8.1 HR may retain classified material in special cases when a bid, proposal or quote is not accepted or upon completion or termination of the contract, provided a special request is made to the contracting officer with justification for retention and such retention is agreed to by the contracting officer.

5.8.2 Unless otherwise indicated on the material, retention for up to one year from date of receipt of classified material which does not relate to a classified contract.

5.9 Public Release. No HR employee shall release, publish, distribute or permit to be published or distributed, brochures, promotional sales literature, or similar type material containing classified information or pertaining to classified contracts or projects without prior review by the Chief Security Officer or the Security Manager.

5.10 Relationships with Citizens or Residents of Communist Countries. Employees who are cleared, or in the process of being cleared, who acquire relationships with citizens or residents of communist countries must inform the Security Supervisor immediately. A report shall then be submitted to DISCO in the following instances:

(1) When a member of the immediate family of the employee or the employee's spouse takes up residence in a communist country;

(2) When, through marriage, the employee acquires relatives who are citizens or residents of a communist country;

(3) When the employee becomes a representative of a foreign interest or if his status as representatative of a foreign interest changes in a manner that would make him ineligible for a personal security clearance.

5.11 Self Inspections. HR shall conduct its own self-inspection program for the purpose of evaluating all security procedures applicable to the Company.

5.11.1 The Chief Security Officer/designated alternate shall review the security system on a continuing basis and shall also schedule a formal self-inspection at reasonable intervals.

5.11.2 Self-inspection shall consist of an audit of all HR operations with regard to this Standard Practice and Procedure (SPP) and the ISM.

5.11.3 Deficiencies identified shall be corrected as expeditiously as possible.

5.11.4 A record of the dates when the self-inspections were done shall be maintained. This record will be available for review during the next regularly scheduled inspection by the cognizant security office.

6.0 REPORTS:

6.1 The Chief Security Officer shall submit immediately in writing to the cognizant office when the following occurs:

(1) When any information comes to his attention concerning existing or threatened espionage, sabotage, or subversive activities;

(2) When any loss, compromise (including deliberate compromise) or suspected compromise of classified information;

(3) Adverse Information. Contractors shall submit reports, classified, if appropriate, of any information coming to their attention concerning any of the employees who have been cleared or who are in the process of being cleared for access to classified information, which indicate that such access or determination may not be clearly consistent with the national interest. The subsequent discharge of an individual by the contractor who receives this information does not obviate the requirement to submit this report. In addition, if the individual is employed on a UA installation, a copy of such report shall be furnished to the Commander or Head of the UA clearance by the contractor, in accordance with paragraph 24b, and is not in process for a U.S. Government granted PCL, the PCL forms specified in paragraph 26c shall accompany the report of adverse information. This requirement to submit information reports also applies to cleared temporary help supplier personnel or Type A Consultants utilized by the contractor. This requirement in no way affects the temporary help supplier's responsibility for submission of such reports when adverse information regarding his or her employee is brought to his or her attention.

(a) Supervisory and Managerial Responsibility for Reporting Adverse Information. Supervisory and managerial personnel shall be reminded of their responsibilities for advising the FSO of the existence of any information coming to their attention concerning any employee who has been cleared or is in the process of being cleared for access to classified information, when information indicates that such access may be questionable or not in the interest of national security.

(4) Changed conditions such as:

(a) Change of ownership or stock that affect control of the company.

(b) A change of address or name.

(c) Any change in officers, directors, executive personnel. The report must indicate the full clearance (level of clearance, date of clearance, date and place of birth, social security number, citizenship, and whether they have been excluded from access in accordance with 22c).

(d) Any change affecting the information previously submitted on DD Form 441S, "Certificate Pertaining to Foreign Interests."

(e) A change in Storage Capability.

(5) When an employee refuses to execute DISCO Form 482.

(6) When there is evidence of tampering with a shipment of classified materials; or such shipment is other than an approved method.

(7) When a new or revised employee badge or identification system is adopted.

(8) When the whereabouts or disposition of classified material previously terminated from accountability is subsequently determined.

(9) When, because of an emergency situation, the contractor is incapable of safeguarding classified information. Appropriate local, state and federal authorities shall be notified as the situation warrants.

(10) When classified material is received which is not related to a contract, or, if security guidance is not provided.

(11) When adverse information is received on a cleared employee, or there is a change in an employee's status.

(12) When requested by competent authority.

7.0 LOSS, COMPROMISE, OR SUSPECTED COMPROMISE OF CLASSIFIED INFORMATION:

7.1 Classified material which is out of the control of its custodian or which cannot be located shall be presumed to be lost until an investigation determines otherwise and shall be reported immediately to the Chief Security Officer or the designated alternate.

7.2 Any employee discovering the loss, compromise, or suspected compromise of classified information outside a facility shall promptly report such fact to the Chief Security Officer or designated alternate. They will contact the nearest office of the FBI and furnish sufficient information to assist in identification of the information. If the loss, compromise or suspected compromise occurs outside the U.S., the nearest U.S. authorities shall be notified in lieu of the FBI.

8.0 BADGES AND IDENTIFICATION CARDS:

8.1 HR will not code their ID badges or issue identification cards that will indicate the level of security clearance or access to Closed or Restricted Areas. If an employee who has a clearance wishes access to classified information, the employee shall contact the Security Manager who will verify the employee's security clearance level, and "need-to-know".

8.2 Visitor badges shall not be used to indicate the visitor's security clearance status.

9.0 DoD SPONSORSHIP OF MEETINGS:

9.1 Classified information shall not be disclosed at a conference, seminar, symposium, exhibit, convention or other gathering except when:

(1) At a meeting in the prime or subcontractor's facility on a specific contract and attended only by authorized persons who have a need-to-know. The meeting site must be established to be physically secure, that the classified notes, minutes and summaries resulting from the meeting are properly safeguarded and that the attendees are given sufficient classified guidance during the oral presentations; or

(2) At a meeting conducted by a DoD activity, however, the information to be disclosed is under the jurisdiction of another government agency; or when the meeting is to be attended by representatives outside the DoD, HR requests written approval from the contracting officer prior to the disclosure.

9.2 In the event HR desires to conduct a meeting requiring DoD sponsorship, a request must be submitted to the DoD activity having principal interest in the subject matter. Only one activity may sponsor a meeting on behalf of the DoD.

9.2.1 No invitation, written or oral, shall be given to a foreign national or to a representative of a foreign interest to attend any session of a meeting sponsored by a DoD activity until approval has been received from the sponsoring activity.

10.0 HANDLING OF CLASSIFIED INFORMATION:

10.1 Classification. The security classification to be applied to information involved in HR contracts and programs will be supplied by the contracting officer, or his designated representative at HR.

10.1.1 The DD Form 254 (Contract Security Classification Specification) provides classification specifications and is the basic document for conveying the security requirements for a classified contract or RFP.

10.1.2 A Revised DD Form 254 is issued at any time a change or additional classification guidance is found necessary.

10.2 The application of a security classification to information developed by HR shall be based on (i) classification guidance furnished by the contracting officer or (ii) HR's knowledge that such information is in substance the same as, or would reveal, other information known to be currently classified.

10.2.1 In cases involving the copying or extracting of classified information from another document, or reproduction or translation of a whole classified document, the individual responsible for such extracting, copying, etc., marks the new document or copy with the same classification as the original document.

10.2.2 The manager or supervisor in charge where such information is being produced or assembled shall notify the Chief Security Officer.

10.3 Whenever HR develops an unsolicited proposal or originates information not in the performance of a contract or program, the information in the proposal or other material which has already been identified as being classified shall be marked with the appropriate classification.

10.3.1 If the proposal or other material contains information which should be safeguarded, the information is to be protected as though classified at the appropriate level until guidance is received from the agency which has an interest in the subject.

10.3.2 The following protective marking shall be used:

Classification determination pending.
Protect as though classified.

(CONFIDENTIAL OR SECRET)

10.3.3 This marking shall appear conspicuously at least once on the material.

11.0 MARKING OF CLASSIFIED INFORMATION

11.1 Designation of physical marking, notation, or other means serves to inform and to warn the holder of the classification designation of the information which requires protection in the interest of national security. The degree of protection against unauthorized disclosure which will be required for a particular level of classification is directly commensurate with the marking designation which is assigned to the material. Such marking designations also facilitate the accomplishment of downgrading and declassification actions.

11.2 Paper Copies of Documents. Each document shall in addition to other marking required, show on its face its overall classification and when it will be declassified, downgraded or will be reviewed for declassification. It shall also show the name and address of the facility responsible for its preparation as well as the date of preparation. The document shall be plainly and conspicuously marked or stamped (not typed) with the appropriate classification "TOP SECRET", "SECRET" or "CONFIDENTIAL." This marking shall be at the top and bottom of the page. Other material shall, whenever practical, show the foregoing information on the material itself or in related or accompanying documentation.

11.2.1 Wholly Unclassified Material. Normally, unclassified material need not be marked or stamped "Unclassified" unless it is essential to convey to a recipient of such material that it has been examined specifically with a view to imposing a security classification and has been determined not to require classification.

11.2.2 Overall and Page Marking. Except as otherwise specified for working papers, the overall classification of a document, whether or not permanently bound, or any copy or reproduction thereof, shall be conspicuously marked or stamped at the top and bottom on the outside of the front cover (if any), on the title page (if any), on the first page, and on the outside of the back cover (if any). Interior pages shall be conspicuously marked or stamped at the top and bottom with the highest classification of the information appearing thereon, including the designation.

UNCLASSIFIED. Alternatively, the overall classification of the document may be conspicuously marked at the top and bottom of each interior page when necessary to achieve production efficiency and the particular information to which classification is assigned is adequately identified in accordance with Paragraph 11.2.4. In any case, the classification marking of a page shall not supersede a lower level of classification indicated by a portion marking applicable to information on that page.

11.2.3 Marking Components. The major components of complex documents are likely to be used separately. In such instances, each major component shall be marked as a separate document utilizing the classification marking requirements. Examples include (i) each annex, appendix or similar component of a plan, program or a project description; (ii) attachments and appendices to a letter and, (iii) each major part of a report.

11.2.4 Portion Marking. Each portion, section, part, paragraph, subparagraph or similar portions of a classified document shall be marked to show the level of classification, or that such portion, section, part, paragraph or subparagraph is unclassified. Portions of a document shall be marked in a manner that eliminates doubt as to which of its portions contains or reveals classified information. Classification levels of portions of a document shall be shown by the appropriate classification symbol placed immediately following the portion letter or number, or in the absence of letters or numbers, immediately before the beginning of the portion. In marking portions, sections, parts, paragraphs, or subparagraphs, the parenthetical symbols "(TS)" for TOP SECRET, "(S)" for SECRET, "(C)" for CONFIDENTIAL and "(U)" for UNCLASSIFIED, shall be used. When appropriate, the symbols "RD" for RESTRICTED DATA and "FRD" for FORMERLY RESTRICTED DATA shall be added, e.g., "(S-RD)" or "(C-FRD)." In addition, portions that contain Critical Nuclear Weapon Design Information (CNWDI) will be marked "(N)" following the classification, e.g., "(TS-RD) (N)."

(a) Except for those cases where a source of intelligence would be revealed, portions, sections, parts, paragraphs or subparagraphs of U.S. Documents containing foreign government information shall be marked to reflect the country or international organization of governments of origin as well as the appropriate classification, e.g., "(NATO-S)" or "(U.K.-C)." Where a User Agency determines that a source of intelligence would be revealed, the classification specifications and source documents furnished to contractors will not bear this information, and in those cases contractors will not identify the foreign governments in classified material that is generated. Many foreign governments and international pact organizations, such as NATO, use a fourth security designation identified as "RESTRICTED" to denote a foreign requirement for security protection of a lesser degree than

CONFIDENTIAL. Foreign RESTRICTED material shall be marked "RESTRICTED" together with the identification of the country of origin and protected in all respects in the same manner as U.S. CONFIDENTIAL except that foreign RESTRICTED material may be stored in locked filing cabinets, desks, or other similar closed spaces which prevent access by unauthorized persons.

(b) Each portion, section, part, paragraph, subparagraph or similar portion of a classified document shall be marked to show the highest level of classified information contained or revealed by it. For example, when an introductory or lead-in portion is unclassified and subordinate portions are classified, the proper method of marking will be:

(A.) (U) This introductory paragraph contains no classified information.

(1.) (S) This paragraph contains SECRET information.

(a.) (TS) This paragraph contains TOP SECRET information.

(c) Illustrations, photographs, figures, graphs, drawings, charts, and similar portions of classified documents shall be clearly marked to show their classified or unclassified status. Such markings shall not be abbreviated and shall be prominent and placed within or contiguous to the portion. Captions or such portions shall be marked on the basis of their content alone by placing the symbol "(TS)," "(S)", "(C)" or "(U)" immediately preceding the caption.

(d) If in an exceptional situation, parenthetical portion marking is determined to be impractical, the classified document shall contain a description sufficient to identify the exact information that is classified and the classification level(s) assigned to it. For example, each portion of a document need not be separately marked if all portions are classified at the same level provided a full explanation is included in the document.

(e) When elements of information in one portion or paragraph require different classification but segregation into separate portions of paragraphs would destroy continuity or context, the highest classification required for any item shall be applied to that portion or paragraph.

11.2.5 Subjects and Title of Documents. Subjects and title of documents shall be selected, if possible, so as not to require classification. A classified subject or title shall be marked with the appropriate symbol, (TS), (S), (C), or (U) placed immediately following and to the right of the item. When applicable, other appropriate symbols, e.g., "(RD)", "(FRD)" and "(N)" shall be added.

11.2.6 Electronically transmitted messages (i.e., those transmitted via authorized cryptographic systems) shall be marked in the same manner as other classified documents. In addition, the first item of information in the text shall be the overall classification of the message; the last line or paragraph shall show the date for declassification or review for declassification, downgrading, if applicable, and the "classified by" line information. Portion marking shall be applied in the manner as required for other paper documents. When messages are printed by an automated system, all markings may be applied by that system provided that the classification markings are clearly distinguished from the printed text.

11.2.7 File, Folder, or Group of Documents. Files, folders, binders, envelopes, etc., containing classified documents when not in secure storage shall be marked conspicuously according to the highest classification of any classified document included therein. Classified document cover sheets may be used for this purpose.

11.2.8 Transmittal Documents. A transmittal document, including endorsements and comments when such are added to the basic communication, shall carry on its face a prominent notation as to the highest classification of information transmitted by it and a legend showing the classification, if any, of the transmittal document, endorsement, or comment standing alone. For example, an unclassified document that transmits as an attachment a classified document shall bear a notation substantially as follows: "Unclassified when Separated from Classified Brochures."

11.2.9 Classified compilations. Where the use of a classification higher than that which applies to any of its components is required by the specific provision of the DD Form 254, or other User Agency direction, to protect a compilation of information, the overall classification shall be placed on the document in the manner prescribed by this paragraph. Where the individual parts of a compilation are unclassified but their total content or their association is classified, the document shall be marked with the proper classification. The reason for classifying the compilation shall be stated at an appropriate location at or near the beginning of the document.

11.2.10 Translations. Translations of U.S. classified information into a language other than English shall be marked to show the U.S. as the country of origin and with the appropriate U.S. classification designation and markings and the foreign language equivalent thereof.

11.3 Marking Special Types of Material/Documents. Security classification and declassification instructions assigned by the classifier shall be conspicuously stamped, printed, written, painted, or affixed by means of a tag, sticker, decal or similar device, on

classified material other than paper copies of documents, and on containers of such material, if possible. If marking the material or container is not practicable, written notification of the security classification and declassification instructions shall be furnished to recipients. The following procedures for marking various kinds of material containing classified information are not all inclusive and may be varied to accommodate the physical characteristics of the material containing the classified information and with organizational and operational requirements.

11.3.1 Artwork. Original artwork shall have the security classification stamped or marked conspicuously in top and bottom margins of the mounting board and on all overlays and cover sheets.

11.3.2 Charts, Maps, Drawings, and Tracings. The appropriate classification markings shall be placed under the legend, title block or scale, in such a manner as to differentiate between the overall classification assigned to the document and any classification assigned to the legend or title itself. The higher of those markings shall be inscribed at the top and bottom of each document. When the customary method of folding or rolling charts, maps or drawings would cover the classification markings, additional classification markings shall be placed so as to be clearly visible when the document is folded or rolled.

11.3.3 Photographs, Films, and Recordings. Photographs, films (including negatives), recordings, and their containers shall be marked in such a manner as to assure that a recipient or viewer will know that classified information of a specified level of classification is involved.

(a) Photographs. Negatives and positives shall be marked, whenever practicable, with the appropriate classification designation. Roll negatives or positives may be so marked at the beginning and end of each strip. Negatives and positives shall be kept in containers bearing conspicuous classification markings. When self-processing film or paper is used to photograph or reproduce classified information, all parts of the last exposure shall be removed from the camera and destroyed as classified waste, or the camera shall be protected as classified. All prints and reproductions shall be conspicuously marked with the appropriate classification designation and downgrading (if applicable) and declassification instructions on the face side of the print if possible. Where such markings cannot be applied to the face side, they may be stamped on the reverse side or affixed by pressure tape label, stapled strip or other comparable means.

(b) Transparencies and Slides. Applicable classification markings shall be shown clearly on the image of each transparency or slide, if possible, or on its border, holder, or frame. Other applicable markings shall always be shown on the border, holder, or frame.

(c) Motion Picture Films. Classified motion picture films and video tapes shall be marked at the beginning and end of each reel by titles bearing the appropriate classification. Such markings shall be visible when projected. Reels shall be kept in containers bearing conspicuous classification, declassification and, if applicable, downgrading markings.

(d) Recordings. Magnetic, electronic, or sound recordings shall contain at the beginning and end a clear statement of the assigned classification which will provide adequate assurance that any listener or receiver will know that classified information of a specified level is involved. Recordings shall be kept in containers or on reels that bear conspicuous classification, declassification and, if applicable, downgrading markings.

(e) Microforms. Microforms are copies usually produced photographically on transparent or opaque materials in sizes too small to be read by the unaided eye. Accordingly, the assigned security classification and abbreviated downgrading (if applicable) and declassification instructions shall be conspicuously marked on the microform medium or its container, so as to be readable by the unaided eye. These markings shall also be included on the image so that when the image is enlarged and displayed or printed, the security markings will be conspicuous and readable. Further marking and handling shall be as appropriate for the particular microform involved. For example, roll film microforms (or roll microform employing 16, 25, 70 or 105 mm films) may generally be handled as provided for roll motion picture film and decks of "aperture cards" may be handled as decks of accounting machine punched cards. Whenever possible, microfiche, microfilm strips and microform chips shall be handled in accordance with this paragraph.

11.3.4 Decks of Accounting Machine Punched Cards. A deck of classified accounting machine punched cards may be considered as a single document. Only the first and last card require classification markings. A deck so marked shall be stored, transmitted, destroyed and otherwise handled in the manner prescribed for other classified documents of the same classification. An additional card shall be added (or the job control card modified), to identify the contents of the deck (at a minimum, the number of cards) and the highest classification therein. Alternatively, a manual log for decks undergoing frequent changes may be employed. Cards removed for separate processing or use, and not immediately returned to the deck, shall be protected to prevent compromise of any classified information contained therein. And for this purpose shall be marked individually with all the required markings as is the case with any other individual ordinary document.

11.3.5 Documents Produced by ADP Equipment. At a minimum, the first page and the front and back covers, if any, of documents produced by ADP equipment shall be marked as prescribed in Paragraph 11.2.2. Classification markings of interior

pages may be applied by the ADP equipment or by other means. When the application of declassification instructions and other markings prescribed in Paragraph 11.5 by the ADP equipment is not consistent with economic and efficient use of such instructions and markings may be applied to a document produced by ADP equipment by superimposing upon the first page of such document a "Notice of Declassification Instructions and Other Associated Markings." Such notice shall include the date or event for declassification or review for declassification and all other such applicable markings. If individual pages of a document produced by ADP equipment are removed and reproduced for distribution to other users, each such page or group of pages shall be marked as prescribed in Paragraph 11.2.3 or by superimposing on each such page or group of pages a copy of any "Notice of Declassification Instructions and Other Associated Markings" applicable to such page or group of pages.

11.3.6 Working Papers. Working papers, such as notes, drafts, drawings, etc., accumulated to assist in the formulation and preparation of a finished document, shall be marked with both the initial and the additional markings prescribed herein in the same manner as other documents, except the additional markings required by Paragraph 11.4.4, below, need not be affixed to working papers until the material is entered into the control station accountability records in accordance with Paragraph 12, is made part of a permanent record or is dispatched outside the facility. Until then, there is no requirement to complete the CLASSIFIED BY line appearing with the RESTRICTED DATA and FORMERLY RESTRICTED DATA notations cited in Paragraph 11.4.1 and 11.4.2, below.

11.3.7 Miscellaneous Material. Material such as rejects, typewriter ribbons, carbons, and similar items, developed in connection with the handling, processing, production, and utilization of classified information shall be handled in a manner which assures adequate protection of the classified information involved and destruction at the earliest practicable moment. Unless a requirement exists to retain this type of material for a specific purpose, there is no need to mark, stamp, or otherwise indicate that the recorded information is classified.

11.4 Additional Markings. In addition to the required classification markings, all classified material shall be marked, as applicable, with one or more of the notations prescribed below. The appropriate notation shall be printed, stamped, typed, or otherwise affixed conspicuously at least once on all classified material possessed, prepared or reproduced by the contractor. In addition, when a copy extract, or paraphrase of a document contains classified information or when a page, chapter or other component is separated from a document, the extract or component shall also be marked conspicuously at least once with the appropriate notation. In the case of documents, these warning notices shall be conspicuously marked on the outside of the front cover (if any) or the first page

if there is no front cover. When display of warning notices on other materials is not feasible, the warnings shall be included in the written notification of the assigned classification.

11.4.1 RESTRICTED DATA Notation. The following notation shall be affixed on all material which contains RESTRICTED DATA:

RESTRICTED DATA

This material contains RESTRICTED DATA
as defined in the Atomic Energy Act of 1954.
Unauthorized disclosure subject to administrative
and criminal sanctions.

Classified by: _____

11.4.2 FORMERLY RESTRICTED DATA Notation. Except when the RESTRICTED DATA notice is used, all material containing information in the FORMERLY RESTRICTED DATA category, shall be marked with the following notation:

FORMERLY RESTRICTED DATA

Unauthorized disclosure subject to administrative
and criminal sanctions. Handle as RESTRICTED DATA
in foreign dissemination.
Section 144b, Atomic Energy Act 1954.

Classified by: _____

11.4.3 Intelligence Sources and Methods Information. Classified information or material involving intelligence sources and methods and subject to specific dissemination controls shall be marked with the following notice. When appropriate, the warning notice will be used in addition to, and in conjunction with, the marking prescribed in Paragraphs 11.4.1 and 11.4.2 above.

WARNING NOTICE

INTELLIGENCE

SOURCES AND METHODS

INVOLVED

11.4.4 Dissemination and Reproduction Notice. From time to time, certain User Agencies may promulgate certain classified information which the government agency originating the material has determined should be subject to special dissemination and reproduction limitations. A statement substantially as follows will be included on the front cover of the document:

REPRODUCTION REQUIRES APPROVAL OF
HIGHER GOVERNMENT AUTHORITY. FURTHER
DISSEMINATION ONLY AS AUTHORIZED BY
CONTRACTING OFFICER.

Reproduction of all portions of the information contained in such documents is absolutely prohibited without the permission of the originating office or higher Government authority. Also further dissemination within the receiving contractor facility is restricted to persons authorized by the addressee. Dissemination outside the facility is prohibited without the permission of the contracting officer.

11.5 Marking of Regraded Documents and Material. Whenever classified information is downgraded, declassified, or upgraded, the material shall be promptly and conspicuously marked to indicate the change, the authority for the action, the date of the action, the identity of the person or activity taking the action, and his operating entity, as provided in this paragraph. The contractor shall request necessary clarification of a notice to regrade classified material from the contracting officer or prime contractor.

11.5.1 Upgraded Material. In every case, when material is upgraded, all the superseded classification markings shall be immediately canceled and the new markings entered, in accordance with the notice to upgrade the material.

11.5.2 Downgraded or Declassified Material

(a) When material is downgraded or declassified, the notations prescribed herein constitute authority for the downgrading or declassification action. All old classification markings shall be canceled and new markings substituted, whenever practicable. In the case of documents, as a minimum, the outside of the front cover, if any, the title page, the first page, the outside of the back cover, if any, must reflect the new marking. Prints of motion picture film shall show regrading action on leaders attached between the plain leader and the first title frame. Material, such as negatives, standing type, proofs, etc., will have a statement showing the regrading attached thereto in a manner which will not alter the reuse of the material. The

containers or holders for negatives, film, microfiche, etc., shall reflect the new markings, and any hard copy produced from such materials shall also reflect the new markings. See Appendix I.

(b) When the volume of material is such that prompt remarking of each classified item cannot be accomplished without unduly interfering with operations, the custodian may attach downgrading and declassification notices to the inside of the file drawer or other storage container in lieu of the remarking otherwise required. Each such notice shall specify the authority for the downgrading or declassification action, the date of the action, and the storage container to which it applies. All remarking actions shall be in accordance with the requirements of this paragraph. When documents or other material subject to downgrading or declassification are withdrawn from one storage container solely for transfer to another, or when a storage container holding such documents or material is transferred from one place to another, the transfer may be made without remarking, if the notice is attached to the new container or remains with each shipment.

11.6 Marking of Foreign Classified Material. Foreign classified material shall be marked in accordance with instructions received from the foreign contracting authority, the cognizant security office, or the User Agency. In any case, if the classification and the country of origin are in a language other than English, the appropriate equivalent U.S. classification and the country of origin will be marked on the foreign classified material. These markings shall be applied to all classified material developed, produced, or reproduced by the contractor which is derived from the original foreign classified information. Markings shall be applied as prescribed in Paragraph 11.5.2(a) above. Additional markings prescribed in Paragraph 11.5.2(b) above shall not be used. Many foreign governments and international organizations, such as NATO, use a fourth security designation identified as "RESTRICTED" to denote a foreign requirement for security protection of a lesser degree than CONFIDENTIAL. Foreign RESTRICTED material shall be marked "RESTRICTED" together with the country of origin and protected in all respects in the same manner as U.S. CONFIDENTIAL, except that foreign RESTRICTED material may be stored in locked filing cabinets, desks, or other similar closed spaces which will prevent access by unauthorized persons.

11.7 Notations Concerning Downgrading and Declassifications. Procedures governing marking for downgrading and declassification are prescribed in Appendix I.

12.0 RECORD OF CLASSIFIED MATERIAL

12.1 Accountability Records. HR shall maintain an accountability record of all SECRET material. The record shall include:

1. Date of origin

2. Company received from
3. Classification
4. A brief, unclassified description of the material
5. Number of copies received
6. Copy numbers
7. HR log number

12.2 Receipt of Classified Material

12.2.1 All classified material or documents which are hand carried into the plant will be delivered to the Security Manager immediately upon entry into the plant.

12.2.2 All registered or certified mail will be signed for and opened by appropriately cleared Mail Room personnel. Upon discovery that registered or certified mail contains an inner envelope which has the security notation of SECRET or CONFIDENTIAL, it is immediately hand carried to the Chief Security Officer or his alternate.

12.2.3 The Chief Security Officer or his alternate inspects the inner envelope to determine that it is properly packaged and marked. All improperly packaged or transmitted documents will be reported to the cognizant security office. Improperly marked documents, i.e., missing Espionage Act Clause, etc., shall be affixed prior to distribution.

12.2.4 The Security Manager will properly log in classified documents in accordance with Paragraph 12 and determine where classified document will be retained, i.e., Main Document Control Station located in Human Resources, or at another authorized classified control station.

12.2.5 The Security Manager will assign an HR log number, attach an appropriate cover sheet (SECRET or CONFIDENTIAL), and hand carry to appropriate security monitor who will sign the "Charge Out" card file which will be retained in the Main Document Control Station.

13.0 TOP SECRET:

13.1 HR does not have facility or personnel clearances at the TOP SECRET level.

14.0 STORAGE:

14.1 All classified material, when not in use, is stored in a security filing cabinet originally procured from an FSS supplier (Federal Supply Service) and bearing a GSA Test Certificate Label.

14.1.1 The steel file cabinet shall be secured by a steel bar and a three-position, dial-type, changeable combination padlock, listed on the GSA Qualified Products List as meeting the requirements of Federal Specification FF-P-110. Non-FSS-three position, dial-type changeable combination padlocks in use at the present time may remain in use until replacement is necessary or additional padlocks are required.

14.2 Combinations of all classified storage containers are established and changed as required, upon the termination or transfer of any employee who has had knowledge of the combination, and/or at least once a year.

14.2.1 Combinations will be changed only by the Chief Security Officer or his alternate. No outside locksmith or subcontractor employee will be allowed to change combinations.

14.3 A log containing the combination, date of combination change, and persons who have access to said combinations is maintained in the Main Document Control Station. Combinations are classified the same as the documents which are locked in the file and are handled and protected as classified documents to the degree of contents in the cabinet.

15.0 ALTERNATE STORAGE LOCATIONS:

15.1 Alternate storage locations will not be utilized.

16.0 SAFEGUARDS DURING USE:

16.1 When in actual use by authorized personnel, classified materials shall be protected as follows:

16.1.1 Kept under constant surveillance of an authorized person who is in a physical position to exercise direct security controls over the material.

16.1.2 Covered, turned face down, or otherwise protected when unauthorized persons are present.

16.1.3 Cleared employees should not automatically assume that other employees in their area have security clearances. Therefore, prior to showing a classified document to another employee, contact the Chief Security Officer or his alternate who will verify if that employee has an appropriate clearance.

16.1.4 Returned to classified storage container before going to lunch, after use, and obviously prior to going home. CONFIDENTIAL documents may not be locked up in the desk while at lunch.

17.0 TRANSMISSION:

17.1 All classified information dispatched from the Valencia facility by mail, personal messenger, or otherwise, must be routed through the Industrial Security Office to ensure that it is properly marked, wrapped, logged and transmitted in accordance with the ISM, whether it is being hand carried or mailed as follows:

17.1.1 Record description of material and when mailed in log book maintained in the Main Document Control Station.

17.1.2 A classified document receipt accompanies document and is contained in the inner envelope.

17.1.3 Registered Mail is used for SECRET and certified ail is used for CONFIDENTIAL with notation "Return Receipt Requested."

17.1.4 SECRET and CONFIDENTIAL information shall be enclosed in an opaque inner and outer container. The classified information shall be protected from direct contact with the inner container by a cover sheet. The inner container shall be sealed, the envelope plainly marked with the assigned classification and addressed to sendee, and return addressed.

17.1.5 The outer container shall be addressed, return addressed and carefully sealed with no marking or notation to indicate the classification or its contents.

17.2 Transmission within the facility need not be double covered. However, employee must contact the Security Manager if transmission of the classified information is to be given to another employee.

17.3 Transmission of SECRET material outside facility. SECRET material shall be transmitted within and between the U.S., Puerto Rico, Panama Canal Zone or a U.S. possession or trust territory by one of the following:

17.3.1 By U.S. Registered Mail, including registered airmail, through U.S. civil postal facilities or Army, Navy or Air Force postal facilities.

17.3.2 However, U.S. Registered Mail destined for activities located in the Panama Canal Zone must be rerouted only via the military postal system.

17.3.3 Appropriately cleared employees of HR, who have been designated and briefed in their responsibilities as couriers or escorts for protecting the SECRET material. When such couriers or escorts are utilized, the classified material remains under the constant custody and protection of the HR personnel at all times and the commercial transportation service (ship, rail, air or truck) is not

required to have a facility security clearance. When services of a commercial carrier are required, HR will comply with instructions contained in the ISM, Paragraph 17.

17.3.4 Escorts or couriers shall always accompany shipments when rail or ship transportation is involved (refer to Appendix X and Appendix XI of the ISM for further guidelines).

17.3.5 Hand carrying of classified material on trips that involve an overnight stopover is not permissible unless arrangements are made in advance for overnight storage of the hand-carried classified material in a government installation or a cleared contractor facility.

17.4 Transmission of CONFIDENTIAL material outside a facility. Same requirements as outlined in Paragraph 17.3 except U.S. Express Mail, or U.S. Certified Mail for CONFIDENTIAL material is used.

17.5 Method of Transmission of SECRET and CONFIDENTIAL Material Outside Areas Enumerated in Paragraph 17.3.

17.5.1 SECRET and CONFIDENTIAL material shall be transmitted only under the provisions of the contract or with the written authorization of the contracting officer. However, when the classified material has previously been authorized for export under a State Department license or letter, HR shall notify the contracting officer of the classified material to be transmitted outside those areas enumerated in Paragraph 17.3.

17.5.2 HR shall not transmit classified material directly to a foreign government or firm. The only exception to this would be when a foreign government, with whom the U.S. has entered into a reciprocal agreement pertaining to the filing of classified patent application in the respective countries, has authorized its U.S. patent agent to return its foreign classified information directly to that foreign government.

17.5.3 Except as noted in Paragraph 17.5.2, transmission of classified material shall take place between HR and a designated U.S. Government representative for forwarding to the foreign activity. This is known as transmission by government-to-government channels. Therefore, when in doubt if a classified document has been given to an HR employee from a foreign government, the employee immediately contacts the U.S. Embassy in the foreign country and deposits the classified material with them. The U.S. Embassy will see that the classified material is transported to the U.S. and sent to HR.

18.0 REPRODUCTION:

18.1 All copies of reproductions of classified material shall be marked or stamped with the same classification as the original. Only sufficient copies necessary to meet operational requirements shall be prepared, and reproductions shall be destroyed as soon as they have served their purpose.

18.2 Reproduction of classified material shall be made only on equipment specifically designated for the reproduction of classified material. Rules governing the use of such designated equipment will be conspicuously posted on or near the equipment. In addition, appropriate warning notices prohibiting reproduction of classified material shall be posted on or near equipment used only for the reproduction of unclassified material.

18.3 All reproductions are logged in the "Reproduction Register" which is maintained at the Main Document Control Station in Human Resources and handled in the same manner as classified documents received in the plant.

18.4 Reproduction records shall be retained for a minimum of two years for SECRET material.

18.5 The Chief Security Officer or his designated alternate are the only personnel authorized to reproduce classified material.

19.0 DESTRUCTION OF CLASSIFIED INFORMATION:

19.1 Classified waste shall be destroyed as soon as practicable. This applies to all waste material containing classified information, such as preliminary drafts, carbon sheets, carbon ribbons, plates, stencils, masters, stenographic notes, worksheets and similar items.

19.1.1 Typewriter ribbons used in transcribing classified material shall be safeguarded in the same manner appropriate for the classification category involved until the ribbon is cycled through the typewriter or printer a sufficient number of times to obliterate information contained thereon. Normally this can be accomplished if the ribbon is completely overprinted five times in all ribbon typing or printing positions.

19.2 Classified waste is brought promptly to the Chief Security Officer/designated alternate for personal disposition.

19.3 All destruction of classified documents, waste will be done by the Chief Security Officer/designated alternate. This is accomplished by burning the data beyond recognition. The residue must be examined for evidence of undestroyed classified material.

Destruction of data classified SECRET is witnessed by one other appropriately cleared employee.

19.4 When actual destruction is accomplished, an appropriate entry is made on the Destruction Certificate (bottom portion of form PS 078 - Document Control Log).

19.5 Classified material will be destroyed as described in this section unless authorization for retention has been received as described in Paragraph 5.M.1.

20.0 SECURITY CLEARANCES:

20.1 Personnel Security Questionnaire. Only employees who will have need for access to classified material will fill out Personnel Security Questionnaires for processing by DISCO. No access to classified material will be granted until receipt of a Letter of Consent (DSA Form 562-R) from DISCO has been received.

20.2 SECRET Clearances. Secret clearances are granted only by DISCO after PSQ form DD48 or DD49 and fingerprint cards are submitted.

20.3 COMPANY CONFIDENTIAL Clearances. Confidential security clearances are granted by HR after form DD48-2 has been completed. EXCEPTION: DOD shall grant clearances for any HR employee who requires a clearance as a condition of the Nuclear Weapon Security Program, or, who are naturalized U.S. citizens from a designated country.

20.4 UPDATE of SECRET Clearances. PSQ Form DD48-3 will be completed if employee has current SECRET clearance granted by previous employer and it has not been over one year since date of termination.

20.5 Initial Security Briefings. Prior to permitting employees to have access to classified information, HR shall brief them on their obligations to safeguard classified information, advise them of its importance, inform them of the required security practices and procedures, and have them read, or have read to them, the portions of the espionage laws, conspiracy laws, and federal criminal statues applicable to the safeguarding of classified information, which appear in Appendix VI of this ISM.

20.5.1 Following the initial security briefing the employees shall be required to execute the "Classified Information Nondisclosure Agreement, (Industrial/Commercial/Nongovernment)," Standard Form (SF) 189-A 4/. The signature of the employee executing the SF 189-A shall be witnessed by his or her supervisor or by another designated representative of the facility. Both signatures must bear the same date. The SF 189-A must also be signed and accepted by a person empowered to act on behalf of the United States Government. The FSO is specifically delegated the authority to accept, on behalf of the United States Government, the

executed SF 189-A for contractor employees. Further delegation of this authority is permitted in unusual circumstances provided that such delegations are in writing, specify the individuals who may accept the executions, and are made part of the facility's permanent security files. Only those individuals who occupy responsible positions within the facility's security system may be delegated such authority.

20.5.2 An employee shall be required to execute the "Security Debriefing Acknowledgment" portion of the SF 189-A at the time of termination of employment (discharge, resignation, or retirement); at the beginning of a layoff or leave of absence for an indefinite period, or a prescribed period in excess of 120 days; if the employee's PCL is administratively terminated; if the employee's PCL is suspended or revoked by the DOD; and upon termination of the facility's FCL.

20.5.3 If a terminating employee had access to COMSEC or other information requiring a special access authorization by the U.S. Government, he or she shall be given an oral debriefing which shall include a statement of: (i) the purpose of the debriefing, (ii) the serious nature of the subject matter which requires protection in the national interest, (iii) the need for caution and discretion, and (iv) advice concerning any travel restrictions which are appropriate.

21.0 FACILITY SECURITY CLEARANCES:

21.1 A facility security clearance is an administrative determination that a facility is eligible from a security viewpoint for access to classified information of the same or lower classification category as the clearance being granted.

21.2 HR Valencia has a facility clearance of SECRET. Our additional locations at Pacoima and Avenue Stanford are not authorized as classified mailing addresses nor may classified work be processed at these locations.

22.0 PERSONNEL CLEARANCES REQUIRED IN CONNECTION WITH FACILITY CLEARANCES:

22.1 All principal officers, such as president, senior vice president, will be cleared SECRET.

23.0 SECURITY CLEARANCE OF NEGOTIATORS:

23.1 Negotiator. Any employee who requires access to classified information during the negotiation of a contract or the preparation of a bid or quotation pertaining to a prime or subcontract may be processed for a personnel security clearance concurrent with, but not as a part of, the facility security clearance.

23.2 The Chief Security Officer/designated alternate will determine if the need-to-know is present for negotiators.

24.0 SECURITY CLEARANCE OF ADDITIONAL PERSONNEL:

24.1 The Department of Defense (DoD) shall grant personnel security clearances for:

(1) U.S. Citizen employees of HR who require access to SECRET, NATO information classified CONFIDENTIAL or higher, when there is a need or when otherwise required by the terms of the ISM.

(2) As a general rule, only U.S. citizens are eligible to be granted a personnel security clearance. There are certain exceptions which must be addressed in specific instances.

24.2 If an employee no longer has or requires access to classified information and no requirement for such access is anticipated in the foreseeable future, the clearance will be administratively terminated.

25.0 PREEMPLOYMENT CLEARANCE APPLICATION:

25.1 HR shall not initiate any preemployment clearance action. An applicant for employment in a position which requires access to classified information may be informed that a security clearance will be required and that a security clearance can only be granted to: (i) U.S. citizens; (ii) immigrant aliens who reside and intend to reside permanently in the U.S.; or (iii) citizens of Canada or the United Kingdom.

25.2 However, in exceptional cases where a written contract for future employment in a position which requires access to classified information has been executed by both parties with a fixed date for employment on the payroll, the personnel security clearance application forms may be furnished to and executed by the employee prior to the date of entry on duty, provided the actual date of entry on duty under such written contract is not contingent upon issuance of a personnel security clearance.

26.0 APPLICATION FOR PERSONNEL SECURITY CLEARANCE:

26.1 New Clearances. Application for an initial clearance and for upgrading an existing clearance shall be made by submitting one of the following:

26.1.1 A DD Form 48 completed by U.S. citizens who are to be processed for DoD issued CONFIDENTIAL or SECRET.

26.1.2 A DD Form 49 is completed by:

(1) Immigrant aliens who are to be processed for SECRET or CONFIDENTIAL clearances;

(2) U.S. citizens who currently hold a clearance who list relatives or relatives of spouse who are residing in a communist country;

(3) U.S. citizens who have clearances and advise HR that they represent a foreign interest.

26.2 If an employee has submitted forms for a clearance and then objects, for any reason, to be processed for a clearance, to have an existing clearance continued, or refuse to execute the SF 189-A, HR will submit a report to DISCO. Verification of such objections shall be made by the government. After the verification, any pending clearance shall be terminated and any security clearance then held by the employee shall be administratively terminated by the government without prejudice to the employee.

26.3 Reemployment of Cleared Personnel. If a former HR employee is rehired within twelve (12) months and has had a SECRET clearance, HR may reactivate the Letter of Consent by submitting DSA Form 562-R to DISCO.

26.3.1 COMPANY CONFIDENTIAL clearances may be reinstated without notification to DISCO unless a "yes" is indicated on number 7 of the form (copy is forwarded to DISCO).

27.0 CONTRACTOR'S CLEARANCE RECORD:

27.1 HR shall maintain a current record of all employees and consultants who have been cleared for access to classified information.

28.0 ADMINISTRATIVE TERMINATION OF PERSONNEL SECURITY CLEARANCES:

28.1 HR may request the administrative termination of SECRET and CONFIDENTIAL personnel security clearances which are no longer required.

28.2 If a cleared employee no longer has or requires access to classified information and no requirement for such access is anticipated in the foreseeable future, the clearance will be administratively terminated. DSA Form 683 is completed and forwarded to DISCO.

28.3 Administrative termination of COMPANY CONFIDENTIAL clearances is accomplished by notification to the cognizant security office.

28.4 In the event an employee whose clearance has been administratively terminated who is required to have classified information, the previous clearance may be revalidated if it

has been within twelve (12) months of the termination. Form DSA 562-R is submitted to DISCO.

28.5 HR shall notify DISCO by submission of Form 562 when an employee's status changes by (a) death, (b) change of name, (c) termination of employment, or (d) when an employee is to be absent for an indefinite period or in excess of 120 days.

29.0 CLASSIFIED VISITOR CONTROL:

29.1 No visitors on classified business are allowed to enter the plant without the express approval of the Chief Security Officer/designated alternate or a cleared management official who will determine the "need-to-know." Incoming visit authorizations received by mail or teletype are delivered to the Security Supervisor. Visit requests received by teletype qualify as written communication and do not require written follow-up confirmation. Requests received by telephone must be followed by confirmation in writing. No visitor shall have access to information classified higher than the degree of access, if any, specified in the visit authorization and in no event higher than the visitor's clearance.

29.1.1 Contractors being visited by representatives of another contractor are responsible for determining that the requesting contractor has been granted an appropriate FCL. This determination is based either on an existing contractual relationshp involving classified information of the same or higher category or by verification from the CSO of the requesting contractor, the visitor's identity, and authorization, prior to any disclosure of classified information. When the requesting contractor's FCL status has been determined, his or her certification as to the proposed visitor's PCL status may be accepted. If, however, there is any question as to the validity of a visit request or identity of the visitor, appropriate confirmation shall be obtained from the contractor or UA activity that initiated the visit request.

29.2 HR employees who intend to visit a company in which a classified visit request is needed must submit the Visit Request and Approval Form (PS 041). This request is completed by the department secretary and is transmitted to the Security Manager in Valencia who will certify the form and forward to the prime contractor. In exceptional cases, the Security Manager will submit a visit clearance by telephone when sufficient time is not available for processing of the request. The request is confirmed promptly in writing. Under no circumstances, however, may employees hand carry their own visit requests to the facility they are visiting.

29.3 Upon termination of employment, revocation or termination of personal security clearance of an HR employee who has been authorized to visit on a continuing basis, notification by the Security Supervisor is made to the prime contractor advising that the visit authorization should be cancelled.

30.0 IDENTIFICATION AND CONTROL OF VISITORS:

30.1 Arrangements should be made by the HR host to discuss with the Chief Security Officer what classified information is to be discussed prior to the visit.

30.2 Visitors who will have access to classified information will be checked by the Security Supervisor before issuing a special "visitor" badge. The visitor will be required to sign the regular sign-in register. The visitor is then escorted by the Security Supervisor, or an employee who has the proper clearance, to the employee whom he is to visit. The visitor is under escort at all times. At termination of visit, the guard or receptionist indicates on the register the time of departure of the visitor.

30.3 Visitors shall be prohibited from making recordings of classified discussions or taking photographs in areas where classified information might be recorded on the film unless the visitor has received prior approval by the contracting activity whose classified information is involved.

31.0 VISITOR RECORD:

31.1 HR will maintain a record of all visitors to the facility for the purpose of having access to classified information.

31.2 A separate set of visitor records will be maintained for NATO visitors.

31.3 The visitor record does not need to indicate whether the visitor actually had access to classified information but the register must distinguish between classified and unclassified visits.

31.4 Records of authorized visit requests for visits actually consummated shall be maintained for a minimum of two (2) years.

32.0 LONG TERM VISITORS:

32.1 When employees of one contractor are temporarily stationed at an HR facility, the security procedures of the facility visited will govern.

33.0 NATO VISIT PROCEDURES:

33.1 A separate set of visitor records shall be maintained for NATO visitors. A NATO visitor log is maintained at all Lobbies. The visit record must distinguish between classified and unclassified visits. For further information regarding NATO visits and NATO precontractual negotiations, contact the Chief Security Officer at Valencia.

34.0 EMERGENCY PROCEDURES:

34.1 Explanation. Routine procedures for safeguarding classified material may be weakened or made ineffective unless we provide for emergency conditions. Employees must know what to do with classified material in case of a fire drill, actual fire, flood, earthquake, actual or threatened explosion, or civil disturbance.

34.2 Detailed instruction for all possible disasters are not feasible. Instead, here are a few easy-to-remember, common-sense procedures generally applicable to any emergency.

34.3 Situations requiring evacuation of a building containing classified material (fire drill, actual fire, bomb threat, explosion, etc.)

34.3.1 Persons to notify as soon as emergency situation becomes evident; any employee who is in charge of planned fire drills, or any other person who has knowledge of any type of emergency which may pose a threat to SECRET or CONFIDENTIAL material at HR is requested to notify:

(1) The Chief Security Officer/designated alternate, day or night, by the most expeditious means available. Office and resident telephone number of the Chief Security Officer/designated alternate are on file at the guard house.

(2) Alternates for the Chief Security Officer (D. Pilling), in the following order, are:

D.E. Basey, Manager Security

Dianne Bouchie, Assistant Security Officer

34.3.2 Chief Security Officer will utilize the present security monitors who will perform duties and take stations as directed by him on the standard operating procedures. This includes provisions for checking for security violations during fire drills.

34.4 Classified documents and small classified hardware normally secured in approved cabinets.

34.4.1 Security monitors must quickly check to see that classified items are properly secured before the area is evacuated.

34.4.2 If classified items are in use, place them immediately in an approved container (security file cabinet), if time permits, and secure cabinet with appropriate combination lock.

34.4.3 If there is not time to return a classified document to the file, the security monitor or person to whom document is charged out will take it from the building, keep it in his possession and avoid disclosure to unauthorized persons. If it cannot be returned to an approved container at HR, the employee is to personally safeguard it until it can be surrendered to an appropriately cleared HR employee (preferably the Chief Security Officer/designated alternate or the U.S. government).

34.4.4 If possible, the surrendered document(s) are to be sealed in inner and outer wrappings or envelopes. On the inner sealed wrapper, write:

- "SECRET" or "CONFIDENTIAL" according to the highest classification of any document in the package;
- HR's name and address;
- Employee's name and home address.

Omit the classification markings from the outer wrapper and address it as necessary to include the employee's name and home address as the return address.

- The sealed document is then to be returned to the Chief Security Officer, his alternate, or the Government Representative of D.I.S.-VN.

34.5 Action upon return to evacuated buildings.

34.5.1 Security monitors will see that containers are examined to determine whether classified material is unaccounted for and whether there is suspected or actual compromise.

34.5.2 Losses and/or compromises are to be reported to the Chief Security Officer or designated alternate immediately. The Chief Security Officer will make the reports to the government as required.

34.6 Security Office Records (located in Personnel/Valencia)

34.6.1 In case of threat to the Security Office, the following records will be given priority for protection and removal from the building. If necessary, by the security monitors in Personnel:

(1) Records of lock combinations which also show location of classified storage containers;

(2) Document control/receipt registers.

34.7 Requests for Assistance

34.7.1 If any emergency is such that HR is incapable of safeguarding classified information at its Valencia facility, the Chief Security Officer, or his alternate, or a company representative acting in his place will, by the most expeditious means, notify:

Defense Investigative Service
Resident Office
44421 No. 10th Street West
Lancaster, CA 93534
(805) 945-8688

If unable to contact above, notify:

Defense Investigative Service
6946 Van Nuys Blvd. Suite 223
Van Nuys, CA 91405
(818) 904-6370

If unable to contact above, notify:

Defense Investigative Service
Director of Industrial Security
3605 Long Beach Blvd.
Long Beach, CA 90807

During nonworking hours:

Defense Investigative Service
Command Post
(213) 643-0990

34.7.2 If necessary, the Chief Security Officer will request, through appropriate government channels, assistance from civil authorities, including local and state law enforcement agencies.

34.7.3 If appropriate, the Chief Security Officer, through the assistance of HR legal advisors, will seek legal remedies, such as issuance of a court order, restraining order or injunction against:

(1) Interfering with HR property rights, or

(2) Interfering in the discharge of HR contractual obligations to safeguard classified information.

34.7.4 The Chief Security Officer or designated alternate will request, when necessary, the assistance of Defense Investigative Service:

(1) Obtain legal remedies;

(2) Arrange for the removal and safekeeping of classified material.

34.8 Reporting Lack of Compliance with HR Security Manual

34.8.1 The Standard Practice Procedures for Safeguarding Classified Information (SPP), in most cases, provides for automatic reporting to the Chief Security Officer, or his alternate, of failures to comply with government requirements. Some of these procedures are:

(1) Continuing internal audit and inspection of classified documents;

(2) After-hours checks by security guards and other personnel;

(3) Routing of outgoing classified documents only through the Security Office located in Personnel/Valencia for a check of marking, receipts, etc.;

(4) Receipt system for controlling all classified documents;

(5) Continuing security education by memos, talks, personal discussions, etc.

34.8.2 Employees who have knowledge of security violations not covered by the procedures in this manual are requested to report them to the Chief Security Officer or his alternate promptly so that assistance may be provided at once to prevent damage to the security of the nation and to the welfare of HR.

34.8.3 In addition to the foregoing procedures for reporting serious irregularities or infractions in the handling of classified information, the DOD has established a Defense Hotline for the reporting of irregularities or infractions concerning defense affiliated contracts. This hotline may be used without fear of reprisal to report such instances, and HR employees are encouraged to do so whenever

company procedures are inadequate or otherwise ineffective. The Defense Hotline address is: The Pentagon, Washington, D.C. telephone number 1-800-424-9098 or the Washington metro number, 693-5080.

35.0 SUBCONTRACTORS:

35.1 Application to Subcontractors. Refers to subcontractors, vendors or suppliers of prime contractors (hereinafter called subcontractor).

35.2 Prior to subcontracting with regard to classified procurement, HR will determine from the cognizant security office that the prospective subcontractor has been granted an appropriate facility security clearance. HR will determine if the subcontractor meets the requirements of the ISM regarding storage capability.

35.3 If the subcontractor meets the above requirements, a DD 254 will be issued by HR which will state the security requirements for the classified information.

LIST OF COMMUNIST COUNTRIES

Afghanistan
Albania
Bulgaria
Cambodia
Chinese Peoples Republic (Communist China including Tibet)
Communist Korea (North Korea)
Cuba
Czechoslovakia
German Democratic Republic (GDR, East Germany - including the Soviet Sector Berlin)
Hungary
Kurile Island
Mongolian Peoples Republic (Outer Mongolia)
North Vietnam
South Vietnam
Poland
Rumania
South Sakhalin (Karafuto)
Union of Soviet Socialist (USSR - including Estonia, Latvia, Lithuania, and all other constituent republics
Yugoslavia

BASIC SECURITY RULES

DO report any existing or threatened espionage, sabotage or subversive activity, or compromise (deliberate compromise or suspected compromise) immediately to the Chief Security Officer or Security Manager. DON'T trust to luck.

DO your part to safeguard all classified information at all times.

DO return all classified material to the control station if you leave your desk or area in which you are working. DON'T leave classified material unattended.

DO memorize the combination to your security lock (if applicable). DON'T write it on your desk pad or notebook. The combination of your lock is classified as high as the classification of material in your file.

DO hand carry SECRET or CONFIDENTIAL documents requiring internal receipts back to the Security Office/Main Document Control Station located in Personnel/Valencia if you want to transfer document to another department, DON'T USE inter-company mail.

DO pass classified information directly by hand (after check to see if other employee has clearance) to the intended recipient. DON'T place classified information in another's in-basket unless he is there.

DO ask questions when in doubt. DON't let yourself or HR down because you weren't sure.

DO contact the Security Manager prior to releasing classified material to another person. DON'T assume that everyone you work with is cleared.

DO remember that security rules, like all rules, have exceptions. Judgment and common sense are the backbone of good security procedures. DON'T gripe because security requires extra work--loss of our security clearance results from poor security practices.

APPENDIX 1

11.0 MARKINGS OF CLASSIFIED INFORMATION - EXAMPLE

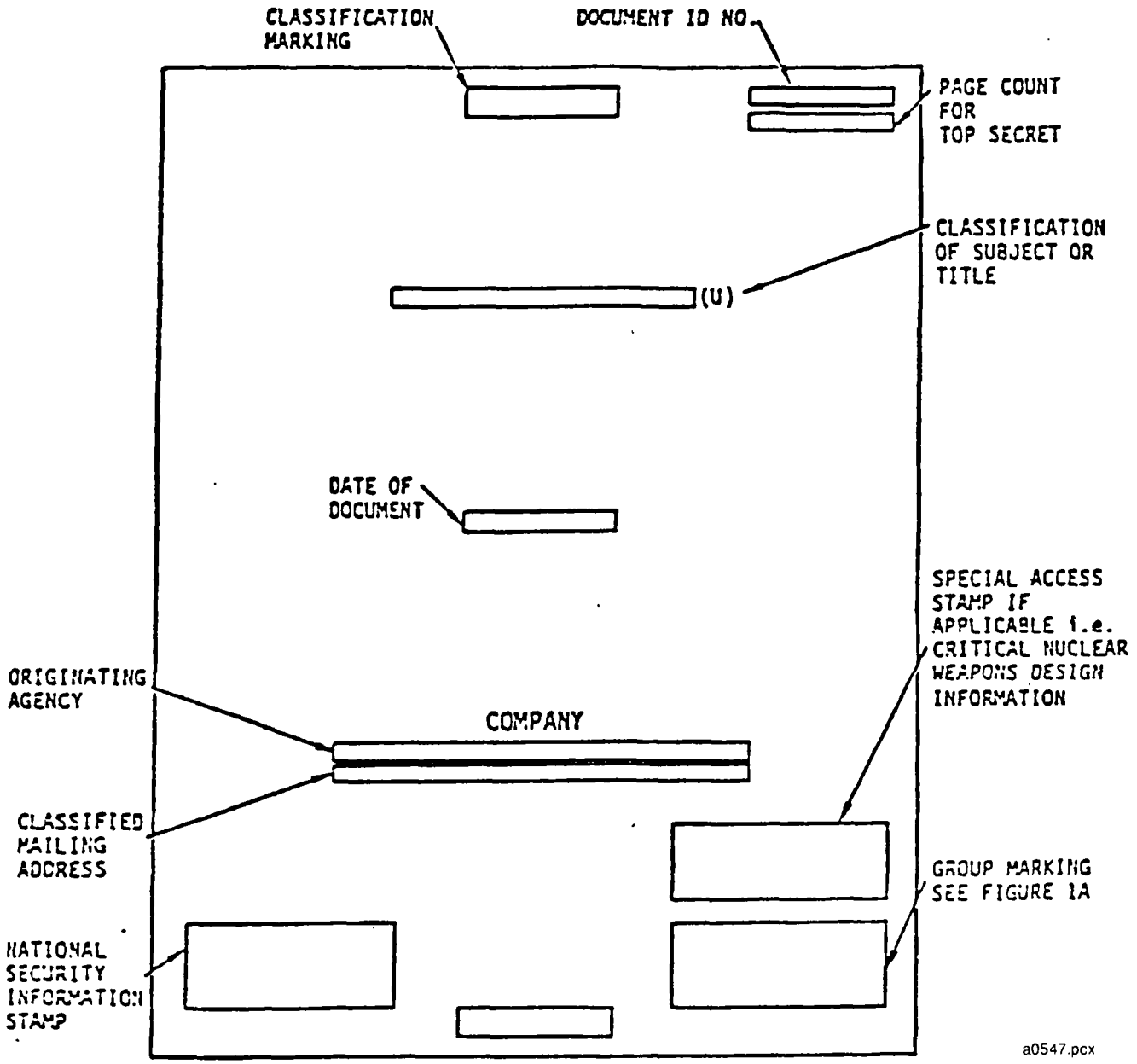


Figure 1. Title Page or First Page of Unbound Document

11.0 MARKINGS OF CLASSIFIED INFORMATION - EXAMPLE

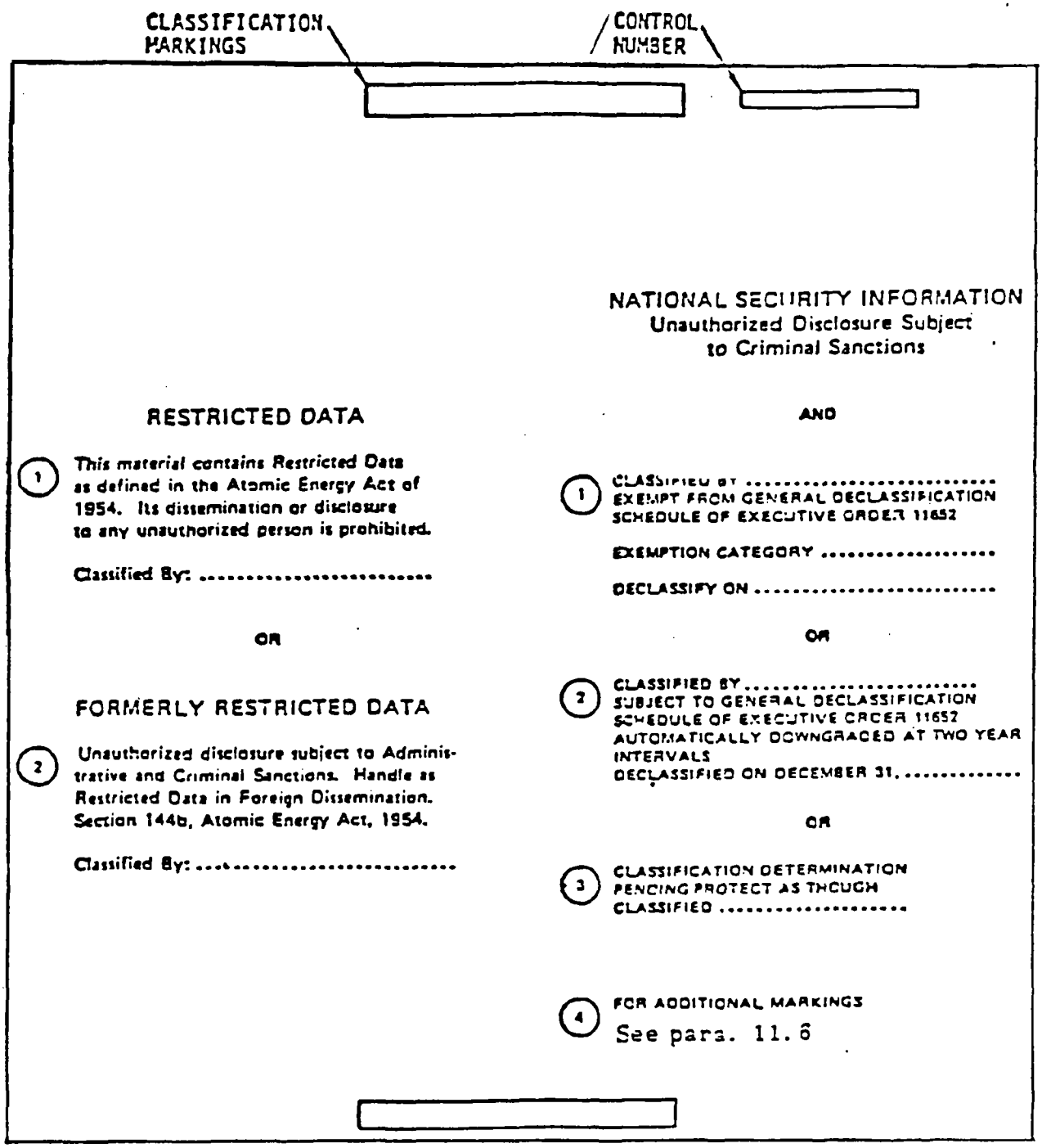


Figure 1A. Additional Markings

a0558.pcx

11.0 MARKINGS OF CLASSIFIED INFORMATION - EXAMPLE

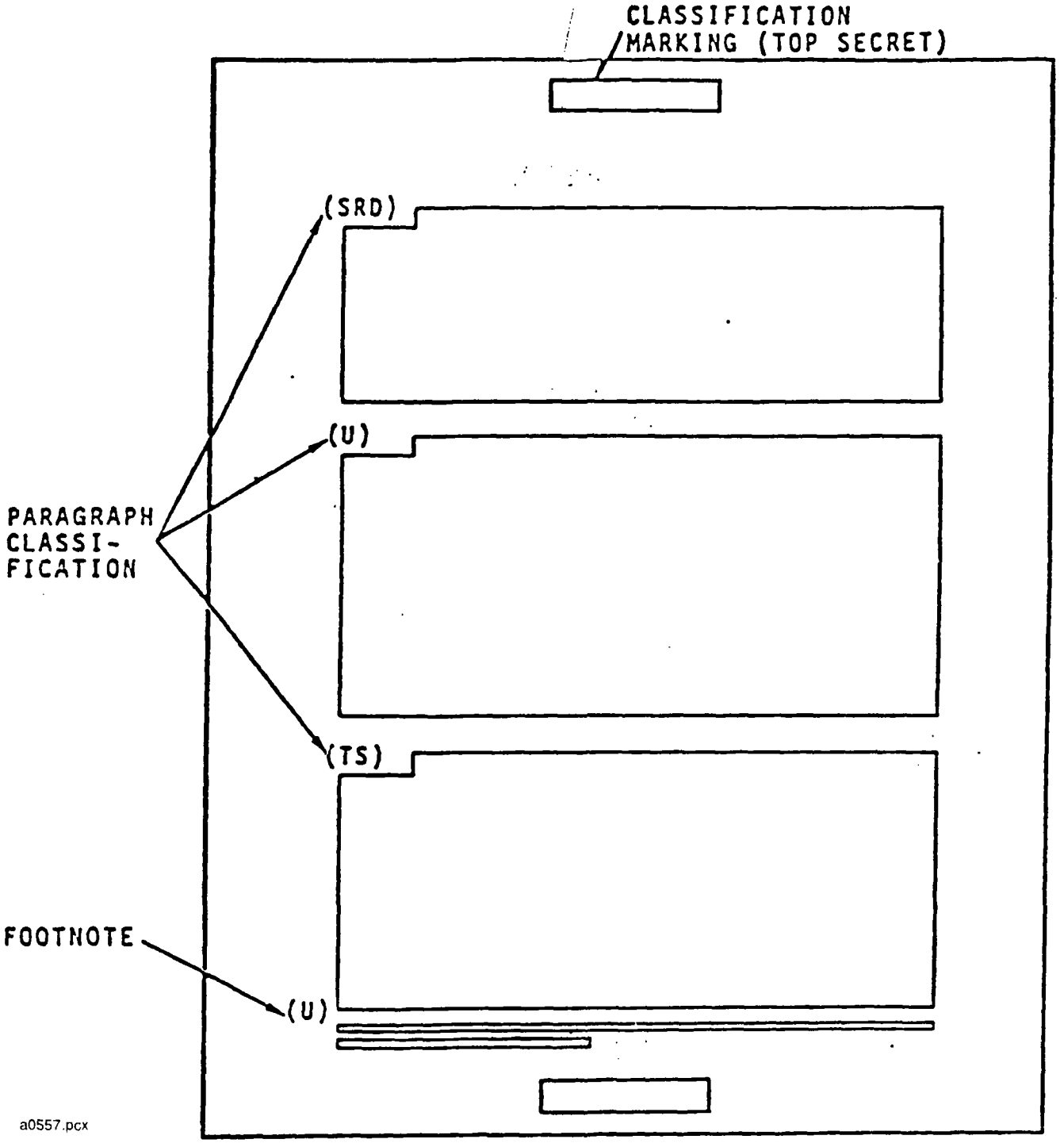


Figure 2. Internal Page

11.0 MARKINGS OF CLASSIFIED INFORMATION - EXAMPLE

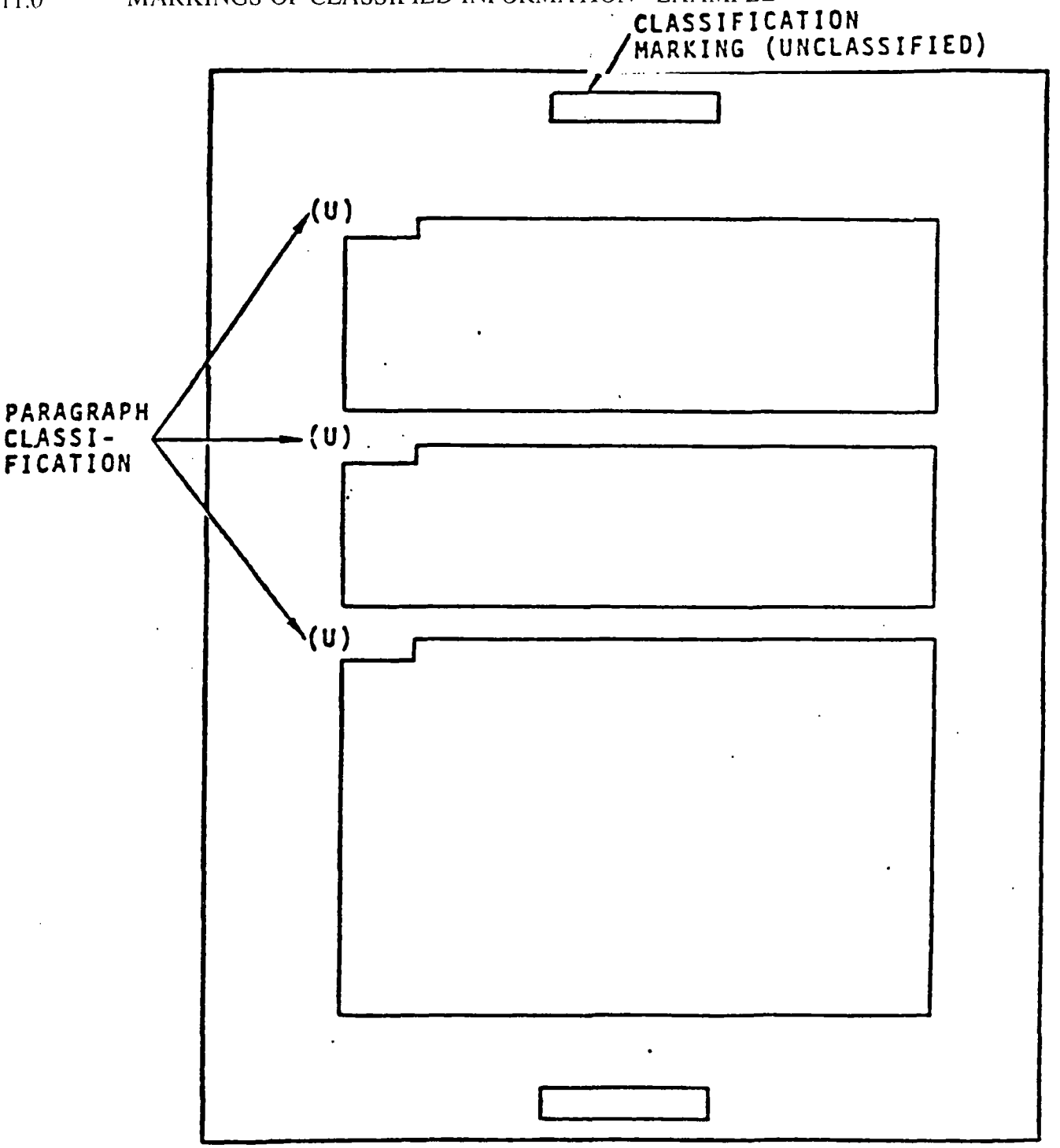


Figure 3. Unclassified Page in Classified Document

a0556.pcx

11.0 MARKINGS OF CLASSIFIED INFORMATION - EXAMPLE

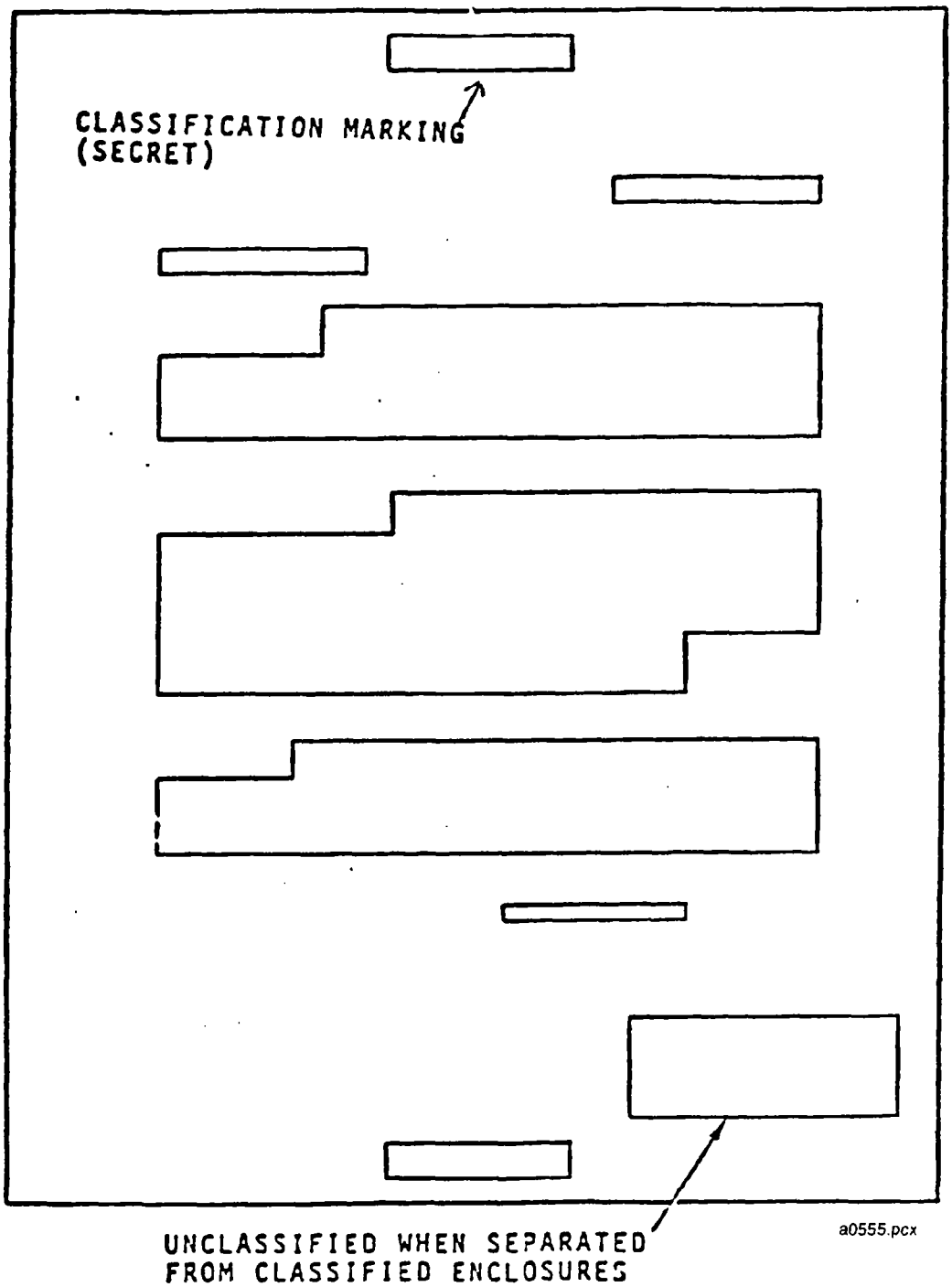


Figure 4. Unclassified Letter of Transmittal with Classified Enclosures

11.0 MARKINGS OF CLASSIFIED INFORMATION - EXAMPLE

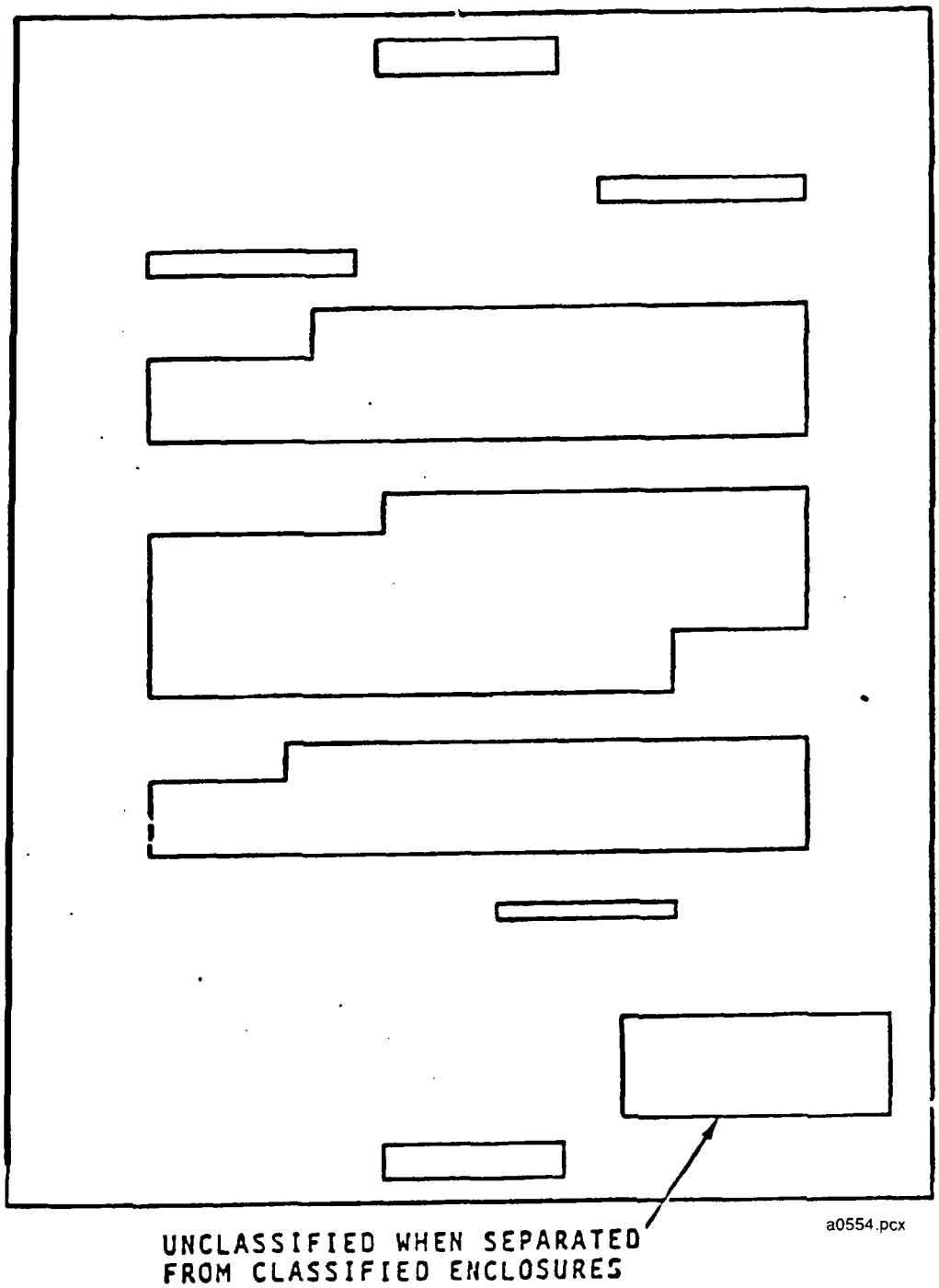


Figure 5. Unclassified Letter of Transmittal with Classified Enclsoures

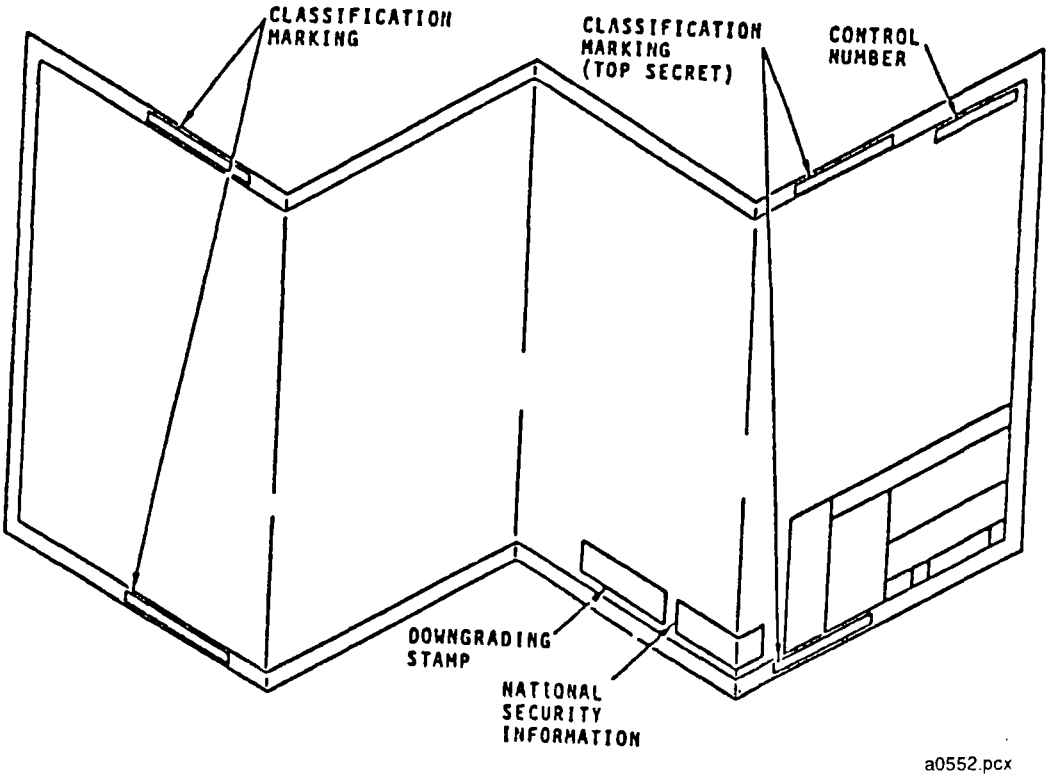
11.0 MARKINGS OF CLASSIFIED INFORMATION - EXAMPLE

This letter is unclassified when separated from attachments.

a0553.pcx

Figure 6. Unclassified Letter of Transmittal with Classified Enclosures

11.0 MARKINGS OF CLASSIFIED INFORMATION - EXAMPLE



11.0 MARKINGS OF CLASSIFIED INFORMATION - EXAMPLE

Figure 7. Drawings, Charts, Maps, Etc.

11.0 MARKINGS OF CLASSIFIED INFORMATION - EXAMPLE

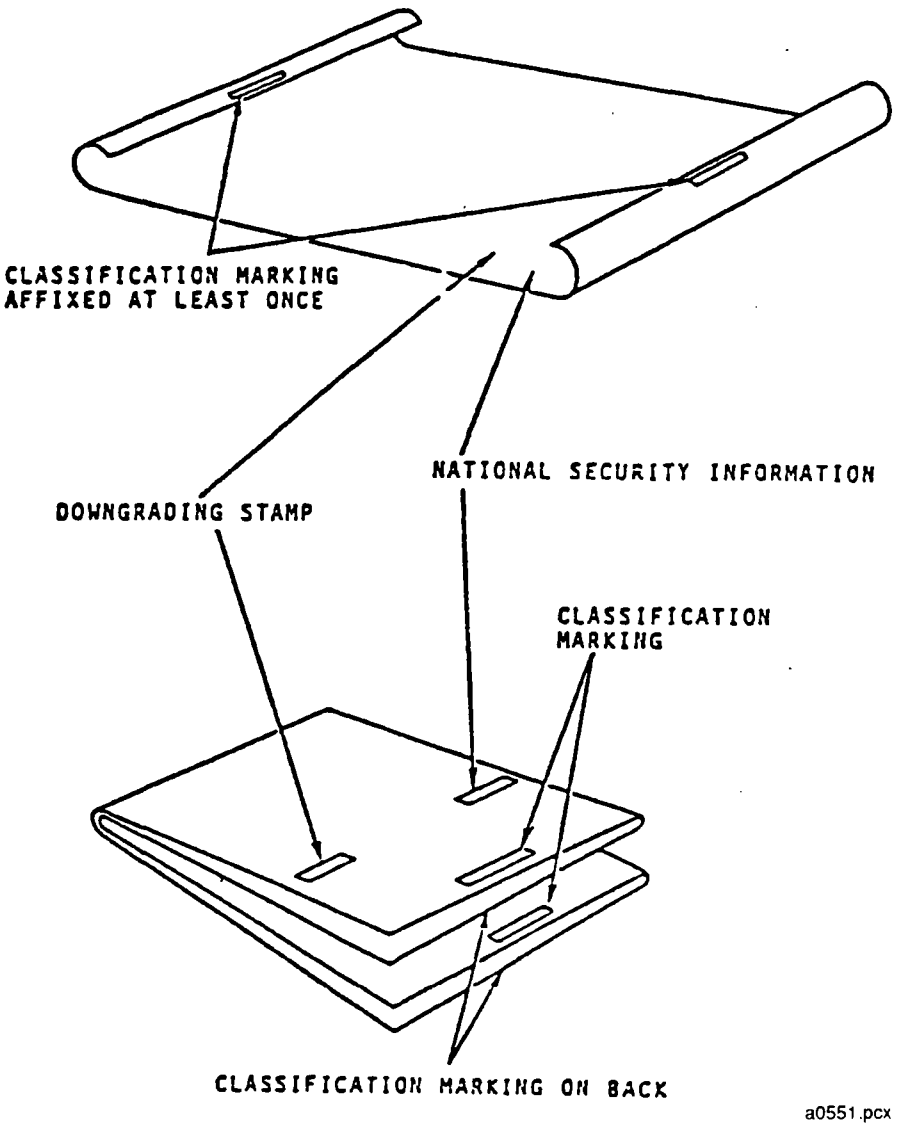


Figure 8. Rolled and Folded Drawings

11.0 MARKINGS OF CLASSIFIED INFORMATION - EXAMPLE

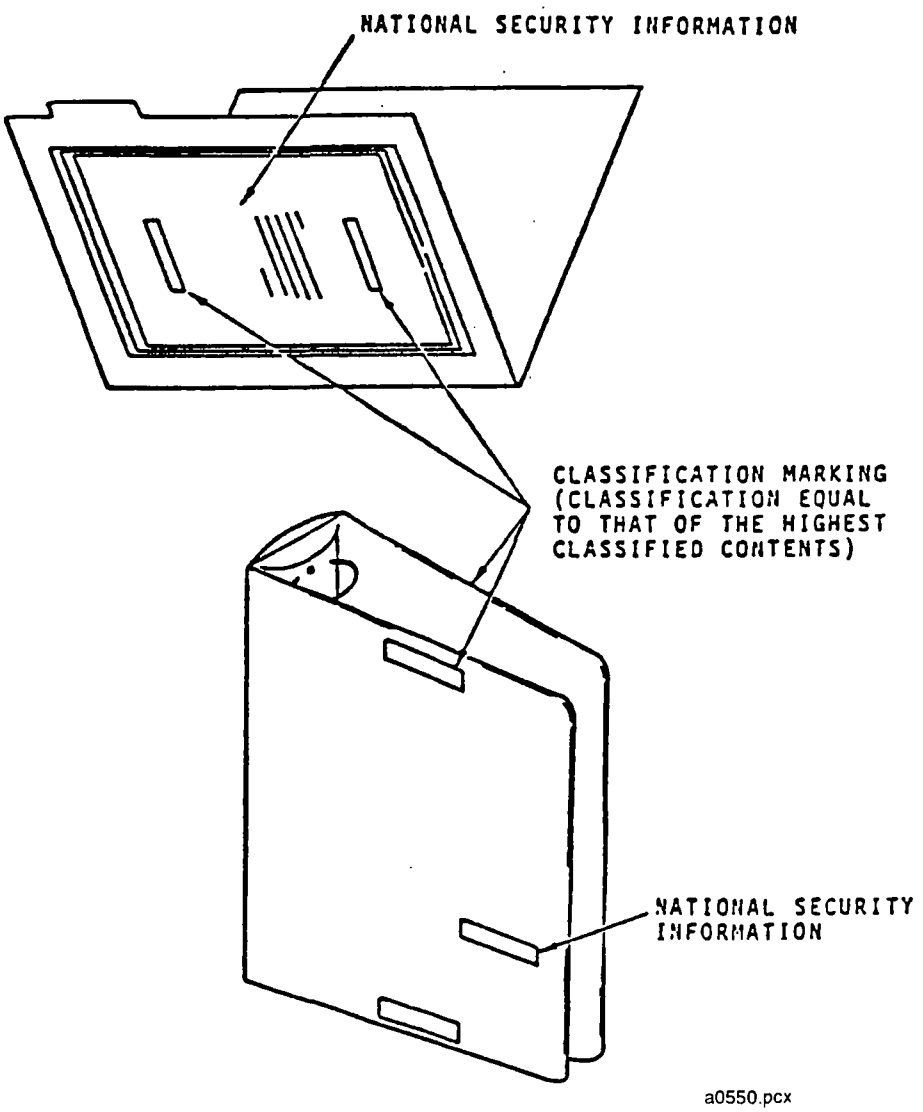


Figure 9. File Folder, Binders

11.0 MARKINGS OF CLASSIFIED INFORMATION - EXAMPLE

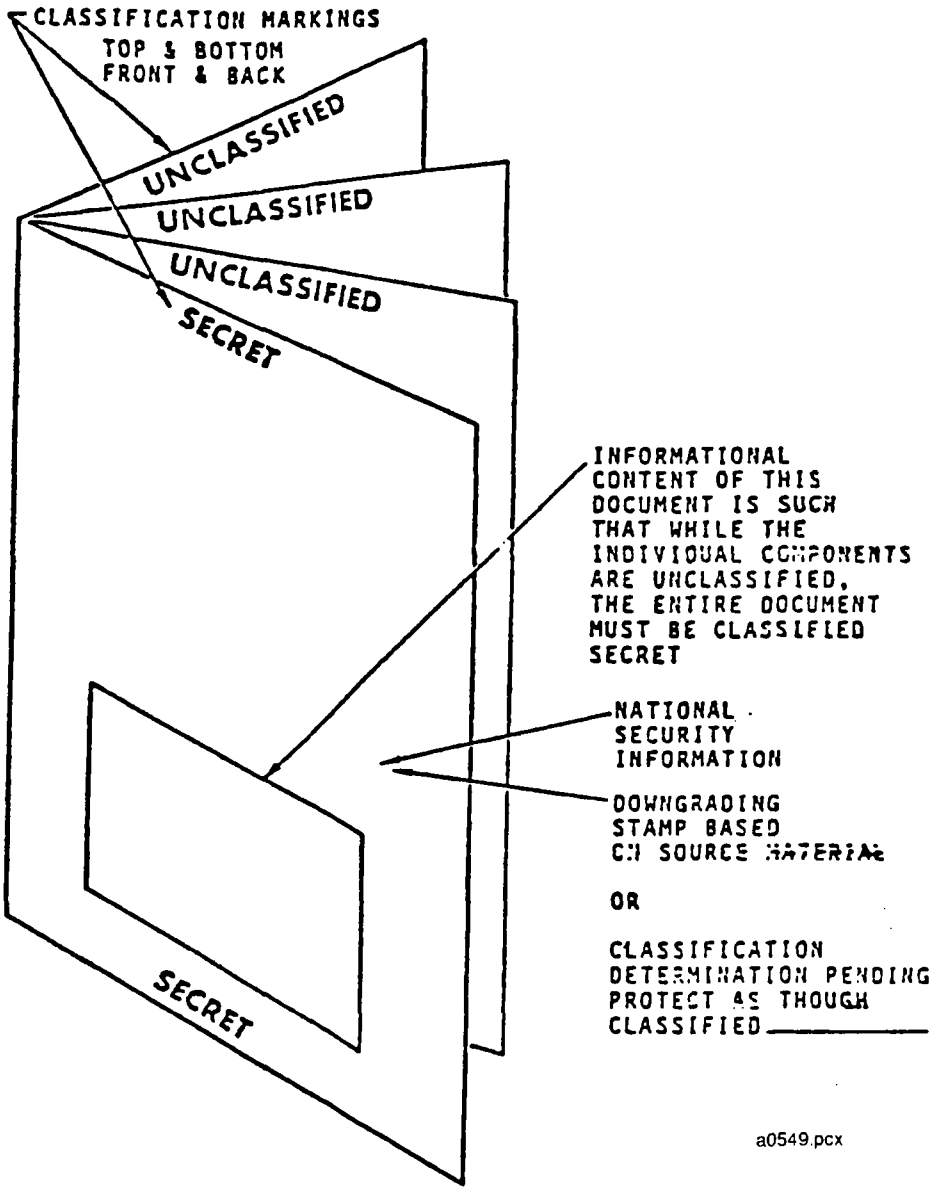
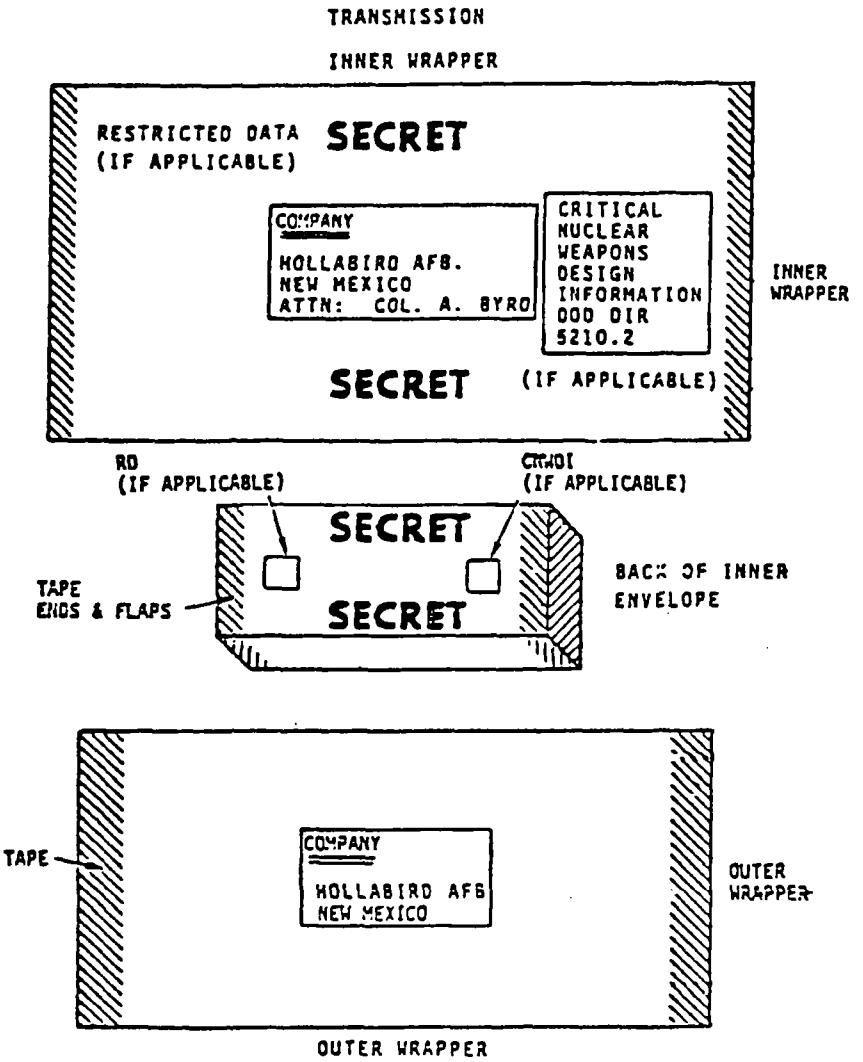


Figure 10. Classified Compilation of Unclassified Components

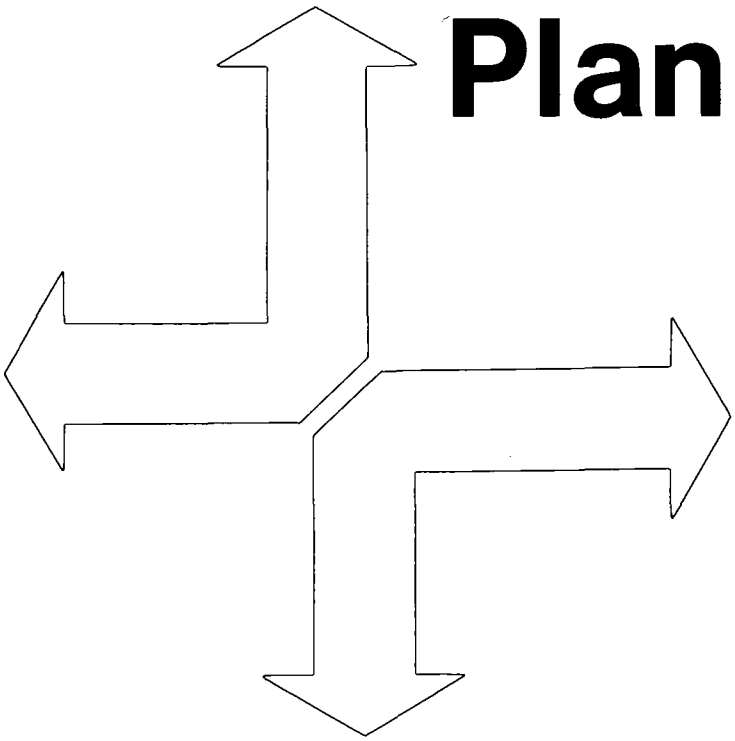
11.0 MARKINGS OF CLASSIFIED INFORMATION - EXAMPLE



a0548.pcx

Figure 11. Transmission

Emergency Response Plan



HYDRAULIC RESEARCH TEXTRON

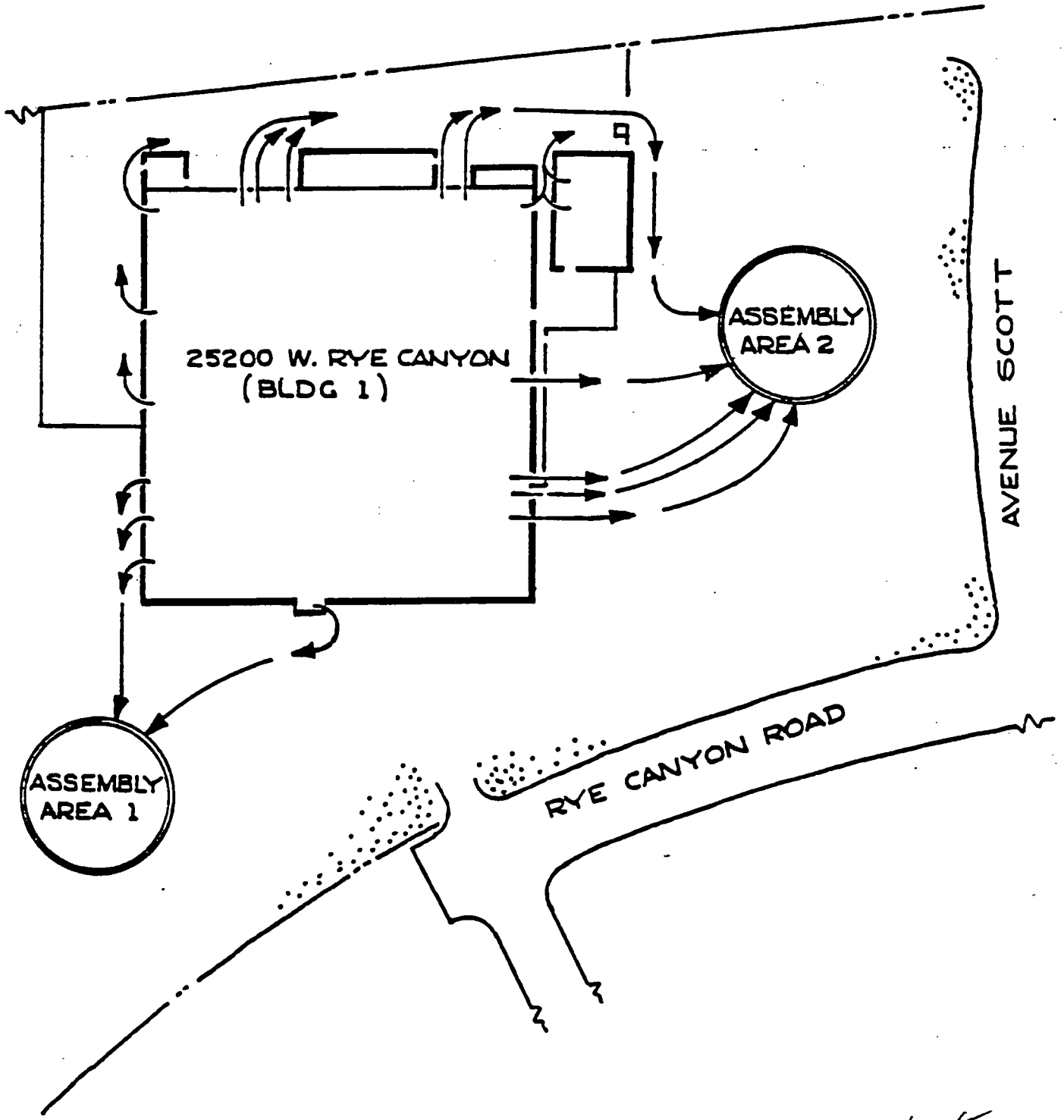
HR TEXTRON HR Textron Inc. a Subsidiary of Textron Inc.	25200 West Rye Canyon Road Valencia, Calif. 91355 805/259-4030 TWX 910/336/1438 TELEX 65/1492	_____ DEPARTMENT PROCEDURE MANUAL	NUMBER EFFECTIVE 8/1/90

SUBJECT

EVACUATION MAP - BUILDING 1

SUPERSEDES

PAGE 6.10 OF



1:45

Z0177(2)

PREPARED BY:	DATE	APPROVED — REQUESTER	APPROVED — DEPT. HEAD

FI 011 (REV. 3/87)

2166-04746

HR TEXTRON INC.
INTEROFFICE COMMUNICATION

DATE: JANUARY 16, 1991
TO: ALL MANAGEMENT
FROM: J.L. WEIGEL, SECURITY MANAGER
SUBJECT: EMERGENCY RESPONSE PLAN

ATTACHED PLEASE FIND THE REVISED COPY OF HR TEXTRON'S EMERGENCY RESPONSE PLAN. PLEASE REPLACE YOUR CURRENT COPY. SHOULD YOU REQUIRE A BINDER, CONTACT LISA RAMOS, EXT. 5252.

IF YOU HAVE ANY QUESTIONS REGARDING THIS, PLEASE CONTACT JAN WEIGEL, EXT. 5658.

J.L. Weigel
J.L. Weigel
Manager, Security

JLW:lr

Attachments

350151

EMERGENCY RESPONSE PLAN

FOR

BUILDING 1
25200 West Rye Canyon Road
Valencia, California 91355

BUILDING 10
25572 Avenue Stanford
Valencia, California 91355

BUILDING 11
25709 West Rye Canyon Road
and
25721 West Rye Canyon Road
Valencia, California 91355

BUILDING 14
28113 Avenue Stanford
and
28115 Avenue Stanford
Valencia, California 91355

INTRODUCTION

This manual and necessary supplements, covering specific areas of concern, shall constitute the HR Textron Inc. Emergency Response Plan. This Plan includes, by reference, existing response orders and response orders subsequently issued.

An Emergency Response Plan, to be effective, must be supported by each member of the organization. We all have responsibilities to the Company and to each other in order to maintain a high level of production. This can best be accomplished by the prevention of circumstances that interfere with production. When incidents occur that cannot be prevented, such as fire, flood, earthquake, etc., our response can minimize adverse effects.

Our first concern is the welfare of the employee in any disastrous situation. Recovery of production capabilities is the next great concern, and both of these concerns are the prime objective of this Plan. Your cooperation is necessary and expected, in order to achieve these goals for all of us.

Richard J. Millman
President

SUBJECT

TABLE OF CONTENTS

Section	Subject	Page	Effective Date
	Public Emergency Agency Telephone Numbers	ii	8/01/90
	Emergency Telephone Contacts	iii	8/01/90
1	Emergency Response Plan	1.1	8/01/90
	Purpose	1.1	
	Classification of Emergencies	1.1	
2	Emergency Organization	2.1	8/01/90
	Administration	2.1	
	Scope of the Emergency Response	2.1	
3	Emergency Operations	3.1	8/01/90
	Warning System	3.2	
	Receptionist's/Secretary's Duties During Emergencies	3.2	
4	Emergency Evacuation	4.1	8/01/90
	Types of Evacuations	4.1	
5	Personnel	5.1	8/01/90
	Emergency Coordinator	5.1	
	Emergency Response Teams	5.1	
	Security Manager	5.3	
	Occupational Health Nurse	5.4	
6	Emergency Actions and Procedures	6.1	8/01/90
	Evacuation	6.1	
	Fire - General Procedures	6.1	
	Earthquake - General Procedures	6.2	
	Emergency Personnel Action	6.3	
	Power Failure - General Procedures	6.3	
	Floods	6.4	
	Violent Weather	6.5	
	Explosions - Chemical Accidents	6.6	
	Bomb Threat and Search	6.6	
	Enemy Attack - Nuclear Fallout	6.8	
	Air Pollution	6.8	
	Building 1 - Evacuation Plan Map	6.10	
	Building 10 - Evacuation Plan Map	6.11	
	Building 11 - Evacuation Plan Map	6.12	
	Building 14 - Evacuation Plan Map	6.13	
	Evacuation Routes	6.14	
	Vulnerability Assessment Map	6.15	
7	Public Relations	7.1	8/01/90
8	Exhibit "A"	8.1	8/01/90
9	Exhibit "B"	9.1	8/01/90

SUBJECT
PUBLIC EMERGENCY AGENCY TELEPHONE NUMBERS

VALENCIA

Fire Department/Paramedics	(805) 259-2111
Sheriff's Department	(805) 255-1121
Ambulance	(805) 255-1121
Hospital - Henry Mayo Newhall Memorial Hospital	(805) 255-8100
Telephone - Pacific Telephone Company	(9) 611
Electricity - Southern California Edison Company	(805) 259-6270
Gas - Southern California Gas Company	(805) 259-8330
Water - Valencia Water Company	(805) 255-4010

PACOIMA

Fire Department/Paramedics	(818) 785-2151
Police Department	(818) 787-1122
Ambulance	(818) 785-2151
Hospital - Pacoima Memorial Hospital	(818) 896-1121
Telephone - General Telephone Company	(9) 611
Electricity - Los Angeles City Department of Water and Power	(818) 785-8393
Gas - Southern California Gas Company	(818) 246-4961
Water - Los Angeles City Department of Water and Power	(818) 785-8393

1.1 PURPOSE

The purpose of this plan is to establish a continuing program of preparation for the protection against emergency from all causes: To ensure survival of HR Textron Inc. facilities through effective organization, coordination, and operational programs designed to assure maximum protection, continuity, and recovery of personnel, premises, products, and services.

1.2 CLASSIFICATION OF EMERGENCIES

A. Stage I - Minor Emergency

A minor emergency is defined as an incident occurring in a relatively small section of the facility which would not seriously affect the overall functional capability of the plant and does not pose a serious safety or health hazard to employees. Minor emergencies will normally be controlled by Safety, Security, Facilities Engineering, and supervisory personnel.

B. Stage II - Major Emergency

A major emergency is defined as an event which occurs to major portions of buildings which seriously impacts the functioning of the affected area. A major emergency disrupts the overall operation of the facility, and work stoppages, casualties, and/or property damage may occur.

C. Stage III - Disaster

A disaster is defined as an occurrence of such magnitude that extreme impairment of the functional capability of the facility results. Work stoppage, severe casualties, and/or property damage will have occurred. The coordinated effort of Company executives, emergency personnel, and equipment, and supervising personnel is required to effectively control the situation. Due to heavy demands placed on governmental emergency personnel and equipment, it may be impossible to rely on their help in stabilizing the facility.

2.1 ADMINISTRATION

The administration of the Emergency Organization, though augmented by personnel with particular expertise in certain areas, should utilize, as much as possible, the day-to-day chain of command. This assures a unity of command that is expected on a daily basis and provides continuity during the stress of emergency operations.

2.2 The Vice President of Human Resources shall assume the position of Emergency Coordinator at the first stage of emergency. He shall cause the President to be advised of the emergency, or the ranking executive officer if the President is unavailable, and coordinate the response of the various line units, such as Manufacturing, Safety, Security, Facilities Engineering, etc. (See Exhibit "A").

2.3 The Director of Facilities Engineering shall assume the additional role of Company Fire/Rescue Marshall. Personnel under his control will be trained to act on either a Fire Brigade or a Rescue Team, depending upon necessity. These emergency teams will be identifiable by distinctive arm bands and hard hats and will be equipped, as necessary, to perform their functions.

2.4 The Emergency Organization shall activate when circumstances warrant and when directed by competent authority: i.e., the President, the senior executive present, the Emergency Coordinator, or such other management personnel as the situation may dictate; for instance, the Operation Manager on the night shift. The management or executive personnel who causes the Emergency Organization to activate shall maintain control of the organization, pending the arrival of one of the aforementioned executives.

2.5 SCOPE OF THE EMERGENCY RESPONSE

The response mounted to any emergency will depend upon the classification of the emergency.

A. Stage I - Minor Emergency

This is the lowest category of emergency, and the response will usually be by supervisory personnel, Security, Safety, and/or Facilities Engineering personnel. The intent at this stage is to localize the effects of the emergency so as not to impair the overall capability of the plant.

B. Stage II - Major Emergency

At this stage, the entire operation of the plant is impaired, and the focus of all activity is toward the emergency situation and subsequent recovery.

C. Stage III - Disaster

This occurrence will be of such magnitude that the capability of the Company to operate is seriously impaired. In coordination with civil authorities, the primary intention will be the safety of personnel, minimizing the damage, protecting Company property, and establishing a recovery program.

2.6 The purpose of matching response to the emergency is to effectively control a situation with the least disruption to production.

3.1 EMERGENCY OPERATIONS

A. When competent authority declares that an emergency exists, specific responses shall be dictated by the type of emergency and as indicated under Emergency Actions and Procedures, Section 6, for the particular emergency. In general, the following procedures will be initiated.

1. The various department managers of the affected areas shall cause the shutdown of any machinery and non-critical equipment, as prescribed under Exhibit "B". Each manager shall name an alternate who will perform his function in the absence of the manager.

2. The Emergency Coordinator, or the executive who has declared a state of emergency in the absence of the Emergency Coordinator, shall name the area to be operated as a Command Post. If the emergency is localized to a small area of the plant or a satellite plant, the Command Post may be the Human Resources Offices or any other section deemed proper. If it is not possible to use the Human Resources Offices, the Facilities Engineering Offices may be the Command Post. At that location, both interior and exterior communications capability exist, enabling information to be received and passed on to concerned agencies.

3. Facilities Engineering personnel will be utilized as an Emergency Response Team, trained in fire suppression techniques and familiar with rescue procedures. An adequate supply of fire hose, hydrant wrenches, shovels, and other necessary equipment will be stored at the northeast corner of Plant 1, to be used where necessary. There are two generators for use in emergencies: The smaller one to provide electricity for portable radio equipment at the Facilities Engineering Offices and one to be utilized for emergency lighting where needed.

4. If the emergency situation exists at a location other than Plant 1, the Emergency Coordinator shall utilize any appropriate area as the Command Post, with necessary support personnel (Exhibit "A") to assist.

3.2 WARNING SYSTEM

A. At Building 1, the public address system shall be used to advise of any emergency. In the absence of a public address system, the person becoming aware of an emergency shall immediately advise his/her supervisor. The supervisor shall cause appropriate personnel to be notified so that the necessary response may be initiated. Human Resources shall be immediately advised of such emergency.

B. In the event of a Stage I emergency at Building 1 that involves the area of the switchboard or a more serious emergency (Stage II or III) and it is felt that an evacuation is imminent, the switchboard will be ordered to shut down, and all incoming calls are to be switched to the main Guard Station. Once the board is switched over, the operators will stand by their area and proceed with the evacuation, as directed by a member of the Emergency Response Team.

3.3 RECEPTIONIST'S/SECRETARY'S DUTIES DURING EMERGENCIES

A. Limit the use of the telephone system to emergency use only.

B. Maintain at least one open line which can be used for emergency purposes. If all lines are in use, terminate the connections on necessary lines so that emergency calls may be made. (On call-directories, advise parties to hang up due to the emergency).

C. Proceed as directed by competent authority.

4.1 EMERGENCY EVACUATION

A building evacuation should be ordered when the health and safety of personnel is endangered. It is not always possible for one individual to determine the extent of actual damage caused by an emergency/disaster or what physical hazards may exist in particular portions of a facility, its surroundings, or the vicinity in which it is located. Therefore, established procedures to accommodate the complete and efficient evacuation of personnel to safe locations are set forth below.

4.2 TYPES OF EVACUATIONS

Three types of evacuations that should be identified prior to an incident are:

A. Immediate Evacuation

Immediate evacuation is the swiftest removal possible of personnel from an imminent danger area. This type of evacuation occurs without waiting for orders; however, once outside the immediate danger area, personnel are to follow the direction of emergency team members and assemble in the designated areas.

B. Partial Evacuation

Partial evacuation is the evacuation of a particular portion of the facility, due to hazardous conditions caused by some unusual circumstance. A partial evacuation usually is limited to a small portion of the facility and only requires those employees which are exposed to the affected area to be evacuated. Those employees will be directed to a safe location; however, the area selected will be contingent on the amount of people evacuated. Except for the immediate need to remove personnel from danger areas, the orders to evacuate these personnel to another location shall be given by the Emergency Coordinator or the senior executive at the location. During non-standard work times, the senior management person available will take command.

C. Total Evacuation

Total evacuation is the systematic removal of all personnel from a facility because of hazards or damage to the facility or because of the extreme probability of a disaster occurring. This shall include disasters that affect the Company, its surrounding vicinity, or the greater Los Angeles area.

4.2 TYPES OF EVACUATIONS (CONT)

Any time it is known that emergency conditions exist, or it is highly probable that they will occur (national emergencies, extreme weather conditions, etc.), the Company will cooperate with the Civil Authorities to avoid any unnecessary impairment to the employees' ability to return to their place of residence. The method of evacuation used to vacate the premises will be contingent on the type of emergency and may not necessarily require the use of the procedures established in this Plan.

The responsibility of ordering a total evacuation will be exclusively the responsibility of the President, the Emergency Coordinator, his designee, an officer of the Company or during non-standard work hours, the highest level management person available. Once off HR Textron property, either by order to evacuate or otherwise, personnel shall be subject to the regulations established by the Civil Authorities vested with this responsibility. When possible, the Company will coordinate evacuation proceedings with these authorities, and every effort will be made to establish safe passage to their residence by obtaining reports of emergency conditions throughout the area.

5.1 EMERGENCY COORDINATOR

A. Shall supervise the development of the Company's emergency plans and organization of the emergency personnel.

B. The Emergency Coordinator shall maintain constant liaison with the executive branch, in addition to reporting situation changes and events, as often as needed.

C. The Emergency Coordinator shall maintain liaison with indicated Civil Authorities, as required, to fully utilize Los Angeles County or City governmental services.

D. Set up, as required or desirable, cooperative disaster arrangements with other firms in the area.

E. The Emergency Coordinator, or his designee with proper clearance, shall be responsible for safeguarding any classified material, pursuant to the Security Manager and the Company Standard Practice and Procedure Manual.

5.2 EMERGENCY RESPONSE TEAMS

The Director of Facilities Engineering assumes the role of Fire/Rescue Marshall during the emergency. He shall train and acquire equipment necessary to accomplish this task. The teams, augmented by Company employees on a voluntary basis, previously named by the Director, shall consist of the following:

A. Fire Brigade

This team, to be trained in fire control, shall respond as indicated in the Appendix under "Fire".

1. The team will be selected by the Director, Fire/Rescue Marshall, and report directly to that position during emergencies. They will respond to the predetermined meeting area when instructions are announced over the public address system or any other method or when there is a general fire alarm. Brigade members will be issued red hard hats for use during emergencies only. The Company will provide specialized training in fire repression techniques, and team members are expected to be knowledgeable of special repression techniques for all hazardous substances or conditions in their area that could cause a major problem if it became ignited: i.e., alcohol, magnesium, etc. Brigade members are also charged with the

5.2 EMERGENCY RESPONSE TEAMS (CONT)

responsibility of ensuring that all Company fire equipment is maintained in a ready-to-use state at all times. Spent extinguishers are refilled weekly, and the necessary type of fire extinguishers/equipment are available within a reasonable distance from sources of serious hazards.

2. Alternate Fire Brigade members will be selected by the Fire/Rescue Marshall, and they will be equally trained in fire fighting techniques, as are the regular Brigade members; however, their function is to replace absent members or assist, as directed.

B. Rescue Team

1. This team shall be comprised of the same personnel as above, assigned as necessary by the Director, and reports to that person during emergencies. They will report to a predetermined meeting place upon being instructed. In emergencies, such as earthquake or explosion, where a public address system may be inoperable or non-existent, they will report immediately to the area of the Command Post and await instructions from the Director or his alternate. The Director will select from this team specially designated team members to accompany any handicapped employees out of the facility. These employees will be evacuated to an assembly area immediately, without need of direction by any authority.

2. The only other time this team will effect an evacuation without orders from the Director or the Emergency Coordinator is if the involved area is heavily damaged by the disaster and immediate evacuation is necessary to prevent serious injury or death.

3. Whenever possible, two or more evacuation routes leading in different directions have been designated on the Facility Maps of this Plan. Rescue Team members are to be knowledgeable of these routes and responsible for thir being free from obstacles at all times. The Rescue Team will remain with their evacuation group during an evacuation and assemble in an area designated outside the plant. There they will separate the group into the original operating departments and note down the names of any missing persons. The group will remain in the assembly area until instructed by the Emergency Coordinator or other competent authority. If the group is released to return home, they will do so by the route determined by the Civil Authorities and be subject to their orders once off HR Textron property.

5.3 SECURITY MANAGER

A. The Company Security Manager shall function in this capacity during any emergency.

B. Shall be responsible to assist key emergency personnel in liaison and communications with Civil Authorities, as needed. Shall immediately transmit emergency requests to appropriate agencies (fire, paramedic, police, etc.). Shall direct those authorities, responding quickly, to the location of the emergency.

C. Shall set up proper protective or security measures, in the event of an emergency to:

1. Prevent unauthorized persons from entering unsafe areas.

2. Prevent the unauthorized removal of property from the emergency area.

3. Provide traffic control so that all emergency equipment and materials can be quickly deployed and ambulances and relief vehicles rapidly dispatched from the scene.

D. Set up and train an auxiliary guard force for use in emergencies.

E. Provide an emergency communications network.

5.4 HEALTH SERVICES ADMINISTRATOR

A. Shall establish a "field hospital" area. The hospital shall be established at the safest convenient location.

B. Shall be responsible for summoning any outside medical assistance the situation demands. Maintains liaison with all local agencies where medical assistance could be obtained.

C. Shall instruct or arrange for first-aid training for certain plant personnel. These trained employees shall be used to assist with first aid at the accident location or in the "field hospital" area, under the direction of the Occupational Health Nurse or outside medical personnel.

5.4 HEALTH SERVICES ADMINISTRATOR (CONT)

D. In the event of a prolonged emergency, supervises sanitary conditions, including control of toilet facilities, garbage and trash disposal, and hygienic procedures. Inspects food supplies and other conditions for safe use.

E. First-Aid Teams

1. Those teams will be comprised of qualified first aiders and will report directly to the Occupational Health Nurse. In Valencia satellite facilities, where a Nurse is not normally assigned, a member of the First-aid Team will be selected as Coordinator of the team and will respond directly to the Field Hospital.

2. First-Aid Teams at satellite facilities will report to the field hospital area indicated on the appropriate evacuation map.

3. The Occupational Health Nurse or Team Coordinator will decide if a field hospital is necessary. If so, the first aiders will carry medical supplies to that site, as directed to do so. The Nurse shall also maintain a portable medical supply case which can be transported to an emergency site with minimal time loss. All First-Aid Team members will be issued green hard hats. The Nurse/Coordinator will direct the nearest available person to call the established emergency number (5555) and request the amount and type of outside help needed: i.e., paramedics, ambulances, hospital notification, etc.

4. In the event of a prolonged emergency, the First-Aid Coordinator will supervise sanitary conditions such as toilet facilities, garbage and trash disposal, as well as hygiene procedures. Water and food supplies will be supervised by this team and they will determine the rationing of such items.

6.1 EVACUATION

A. When evacuation is deemed necessary by the Emergency Coordinator, employees will be directed to leave the building immediately by the nearest designated exit and in accordance with the Evacuation Plan.

B. Handicapped personnel will be given the highest priority evacuation. They will be assisted by way of the safest and most expeditious routes available.

C. When evacuating, employees should walk, remain quiet, and watch for hazardous obstructions.

D. After exiting the building, employees will gather in one of the designated assembly areas shown on the Evacuation Plan. It is important that everyone remain in one of the assembly areas to facilitate head count and the dissemination of information.

E. After evacuation, emergency personnel will prevent entrance to the building except for authorized individuals.

F. When it has been determined that the emergency no longer exists, the Emergency Coordinator will advise employees to return to the buildings.

6.2 FIRE - GENERAL PROCEDURES

A. Available personnel will be employed to alert all other personnel in case of a fire any place in the facility. The plant will be divided into fire zones and charts posted in key locations throughout the facility.

B. It will be the responsibility of each employee to be totally familiar with the evacuation maps and know at all times which route to use if evacuated.

C. Fire should be reported by the first person who is aware of it by dialing extension 5555, which is a clear line to the Guard House. The person reporting the fire should give the area in which the fire is located to the Guard. He should also give the Guard the extension from which he is calling and then stand by that phone in case the operator or emergency personnel should call back for further details. (Procedure to be followed by the Guard is covered under Guard Instructions - FIRE).

6.3 EARTHQUAKE - GENERAL PROCEDURES

A. THINK...DON'T PANIC! The major hazard in any of our facilities is that of falling objects, such as light fixtures, ceiling panels, etc.

B. At the first shock, all personnel should immediately attempt to get under a strong table, bench, or desk in their immediate area. They should stay under such protection as long as possible, even though they may slide around the room or building. Secondary safe locations would be to stand under doorway headers and arches, bracing yourself in position if possible.

If at all possible, avoid areas:

1. Under light fixtures;
2. Near files, large shelves, and racks that could tumble;
3. Concrete walls around periphery of building;
4. Proximity to large pieces of machinery or equipment.

C. Do not attempt to leave your area until the initial shock has subsided and then only if threatened by fire or serious overhead structural damage of the buildings. Emergency personnel will organize evacuation, especially in darkened areas by providing light, if possible, to assist in avoiding wreckage and dangerous overhead conditions.

D. Upon reaching the outside of the building, move away from walls and assemble in the designated assembly areas as rapidly as possible.

E. If the quake is severe enough to cause serious damage with the possibility of personnel being trapped in wreckage, all supervision shall take an immediate head count, reporting all missing or unaccounted for personnel to the Emergency Coordinator so that Rescue Teams may be organized and search for missing persons begun. No person should leave the facility without notifying a member of supervision in his department, the Security Guard, or the area Evacuation Team Coordinator.

6.4 EMERGENCY PERSONNEL ACTION

A. All personnel who are assigned to emergency duties should assemble, as soon as possible, in an area adjacent to the Command Post with any emergency equipment (flashlights, tools, etc.) they are able to accumulate. If the damage is severe and there is danger of personnel being trapped in wreckage, Rescue Teams shall be dispatched to critical areas or areas where known missing persons may have been at the time.

B. Such Rescue Teams shall be assigned from qualified members of the Emergency Response Teams, on a voluntary basis, by the Director of Facilities Engineering, his assistant, or the Emergency Coordinator. No individual or groups of individuals shall enter the building(s) for any purpose, unless directed by proper authority. A record shall be maintained indicating the names of any personnel entering the facility and the area involved.

6.5 POWER FAILURE - GENERAL PROCEDURES

A. There are two kinds of power failures:

1. Planned Blackouts by the Power Companies - In the case of pre-warned blackouts, personnel in critical dark areas will be evacuated prior to the blackout.

2. Unplanned or Accidental Power Outages - In the case of an unwarned power failure, all personnel should remain in place for a few minutes. If no information is forthcoming, evacuation teams shall begin evacuation, providing lights in areas where emergency light is insufficient.

B. If the blackout is of any significant duration, all personnel (if the event occurs on day shift) shall assemble in the areas noted on the Facility Evacuation Maps. No personnel, other than Emergency Teams, shall enter dark portions of buildings until service is restored. If the event occurs at night, all personnel shall assemble in the designated assembly areas to await instructions.

C. No personnel shall leave the premises without permission or instruction during power outage, regardless of duration. When the duration of power outage is determined, an executive decision shall be made as to whether personnel shall be sent home or not.

6.6 FLOODS

A. Flooding

The flood threat which could affect the Company generally would be from:

1. Catastrophic failure of man-made dams, upstream;
2. Massive rainfall or flash flooding on the Santa Clarita River, its tributaries, and adjacent canyons.

B. Locations Affected

1. All facilities located in Valencia.
2. Travel routes leaving plants, including bridges over Santa Clarita River.

C. Actions

1. Warnings and information regarding actual and forecast conditions will be announced as they are received.
2. Employees are not to leave or evacuate until instructed by senior management personnel, after a determination has been made of safe evacuation routes.
3. If a dam break has occurred, move quickly to high ground.

6.7 VIOLENT WEATHER

A. Results of heavy snowstorm, severe wind and rain storms, etc. Hazards include:

1. Downed power lines, trees, and signs.
2. Blocked or clogged highways or freeways.
3. Hazardous highways from ice or snow.
4. Weakened bridges.

6.7 VIOLENT WEATHER (CONT)

B. Actions

1. Warnings and information regarding actual and forecast conditions will be announced as they are received.

2. Employees are not to leave or evacuate until instructed by senior management personnel, after a determination has been made of safe evacuation routes.

3. If a dam break has occurred, move quickly to high ground.

6.8 EXPLOSIONS - CHEMICAL ACCIDENTS

A. Explosions or threat of explosions could occur due to leaking gas, faulty pressure valves, spillage of volatile chemicals, or from the effects of flammable fluids atomized, due to a rupture under pressure.

In this event, employees should:

1. Notify the Guard House, extension 5555, if there is time.

2. Take cover under tables, desks, or other objects which will give protection against flying objects or debris.

3. After effects of explosion have subsided, evacuate as instructed by emergency personnel, according to Evacuation Plan.

B. Prompt action to recognize potentially explosive conditions may prevent them from occurring.

1. If unusual amounts of gas are detected or if dangerous spills occur, immediately notify emergency personnel. Reduce the hazard by having the source disconnected or the spill isolated and cleaned up before it reaches hazardous concentrations.

2. Open doors and ventilate area.

6.9 BOMB THREAT AND SEARCH

A. Employees receiving or discovering a bomb or receiving a bomb threat should immediately notify the Guard House, extension 5555.

If a bomb threat is received by phone, ask:

1. When is the bomb set to explode?
2. Where is the bomb right now?
3. What kind of bomb is it?
4. What does is look like?
5. Why did you place the bomb?

B. KEEP THE CALLER ON THE LINE AS LONG AS POSSIBLE

Record the following information:

1. Time of call
2. Date of call
3. Exact words of person
4. Age, sex, adult, child
5. Background noises
6. Speech pattern, accent

C. DO NOT LEAVE DETAILS TO MEMORY - RECORD IMMEDIATELY

If bomb threat is received by mail, employees should:

1. Not handle the letter, envelope, or package after the contents have been determined.
2. Notify Human Resources, extension 5789.
3. Preserve all evidence for law enforcement officials.

6.9 BOMB THREAT AND SEARCH (CONT)

D. Evacuation

If there is reasonable evidence to suspect that there is a bomb on the Company property, the person acting as the Emergency Coordinator will order an evacuation of the facility:

1. Evacuate as instructed by emergency personnel and according to the Evacuation Plan.

2. Move to assembly areas and remain there until released or cleared by emergency authorities to return to the facility.

6.10 ENEMY ATTACK - NUCLEAR FALLOUT

A. In the event of an enemy attack, employees will be advised by the use of the public address system or the person receiving the information. Available AM radios shall be turned to 640 or 1240 K.C. for additional information:

1. If evacuation is necessary, employees will do so, in accordance with the Evacuation Plan as instructed by emergency personnel.

2. Employees should take all personal belongings and possessions when leaving.

3. Take cover under tables, desks, or any large objects which will give protection against flying glass and debris.

4. Stay against the wall nearest the windows for protection.

5. Stay under cover until notified otherwise.

6. If evacuation is ordered, proceed to shelters, as directed by emergency personnel.

7. Remain in shelter until other action is directed by emergency personnel.

8. Await further instructions and information from appropriate authorities regarding the state of emergency and hazard conditions.

6.11 AIR POLLUTION

A. Specific actions by the Company are governed by the approved Air Pollution Episode Emergency Plan.

B. Warnings

Notices of forecast smog alert conditions will be received by the Company by:

1. An alert monitor radio receiver, located in the Guard House at Valencia.
2. Local radio and television stations.

The notice of forecast alerts will be transmitted to designated Company locations.

Employees may be notified by:

1. Special sign notices at the plant exits.
2. Public address system bulletins or supervisory personnel.

C. Depending on the severity of the forecast conditions, alerts will be designated:

1. First Stage Alert
2. Second Stage Alert
3. Third Stage Alert

D. Actions

First Stage Alert:

1. Employees will be requested to utilize carpools or public transportation for commuting.
2. Certain equipment which emits air contaminants will be prepared for shutdown if Second Stage Alert levels are reached.

6.11 AIR POLLUTION (CONT)

Second Stage Alert:

1. Employees will be strongly urged to utilize carpools or public transportation, if they have not already done so.

2. Company vehicles will not be dispatched into areas where Second Stage levels have been reached.

3. Shut down designated equipment which emits air contaminants.

4. Prepare plans for shutdown of plant if Third Stage levels are reached.

Third Stage Alert:

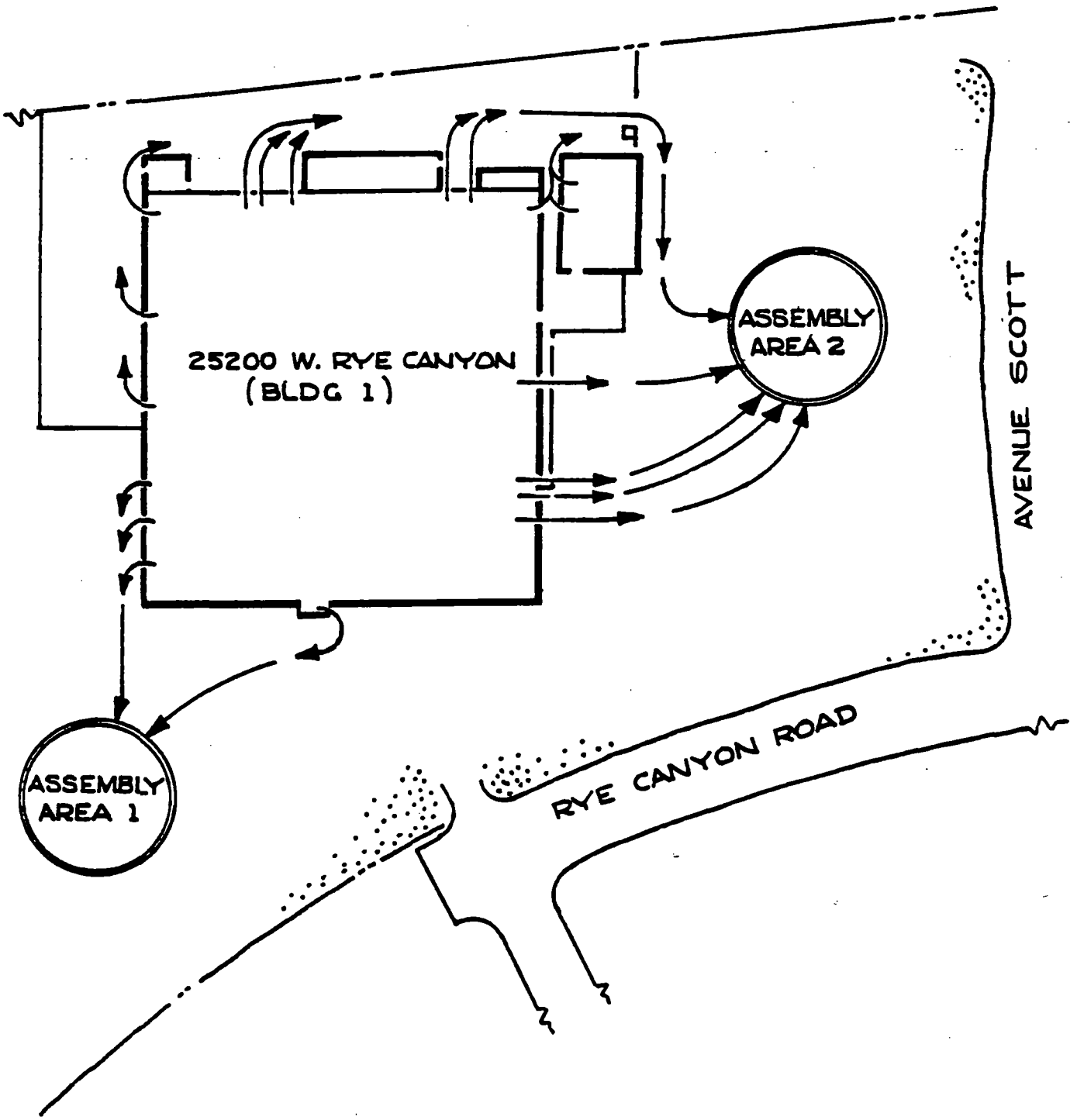
1. All Company vehicles still out will be recalled to the plant.

2. If ordered by the Air Pollution Control officer, the plant will be shut down. This will be performed under full Company supervision.

3. In the event of a complete shutdown, employees will be released to return directly to their homes.

SUBJECT

EVACUATION MAP - BUILDING 1

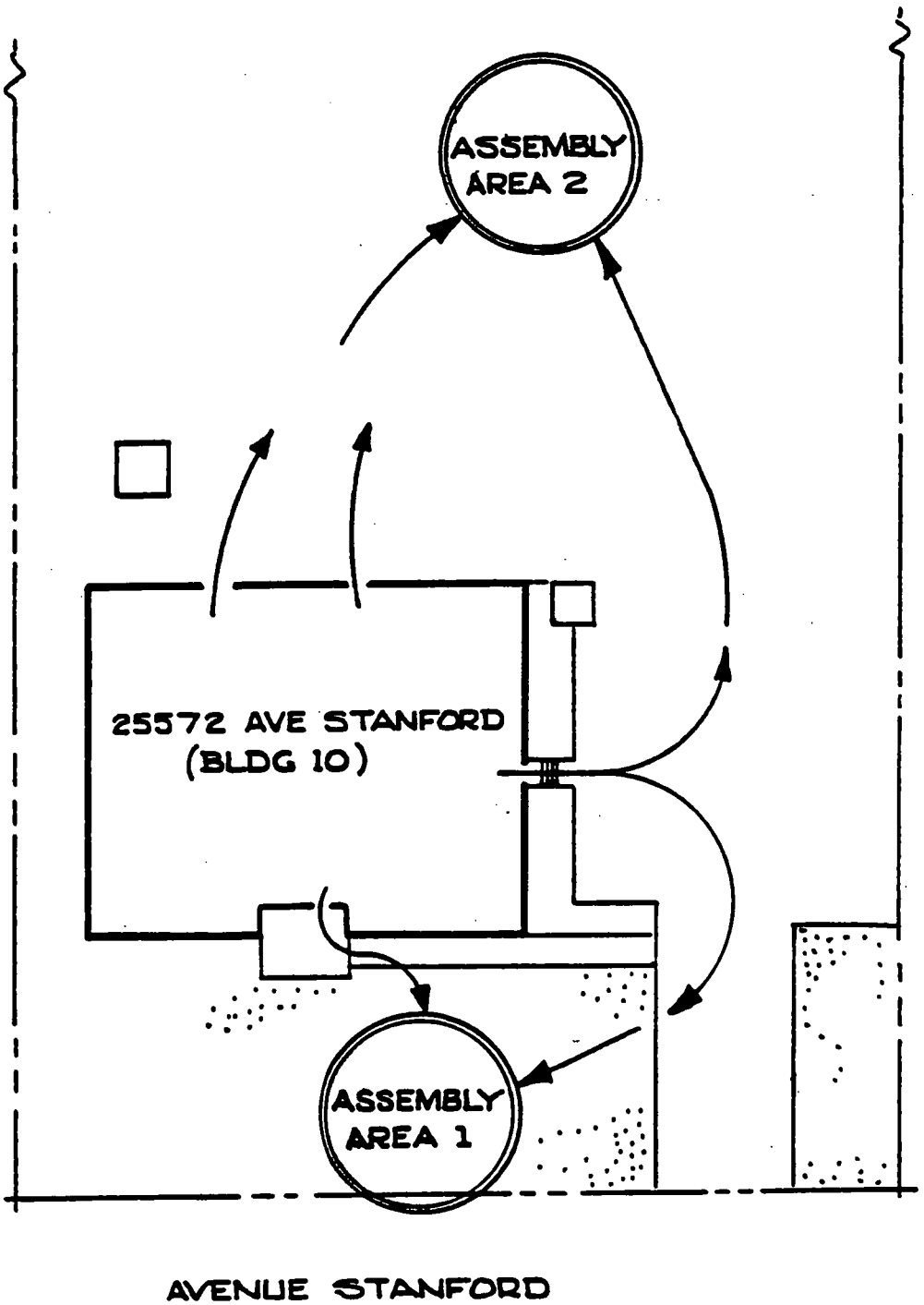


Z0177(2)

PREPARED BY:	DATE	APPROVED — REQUESTER	APPROVED — DEPT. HEAD

SUBJECT

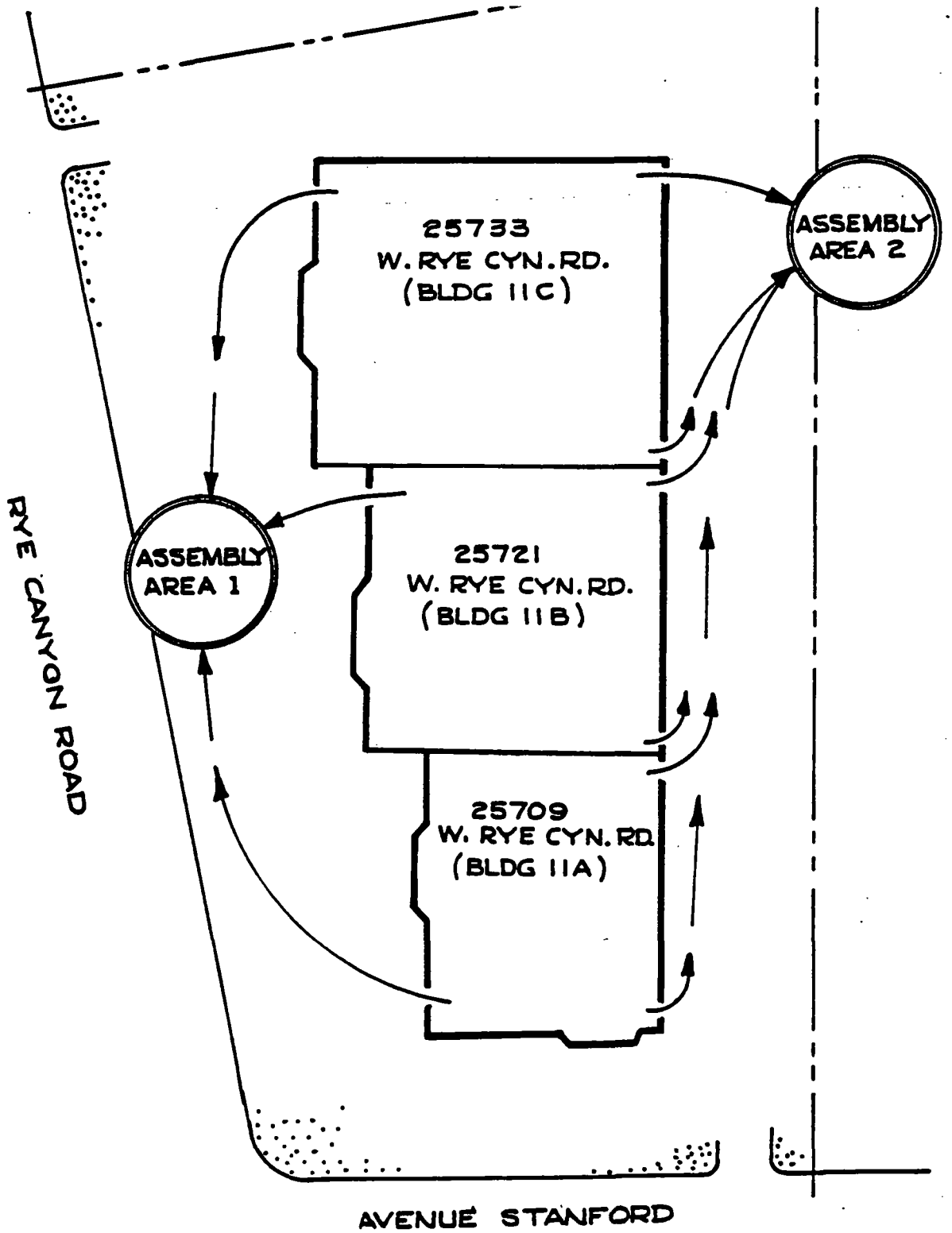
EVACUATION MAP - BUILDING 10



Z0177(2)

PREPARED BY:	DATE	APPROVED — REQUESTER	APPROVED — DEPT. HEAD

SUBJECT
EVACUATION MAP - BUILDING 11

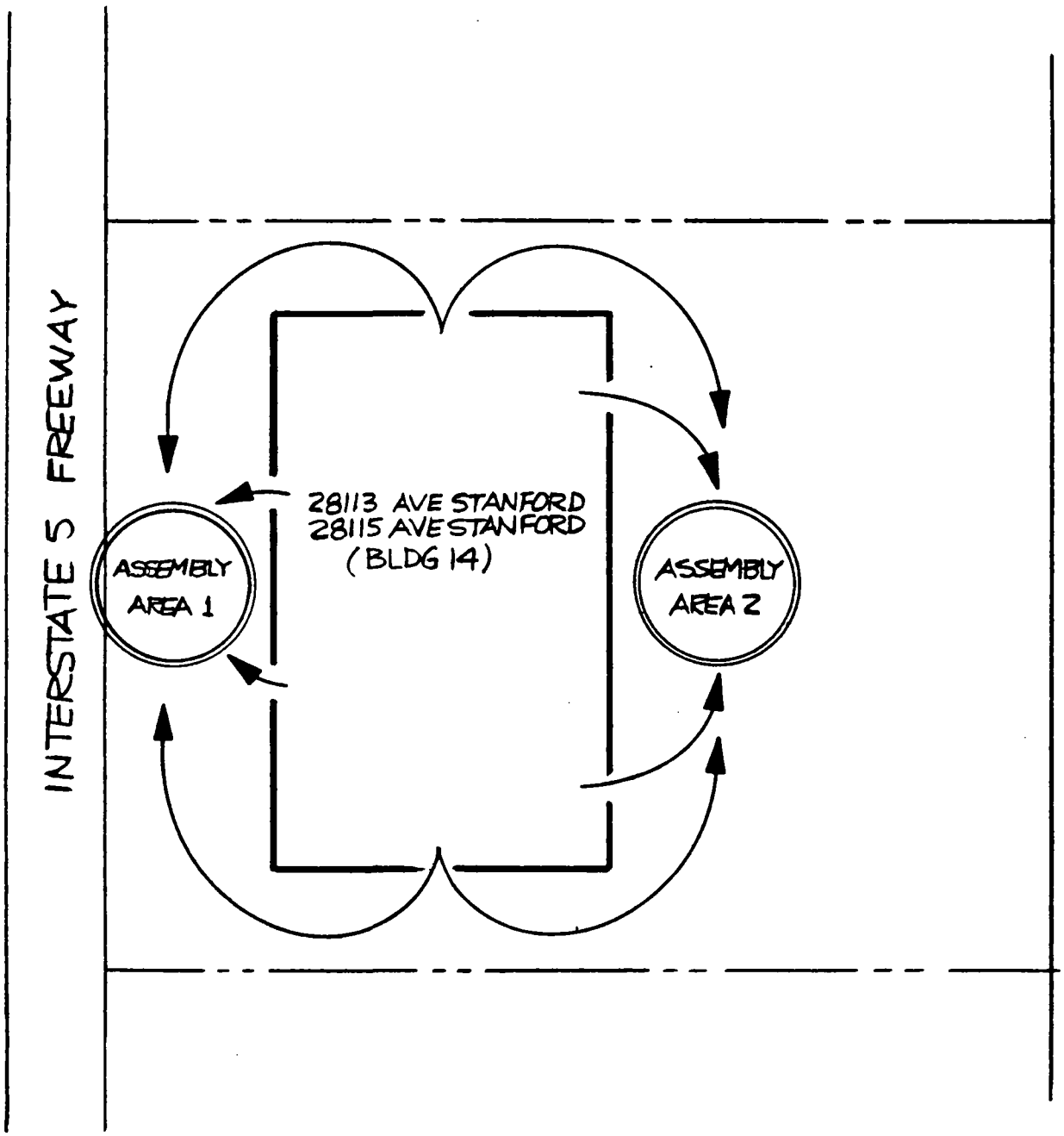


Z0177(2)

PREPARED BY:	DATE	APPROVED — REQUESTER	APPROVED — DEPT. HEAD

SUBJECT

EVACUATION MAP - BUILDING 14

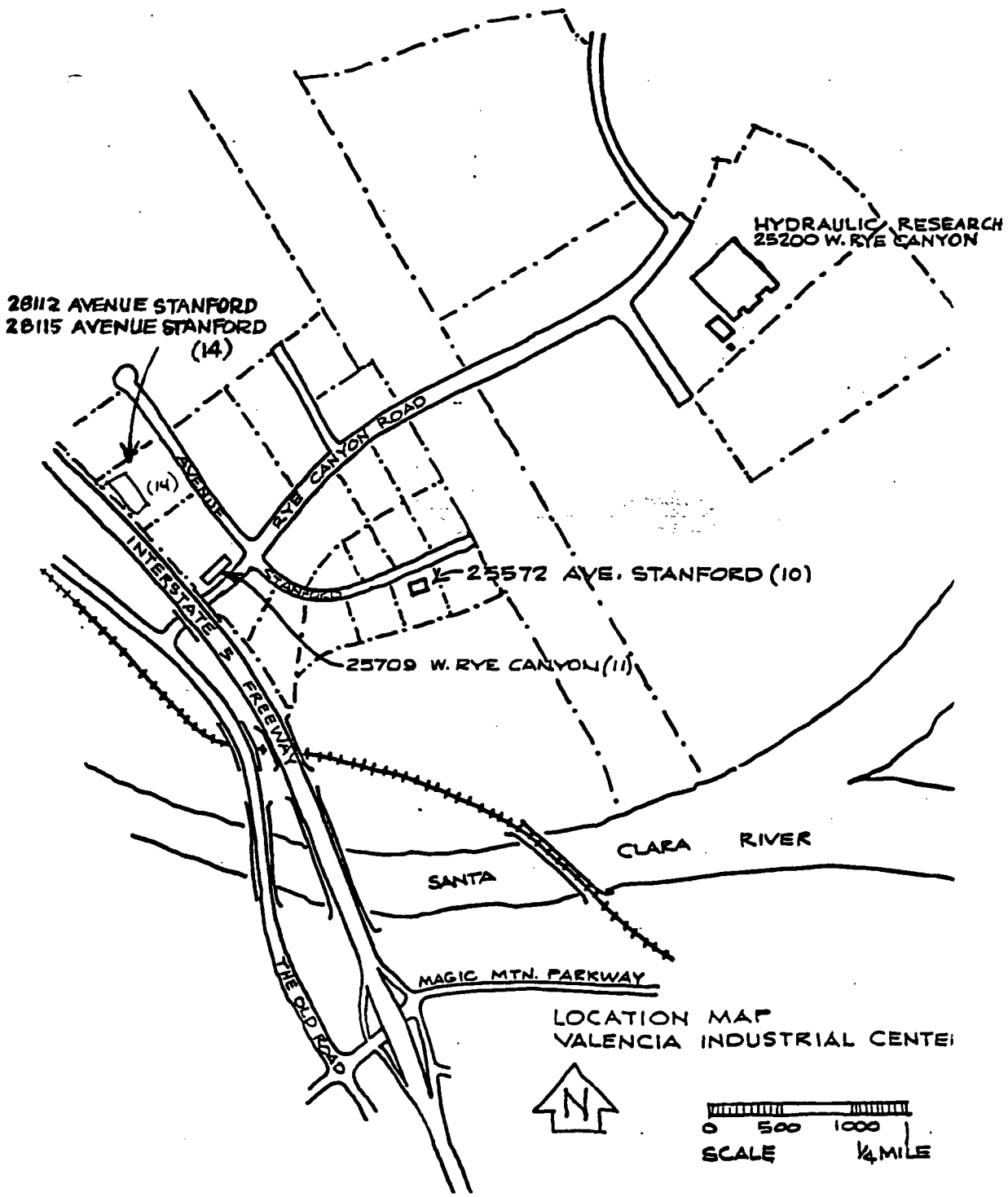


Z0177(2)

PREPARED BY:	DATE	APPROVED — REQUESTER	APPROVED — DEPT. HEAD

SUBJECT

EVACUATION ROUTES

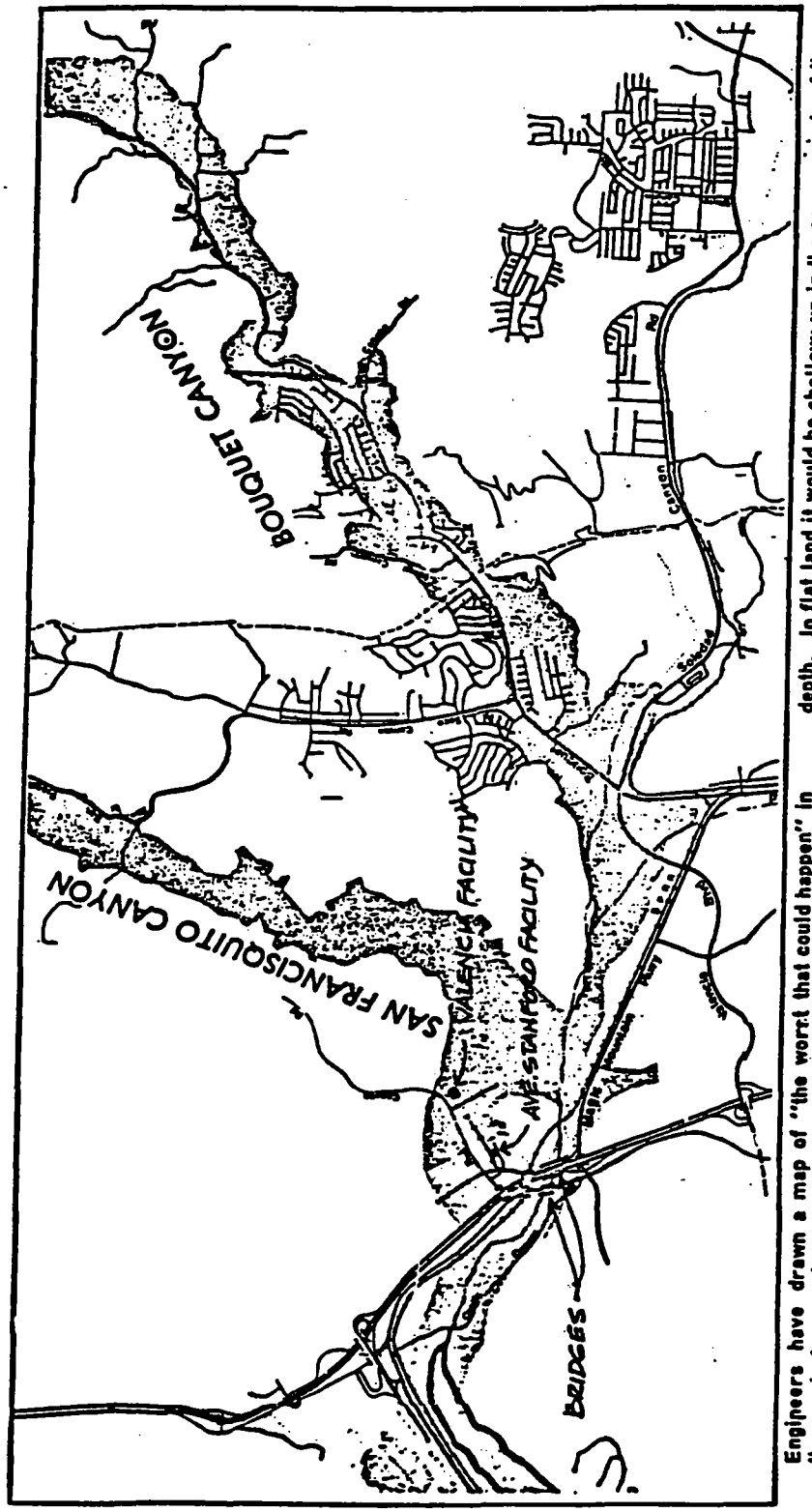


Z0177(2)

PREPARED BY:	DATE	APPROVED — REQUESTER	APPROVED — DEPT. HEAD

SUBJECT
VULNERABILITY ASSESSMENT

High Wa.er Mark



Engineers have drawn a map of "the worst that could happen" in the event of a massive earthquake which hit directly at Bouquet dam. The above drawing is a preliminary sketch of where the water could conceivably go providing that the reservoir were full (which it seldom is) and that the dams ruptured all at once. Bouquet reservoir actually has two dams, one at the head of Bouquet and the other in San Francisquito Canyon. This map is incomplete, as it does not indicate water depth. In flat land it would be shallow; up in the narrow parts of the canyon it could be a high wall of water. A flood takes time; water in the sudden, total collapse of San Francisquito Canyon dam in 1928 traveled at 18 mph to the canyon mouth, entered Ventura County at about 9 mph, and was moving at a sluggish 2 mph when it hit the ocean at Oxnard. Best advice: when in doubt, move quickly uphill; no canyon resident is far from a hill.

Z0177(2)

PREPARED BY:	DATE	APPROVED — REQUESTER	APPROVED — DEPT. HEAD

7.1 PUBLIC RELATIONS

Any event which evokes procedures, as herein described, may well draw the attention of media representatives. The following procedures are guidelines to assist you in those instructions.

A. Contact the Vice President, Human Resource HR's official spokesman, or in his absence, his designee.

B. Keep the updated HR Emergency Contact List in your wallet at all times.

C. While you are waiting for the official spokesperson to arrive at the scene of the emergency, gather all of the facts.

D. If the media arrives on the scene before the spokesperson, don't say "no comment". Tell them the name of the spokesperson and that he/she will make a statement as soon as all of the facts are gathered.

E. If necessary, a meeting will be called of the Executive Committee to decide the Company's position and statement.

F. An official Company statement will be distributed to the Switchboard Operators and the Guards.

G. Outside legal or technical counsel should be contacted by the spokesperson, when necessary.

H. If Textron needs to be alerted, that will be accomplished through the Company President or his designee.

I. When practical, a set of questions and answers will be prepared for the spokesperson.

J. Spokesperson to prepare news release if logical:

1. You can get the full story out (fast) with proper show of concern and action planned or underway.

2. If it's newsworthy, it will get printed with correct facts and your point of view.

3. Reduces overestimate of danger or bad motives.

7.1 PUBLIC RELATIONS (CONT)

4. May limit coverage to one day rather than a second day rehash with your (tardy) response.

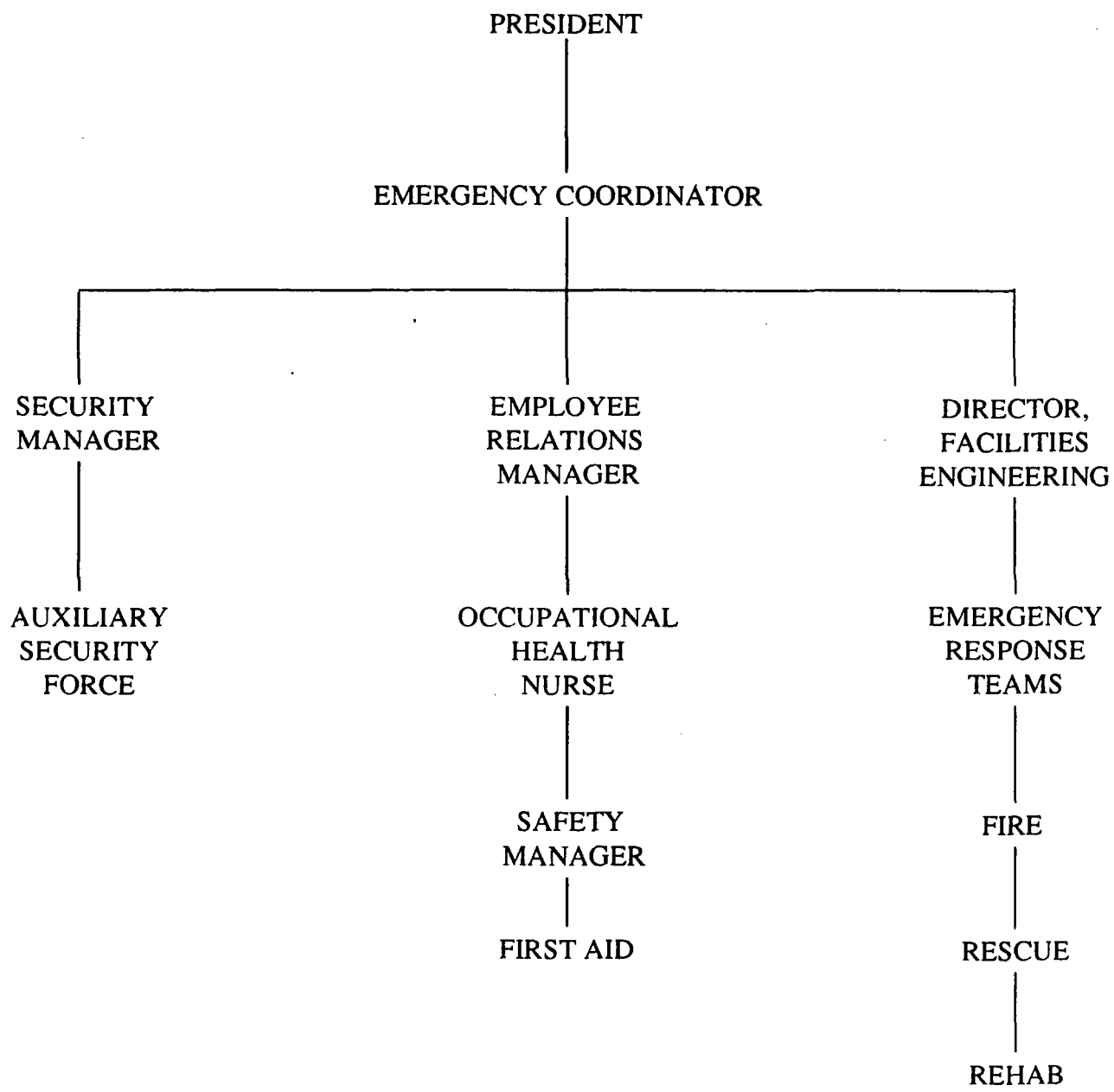
K. List of Don'ts

1. Don't go off the record.
2. Don't guess.
3. Don't lie or give half truths.
4. Don't use complicated sentence structure.
5. Don't be led into saying more than you intend to say.
6. Don't answer a question you don't understand -- repeat it in your own words.
7. Don't lose your temper with an abrasive questioner.
8. Don't be funny or sarcastic.
9. Don't say "no comment" unless necessary -- you may appear guilty.
10. Don't embroider the facts or speak in superfluous terms.

L. List of Do's

1. Do get the exact wording of the accusation.
2. Do give the facts -- in brief and straightforward.
3. Do have the answer to "what are you going to do about it?"
4. Do demonstrate concern for the public.
5. Do treat attackers as sincere, but misinformed.
6. Do respect deadlines -- return every call.
7. Do advise employees and customers promptly.
8. Do keep your cool.
9. Do keep your management informed of progress.

SUBJECT
EXHIBIT "A"



Z0177(2)

PREPARED BY:	DATE	APPROVED — REQUESTER	APPROVED — DEPT. HEAD

SUBJECT
EMERGENCY SHUTDOWN PROCEDURES - EXHIBIT "B"

9.1 EMERGENCY SHUTDOWN PROCEDURE

Protection of people is the first priority, but the additional protection of plant and property can be essential to a rapid restoration of operations after a disaster.

A. If time permits after receipt of warning, it will be the responsibility of all employees to contribute to the protection of Company property, before leaving work stations.

B. Where no warning of an emergency occurred, those actions which will do the most good will be initiated to minimize losses and damage.

9.2 Shutdown operations will be under the direction of the Director of Facilities. He will coordinate his activities with the department managers affected, if time permits.

A. Shutdown instructions shall be prepared and posted near critical pieces of equipment, switches, valves, and other operating mechanisms.

B. Red emergency shutoff tags should be stored at or near major pieces of equipment for attachment at the time of a shutdown.

C. Provisions should be made to protect valuable and sensitive tools, instruments, machinery, and materials. If a secure storage is doubtful, consider a safer location for the items, depending on the impending emergency.

D. Personnel on each shift should be designated to perform assignments, including closing doors, tying down loose items, barricading and covering material.

9.3 Shutdown Check List:

Shutdown Task	Time Required	Name or Title of Person Assigned	Date Assigned

Z0177(2)

PREPARED BY:	DATE	APPROVED — REQUESTER	APPROVED — DEPT. HEAD

POLICY AND PROCEDURE MANUAL

SAFETY

HR TEXTRON

INDEX

2166-04746

350150

2166-04746

HR Textron Policy & Procedure Manual

SUBJECT: SAFETY

PROCEDURE

NUMBER:

REVISION:

APPROVED: DATE: September 1, 1988

Section	Title	Effective
i	INDEX	9/1/88
ii	INTRODUCTION	9/1/88
iii	SAFETY RESPONSIBILITIES	9/1/88
1	PERSONAL PROTECTIVE EQUIPMENT	9/1/88
2	HAZARDOUS SUBSTANCE SAFETY	9/1/88
3	RESPIRATORY PROTECTION	9/1/88
4	PORTABLE FIRE EXTINGUISHERS	9/1/88
5	PORTABLE COMPRESSED GAS CYLINDERS	9/1/88
6	WELD-HOT WORK	9/1/88
7	ELECTRICAL/MECHANICAL LOCKOUT	9/1/88
8	MACHINE GUARDING	9/1/88
9	GRINDING MACHINES, ABRASIVE WHEELS	9/1/88
10	COMPRESSED AIR	9/1/88
11	HOISTING EQUIPMENT	9/1/88
12	POWERED INDUSTRIAL VEHICLES	9/1/88
13	RADIATION SAFETY	9/1/88
14	ACCIDENT INVESTIGATION	9/1/88
15	EVACUATION PROCEDURES	9/1/88
16	SAFETY TRAINING	9/1/88
17	SAFETY BULLETINS	9/1/88
18	EXPLOSIVE MATERIALS HANDLING	5/1/89

HR Textron is a responsible corporate citizen.

It is important that the individual and collective safety and health of all HR Textron employees be maintained. This responsibility extends also the members of the general public in our surrounding community. An important aspect of these responsibilities is HR Textron's ongoing programs to protect the whole environment - to make HR a safe and healthy workplace, and to protect the community's air, land, and water quality.

To this aim it is our policy at HR Textron to work diligently and conscientiously:

To maintain and improve present facilities, and construct new areas with health, safety, and protection of the environment as primary concerns.

To comply fully with all laws and regulations relating to employee safety and health and control of environmental pollution.

To cooperate with government, industry, and academia in supporting research and maximizing benefits for the general public and our employees in safety, health, and environmental matters.

To ensure that qualified HR Textron personnel are employed, trained, and given defined responsibilities and authority to minimize adverse effects on health, safety, or the environment.

To keep employees and the general public informed of the Company's programs and progress related to improving the environment.

This safety, health, and environmental policy shall be an integral part of our daily operations, and will be enforced uniformly, consistently, and swiftly. Only through such efforts can a safety, health, and environmental record be preserved in the best interests of all.

1.0 SCOPE

It is the policy of HR Textron to provide safe and healthful working conditions in all facilities, for all employees. The prevention of occupational injuries and illness is of such consequence that it must be given precedence. To this end it is the Division's policy that an effective program of occupational safety and health be the DIRECT RESPONSIBILITY of each member of Management, and this requires the development of safety awareness in all HR employees.

2.0 THE SAFETY AND HEALTH PROGRAM

The HR Safety and Health program includes the following:

2.1 Training all employees in sound safety and health practices.

2.2 Conducting a program of safety and health inspections to eliminate UNSAFE working conditions; UNSAFE work practices; and to control health hazards and fully comply with the published safety and health standards for every job.

2.3 Providing all the necessary personal protective equipment and the instructions for its use and care as necessary.

2.4 Developing and enforcing safety and health standards and motivating all employees to cooperate with these standards as a condition of employment.

2.5 Holding periodic safety meetings or orientations with employees to discuss safety concerns.

2.6 Investigating accidents to determine their cause and to take appropriate corrective action so that the likelihood of recurrence is minimized.

3.0 ASSIGNMENT OF RESPONSIBILITIES

3.1 HR Textron Management is responsible for leadership in the Safety and Health Program, its effectiveness, improvements, and for providing all the necessary safeguards to ensure safe working conditions.

3.2 The Safety Department is responsible for establishing the procedures and practices necessary to achieve an effective Safety and Health Program.

3.3 HR supervisors and managers are responsible for developing the proper attitudes toward safety and health, and ensuring that all operations are performed with the HIGHEST regard for the safety and health of all personnel involved.

3.4 Employees are responsible for complying with ALL provisions of the Safety and Health Program, for wearing the prescribed, personal protective equipment provided for each assignment, for obeying all Safety Standards and exercising GOOD SAFETY PRACTICES in the performance of their jobs.

3.5 Purchasing

Ensure, through purchase order instructions, that the supplier will provide:

3.5.1 The required guarding for all machines and equipment, in accordance with the applicable State Industrial Safety Orders;

3.5.2 That such electrical wiring is in accordance with applicable State, County, and City Electrical Codes;

3.5.3 That chemicals (injurious substances) be labeled in accordance with the applicable Safety Orders, to ensure proper use, storage, handling, and employee safety, and to ensure that proper protective clothing is worn, etc.

3.5.4 Obtain the current Material Safety Data Sheet for the substances purchased. Upon receipt of delivery of any equipment or materials, verify that the above safety requirements have been fulfilled.

4.0 SAFETY DEPARTMENT RESPONSIBILITIES

HR Textron Human Resources Department is staffed with a thoroughly qualified professional Safety Department whose principle responsibilities are to support you in the following areas:

1. Providing advice and counsel on any safety problems;

2. Developing specialized safety training programs;

3. Preparing and/or reviewing and updating safety procedures, practices, rules and regulations;

4. Conducting safety inspections and determining safety requirements for new or modified equipment, operations, and areas;

5. Conducting accident investigations and preparing accident reports

The services of the Safety Department are available to all supervisors and you are urged to use the expertise whenever you have a safety problem or a questions concerning safety rules and practices.

5.0 SAFETY COMMITTEE

POLICY

To motivate employees regarding safety, the Safety Committee shall be created as appropriate, under the direction of the Safety Department, to promote the Safety-Accident Prevention Program. All employees, including supervision, are provided with an opportunity to have a forum for expression of safety attitudes and ideas. This is a cooperative effort for airing and solving safety questions for the mutual benefit of the company and employees. Allowing for such free communication encourages cooperation, which satisfies a basic need for job satisfaction. It also provides a commitment for trust, which requires action.

5.1 Practice

The Safety Committees, Safety Committee members, and Safety Manager shall work together to create a better, safe and healthy environment. The function and responsibility of each is as follows:

5.1.1 General Committee:

There shall be two General Committees; one for the Valencia facility and one for the Pacoima facility. The General Committee shall consist of one representative from the Bargaining Unit, Facilities Engineering, Plant Nurse, designated representatives of supervision and the Safety Manager, as Chairperson. The Committee shall meet once each month to:

a. Review and act on the Workers' Committee Report and the Safety Manager's Inspection Report.

b. Review and discuss all pertinent safety recommendations to determine their practicality (written records of such discussion and approved recommendations shall be kept in the form of minutes).

c. Study the causes of accidents occurring since the last meeting, for the purpose of devising methods to prevent recurrence.

d. Set up systems to educate employees in the hazards of their work and in safety practices, through the use of bulletins, safety publications printed rules and other safety training aids, as well as oral instructions.

5.2 Safety Manager

The Safety Manager shall be responsible for the facility inspection as required by the Worker's Compensation Insurance carrier and shall:

a. Inspect assigned facilities once a month for safety hazards.

b. Check and report on "Action Items" submitted by the General Committee as to the status of completion.

c. Initiate action on items of a minor nature which can be corrected by a Department Supervisor or an area maintenance representative.

The Safety Manager will coordinate and administer the functions of the company's Safety Program. In this capacity, he/she shall:

a. Serve as a member of the General Committee.

b. Maintain coordination and communications with the insurance carrier's safety representative, county and state inspection representatives and the Local and National Chapters of the National Safety Council.

c. Schedule and coordinate safety inspection tours with department managers and Facilities Engineering.

d. Assign priorities for "Corrective Action" items as required by Safety Recommendations, Form PS-005 and/or Facilities Work Request, Form FE-001.

e. Maintain accident record system, make reports, investigate fatal or serious accidents, and check corrective action taken by supervisors to eliminate accident causes.

f. Conduct safety training courses and provide information and assistance to maintain effective Safety Programs at HR Textron.

5.3 Plant Nurse

The Plant Nurse shall serve as a member of the General Committees

a. Originating "Employer's Report of Injury" to the insurance carrier's claim representative.

b. Prepare accident records and make reports.

c. Secure "Supervisor's Accident Investigation" reports.

d. Provide information and assistance to maintain an effective employee health program.

5.4 Responsibilities

5.4.1 Supervision - ensure full support and attendance of Safety Committee members under their authority at safety meetings and related program matters.

5.4.2 Human Resources - organize and provide direction for the Safety Committees in support of the Safety-Accident Prevention Program.

6.0 PROCEDURES FOR INSTITUTING HAZARD CORRECTIVE ACTION

6.1 There are basically four kinds of problems that will be observed by, or brought to the attention of, safety committee members and they may range from major to minor in their level of hazard:

a. Hazardous physical conditions - blocked exists, trip hazards, exposed electrical connections, various equipment problems, etc.

b. Safety equipment usage - the misuse or nonuse of required personal protective equipment.

c. Environmental - room temperature variations, odors and fumes, lighting and other factors relating to employee occupational health and comfort.

d. Organizational - evacuation drills, equipment training, etc.

A serious hazard situation is not to be confused with an emergency situation in which imminent danger to employees is present such as fire, large chemical spill, toxic gas leak, etc. In such cases, Safety and Emergency Control should be immediately notified. Use company telephone, and dial the EMERGENCY NUMBER (Valencia 5555, Pacoima 222) to report the emergency.

6.2 Serious hazards involve situations where the possibility of employee injury may be significant, such as nonuse of required safety equipment, unguarded mechanical equipment, exposed electrical connects, slippery walk surfaces, blocked emergency exists, inoperative alarm systems, unbalanced storage of materials, vehicles requiring basic maintenance, etc.

6.3 In the case of SERIOUS HAZARDS, the Safety Committee member should immediately:

6.3.1 Contact the responsible supervisor of the equipment and/or person involved in the hazard and tactfully point out the problem and request that corrections be made.

6.3.2 Inform the Safety Section/Personnel (X5338) of the hazard and request corrective action and notification of the appropriate response personnel.

6.3.3 Alert the Safety Committee Chairperson in whose area the SERIOUS HAZARD exists for followup action.

6.4 The Safety Committee Chairperson in which area the SERIOUS HAZARD exists has the responsibility to approach proper management to ensure corrective action.

6.4.1 If corrective action requires a major work order or a change in the HR safety policies, the chairperson should then inform the Safety Department who will initiate termination of the hazardous operation or determine suitable change of safety policy.

6.5 Nonserious Hazards

6.5.1 Situations such as room temperature variations, burned-out light fixtures, and other lesser problems can usually wait to be discussed at the safety committee meeting. At that time the chairperson can delegate a particular member (and there often are representatives from the departments responsible for making the corrections) to investigate and have the problems corrected.

SECTION
1

CONTENTS

Paragraph		Page
1.0	PURPOSE/SCOPE	1
2.0	PROTECTIVE CLOTHING	1
3.0	EYE PROTECTION	2
4.0	EYE PROTECTION REQUIRED FOR SPECIFIC TASKS	2
5.0	MANDATORY EYE PROTECTION AREAS	3
6.0	TYPES OF EYE PROTECTION	4
7.0	HOW TO OBTAIN EYE PROTECTION	7
8.0	RESTRICTIONS FOR WEARING CONTACT LENSES	8
9.0	EMPLOYEES WHOSE VISION IS LIMITED TO ONE EYE	8
10.0	FOOT PROTECTION	8
11.0	FOOT PROTECTION AREAS/JOBS	8
12.0	TYPES OF FOOT PROTECTION	9
13.0	PROHIBITED FOOTWEAR	10
14.0	HAIR PROTECTION	11
15.0	HEAD PROTECTION	11
16.0	HEARING CONSERVATION	11
17.0	SAFETY BELTS	14
18.0	MISCELLANEOUS PERSONAL PROTECTION	15

1.0 PURPOSE/SCOPE

1.1 Purpose

The purpose of this policy is to provide procedures to reduce employee exposure to injury during job performance.

1.2 Scope

1.2.1 The scope of this policy is to prescribe certain personal protective equipment used at HR Textron for the protection of the employee where work of a hazardous or potentially-hazardous nature is being performed. Its use is to prevent injury and not to complicate the job. Its serviceability depends upon reasonable care and inspection before and after use.

1.2.2 Safety equipment is not intended to substitute for proper installation and maintenance of equipment, adequate operating procedures, or good personal judgment.

2.0 PROTECTIVE CLOTHING

2.1 Acid Aprons and Gloves

2.1.1 Acid aprons are to be worn in conjunction with full-face shields, gloves and safety footwear for protection against acids and other hazardous chemicals as required.

2.1.2 In use, acid apron sleeves should be worn over glove wristlets and the apron should be long enough to reach the top of the safety footwear.

2.1.3 In the event of a spill/splash, care must be used to flush away all contaminants on the apron, gloves, and face shields before removing the equipment.

2.1.4 Acid aprons and gloves must be free of holes.

2.1.5 They must be tested or checked for tears or leakage before and after each use. Never inflate gloves by exhalation.

2.1.6 They must be washed after each use.

2.1.7 Supervisors in areas requiring the use of acid aprons and gloves are responsible for the cleanliness and serviceability of the equipment.

2.2 Gloves

2.2.1 Gloves of proper type and material are provided for hand protection in work involving the handling of sharp or rough objects, corrosive liquids, flammable liquids, and materials or equipment under abnormal conditions or in temperature extremes.

2.2.2 Supervisors will ensure the availability and use of suitable gloves for the work at hand.

2.2.3 Gloves shall not be worn at work with machinery which presents the hazard of gloves being caught by rotating or moving gears, chains, shafts, etc.

2.2.4 The Safety Department may be contacted for glove specifications.

3.0 EYE PROTECTION

3.1 Each employee has a responsibility to protect his eyesight by conscientious use of eye protection equipment against the unexpected happening, as well as during the course of work known to offer particular hazard to the eyes. Requirements are based on operations within the areas which are appropriately identified and posted as requiring eye protection.

3.2 This policy is to advise employees of the types of eye protection equipment available to them, how it may be obtained, and to specify the requirements for its use.

4.0 EYE PROTECTION REQUIRED FOR SPECIFIC TASKS

4.1 Eye protection must be worn on any job where an eye hazard exists.

4.2 Eye protection as indicated must be worn by individuals performing the following specific tasks:

Task	Eye Protection Required
Acetylene welding, brazing, burning, cutting, silver soldering or soft soldering when using torch	Welding goggles
Buffing, chipping and grinding	Safety glasses with side shields
Metal drilling, forging, machining, milling, and swaging	Safety glasses with side shields

Task	Eye Protection Required
Woodpower sawing, planing, shaping, sanding, and turning	Safety glasses or full face shield
Handling acids, caustic powders, corrosive liquids, flammable materials and powdered metals	Chemical goggles or full face shield
Operating and testing pressurized systems	Safety glasses with side shields
When de-energizing or energizing high-voltage switches and fused cutouts	Safety glasses with side shields
Solvent degreasing and cleaning operations other than small scale	Full face shield
Solvent degreasing operations in labs and small scale operations	Chemical goggles or full face shield
Using air or electrically-driven hand tools	Safety glasses with side shields
Welding other than acetylene	Welding hood
Ultraviolet inspection shields	Tinted safety glasses with side

5.0 MANDATORY EYE PROTECTION AREAS

Where the presence of an eye hazard may be a prevailing situation, the Safety Department may designate the area as a mandatory eye protection area.

5.1 Areas so designated will be posted with appropriate signs, "EYE PROTECTION REQUIRED".

5.2 All personnel entering a mandatory eye protection area must comply with the eye protection requirements of the area. This is a condition of employment.

5.3 In special situations, supervisors or the Safety Engineer may require eye protection to be worn in areas not posted.

5.4 All fabrication areas beyond the aisle border are considered mandatory eye protection areas.

6.0 TYPES OF EYE PROTECTION

6.1 Safety glasses with wrap-around side shields (plain, tinted)

6.1.1 The wrap-around side shields safety glasses are made durable, impact-resistant polycarbonate plastic that meets current ANSI standards. The side shields prevent foreign bodies from entering from top or side. These safety glasses are to be standard for fabs and other manufacturing areas. They may be put over slight-framed prescription spectacles. Safety glasses with wrap-around side shields are to be used by employees and visitors.

6.2 Chemical Goggles

6.2.1 Chemical goggles provided by HR are of the ventilated type. The ventilation ports are covered (hooded) in a manner that will allow air to circulate around the eyes and prevent splashed liquids from entering the ports. Goggles may be worn over prescription spectacles.

6.3 Face Shields

6.3.1 Full face shields are to be used to protect the face and eyes against impact from flying objects and corrosive liquids. Under some circumstances they may be used in the place of goggles and safety glasses.

6.3.2 Clear face shields will be used to protect against light impact and corrosive liquids.

6.4 Welding Goggles

6.4.1 Welding goggles may be worn over safety glasses or ordinary glasses. They are designed in a manner to permit easy changing of the lenses to that the shade of the lens may be changed to meet the requirements of the particular type of welding.

The higher the shade number, the darker the lens. The principal objective is to diminish the intensity of the light to a point where there will be no injurious visible, infrared, or ultraviolet rays or glare. The shade of lens to use in a particular task may be determined by the individual wearer, but the shade selection must not vary more than two (2) consecutive numbers from the shades specified below. (See Table 1 for specific transmittances).

6.4.1.1 Clear lenses and filter lenses up to and including Shade No. 2 may be used for welding and for stray light from nearby cutting and welding operations, furnace work, and reflected light from these operations.

6.4.1.2 Shade No. 5 filter lenses are intended for light gas cutting and gas welding.

6.4.1.3 Shade No. 6 filter lenses are intended for gas cutting, medium gas welding, and for arc welding to 30 amperes.

6.4.1.4 Shade No. 8 filter lenses are intended for heavy gas welding and cutting exceed 75 but less than 200 amperes.

6.4.1.5 Shade No. 10 filter lenses are intended for arc welding and cutting exceeding 75 but less than 400 amperes.

6.4.1.6 Shade No. 12 filter lenses are intended for arc welding and cutting exceed 200 but less than 400 amperes.

6.4.1.7 Shade No. 14 filter lenses are intended for arc welding and cutting exceeding 400 amperes.

6.5 Welding Hood

6.5.1 A welding hood is made of strong, noncombustible, opaque material shaped to protect the entire face and ears from flying sparks, molten metals, and injurious rays of light. The hood will be equipped with a colored lens to permit viewing of the work. The lens shade should be selected in accordance with the guidelines in Section 6.4.1.

Table 1. Tolerances in Transmittance of Various Shades of Glass Filter Lenses

The values given apply to Class I filter glass. For Class II filter lenses the transmittances and tolerances are the same with the additional requirement that the transmittance at 589.3 mμ shall not exceed 15 percent of the luminous transmittance.

	Optical Density			Luminous Transmittance			Maximum Infrared Transmittance Percent	Maximum Spectral Transmittance in the Ultraviolet and Violet			
Shade Number	Minimum	Standard	Maximum	Maximum	Standard	Minimum		313mμ*	334mμ	365mμ	405mμ
1.5	0.17	0.214	0.26	67	61.1	55	25	0.2	0.8	25	65
1.7	0.26	0.300	0.36	55	50.1	43	20	0.2	0.7	20	50
2.0	0.36	0.429	0.54	43	37.3	29	15	0.2	0.5	14	35
2.5	0.54	0.643	0.75	29	22.8	18.0	12	0.2	0.3	5	15
3.0	0.75	0.857	1.07	18.0	13.9	8.50	9.0	0.2	0.2	0.5	6
4.0	1.07	1.286	1.50	8.50	5.18	3.16	5.0	0.2	0.2	0.5	1.0
5.0	1.50	1.714	1.93	3.16	1.93	1.18	2.5	0.2	0.2	0.2	0.5
6.0	1.93	2.143	2.36	1.18	0.72	0.44	1.5	0.1	0.1	0.1	0.5
7.0	2.36	2.571	2.79	0.44	0.27	0.164	1.3	0.1	0.1	0.1	0.5
8.0	2.79	3.000	3.21	0.164	0.1000	0.061	1.0	0.1	0.1	0.1	0.5
9.0	3.21	3.429	3.64	0.061	0.037	0.023	0.8	0.1	0.1	0.1	0.5
10.0	3.64	3.857	4.07	0.023	0.0139	0.0085	0.6	0.1	0.1	0.1	0.5
11.0	4.07	4.286	4.50	0.0085	0.0052	0.0032	0.5	0.05	0.05	0.05	0.1
12.0	4.50	4.714	4.93	0.0032	0.0019	0.0012	0.5	0.05	0.05	0.05	0.1
13.0	4.93	5.143	5.36	0.0012	0.00072	0.00044	0.4	0.05	0.05	0.05	0.1
14.0	5.36	5.571	5.79	0.00044	0.00027	0.00016	0.3	0.05	0.05	0.05	0.1

*313 mμ = 313 nm

7.0 HOW TO OBTAIN EYE PROTECTION

7.1 Non-prescription safety glasses with wrap-around side shields (plain, tinted)

7.1.1 Non-prescription safety glasses are issued by the company dispensary individual request. Damaged glasses will be replaced. Upon completion of work requiring eye protection, the employee shall retain the safety glasses for future use. (individuals requesting safety glasses on a continuing basis will be noted and asked to explain why new safety glasses are frequently required).

7.2 Prescription safety glasses with side shields

7.2.1 If an employee is required to wear prescription glasses, the employee is to contact the Dispensary for a Prescription Order Form. Frames may be selected at this time.

7.2.2 The employee requiring prescription safety glasses shall pay the expense of their eye physician for the examination and filling out the prescription.

7.2.3 The completion Prescription Order Form will be returned to the Dispensary for administering and ordering the prescription safety glasses.

7.2.4 The employee will be notified by the Dispensary, upon arrival of the prescription safety glasses.

7.2.5 The employee must return to their eye doctor to have the prescription verified and the spectacles properly fitted.

7.2.6 Prescription safety glasses may be replaced at twelve-month intervals or when the prescription changes or if damaged in an incident to injury.

7.3 Full Face Shields

7.3.1 Full face shields are to be provided by the departments that require their use.

7.4 Welding goggles, chemical goggles, welding hoods and other special eye protection equipment

7.4.1 These items may be obtained from supervisors of the use area. Only eye protection equipment approved by Safety is to be stocked in the Dispensary.

8.0 RESTRICTIONS FOR WEARING CONTACT LENSES

8.1 Contact lenses shall not be worn by an employee engaged in operations involving the following:

8.1.1 Exposure to dusts, sandblasting, or fiberglass application.

8.1.2 Exposure to corrosive or irritant liquids, gases or vapors.

8.1.3 Exposure to flammable liquids.

8.1.4 While wearing respiratory protection.

8.1.5 Welding operations

9.0 EMPLOYEES WHOSE VISION IS LIMITED TO ONE EYE

9.1 Employees whose vision is limited to one eye must wear safety glasses at all times.

10.0 FOOT PROTECTION

10.1 Each employee has a responsibility to protect his/her feet by conscientious use of foot protection. Requirements are based on operations within areas which are appropriately identified and posted as requiring foot protection.

11.0 FOOT PROTECTION AREAS/JOBS

11.1 Where the presence of a foot hazard may be a prevailing situation, the Safety Section may designate the area as a recommended Foot Protection Area. Areas so designated will be posted as a "Foot Protection Area".

11.2 Employees working full time in specifically identified foot hazard jobs within the company that have been designated as Foot Protection Areas include:

11.2.1 Plant Maintenance

11.2.2 Line Maintenance

11.2.3 Machine Shop

11.2.4 Shipping and Receiving

11.2.5 Chemical Handlers

11.2.6 Shop Loading

11.2.7 Nondestructive Test

11.2.8 Other Areas so Designated by the Safety Section

11.3 All personnel entering a Foot Protection Area must comply with the foot protection requirement of that area. At the discretion of the area supervisor or Safety Department, personnel transiting a foot protection area, may need to comply with the foot protection requirements.

11.4 In special situations the supervisor or Safety Engineer may require foot protection to be worn in areas that are not so posted.

12.0 TYPES OF FOOT PROTECTION

12.1 Hard-Toe Safety Shoes

12.1.1 Hard-toe safety shoes are shoes which have a steel toe cap underneath the leather toe cap. These are intended to protect the wearer's toes from moving or falling objects. It is recommended that they be worn by individuals who are handling objects which may be dropped on the toes.

12.2 Hard-Toe Chemical Resistant Safety Shoes

12.2.1 Hard-toe chemical resistant safety shoes are similar in appearance to ordinary safety shoes. They differ in that they are made of leather with a one-piece tongue and a chemical (acid) resistant sole. These are intended to protect the wearer's feet from falling objects and chemical contact. It is recommended that they be worn by individuals who are handling chemicals.

12.3 Plastic Shoe Covers (Disposable)

12.3.1 These are intended to protect the wearer's feet from small chemical splashes only. It is recommended that they be worn by individuals who have brief contact with chemicals or visitors to an acid use area.

13.0 PROHIBITED FOOTWARE

13.1 29CFR1910 and California Safety orders state as follows:

"Appropriate foot protection shall be required for employees who are exposed to foot injuries from hot, corrosive, poisonous substances, falling objects, crushing or penetrating actions which may cause injuries or are required to work in abnormally wet locations."

13.2 Prohibited footware within HR manufacturing, production areas, laboratory, or jobs appropriate to Section 13.1 above, is defined as follows:

13.2.1 Any shoe that does not fully enclose the foot below the ankle bone.

13.2.2 Any shoe constructed, above the sole, of synthetic materials, canvas, perforated plastic or other porous or open-weave materials.

13.2.3 High heels, spiked heels or any heel designed with less than one square inch of heel surface on the ground.

13.2.4 Any shoes with heels higher than two (2) inches when measured at the instep.

13.3 Managers and supervisors are responsible for the enforcement of these foot protection safety rules in all manufacturing/production areas.

13.3.1 Areas that are not covered by this foot protection requirement are:

13.3.1.1 Office Areas

13.3.1.2 Cafeteria

13.3.1.3 Engineering Areas

13.3.1.4 Data Processing Areas

13.3.1.5 Main Hallways/Aisleways

13.3.2 Individuals that have occasion to go into any area where the presence of a foot hazard may prevail, are covered by Section 13.2 - Prohibited Footwear.

14.0 HAIR PROTECTION

14.1 Hair protection for all employees in the form of hairnets, ties, or any other measure necessary to hold hair back, will be used at all times when working with or in the vicinity of moving machinery or hazardous chemicals.

15.0 HEAD PROTECTION

15.1 Requirements for wearing safety helmets (hardhats).

15.1.1 Head protection will be worn whenever there is a hazard from falling objects from above or where there is danger of bumping the head against overhead structures, moving equipment, or swing loads of material.

15.1.2 Safety helmets will be worn by all personnel in areas:

15.1.2.1 Whenever overhead operations are in process.

15.1.2.2 Under unusual conditions or when designated by the Safety Engineer.

15.1.3 Safety helmets worn by electricians shall be special nonconductive electrical worker-type helmets.

15.1.4 Chin straps or other special types of helmet suspension to prevent loss of safety helmet will be worn by all personnel operating over twenty feet above ground floor level.

15.1.5 Areas where safety helmets are required shall be appropriately posted according to the requirements of the area.

15.1.6 Safety helmets issued for individual employee use will not be passed from one individual to another without first being sanitized and inspected for damage.

16.0 HEARING CONSERVATION

16.1 HR administers a continuing hearing conservation program designed to reduce employee noise exposures equal or not exceeding an eight-hour time-weighted average sound level of 85 decibels (db) as measured.

16.2 Employee noise exposure shall be computed in accordance with Section 5097, Appendix A and Table A-1 of the General Industry Safety Orders, State of California, and without regard to any attenuation provided by the use of personal protection equipment.

16.3 When employees are subjected to sound levels exceeding those in the following table, feasible administrative or engineering controls shall be utilized. If such controls fail to reduce sound levels within acceptable levels, personal protective equipment shall be used to reduce employee exposure.

Table 2. Permissible Noise Exposure

Sound Level (dBA)	(Hours-Minutes)	Hours	Sound Level (dBA)	(Hours-Minutes)	Hours
90	8-0	8.00	103	1-19	1.32
91	6-58	6.96	104	1-9	1.15
92	6-4	6.06	105	1-0	1.00
93	5-17	5.28	106	0-52	0.86
94	4-36	4.60	107	0-46	0.76
95	4-0	4.00	108	0-40	0.66
96	3-29	3.48	109	0-34	0.56
97	3-2	3.03	110	0-30	0.50
98	2-38	2.63	111	0-26	0.43
99	2-18	2.30	112	0-23	0.38
100	2-0	2.00	113	0-20	0.33
101	1-44	1.73	114	0-17	0.28
102	1-31	1.32	115	0-15	0.25

[1] When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each. If the sum of the following fractions: C/T + C/T ... C/T exceeds unity, then, the mixed exposure should be considered to exceed the limit value. C_n indicates the total time of exposure at a specified noise level, and T_n indicates the total time of exposure permitted at that level.

16.4 New employees required to work in high noise level areas shall undergo audiometric testing to determine "baseline" hearing capabilities. The testing will be conducted by a licensed or certified audiologist, otolaryngologist or other physician or by a technician who is certified by the Council of Accreditation in Occupational Hearing Conservation.

16.4.1 The baseline audiogram shall be preceded by at least 14 hours without exposure to workplace noise. (This requirement may be met by wearing hearing protectors which will reduce the employee exposure to a sound level of 80 dBA or below).

16.4.2 After obtaining the baseline audiogram, exposed employees shall have audiometric testing performed annually.

16.5 Hearing Protectors

16.5.1 Hearing protectors are available from the dispensary from employees who may be exposed to loud continuous noise and impact noise at all frequencies. Three types of hearing protectors are available.

A. Disposable from inserts

B. Reuseable triple flange ear inserts

C. Industrial ear muffs

16.5.2 Hearing protectors will have a minimum Noise Reduction Rating (NRR) of 20 dB.

16.6 Mandatory Hearing Protection

A few operations create high noise levels regardless of engineering improvements. Employees involved in such operations and in the vicinity of the operation shall wear hearing protectors. This is a condition of employment.

16.6.1 Machine operations creating noise above 85 dBA.

16.6.2 Machining operations creating high frequency noise shall wear hearing protection.

16.6.3 The supervisor/Safety Engineer may require use of hearing protection for any loud operations.

16.7 Training Program

16.7.1 Employees involved in the Hearing Conservation Program will be trained at the time of the baseline audiogram, then annually.

16.7.2 Training effects of noise on hearing.

16.7.2.1 The effects of noise on hearing.

16.7.2.2 The purpose of hearing protectors, the advantages, disadvantages, and attenuation of various types and instructions on selection, fitting, use and care.

16.7.2.3 The purpose of audiometric testing, and an explanation of the test procedure.

16.8 Record Keeping

To maintain an accurate Hearing Conservation Program, the following information must be maintained.

16.8.1 Employee exposure records.

16.8.2 Audiometric tests and audiograms.

16.8.3 Name and job classification of the employees.

16.8.4 Date of the audiogram.

16.8.5 The examiner's name and affiliation.

16.8.6 Date of last acoustic calibration of the audiometer.

16.8.7 Employee's most recent noise exposure assessment.

16.8.8 Accurate records of Audio-metric Test Rooms and background sound pressure levels in the audio-metric test rooms.

16.8.9 These records shall be maintained for the duration of the affected employee's employment.

16.8.10 Noise exposure measurement records shall be retained for two (2) years.

17.0 SAFETY BELTS

17.1 Safety harnesses and belts are safety devices often required as an added precaution against serious injury from a fall. The wearing of a safety harness with a lifeline manned by another employee is required when tanks or pits are entered to provide a means of rescue in the event of an unforeseen accident.

17.2 It is the responsibility of the supervisor to insure that employees do not subject themselves to a hazardous toxic environment without the protection of a safety harness or belt, if required by the nature of the operation.

17.3 Safety harnesses, belts and lifelines will be inspected before each use.

17.4 Safety harnesses or belts will be used with as little slack in the lifeline as possible.

17.5 Safety harnesses, belts and lifelines will only be used for their sole intended purpose.

18.0 MISCELLANEOUS PERSONAL PROTECTION

18.1 Safety Showers and Eyewash Fountains

18.1.1 Safety showers and eyewash fountains are provided in all locations where the possibility of contact with hazardous materials exists. Their primary purpose is for immediate first aid to dilute and flush away toxic materials before serious effects occur.

18.1.2 Managers and supervisors whose employees may be exposed to hazardous materials (corrosives, caustics, cryogenics, flammable and/or toxic materials) will assure the provision of safety showers and eyewash fountains in adequate numbers for all anticipated exposures - a rule of thumb is 25 feet of the work station.

18.1.3 A clear pathway to showers and fountains must be maintained at all times.

18.1.4 Treatment under a shower or eyewash fountain will be continued for at least fifteen minutes and will be followed immediately by a visit to the nurse and/or treatment by the medical authority having jurisdiction.

18.1.5 Installation of safety showers and eyewash fountains shall require approval from Safety.

18.1.6 All installation of showers and fountains in areas near electrical equipment shall be enclosed and properly drained to circumvent an electrical shock hazard by the use of the shower or fountain.

18.1.7 All safety showers and eyewash fountains will be inspected and tested on a monthly basis as a minimum.

SECTION
2

CONTENTS

Paragraph		Page
1.0	PURPOSE	1
2.0	SCOPE	1
3.0	REFERENCES	1
4.0	DEFINITIONS	2
5.0	MATERIAL SAFETY DATA SHEETS	5
6.0	HANDLING PROCEDURES	8
7.0	STORAGE, LABELING AND RECORD KEEPING	12

1.0 PURPOSE

The purpose of this Hazardous Substance Safety Procedure is to inform all employees that may be exposed to hazardous materials, the correct handling techniques, Potential hazards, employee training and employee rights to ensure the safety of HR personnel and our environment.

2.0 SCOPE

Current state laws require that all personnel who may be exposed to hazardous materials or wastes during the performance of their job be informed of the potential hazards, specific personal protective equipment, be trained in the use of protective equipment, the safe handling of hazardous substances and be informed of their rights.

The Hazardous Substance Safety Procedure is designed to be used with an audio-visual training program. All personnel requiring training must also read this safety procedure. Comprehensive training records will be kept in the Safety Department. Training must be completed prior to an assignment to an area in which there is the potential for exposure to a hazardous material for which the employee has not received previous information or training. Training will be updated annually. All training verification will consist of employee signature on a HR form. Annual training will consist of personal protective equipment use and storage, and rereading the Safety Procedures. Additional training will be conducted whenever HR receives new or revised Material Safety Data Sheets, within 30 days, if the new information indicates significantly increased risks to or measures necessary, to protect employee health as compared to previous data.

3.0 REFERENCES

A. Title 8, California Administrative Code, Subchapter 7 General Industry Safety Orders.

B. Title 8, California Administrative Code, Subchapter 7 Article 110 Special Hazardous Substances and Processes.

C. California Labor Code, Division 5 Chapter 2.5, Hazardous Substances Information and Training.

D. 29 Code of Federal Regulations Parts 1900 - 1910. Chapter XVII.

E. 40 Code of Federal Regulations, Parts 261-263, 413.

F. 49 Code of Federal Regulations, Parts 172 - 173.

4.0 DEFINITIONS

A. ANSI - American National Standards Institute

B. Cal-OSHA - California Occupational Safety and Health Administration

C. Carcinogen, Carcinogenic - Any substance that causes the development of cancerous growths in living tissue.

D. CAS Number - The unique identification number assigned by the Chemical Abstracts Service to specific chemical substances.

E. Caustic - Any substances that can burn human tissue by chemical action.

F. Common Name - Means any designation or identification such as a code name, code number, trade name or brand name used to identify a substance other than by its chemical name.

G. Contingency Plan - A document specifying an organized, planned and coordinated course of action to be followed in case of emergency; i.e., fire, explosion, release of hazardous material or waste which would threaten human health, the environment or facility safety.

H. Corrosive - Any solid, liquid or gaseous substance that burns, irritates or destructively attacks human tissue by chemical action.

I. Dermatitis - Skin irritation often characterized by redness, rash and/or inflammation of the affected area.

J. Disposal - Discharging of pretreated waste to the sewer system or commercial hauling by a registered waste carrier.

K. DOHS - Department of Health Services.

L. DOT - Department of Transportation.

M. EPA - Environmental Protection Agency.

N. Exposure or Expose - Means any situation arising from a work operation where an employee may ingest, inhale, absorb through skin, or eyes, or otherwise come in contact with a hazardous substance.

O. Generator - A generator of hazardous waste in the course of normal operation.

P. Hazardous Material - Any material or substance which, if improperly handled, can be damaging to the health and well being of man. Such materials cover a broad range of types which may be classified, but not limited to: poisons or toxic agents, corrosive chemicals, flammable materials, explosives, organic waste, radioactive chemicals.

Q. Hazardous Substance - Includes hazardous materials and hazardous waste.

R. Hazardous Waste - Any waste material or mixture of wastes which may cause increased mortality or serious illness or pose a substantial hazard to human health or the environment when not properly handled. This includes hazardous materials when removed from use.

S. Hazardous Waste Manifest - The State and Federal required shipping document used to identify the quantity, Department of Transportation shipping name, Environmental Protection Agency chemical or technical names, hazard class, origin, routing and destination of a hazardous waste shipment.

T. Incompatible - Unsuitable for mixing with another waste or material under uncontrolled circumstances where the mixing might result in an explosion, violent chemical reaction, fire extreme heat, formation of a toxic substance or other conditions which might endanger public health and safety.

U. Irritant - Any non-corrosive substance which on immediate, prolonged or repeated contact with normal human tissue will produce local inflammation.

V. Mixture - Means any solution of two or more substances when at least one is a hazardous substance.

W. MSDS - Material Safety Data Sheet

MESA - Mining Enforcement Safety Administration

X. NIOSH - National Institute for Occupational Safety and Health.

Y. OSHA - Occupational Safety and Health Act (Federal).

Z. Reportable Quantity - One pound of any hazardous material or waste, unless otherwise designated within Department of Transportation Shipping Regulations, 49 CFR 172.101.

AA. Respirator - A filtering device worn over the mouth or nose or both, to protect the respiratory tract, and approved by Mining Enforcement Safety Administration, National Institute for Occupational Safety and Health or both.

AB. Shall - is an expression of a mandatory statement.

AC. Spill - The accidental spilling, leaking, pumping, pouring, discharging, emitting or dumping of hazardous waste or material.

AD. Toxic - The ability of a substance to cause damage to living tissue, impairment of the central nervous system, severe illness, or, in extreme cases, death when ingested, inhaled or absorbed by the skin.

AE. Toxicology - The branch of medical science devoted to the study of poisons, including their mode of action, effects, detection and counter measures.

AF. Treatment - Any method, technique or process designed to change the physical chemical or biological character/composition of any hazardous waste, or to recover energy or material resources from the waste, or to render such waste as non-hazardous or less hazardous; safer to store, transport or dispose of; or able for recovery, storage or reduction in volume.

AG. Permissible Exposure Limit (PEL) - is the maximum permitted 8 hour time weighted average concentration of an airborne contaminant.

AH. Time Weighted Average (TWA) - is an employee exposure, as measured or calculated by a formula, to an airborne contaminant during an 8 hour workday.

AI. Threshold Limit Valve (TLV) - is a set of standards established by the American Conference of Governmental Industrial Hygienists (ACGIH) for concentrations of airborne substances in workroom air. Intended to serve as a guide in control of health hazards.

AJ. Threshold Limit Value (LD-50) Rule - is the dose required to kill 1/2 of a group. (Test are conducted with rats).

AK. Fume - is solid condensation particles of fine diameter, commonly generated from molten metal as metal fumes.

AL. Mist - is liquid particulate matter (fog).

AM. Vapor air contamination caused by evaporation of liquid or solid.

5.0 MATERIAL SAFETY DATA SHEETS

5.1 As required by 29CFR1910.1200, a Material Safety Data Sheet (MSDS) must be supplied by each chemical manufacturer or supplier providing HR with hazardous materials. The Safety/Training Department maintains copies of all MSDS's.

Each employee has the right:

A. To personally receive information regarding hazardous substances to which they may be exposed.

B. For their physician or collective bargaining agent to receive information regarding hazardous substances to which the employee may be exposed.

C. Against discharge or other discrimination due to the employee's exercise of the rights afforded pursuant to the provisions of the act.

D. Employees shall be informed of the requirements of 29CFR1910.1200.

E. Employees shall be informed of any operation in their work area where hazardous substances are present.

F. Employees shall be informed of the location and availability of the written Hazard Communications program.

G. Employees shall be trained in the methods and observations that may be used to detect the presence or release of a hazardous substance in work area.

H. Employees shall be trained in the physical and health hazards of the substances of the work area, and the measures they can take to protect themselves from these hazards, including specific procedures HR has implemented to protect employees from exposure to hazardous substances, such as appropriate work practices, emergency procedures, and personal protective equipment to be used.

I. Employees shall be trained in the details of the Hazard Communication program developed by HR, including an explanation of the labeling system and the Material Safety Data Sheet and how the employees can obtain and use the appropriate hazard information.

An example of a Material Safety Data Sheet may be found in Figure 1.

The procedure for requesting information regarding hazardous substances is specified in Section 5.2.

Manufacturers may use different form, but the information required on each data sheet is basically the same. The major categories include:

Section

I Manufacturers Name and Address
- Emergency Telephone Numbers
- Chemical Name and Synonyms
- Chemical Family
- Formula

Section

II Hazardous Ingredients
- Whether paint, preservative or solvent
- Alloys and Metallic Coatings
- Threshold Level Valve (TLV)
- Percentage of Mixture (%)
- Hazardous Mixtures of other liquids, solids or gases.

Section

III Physical Data
- Boiling Point
- Vapor Pressure
- Specific Gravity
- Percentage Volatile by Volume
- Evaporation Rate
- Appearance and odor

Section

IV Fire and Explosion Hazard Data
- Flash Point and Method Used
- Flammable or Explosive Limits
- Extinguishing Agent
- Special Firefighting Procedures (and precautions)
- Unusual Fire and Explosive Hazards

Section

V Health Hazard Data
- Threshold Limit Value
- Effects of Over Exposure
- Emergency and First Aid Procedures

Section

VI Reactivity Data
- Stability
- Incompatibility
- Hazardous Decomposition Products
- Hazardous Polymerization

Section

VII Spill or Leak Procedures
- Steps to be taken in case material is released or spilled
- Waste Disposal Methods

Section

VIII Special Protection Information
- Respiratory Protection
- Ventilation
- Protective Gloves
- Eye Protection

Section

IX Special Precautions
- Taken in Handling or Storage
- Other precautions

The Safety/Training Department shall keep the MSDS's up to date and shall inform employee's on a timely basis not to exceed 30 days after receipt, if the new information indicates significantly increased risks to, or measures necessary to protect employee health as compared to MSDS's previously provided.

5.2 Request Procedure for Material Safety Data Sheets

5.2.1 Purpose - To establish the procedure for the issuance and record keeping for Material Safety Data Sheets on each hazardous substance to which an employee may be exposed during the course of his job.

5.2.2 Scope - This procedure shall apply to all employees of HR Textron.

5.2.3 Policy - It is the policy of HR to furnish employees with an explanation of what an MSDS is, provide employees' the contents of MSDS data for that hazardous substance, and shall train employees as outlined in the MSDS:

Health hazards associated with the use of the hazardous substance or mixture.

Proper precautions for handling, necessary personal protective equipment or other safety precautions necessary to prevent or minimize exposure to the hazardous substance.

The emergency procedures for spills, fire, disposal and first aid.

5.2.4 Responsibility - The Safety Department shall be responsible for providing current employees and all new employees with a copy of the Hazardous Substance Safety Procedure.

6.0 HANDLING PROCEDURES

6.1 General Safety

Good housekeeping practices, with particular attention to hazardous substances, greatly contribute to facility, environmental and personnel safety. The HR Safety Manual outlines standard practice and procedures. The safety of each department is the responsibility of its direct supervisor, the responsibility is shared by each employee in the handling of hazardous substances and processes and to use the provided safety equipment.

6.2 Personal Protection

Personal protective equipment for eyes, face head and extremities, protective clothing, respiratory devices, and protective shields and barriers shall be provided, used and maintained in a sanitary and reliable condition wherever it is necessary by reason of hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.

The MSDS Training and Information Program will familiarize the employee with the hazardous material to be handled and the potential hazards involved. The training program will specify necessary personal protective equipment, train employee's in the use, sanitation and storage of the personal protective equipment. Whenever personal protective equipment is required, it shall be provided, maintained or replaced by the company. The department supervisors shall assure the equipment is in good repair and shall be responsible for the proper and appropriate use of all personal protective equipment. Table 1 is a guide that suggests safety equipment for use with various hazardous substances used at HR. Safety equipment shall be specified by the Safety Department.

6.3 Respiratory Protection

All personnel that may have a hazardous exposure to dusts, fumes, mists, vapors or gases as prescribed by OSHA or of such nature by inhalation as to result in, or have probability to result in injury, illness, disease, impairment, or loss of function will be trained in the use of, provided, and will use respiratory protective equipment.

Harmful exposures shall be prevented by engineering controls whenever feasible. Respiratory protective equipment, shall be in accordance with 29CFR1910.134 and will be used to prevent harmful exposures as follows:

A. During the time period necessary to install or implement feasible engineering controls.

B. Where feasible engineering controls and administrative controls fail to achieve full compliance.

6.3.1 Approved Equipment - Whenever respirators are required to be used to control harmful exposures, only respiratory equipment approved for that purpose shall be used and such equipment shall be approved by the Mining Enforcement and Safety Administration or the National Institute for Safety and Health. Only parts approved for the specific respirator system shall be used for replacement. Proper use and selection of respirators shall be made in accordance with the American National Standards Institute, Z88.2-1969.

The Safety Department will specify the appropriate equipment, and the individual issuing them shall be adequately instructed to assure that the correct respirator is used.

Appropriate surveillance of environmental conditions in the work area, such as increases in exposure concentration or the introduction of other toxic substances or other conditions which increase the degree of employee exposure or stress shall be maintained.

The effectiveness of the program shall be evaluated at regular intervals.

6.3.2 Education and Training -- Employees shall be instructed and trained in the need, use, sanitary care, and limitations of such respiratory equipment as any employee may have the occasion to use. Respirators shall be inspected before each use and shall not be worn when conditions prevent a good gas-tight face seal. Every respirator wearer shall be instructed in how to fit and test respiratory equipment. Employees requiring the use of respirators shall have a medical pulmonary function test performed and must pass this evaluation prior to assignment to a respirator area.

Education, training and pulmonary function tests are to be completed for all employees that require respirator use under normal conditions and that may require a respirator in the event of emergency.

Employees that do not qualify for respirator use shall not be assigned to a respirator area.

6.3.3 Maintenance and Sanitation - HR shall provide, repair or replace respiratory protective equipment as may be required due to wear and deterioration.

Respirators maintained for emergency use shall be inspected and sanitized after each use and inspected at least monthly. A record of the most recent inspection shall be maintained for the respirator and storage container and shall include the inspectors' identification, the date and respirator identification number.

HR will provide means for cleaning all respiratory protective equipment.

6.3.4 Emergency - In an atmosphere immediately hazardous to life or health, at least two persons equipped with approved respiratory equipment shall be on the job. Communication shall be maintained between both or all individuals present. Stand by persons, at least of which shall be in a location which will not be affected by any likely incidents, shall be present with suitable rescue equipment including self contained breathing apparatus.

6.4 Personal Decontamination Procedure

All personnel that may be exposed to hazardous materials, caustics or corrosives shall thoroughly wash with soap and water before eating, drinking or using toilet facilities. Directives as to authorized eating and smoking areas will be strictly adhered to for personal health, safety and overall facility safety.

6.4.1 Emergency Decontamination - Emergency eyewashes and emergency deluge showers are located throughout the facility and personnel who may be exposed to a hazardous material or hazardous waste should become familiar with those emergency stations closest to their work area. The Emergency Shower/ Eyewash Stations shall not be blocked and made accessible immediately.

6.5 Specific Hazards/Incompatible Substances

Many hazardous materials and hazardous wastes, as well as other chemicals, are considered to be incompatible when mixed with other materials or wastes - whenever such mixing would result in violent reaction, fire or explosion, produce toxic dust, mists, fumes or gases, extreme heat or pressure, or flammable fumes or gases. Some specific

examples of incompatible substances found at HR are given below, and a more comprehensive listing is provided in Figure 4.

Cyanide - If cyanide in any compounds, liquid or solid, contacts acids, a lethal cyanide gas may be released. This would be particularly dangerous in an enclosed area. If either sodium nitrate or ammonium nitrate mixes with cyanide, an explosive reaction could occur. Good housekeeping in areas where cyanide compounds are used is mandatory to avoid accidental mixing on the floor, wood grating or other work areas.

Acids - When strong acids and bases are mixed they will react violently and generate heat. Always add acid to water, never water to acid; special care to avoid splashing must be used. If powdered acids or bases are to be mixed with water, avoid inhaling the powder by using a face mask. Contact of acids with chemicals such as sodium hydroxide or ammonium hydroxide can generate explosive reactions.

Solvents - Only use solvents with proper ventilation. When applying solvents by hand, including acetone, work in well ventilated areas. Do not use around open flame, ignition source, or heat source.

When using very volitile solvents (such as freon), only small amounts should be used at one time. When working on large parts, wipe one small sections at a time. Repeated use of solvents can remove oil from the skin. If this becomes a problem, protective oil is available.

6.6 Flammable Liquids

Flammable liquids, when brought inside an HR facility, will be in an approved safety can. Bulk flammable liquids are stored in the Flammable Liquids Compounds. Metal, 55 gallon drums will be electrically bonded, have explosion proof bungs installed, have a nonferrous spigot and have a drip pan.

Departments requiring use of flammable liquids will transfer the liquid from the 55 gallon drum to a 5 gallon approved safety transfer can. The liquid may then be brought into the facility and transferred to approved self closing rinse tanks, plunger cans or bench cans. All approved containers will be plainly identified as to contents and appropriate hazard warnings. Safety cans shall not be altered: i.e., removal of spark arrestor screen, self-closing caps or lids wired open.

Flammable liquids shall not be used in confined spaces without obtaining approval from the Safety Department.

Flammable liquids shall not be used to wash floors, ceilings, walls, furniture, equipment, machines or machine parts unless ventilation is provided and maintained. No ignition sources will be permitted in the area.

Nonflammables, such as 1,1,1 trichloroethane or trichlorotrifluoroethane, (freon) shall not be stored in fire safety cans.

7.0 STORAGE, LABELING AND RECORD KEEPING

7.1 Storage Procedure - Hazardous Materials/Chemicals

Several different chemicals are stored in Chemical Storage. Special care must be used to assure proper handling of these materials. Maintenance personnel handling these chemicals should read and follow the recommended Storage and Handling Procedures included in the Material Safety Data Sheets.

7.2 Storage Procedures - Hazardous Waste

The law prohibits the hazardous wastes generated at HR from being disposed of into the sewer unless standards defining concentration limits are met (refer to Process Engineering Report Number 316, "Hazardous Substance Management Legislation Summary"). It is therefore necessary to store the majority of hazardous wastes until they can be hauled away by a licensed transporter to a licensed disposal site (landfill), or licensed recycler.

7.2.1 All hazardous wastes shall be stored within the fenced area of the storage yard, and within the locked area on the eastern side of the yard.

7.2.2 Containers holding ignitable or reactive waste be kept at least 50 feet away from the property line.

7.2.3 Maintenance shall check daily for leaking or deteriorated containers, and to ensure proper storage. If a container holding hazardous waste is not in good condition, or if its begins to leak, the waste must be transferred to another container or managed in a way to prevent its release.

7.2.4 Containers may not be used which are made of or lined with materials which will react with, or are incompatible with the waste, such that the ability of the container to contain the waste is impaired.

7.2.5 Hazardous waste must not be placed in an un-washed container that previously held an incompatible waste or material. If question arises as to incompatibility, contact the Safety Department for information (refer also to Figure 4).

7.2.6 Containers holding hazardous waste must be kept closed during storage, except when adding or removing wastes.

7.2.7 Any leakage or spillage shall be reported IMMEDIATELY to the Mainte-

nance Department to assure proper and safe handling and disposal. Spilled or leaked waste must be removed as soon as possible. If an emergency situation develops, the Emergency Coordinator must be contacted immediately (see Section 2.0, Para. 4.2.1)

7.2.8 Hazardous waste shall not be stored on site longer than 90 days.

7.3 Labeling Procedures

7.3.1 Labeling for Storage - Accurate labeling of all containers of hazardous material and waste is critical to the assurance of safe handling and storage, as well as for proper disposal. It is the responsibility of the Maintenance Department to maintain these labels in legible form. In order to do this they must be provided with accurate information of any problems (i.e., missing or unreadable labels.

All chemicals, including those considered to be hazardous materials, are received with clear labels already affixed. The information provided has typically the common name of the material, the chemical constituents, and the hazard class (e.g. toxic, corrosive, etc.).

All containers within HR shall be labeled as to the contents of the container and the appropriate hazard warnings. Labels may be obtained from the Facilities Department.

Hazardous waste shall be labeled by the Facilities Department. At the very least, the information provided shall include the contents (e.g., OHKITE 126) and the date on which accumulation began. The words "Hazardous Waste" must be clearly marked or displayed on each container.

7.3.2 Labeling for Transport - Regulations published and enforced by both EPA and DOT require that anyone offering hazardous waste for transport must comply with specific manifesting procedures (40CFR262.20). This information must be contained in the document entitle the "Hazardous Waste Manifest" (HWM). A "Uniform Hazardous Waste Manifest" form has been developed by the State of California, and the information required therein is self-explanatory (refer to Figure 5).

The generator must designate the treatment, storage and disposal (TSD) facility which is licensed to handle the waste described on the manifest. The determination is the responsibility of the Maintenance Department. The form also allows for designation of an alternate TSD facility which can accept the waste. This provides the hauler with a second facility where the waste may be delivered in the event it cannot be delivered to the first TSD. If the transporter

is unable to deliver the hazardous waste to either the designated or the alternate facility, the generator must either designate another facility or instruct the transporter to return the waste.

Table 2 provides a list of the information required by the Department of Transportation (DOT). This information must be provided to the transporter, and is required on the HWM.

7.3.3 NFPA Area Hazard Identification - A nationally recognized Hazard Identification Coding System is used to identify potentially hazardous areas for the benefit of employees and public emergency services personnel.

The signals are diamond shape with four boxes or RED, YELLOW, BLUE and WHITE. The Code is as follows:

BLUE Health Hazard	RED Fire Hazard
4-Deadly	4-Below 73 Degrees F.
3-Extreme Danger	3-Below 100 Degrees F.
2-Hazardous	2-Below 200 Degrees F.
1-Slightly Hazardous	1-Above 200 Degrees F.
0-Normal Material	0-Will Not Burn

WHITE Specific Hazard	YELLOW Reactivity
OXY-Oxidizer	4-May detonate
ACID-Acid	3-Shock and Heat may detonate
ALK-Alkali	2-Violent chemical change
COR-Corrosive	1-Unstable is heated
Use No Water	0-Stable
Radiation Hazard	

The numerical signals will be established from the Substance Material Safety Data Sheet.

In areas containing several potentially hazardous substances, the signals will reflect the most hazardous elements to which individuals may be exposed.

7.4 Record Keeping

7.4.1 Introduction - The Facilities Department shall be responsible for maintaining the necessary records on hazardous waste material (HWM).

7.4.2 Hazardous Waste Manifest Records - The standard Hazardous Waste Manifest form contains six copies. Two copies are retained by HR, one of these must be sent to DOHS, and the second must be kept at the plant of at least three years. The remaining copies must be given to the transporter. The remaining copies, the hauler and the disposal facility (TSDF) each keep one copy, and the TSDF must send one copy to DOHS and one copy to HR within 15 days.

7.4.3 Exception Reporting - If a copy of the manifest is not returned to HR signed by the operator of the TSDF within 35 days of transport, the maintenance department must contact the transporter and/or the TSDF to determine the status of the hazardous waste. Records should be kept of these contracts.

If a signed copy of the manifest has not been received from the TSDF within 45 days of the date of initial transport, an exception report must be submitted to the EPA Regional Administration. This report must include:

A legible copy of the manifest for which the generator does not have confirmation of delivery:

A cover letter signed by the generator explaining the efforts taken to locate the hazardous waste and the results of those efforts.

SECTION
3

CONTENTS

Paragraph		Page
1.0	SCOPE	1
2.0	RESPONSIBILITIES	1
3.0	RESPIRATOR SELECTION	3
4.0	FIT TESTING	4
5.0	INSTRUCTIONS AND TRAINING	7
6.0	INSPECTION AND MAINTENANCE	8
7.0	CLEANING AND SANITIZATION	8

1.0 SCOPE

The goal of HR Textron is to provide a safe working environment where respiratory protection will not be necessary for production workers in normal conditions. Engineering controls to the greatest feasible extent will be installed to reduce contaminants to safe levels. Certain jobs which are done infrequently by technicians, maintenance workers and others may require use of respiratory protection because engineering controls are not feasible. In emergency situations, certain production workers and others may need to use respiratory protection for escape or rescue. Proper use of respirators will provide protection or lower the probability that an employee will suffer ill-health effects from performing duties in contaminated or oxygen deficient atmospheres. This document sets down the Respirator Protection Produces that HR will follow in order to protect employees and to promote good safety practices in the use of respiratory protection.

2.0 RESPONSIBILITIES

2.1 HR Respirators will be provided by the Company to employees when such equipment is necessary to protect the health of the employee. Only respiratory protection equipment purchased by the Company will be allowed on the premises.

2.2 Division Safety Department

The Division Safety Department has the responsibility for the administration, specification and enforcement of the Respiratory Protection Program. Authority to administer the Respiratory Protection Program may be delegated to a supervisor or a safety team member, hereafter referred to as the Respiratory Protection Coordinator. The Respiratory Protection Coordinator will be trained in the use and limitations of respiratory protection devices.

2.2.1 Respiratory Protection Coordinator - The responsibilities of the Respiratory Protection Coordinator will include:

2.2.1.1 Control of respirator usage in their area(s). This requires coordination with the Safety Training Section.

2.2.1.2 Control of respirator inventory, spare parts and equipment ready for re-issue after cleaning/maintenance.

2.2.1.3 Referral of employees to the Safety-Training Station for fit testing.

2.3 Employees

Responsibilities of employees using respirators will be to:

2.3.1 Wear the respirator only with supervisor/respiratory protection coordinator approval in situations or jobs designated by them.

2.3.2 Maintain the respirator as valuable equipment and follow instructions from supervisor/respiratory protection coordinator for use and care.

2.4 Safety-Department

Responsibilities of the Safety-Department follow:

2.4.1 Maintain and update the written Respiratory Protection Program for HR.

2.4.2 Evaluating employee exposure and work conditions, and determining when appropriate respirator protection is required.

2.4.3 Selection of the types of respirators cartridges and filters that will be stocked.

2.4.4 Train all applicable managers, supervisors, respiratory protection coordinators and employees in the uses and limitations of respiratory devices.

2.4.5 Fits test all personnel requiring respiratory protection.

2.4.6 Provide instructions for cleaning respirators.

2.4.7 Arrange for preliminary and periodic medical examinations to assess physical ability of individuals to use respirators.

2.4.8 Maintain a record of employees fitted and trained for all types of respiratory protective equipment.

2.4.9 Perform periodic audits of the Respiratory Protection Program, including random inspections of respiratory use and care.

2.5 Facilities Engineering Department

2.5.1 Perform inspection of self-contained breathing apparatus (SCBA's) monthly.

2.5.2 Fill or replace oxygen tanks on S.C.B.A's as needed.

2.5.3 Keep records of inspections and maintenance of S.C.B.A.'s.

3.0 RESPIRATOR SELECTION

3.1 All respirators used at HR must be approved by the National Institute for Occupational Safety and Health (NIOSH) and the Mine Safety and Health Administration (MSHA) for their particular use. The expected levels of the contaminant, the properties of the contaminant, and the duration of exposure must be taken into account for proper respirator selection.

HR utilizes two types of respiratory protection. The air purifying respirator and the self-contained breathing apparatus (SCBA).

3.1.1 Air purifying respirators are devices that remove contaminants from the air. They do not supply oxygen and cannot be used in oxygen-deficient atmospheres. Two common air purifying respirators are the half-masks and full face piece respirators.

3.1.1.1 Half mask respirators with an appropriate cartridge (organic vapor, acid gas) and filters (mist) can be used in atmospheres where the air concentration of a contaminant does not exceed 10 times the OSHA Threshold Limit (TLV) for that contaminant. Half mask respirators are not approved for substances that are eye irritants.

3.1.1.2 Full face piece respirators with an appropriate cartridge filter can be used to protect an employee in atmospheres up to 50 times the OSHA Threshold Limit Value. For all contaminants that are eye irritants, full face piece respirators are required at all levels below 50 times the OSHA TLV. Full face piece respirators are available by the approval of the Division Safety Department.

3.1.2 Self-contained breathing apparatus (SCBA's) used at HR are all open circuit devices. The supply tank is of high pressure compressed air. The exhaled air is exhausted to the atmosphere. The compressed air from the tank is supplied to a two stage regulator which reduces the pressure for delivery to the facepiece. The regulator serves as a flow regulation device providing air to the facepiece on demand. If the face-to-mask seal is broken, air flow is continuous (in the pressure-demand setting).

3.1.2.1 Demand - In the Demand mode, air is supplied to the facepiece only upon inhalation. Since negative pressure is created in the facepiece upon inhalation, the SCBA in this mode is no more efficient than an air purifying respirator with the same facepiece. Do not use a SCBA in the demand mode in atmosphere immediately hazardous to life or health.

3.1.2.2 Pressure-Demand - The Pressure-Demand mode allows a slight amount of air to pass continuously, maintaining positive pressure inside the facepiece. Any facepiece leakage is outwards and protection of up to 10,000 times the OSHA TLV can be attained. The pressure demand mode should always be used in atmospheres of unknown contaminants or concentration.

3.2 Respirator Selection Chart

The Chart on the following page is utilized in recommending respiratory protection in various hazard situations.

NOTE: Air purifying respirators should not be used for HF or other substances without good warning (odor) properties.

4.0 FIT TESTING

The policy at HR shall be that each person required to wear a respirator shall have an adequate fitting respirator.

In order for a respirator to provide the protection it was designed for, the respirator facepiece must fit the face of the wearer properly. There are several methods of testing the facepiece-to-face seal ("fit") of the respirator. All methods fall into the categories of qualitative or quantitative tests.

At the current time, HR conducts qualitative test to determine proper respirator fit. Qualitative fit testing (Section 4.3) using Isoamyl Acetate vapor or other appropriate substances will be done during respirator training courses and then yearly by the Safety-Department.

Positive and negative pressure tests (Sections 4.1 and 4.2) are user executed tests which are done before each use of the respirator. Respirator users will be taught these tests in the Respirator Training Course.

4.1 Positive Pressure Test

This test is initiated by holding the exhalation valve closed and exhaling lightly into the facepiece. A proper fit is exhibited when a slight positive pressure is built up inside the respirator and there is no evidence of outward leakage.

Designs of some respirators may require the removal of the exhalation valve cover which can disturb the fit.

RESPIRATOR SELECTION CHART

Situation		Respirator to be used
Oxygen deficient atmosphere assumed (less than 19.5% oxygen)	A) Unknown contaminants or known concentrations. B) Escape or rescue in emergency situations. C) Pit/tank entry, unknown contaminants.	Self-contained breathing apparatus in the pressure-demand mode. SCBA in pressure mode.
Oxygen at 19.5% or or greater. Contaminants known.	D) Eye irritants: E) Non eye irritants:	Full face respirator with: specified chemical cartridge Half mask air purifying respirators with: Air purifying cartridges
Oxygen at 19.5% or greater. Contaminants known.	F) Abrasive particulates: 1. Sicica sand 2. Blasted materials G) Welding: 1. Arc 2. Gas 3. General Fume (as specified)	Personal environment system. 1. Personal environment system or welding hood. 2. Welding goggles, ventilation system. 3. Disposable welding fume filter.

4.2 Negative Pressure Test

This test consists mainly of closing off the inlets of the filter or cartridge. The test is accomplished as follows:

4.2.1 Full facepiece/quarter facepiece/half facepiece. Cover cartridge(s) or filter(s) with palm of hand or squeeze the breathing tube so that it does not pass air.

4.2.2 Inhale lightly so that the facepiece collapses slightly.

4.2.3 Hold breath for 10 seconds. The facepiece fit is considered adequate if it remains collapsed for the 10 seconds and no inward leakage is detected.

4.3 Isoamyl Acetate Vapor (Banana Oil) Test

This organic compound has a pleasant odor detectable at 1 - 10 ppm. The permissible exposure level is 100 ppm.

The isoamyl acetate is contained in a fit check ampule, brush, or is utilized by saturating a piece of cloth/cotton with isoamyl acetate.

The respirator being tested must be equipped with organic vapor cartridges or canisters if the atmosphere to be entered contains particulates, the test may be conducted by replacing the particulate cartridges with organic cartridges; once the test is complete, the particulate filters may be placed back on the respirator.

The test is conducted in a variety of position in order to duplicate actual work movements. This will ensure the detection of leaks under work conditions.

The test is conducted as follows:

4.3.1 The respirator wearer places the respirator on the face in the usual manner. (As mentioned above, the respirator must have organic cartridges installed). If needed, the particulate cartridges may be exchanged aster the test while the respirator is still in place.

4.3.2 Once a positive or negative pressure test has been conducted, the ampule, stencil brush or saturated cotton is passed (closely) along the face of the respirator seal surfaces. If the wearer detects any odor from the banana oil he will then adjust the facepiece straps if necessary.

4.3.3 The brush or cotton is then passed along the sealing surfaces again. Again, if any odor is detected the respirator will then be re-adjusted.

The leak should be localized if possible. If the leak cannot be localized and/or eliminated, then another mask of the same type should be used. If this respirator cannot be tested successfully, then another brand of respirator providing equivalent protection against the specific contaminants should be used.

4.3.4 After the respirator fit has been successfully tested, the correct filters, cartridges or canisters must be placed on the respirator.

4.4 All tests should be conducted while the wearer makes movements simulating the various work positions. As a minimum, the following shall be done prior to entry into the contaminated atmosphere:

4.4.1 Normal breathing

4.4.2 Deep breathing.

4.4.3 Moving head side to side.

4.4.4 Moving head up and down.

4.4.5 Talking (loud enough to be heard through the respirator.

5.0 INSTRUCTIONS AND TRAINING

All individuals at HR who use a respirator device in the normal course of their work, or can be expected to use one in emergencies (Emergency Response Teams), shall be trained in the use of such devices. Any individual who attends and successfully completes a training course from HR on Respiratory Protected is deemed trained in Respirator Protection. Any individual who has not successfully completed the HR Respiratory Protection course(s) is not allowed to use a respirator under any circumstances.

The written test of the HR Training Respiratory Protection Course(s) represents the training portion of the HR Respiratory Protection Program. Training will include:

5.1 Proper selection of respirators where applicable.

5.2 Limitations of use.

5.3 Facepiece fit testing and qualitative fit testing.

5.4 Inspection and Maintenance.

5.5 Cleaning and Sanitization.

5.6 Medical Limitation.

5.7 Storage.

6.0 INSPECTION AND MAINTENANCE

Each person assigned a respirator has the responsibility to inspect their respirator before and after each use. The structural integrity and condition of the facepiece, hoses, pliability and condition of all straps, valves, valve covers (gaskets), cartridges, proper tanks air level, and cleanliness of the respirator shall be checked.

6.1 Replacement

Dirty, missing, worn or damaged parts must be replaced immediately before using the respirator. The Company, through your manager or supervisor, will provide repair or replacement parts for your respiratory protective equipment. New chemical cartridges/ filters for air purifying respirators will be available from your supervisor. Also, other replacement parts will be available through the Supervisor. DO NOT interchange parts between different brands of respirators.

6.2 Storage

All respiratory protection devices shall be stored in a condition which prevents dirt, chemicals, sunlight, or other conditions from causing deterioration of the device. Normally, storage in a sealed plastic bag will satisfy this requirement.

7.0 CLEANING AND SANITIZATION

7.1 Respirators for Exclusive Employee Use

Respirators must be periodically cleaned and sanitized. When only one employee uses the device, once a week cleaning is sufficient for most uses.

7.2 Respirators for Non-Exclusive Employee Use

Respirators SHALL NOT be passed on from one person to another until it has been cleaned, inspected, and sanitized.

7.3 General Cleaning and Sanitizing Procedure

The following procedure must be followed to properly clean and sanitize respirators:

7.3.1 Remove filters, straps, hoses, air tank and metal valve.

7.3.2 Wash in mild soap using a soft brush.

7.3.3 Immerse in sanitary solution for at least two minutes.

7.3.4 Rinse thoroughly with clean, warm water.

7.3.5 Air-dry; do not exceed 125 degrees Fahrenheit.

7.4 Sanitizing Solutions are available from the Dispensary. Keep sanitizing solution at less than 125 degrees Fahrenheit.

7.4.1 Quaternary Ammonium Compound (220 ppm).

7.4.2 Hypochlorite Solution (110 ppm)

7.4.3 Aqueous Solution of Iodine (25 ppm)

7.4.4 Chlorine Solution (110 ppm)

7.5 Cleaning Responsibilities

7.5.1 The manager, supervisor or Respiratory Protection Coordinator shall be responsible for cleaning respirators. However, if an employee is instructed in the proper cleaning and sanitization, they may be responsible for cleaning their own respirator. In this case, the manager, supervisor or Respirator Protection Coordinator is still responsible for enforcing and ensuring the employees' respirator cleaning practices.

7.6 Medical Limitations

7.6.1 Each person who wears or will wear respirator protection device shall be certified able to wear such a device by licensed medical physician. The physician shall take into account the type of work to be performed the the medical condition of the user. HR, through the Safety Department and the Dispensary, will arrange for this examination.

7.6.2 Wearing of contact lenses is strictly prohibited in atmospheres where respirators are used.

7.6.3 Persons requiring vision correction will not be able to wear normal spectacles when required to use full face respirators and SCBA units. If vision correction is required, then these persons need to obtain a spectacles correction kit which is mounted in the facepiece. Employees in this category should see the Safety Department or the Dispensary prior to the anticipated respirator usage.

SECTION
4

CONTENTS

Paragraph		Page
1.0	SCOPE	1
2.0	PURPOSE	1
3.0	RESPONSIBILITIES	1
4.0	DEVIATION	1
5.0	CLASSIFICATION OF FIRE EXTINGUISHERS	1
6.0	CLASSIFICATION OF FIRES	2
7.0	CLASSIFICATION OF HAZARDS	2
8.0	FIRE EXTINGUISHER SIZE AND PLACEMENT	3
9.0	HALON FIRE EXTINGUISHERS	5
10.0	REQUIREMENTS	5
11.0	HYDROSTATIC TESTS	6
12.0	REFERENCE	6

1.0 SCOPE

This section covers requirements for the selection, installation, inspection, maintenance and testing of portable fire extinguishers.

2.0 PURPOSE

The purpose of this section is to establish operating practices and responsibilities for the installation, inspection and maintenance and testing of portable fire extinguishers.

3.0 RESPONSIBILITIES

3.1 Department Managers

Department Managers shall see that appropriate portable fire extinguishers are in place in their departments and that access to the fire extinguishers is free and clear.

3.2 Supervisors

It is the responsibility of the supervisors to see that all personnel under their direction know how to operate fire extinguishers in their areas.

3.3 Safety Department

The Safety Department is responsible for the following:

A) Overseeing the monthly inspection and maintenance of portable fire extinguishers.

B) Conducting training programs in the use of portable fire extinguishers.

C) Accurately maintaining the inspection tags attached to the fire extinguishers.

4.0 DEVIATION

Deviations from the requirements of this procedure are not permitted, except in cases where local regulations are more stringent.

5.0 CLASSIFICATION OF FIRE EXTINGUISHERS

Portable fire extinguishers are classified according to the type of fire for which they are effective. The U.L. rating consists of a letter, which indicates the class of fire, preceded by a rating numeral (Class A and B only) which indicates the relative extinguishing effectiveness.

Extinguishers classified for use on Class C or D fires do not have a numeral.

5.1 Selection of Fire Extinguishers

The selection of extinguishers shall be determined by the anticipated fire hazards, the building construction, the occupancy, or the nature of the property to be protected.

Class "A" extinguishers for Class "A" fires are selected from among water types, and multipurpose dry chemical.

Class "B" extinguishers for Class "B" fires are selected form among the following: bromotrifluoroemethane (Halon 1301), bromochlorodifluormethane (Halon 1211), carbon dioxide, and dry chemical types.

Class "C" extinguishers for Class "C" fires are selected from among the following: bromotrifluoromethae (Halon 1301), bromochlorodifluoromethane (Halon 1211, carbon dioxide, and dry chemical types.

Class "D" extinguishers for Class "D" fires shall be selected on a basis of the specific combustible metal, its physical particle size, area to be covered and recommendations by the extinguisher manufacturer on data from control tests conducted.

5.2 Distribution of Extinguishers

Rooms or areas shall be graded general as light hazard, ordinary hazard, or extra hazard. Limited areas of greater or lesser hazard shall be protected as deemed appropriate by the Safety Department.

6.0 CLASSIFICATION OF FIRES

Class "A" -- ordinary combustibles, wood, paper, cloth, rubber and many plastics.

Class "B" -- burning liquids, gases and greases.

Class "C" -- live electrical equipment, electrical motors, controls, and wiring.

Class "D" -- burning metals, such as magnesium, titanium, zicromium, sodium, and potassium.

7.0 CLASSIFICATION OF HAZARDS

7.1 Light Hazards

Where the amount of combustibles or flammable liquids is such that fires of small size may be expected; offices, for example.

7.2 Ordinary Hazards

Where the amount of combustible or flammable liquid is present, is such that fires of moderate size may be expected; parking garages, light manufacturing area, and warehouses.

7.3 Extra Hazards

Where the amounts of combustibles or flammable liquid present, is such that fires of severe magnitude may be expected; for example, processes such as flammable liquid handling, painting, dipping, etc.

8.0 FIRE EXTINGUISHER SIZE AND PLACEMENT

8.1 Table 1 (Class A Fires)

Table 1. Class A Fires

Basic Minimum Extinguisher Rating for Area Specified	Maximum Travel Distances to Extinguishers	Areas to be Protected per Extinguisher		
		Light Hazard Occupancy	Ordinary Hazard Occupancy	Extra Hazard Occupancy
1A	75 ft.	3000 sq. ft.	Not Permitted	Not Permitted
2A	75 ft.	6000 sq. ft.	3000 sq. ft.	Not Permitted
3A	75 ft.	9000 sq. ft.	4500 sq. ft.	3000 sq. ft.
4A	75 ft.	11250 sq. ft.	6000 sq. ft.	4000 sq. ft.
6A	75 ft.	11250 sq. ft.	9000 sq. ft.	6000 sq. ft.
10A	75 ft.	11250 sq. ft.	11250 sq. ft.	9000 sq. ft.
20A	75 ft.	11250 sq. ft.	11250 sq. ft.	11250 sq. ft.
40A	75 ft.	11250 sq. ft.	11250 sq. ft.	11250 sq. ft.

8.2 Class "B" Fires

Other than fire in flammable liquids of appreciable depth; dip tanks, for example.

Table 2. Class B Fires

Type of Hazard	Basic Minimum Extinguisher Rating	Maximum Travel Distance to Extinguishers
Light	5B	30 ft.
	10B	50 ft.
Ordinary	10B	30 ft.
	20B	50 ft.
Extra	20B	30 ft.
	40B	50 ft.

8.2.1 Class B Fire Extinguishers for Pressurized Flammable Liquids and Pressurized Gas Fires. Fires of this nature are considered to be a special hazard. Some extinguishers containing foam or carbon dioxide which are classified for Class B fires are relatively ineffective on this hazard due to stream and agent characteristics. Selection of extinguishers for this type of hazard shall be made on the basis of recommendations by manufacturers of this specialized equipment. The system used to rate extinguishers on Class B fires (flammable liquids in depth) is not applicable to these types of hazards. It has been determined that special nozzle design and rates of agent application are required to cope with such hazards.

CAUTION: IT IS UNDESIRABLE TO ATTEMPT TO EXTINGUISH THIS TYPE OF FIRE UNLESS THERE IS REASONABLE ASSURANCE THAT THE SOURCE OF FUEL CAN BE PROMPTLY SHUT OFF.

8.3 Class "C" Fires

Extinguishers with Class C ratings shall be required where energized electrical equipment may be encountered which would require nonconducting extinguishing media. This will include fire either directly involving or surrounding electrical equipment.

Since the fire is a Class A or Class B hazard the extinguishers are sized and located on the basis of the anticipated Class A or B hazard.

NOTE: Whenever possible, electrical equipment should be de-energized before attacking a Class C fire.

8.4 Class "D" Fires

(a) Extinguishers or extinguishing agents with Class D ratings shall be provided for fires involving combustible metals.

(b) Extinguishing equipment shall be located not more than 75 feet from the Class "D" hazard.

(c) Size determination shall be on the basis of the specific combustible metal, it physical particle size, area to be covered and recommendations by the extinguisher manufacturer on data from control tests conducted.

9.0 HALON FIRE EXTINGUISHERS

Portable fire extinguishers containing Halon 1301 or 1211 are recommended for the following areas:

(a) Computer room facilities and copy machines.

(b) Electronics laboratories

(c) Where a clean agent is required.

(d) Where there are surface burning flammable solids, such as thermoplastics.

(e) Where the hazard area contains a process or object or high value.

10.0 REQUIREMENTS

10.1 General

Portable extinguishers shall be maintained in a fully charged and operable condition and kept in their designated places at all times when not being used.

Extinguishers shall be conspicuously located where they will be readily accessible and immediately available in the event of fire. They shall be located along normal paths of travel including exists from all areas or directly adjacent to a known hazardous operation.

The method of operation of an extinguisher shall be prominently indicated on the extinguisher and shall face outward.

10.2 Inspection

Extinguishers shall be inspected monthly to insure that they are in their designated places and in operable condition. Date inspection record each time they are inspected.

10.3 Maintenance

At regular intervals, not more than one year apart, extinguishers shall be thoroughly examined and if necessary, recharged, repaired, or replaced by a trained service person. This service is usually provided by an outside agent.

While maintenance is in process, spare extinguishers shall be left as temporary replacements.

10.4 Inspection Tag

Each portable fire extinguisher shall have an inspection tag to record the monthly check which assures that the extinguisher is available and operable, the other side to record that extinguisher has been subjected to a thorough annual maintenance inspection.

11.0 HYDROSTATIC TESTS

If, at any time, an extinguisher shows evidence of corrosion or mechanical injury, it shall be subjected to a hydrostatic pressure test or replaced. Facilities Department should be contacted in the event of damage or corrosion.

12.0 REFERENCE

(a) NFPA No. 75-1976 "Electronic Computer/Data Processing Equipment."

(b) NFPA No. 10-1977 "Standard for Portable Fire Extinguishers." National Fire Protection Association, 470 Atlantic Ave., Boston, MA 02210.

(c) 29 CFR 1910.157 "Portable Fire Supression Equipment."

SECTION
5

CONTENTS

Paragraph		Page
1.0	INTRODUCTION	1
2.0	DEFINITIONS	2
3.0	HAZARDS	2
4.0	GAS IDENTIFICATION MARKINGS	3
5.0	OUTLET CONNECTION	3
6.0	APPROVED CYLINDERS	4
7.0	CATEGORIZATION OF CHEMICAL PROPERTIES	4
8.0	STORAGE REQUIREMENTS	5
9.0	HANDLING (TRANSPORT)	8
10.0	USE	9
11.0	EMERGENCY PROCEDURES	14
12.0	FIRST AID AND MEDICAL MEASURES	16
APPENDIX		
A	GASES IN COMMON USAGE	17

1.0 INTRODUCTION

The inherent nature of compressed gases presents a potential risk to HR facilities that can be kept to an absolute minimum only if proper techniques and practices are employed. A combination of engineering and administrative controls have been designed that are intended to maximize the personal safety of user and plant personnel, as well as to protect the facilities in which compressed gases are employed. The following policy represents the minimum standard with which compressed gases will be regulated within HR Textron.

It is incumbent on all user and supervisory personnel that the spirit and intent of this and related policies are practiced if we are to ensure a safe and healthy work environment.

1.1 Scope

This policy is intended to address the procedures for the safe storage, handling and use of portable compressed gas containers within the confines of the HR facilities to include the space defined by the property lines of the plant.

1.1.1 Many of the rules noted in this policy have been compiled by the Compressed Gas Association, Inc., and others primarily for the guidance of users of compressed gases in containers. They are based primarily on accident prevention experience. It should not be assumed that every acceptable safety precaution has been included, or that unusual circumstances may not require additional procedures. The best safety precaution is to ensure that the container, the handler, and the product user are adequately trained in the safe handling of the container as well as in the proper use of the product.

1.2 Purpose

To outline the minimum safety standards to be utilized in the proper storage, handling, and use of portable compressed gas containers by HR Textron personnel.

1.3 References

The following list of Safety Policies includes the requirements with which the users of compressed gases should be aware. In addition, several references have been added that will provide greater background and detail in specific areas.

1.3.1

Section Number	Title
1	Personal Protective Equipment
3	Respiratory Protection Program
6	Welding/Hotwork Policy

1.3.2 Additional References

American National Standards Institute. American National Standard of Marking Portable Compressed Gas Containers to Identify the Material Contained, ANSI Z 48.1, Compressed Gas Association Standard C-4.

American National Standards Institute. American National Standard Compressed Gas Cylinder Valve Outlet and Inlet Connections, ANSI B57.1, and Compressed Gas Association a V1."

National Fire Protection Association, National Fire Codes. NFPA Vol. 4: No. 51.

2.0 DEFINITIONS

2.1 Portable Compressed Gas Container

Portable compressed gas container is any container (cylinder) that is constructed in accordance with the specifications of a recognized authority (such as the Department of Transportation or the pressure Vessel Code of the American Society of Mechanical Engineers) and is intended to contain compressed or liquified gas, as defined in the Hazardous Materials Regulation of the U.S. Department of Transportation.

2.2 Compressed Gas

Compressed gas is any material or mixture having in the container (cylinder) an absolute pressure exceeding forty-pounds-per-square-inch at 70 degrees Fahrenheit, or regardless of the pressure at 70 degrees Fahrenheit, having an absolute pressure exceeding forty-pounds-per-square-inch absolute at 100 degrees Fahrenheit as determined by ASTM test D-323.

2.3 Handling

Handling is the deliberate transport of material by any means to a point of storage or use.

2.4 Use

Use is the act of being placed in use or enabling the contents of a container (cylinder) to be withdrawn. Any container (cylinder) that has a fitting connected to its valve, regardless of whether the gas is flowing or not, is to be considered in use.

3.0 HAZARDS

The storage, handling, and use of compressed gases can involve explosion, fire and health hazards. A brief description of these hazards is noted below. Specific requirements to minimize these hazards are described in the following sections of this procedure.

3.1 Explosion Hazards

Explosion hazards could develop when compressed gases in cylinders are exposed to temperatures of excess of 125 degrees Fahrenheit or when leaks occur in the system where flammable gases are employed. Cylinders must not be placed close to heat producing devices or open flame because the gas may expand causing the safety relief device to open, or in the case of toxic gases cause the tank to burst. Rough handling, jarring, or dropping of cylinders may cause explosions.

3.2 FIRE HAZARDS

Fire hazards can occur when flammable or oxidizing gases have leaked from cylinders. Such gases shall be stored out of doors on in well-ventilated rooms.

3.3 ASPHYXIATION

Most compressed gases can produce a suffocation hazard by displacing the air and leaving insufficient oxygen to support life.

4.0 GAS IDENTIFICATION MARKINGS

All compressed gas cylinders shall be legibly marked with at least the chemical name or a commonly-accepted name of the material contained. Marking shall be by means of stenciling or stamping. In the U.S., marking shall conform to ANSI Z48.1 which requires that the name of the gas shall appear on the shoulder of each compressed gas cylinder.

Cylinders that are not plainly and legibly marked shall not be accepted form the vendor.

5.0 OUTLET CONNECTION

Cylinders shall conform to the American National Standards Institute, Standard B57.1-1977 and Compressed Gas Association Standard V-7T on compressed gas cylinder valve outlet and inlet connections. In general, HR's vendors apply this standard routinely. It will be HR's policy that strict compliance with the standard is required in order that all cylinder valves furnished are provided with a standard cylinder connections. The use of adapters to accommodate the connection of cylinders to ANY gas delivery system is specifically FORBIDDEN IN ALL AREAS.

6.0 APPROVED CYLINDERS

Only approved gas cylinders bearing markings indicating approval by the Department of Transportation (or ICC) shall be accepted for use in HR facilities. These markings are stamped in the metal at the top of the cylinders and include the letters DOT (or ICC), a series of numerals and a date which shows the month and year of manufacture or of testing by the suppliers.

7.0 CATEGORIZATION OF CHEMICAL PROPERTIES

7.1 General

Compressed gases are chemicals which have several unique hazards including:

- Pressure hazard.

- Low flash point (ability to exist as a vapor which is easily ignited at average temperatures encountered).

- Ability to diffuse or travel throughout the work area rapidly.

- The lack of visual indication of odor for many of the gases commonly encountered.

Gases which are corrosive may be damaging to skin and mucous membranes by short-term exposure. It is important to keep these gases away from moisture either in or on the body, or in any hardware system.

Flammable gases are capable of forming explosive atmospheres or atmospheres in which fires can easily occur. Pyrophoric gases can self-ignite upon release to the atmosphere.

They are capable of producing explosions by acting as their own ignition source. Thermal burns are a danger that must be avoided.

Inert gases are capable of displacing oxygen and reducing breathable atmosphere. They have been implicated in numerous deaths in numbers exceeding those associated with toxic gases. Care must be exercised to maintain adequate ventilation in all locations where such gases are utilized.

Oxidizing gases may have detrimental effects on the body. Nitrous oxide, for example, is an asphyxiant and acetylene is an asphyxiant, flammable and toxic. These gases can produce environments which are extremely reactive and able to become involved in unexpected ignitions and explosions if contact is made with other fuels or corrosive agents in an uncontrolled environment.

Toxic gas category represents a category of materials which react with the body in such a way as to rapidly jeopardize life with a short-term exposure. Some gases are extremely toxic and other slightly so. Gases that bear the poison label are extremely toxic and should be recognized as having the highest potential to cause death or a permanently disabling injury.

7.2 Specific Chemical Information

Specific chemical information is contained in the form of Material Safety Data Sheets (MSDS) that are maintained by the Safety Section and the Area Supervisor.

Specific guidance for each gas is required to be given which details:

Hazardous Ingredients (if a mixture)
Physical Data
Fire and Explosion Hazard Data
Health Hazard Data
Reactivity Data
Spill or Leak Procedures
Special Protection Information
Special Precautions

There are very few compressed gases that present only a single safety or health hazard due to the chemical nature of the gas. Each gas has a number of properties (hazards) that must be addressed in order that it may be used safely.

A list of the commonly-used gases, along with a key to identify the prime hazards associated with each gas is listed in Appendix A of this policy.

8.0 STORAGE REQUIREMENTS

The storage of compressed gases is regulated by a number of local ordinances as well as by requirements of the State and Federal Governments. This policy will not attempt to list all of the criteria required for emergency planning and reporting under local guidelines. It will, however, dictate the rules and requirements incumbent on all users that are established as good manufacturing practice, most of which have been adopted at the Federal level.

8.1 Protection from Heat

Containers of compressed gases should be stored in areas where they are protected from external heat sources such as intense radiant heat, or high temperature steam lines.

8.2 Stored Upright

Containers are to be stored upright and secured in a well-protected, dry location. This requirement is especially important for cylinders that contain liquids. Acetylene cylinders must be STORED AND USED valve end up. Storage of acetylene cylinders, valve end up, will minimize the possibility of solvent being discharged. (Valve end up includes conditions where the container axis may be inclined as much as 45 degrees from the vertical).

8.3 Posting

Container storage areas shall be prominently posted with the names of the gases to be stored. Additional visible hazard identification signs, as specified in Uniform Fire Code Standard No. 79-3, shall be placed at all entrances to, and in locations where compressed gas containers are stored, handling, or used. Areas with a variety of gases will typically be posted with the highest hazard grouping, however, judgment shall be used where minor quantities exist (lecture bottles for example) in order that the areas are not made to appear of a higher hazard than is warranted. In addition, all storage areas are to be posted with appropriate "No Smoking" signs, regardless of the nature of the compressed gas stored.

8.4 Grouping

Where gases of different type are stored at the same location, containers should be grouped by types of gas, and the groups arranged to take into account the hazard of the gases contained. Full and empty containers should be stored separately with the storage layout so planned that containers comprising old stock can be removed first with a minimum handling of other containers.

Storage in buildings or rooms shall be arranged so as to separate compressed gases from liquid or solid (A) Toxics; (B) Acids; (C) Bases; (D) Flammables, and (E) Oxidizers.

8.5 Separation from Combustibles

Containers shall not be stored near readily-ignitable substances such as gasoline or waste, or near combustible in bulk, including oil.

8.6 External Corrosion

Containers should not be exposed to continuous dampness and should not be stored near salt or other corrosive chemicals or fumes. Corrosion may damage the containers and may cause the valve protection caps to stick.

8.7 Mechanical Damage

Containers shall be protected from any object that will produce a harmful cut or other abrasion in the surface of the metal. Containers shall not be stored near gangways, unprotected platform edges or in locations where heavy moving objects may strike or fall on them.

8.8 Outdoor Storage

Containers may be stored in the open but should be protected from the ground beneath to prevent bottom corrosion and from overhead heat due to sun rays.

8.9 Public Areas

Containers shall not be stored in areas accessible to visitor foot traffic. Storage shall be protected against tampering.

8.10 Interference with Egress

Containers, when stored inside, shall not be located near exists, stairways, or in areas normally used or intended for the safe exit of people.

8.11 Quantity Limitations

Storage of quantities in excess of one-month's supply in any storage location is seldom required.

8.12 Ventilation

Storage areas inside of building shall be provided with continuous mechanical exhaust ventilation. Ventilation must be provided at a rate of not less than one cfm per-square-foot of floor area or six changes per hour, whichever is greater.

8.13 Unventilated Enclosures

Containers shall not be kept in unventilated enclosures such as lockers, cabinets, and cupboards.

8.14 Fire Protections

Adequate appropriate portable fire extinguishers shall be available for emergencies at storage locations.

9.0 HANDLING (TRANSPORT)

The handling of cylinders by HR personnel should be restricted to persons trained in general gas safety. Supervision is responsible for training their respective personnel.

9.1 Trucks

Containers shall not be dragged, rolled or slid. Except for containers with a gross weight of less than 25 pounds, (which may be hand-carried), a suitable hand truck, forklift, other mechanical transport is required.

9.2 Rough Handling

Containers shall not be dropped or permitted to strike violently against each other or other surfaces.

9.3 Valve Protective Caps and Plugs

All containers in transit shall have the threaded portion (outlet) of valves capped or plugged with an appropriate closure device in addition to having their protective cylinder caps in place.

9.4 Containers Restrained

Containers placed on carts for transport shall be individually restrained.

9.5 Containers Unattended

Containers shall not be stored, or left unattended in the exit corridor system.

9.6 Lifting

Caps shall not be used for lifting containers except for the use of hand trucks which grip the cylinder cap for lifting onto the hand trucks.

Where appropriate lifting attachments have not been provided on the container, suitable cradles or platforms to hold the containers shall be used for lifting.

WARNING: COMPRESSED GASES SHALL BE HANDLED OR USED ONLY BY PROPERLY TRAINED PERSONNEL.

10.0 USE

10.1 Visual Check

Cylinders must be checked for acceptability/safety prior to being placed into use in any installation whether it is inside or outside any facility. This check includes an external visual inspection for signs of damage such as cuts or gouges in the metal, bent, or broken caps, bent or damaged valve, burn marks, scale, rust, corrosion, lack of identification labels, or other such defects that may make the cylinder unacceptable from either a safety or a process standpoint.

10.2 Leak Check (Receiving/Shipping/Transport)

All cylinder valves should be checked for leaks:

- Upon Receipt

- Prior to Shipment from the Facility

- Prior to Transport from the Storage Area

- After being Installed and Prior to Use

Other than cylinders in uses, the leak check is to be performed with the valve closed. An in-use check of installed cylinders is to be performed with the valve connected. Leak checks may be performed with the use of an approved leak check solution such as Snoop$_{TM}$. All leaking cylinders are to be reported immediately to the area supervisor. Detailed procedures for handling leaking cylinders are provided in Section 11 of this procedure.

10.3 Valve Check (Shipping/Transport)

Cylinder valves are to be checked to verify that they are closed before transporting the cylinder from the storage area. The check will be made by verifying that the hand wheel or stem (in key-operated valves) is snugly secure when turned in a clockwise direction.

CAUTION: VALVES ARE NOT TO BE OPENED ON ANY CYLINDER IN OTHER THAN A CONTROLLED ENVIRONMENT.

In addition, all cylinders are to be checked for leaks and all valve protection caps and plugs verified closed, prior to shipment from the facility.

10.4 Content Identification

Where the user is responsible for the handling of the container and connecting it for use, such containers shall carry a legible label or marking identifying the content. Containers not bearing such a label shall not be used and shall be returned to the gas suppliers.

10.5 Cylinder Caps

Where removable caps are provided by the gas supplier for valve protection, the user shall keep such caps on containers at all times when containers are connected to dispensing equipment.

10.6 Misuse

Containers shall not be used for any purpose other than to contain the content as received.

10.7 Containers Not In Use

The users shall keep container valves closed at all times (charged or empty) except when the container is in use.

10.8 Electrical Circuits

Containers shall not be placed where they might become part of an electrical circuit. When the containers are used in conjunction with electric welding, compressed gas containers shall not be grounded. These precaution will prevent burning by electric welding arc. Heating tapes will not be permitted to be placed on any gas cylinder without the approval of the Safety Department.

10.9 High Temperature

Compressed gas containers shall not be subjected to an atmospheric temperature above 125 degrees Fahrenheit. A flame shall never be permitted to come in contact with any part of a compressed gas container.

10.10 Low Temperature

Containers shall not be subjected to artificially created low temperatures without the approval of the gas supplier and the Safety Department. Many steels undergo significantly decreased impact resistance and ductility in low temperatures.

10.11 Inadequate Information

When in doubt about the proper handling of a compressed gas cylinder or its contents, consult your supervisor or the Safety Department.

10.12 Returning Empty Cylinders

Before returning empty cylinders, the container valve shall be closed and the container valve protection caps, if used, shall be replaced. Cylinders equipped with valve outlet caps or plugs, or sealing valve caps shall be returned with these caps or plugs in a gas-tight condition. Empty containers shall be labeled or marked according to DOT Regulations. Shipments must conform to DOT Regulations.

NOTE: Cylinders are never truly empty and a residual pressure always exists. By definition, a compressed gas is present in the cylinder if the residual pressure in the container is equal to or greater than 25 psig (40 psia). Containers with a residual pressure of 25 psig or greater, must be shipped as full cylinders under the requirements of the DOT. Containers used for the transport of poisons and other similarly hazardous substances have to be shipped as full, regardless of the pressure.

In order to facilitate the identification of cylinders for shipment purposes, it is necessary that all cylinders being returned to vendors be marked with a residual tag securely attached to the cylinder cap which states "USED CYLINDER CONTAINING ___ PSIG RESIDUAL GAS". This tag is to be prepared by the user prior to release from the department to the shipping area.

10.13 Nonrefillable Containers

Nonrefillable (typical of those supplying propane torches) shall not be refilled with any material after use of the original contents regardless of the application. After usage, such containers shall be disposed of in accordance with the container manufacturers or fillers recommendations.

10.14 Welding and Cutting

The use of oxygen and fuel/gas containers, including storage and handling by the user, when used for welding, cutting, brazing and allied processes shall comply with the requirements specified in Welding/Hot Work.

10.15 Secure Containers

When in use, all containers shall be secured in an upright position. An appropriate cylinder bracket, clamp or chain that holds the cylinder securely in place shall be utilized.

10.16 Pressure Regulator

A suitable pressure-regulating device shall be used where gas is admitted to a system of lower pressure rating than the supply pressure, and where due to the gas capacity of the supply source, the system pressure rating may be exceeded.

NOTE: This is a requirement regardless of the possible presence of a pressure-relief device protecting the system.

10.17 Regulators in Corrosive Service

Corrosive gases continually work to decompose sensitive control panel parts and fittings. A preventative maintenance program for regulators used with all corrosive gases is desirable and users should consider the benefits of a regular refurbishment for all gas systems. Regulators and gas panels should be replaced or refurbished at least annually.

10.18 System Pressure-Relief Device

A suitable pressure-relief device shall be used to protect a system utilizing a compressed gas where the system has a pressure rating less than the compressed gas supply source and where due to the gas capacity of the supply source, the system pressure rating may be exceeded.

10.19 Connections

Connections that do not fit shall not be forced. Threads on regulator connections or other auxiliary equipment shall match those on the container valve outlets.

10.20 Manifolds

In general, manifolds are engineered for their specific purpose, however, where compressed gas containers are connected to a manifold and its related equipment, such as regulators, shall be of proper design. A check valve is required at each cylinder connection on the manifold.

10.21 Changing Services

Regulators, gauges, hoses and other appliances provided for use with a particular gas or group of gases shall not be used on containers containing gases having different chemical properties unless information obtained from the supplier indicates that this can be done safely. As an example, only pressure-regulating devices approved for use with oxygen shall be used in oxygen service.

10.22 Container Valve

Container valves shall be opened slowly. Valve outlets shall be pointed away from the user and other persons. On valves without handwheels, the wrenches provided or recommended by the gas supplier shall be used. A wrench must be maintained on every cylinder valve when cylinder valves without handwheels are in use. On valves with handwheels, wrenches shall not be used except when designed specifically for that purpose. Valve wheels shall not be hammered in attempting to open or close the valve. For valve that are hard to open, or frozen because of corrosion, the supplier shall be contacted and the supervisor and Safety Department notified.

10.23 Dusting Clothing

Compressed gas shall not be used to dust off clothing. This may cause serious injury to eyes or body, or create other hazards.

10.24 Check Valves

Compressed gases shall not be used where the container may be contaminated by the feedback of process materials unless protected by suitable traps or check valves.

10.25 Tightness

Connections to piping, regulator and other appliances, shall be kept tight to prevent leakage. Where a hose is used, it shall be maintained in good conditions.

10.26 Removing Pressure Regulators

Before a regulator is removed from a container the container valve shall be closed and the regulator drained of gas pressure.

10.27 Personal Protective Equipment

Personal protective equipment shall be provided for all personnel who handle or utilize compressed gas containers in accordance with Section No. 1.

11.0 EMERGENCY PROCEDURES.

11.1 General

A leaking compressed gas cylinder represents a high hazard to the facility. Leaks are generally small, however, some leaks that appear to be relatively harmless in their initial stages can develop into catastrophic failure in a relatively short time.

The liability and the risks that management assumes with handling of a leaking container is great. Personnel may become exposed within the plant and the safety of the entire facility is of concern should conditions worsen. Suppliers are of little help in most cases due to the distance of their personnel and facilities from the use point as well as the lack of suitable portable containment equipment with which such incidents can be controlled.

A rapid and proper reaction by plant personnel in the handling of any leaking container, regardless of the apparent rate of leak, is paramount to the early prevention of major incidents. It is for this reason that compressed gas cylinder MUST BE CHECKED FOR LEAKS in a competent manner upon receipt prior to placement in storage, prior to transport to a use point, or prior to shipment back to the supplier.

Risks and hazards can be further reduced by providing a well defined and practiced safety plan in each area where pressurized chemicals are present.

11.2 Action in the Event of a Leak

Generally speaking, the action required of personnel in the event of a gas leak within any building is for the personnel to:

Contact the immediate supervisor.
Evacuate the immediate area.
Ventilate the area.
Notify: Maintenance and Safety Department

Events will dictate the order in which these steps are performed. The seriousness of the leak will dictate just who or how many of the area's inhabitants are to be evacuated.

Personnel are CAUTIONED not to underestimate the effects of a leak nor to magnify the impact beyond reasonable expectations. It is for those reasons that the involvement of plant safety is important.

WARNING: DO NOT ATTEMPT TO HANDLE LEAKING CYLINDERS WITHOUT ADEQUATE INFORMATION OR EQUIPMENT REGARDLESS OF THE SIZE OR THE NATURE OF THE LEAK.

11.3 Action Required with Leaking Containers

The hazards of leaking containers vary with the nature of the gas and the rate of the leak. Specific controls and procedures to be implemented will be addressed.

11.3.1 If a leak is discovered in piping, fittings, or portions of the distribution system, SHUT THE GAS OFF AT ITS SOURCE.

11.3.2 LEAK DISCOVERED IN A CYLINDER VALVE - Maintain local exhaust at the cylinder location inside the building, or if outside, maintain its position. If the leak is from a flammable material, prepare to confront a fire. The cylinder that is involved should be isolated and secured as soon as possible.

11.3.3 RESPIRATORY PROTECTION - As a general rule, respiratory protection is not required due to the types of gases currently utilized and areas that use gases are well ventilated. Specific procedures will be developed when toxic gases are introduced. Circumstances will dictate the need.

11.3.4 LEAKING CYLINDERS LEFT UNATTENDED - If leaks are minor and the cylinder is to be left in a controlled state until appropriate action can be taken, the cylinder shall be marked with an appropriate warning sign such as:

DANGER - LEAKING COMPRESSED GAS CYLINDER EXPLOSION OR TOXIC HAZARD - PERSONNEL KEEP AWAY

Persons that do not have both the need, and the permission from the responsible supervisor or the Safety Department to be in the areas shall be prohibited from reentry to the area until the hazard has been resolved.

11.3.5 DO NOT ATTEMPT to repair a leaking cylinder without adequate knowledge or supervision. OSHA regulations forbid tampering with or attempted repair of cylinder valves without supplier advice.

DO NOT SHIP a cylinder in a leaking conditions. You, as the shipper, are personally liable for the consequences.

DO NOT TAKE a leaking cylinder through the plant without proper controls in place.

DO NOT ATTEMPT to solve the problem by working along during off hours, or without the involvement of supervisory and Safety Department personnel.

11.4 Additional Information

Is required in order to safely handle all conditions. Safety is enhanced through the proper application of sound engineering principals and procedures. The wise employee will treat all leaks carefully and seriously thereby minimizing the hazard to themselves, fellow workers and the facility.

12.0 FIRST AID AND MEDICAL MEASURES

12.1 General

The exposure of the human body to compressed gases may result in various effects. Treatment of the effects of an acute (short term - high concentration) exposure shall be done by medically-qualified and competent persons familiar with the impact of gases on the body. Regardless of the treatment to be given by medical personnel, it is important that the exposed persons be removed to fresh air as quickly as possible and regular breathing established in order that the best chances for recovery are provided.

WARNING: IN THE EVENT OF PERSONNEL EXPOSURE TO HAZARDOUS GASES, CONTACT EMERGENCY PERSONNEL BY DIALING EXTENSION 5555 OR 222P IMMEDIATELY.

12.2 It is important that the physician rule out those effects not of concern and be alert to conditions that are known to be associated with gas involved. In that regard, it will be HR Textron's policy that ample information is provided to in-house and local emergency service personnel describing the types of gases (chemicals) in use and current-immediate first aid procedures.

APPENDIX A
GASES IN COMMON USAGE

Gas or Chemical	TLV[1]	Hazard Category
Acetylene	Note 1	F
Ammonia	Note 1, 3	F, Ir
Argon	Note 1, 3	I
CO_2	5,000 ppm	I
Fuel Gas (Acetylenic and Allene Hydrocarbon Mixture)	1,000 ppm	F, Ir
Hydrogen	Note 1	F
Helium	Note 1, 3	I
Mapp (Methyl-Acetylene-Propylene)	1,000	F
Nitrogen	Note 1, 3	I
Nitrous Oxide	Note 1	I
Oxygen	Note 2	NF1
Propane, Gas	Note 1, 3	F
Propane, Liquid	Note 3	F
Propylene	Note 1	F

TLV1 - Threshold Limit Value for Chemical Substance in the work environment adopted by the ACGIH for 1986. CAL-OSHA Permissible Exposure Limits for Chemical Containments.

Note 1: A number of gases and vapors, when present in high concentration, act primarily as simple asphyxiants without other adverse effects. The criteria of concern is the oxygen available to sustain life. Ignition sources, with oxygen available, present a fire and explosion hazard.

Note 2: Oxygen in combination with a fuel gas presents a fire hazard. Breathing high concentrations of oxygen (greater than 75%) may cause symptoms of cramps, nausea, dizziness, hypothermia, respiratory difficulties, and other effects.

Note 3: Liquified gases (argon, nitrogen, propane) contact with human tissue could cause frost bite and cryogenic "burns".

APPENDIX A - Continued

Hazard Category

Symbol	Hazard
F	Flammable
I	Inert
Ir	Irritant
NF1	Nonflammable, except when mixed with fuel

CONTENTS

Paragraph		Page
1.0	POLICY	1
2.0	PRECAUTIONS FOR HOT WORK PERFORMANCE	1
3.0	FLAME/SPARK PRODUCING EQUIPMENT	2

1.0 POLICY

It is the policy of HR Textron to ensure that safety precautions are observed when hot work is performed.

1.1 This policy covers brazing, welding, cutting, and other hot work performed by HR employees and by all outside contractors.

2.0 PRECAUTIONS FOR HOT WORK PERFORMANCE

2.1 The hot work supervisor or project manager will examine the location where the work will be done.

2.2 In areas where sprinklers are provided, they must be in service and remain in service until the work is completed.

2.3 Work must be confined to a specific area.

2.4 The work area must be well ventilated.

2.4.1 Required safeguards are that:

2.4.1.1 Floors and surrounding areas must be swept clean and tile floors must be wet down.

2.4.1.2 Ample fire extinguishers, water pails, etc., must be provided.

2.4.1.3 The supervisor/project manager shall advise employees or contractors doing hot work, the location of fire extinguishers, fire blankets, and other safety equipment and how to use them.

2.4.2 If the work involves cutting, welding or other spark-producing equipment, the following additional safeguards must be met:

2.4.2.1 All flammables/combustibles must be thirty to forty feet from the operation. Those that cannot be located forty feet away must be covered with a flame-proof cover, curtain, or metal safeguards.

2.4.2.2 All floor and wall openings within forty feet of the work area must be tightly covered.

2.4.2.3 A responsible person must be assigned to watch for dangerous sparks in the area and in floors above and below. The watch must extend through the work period and at least twenty minutes after the work has been completed during rest and lunch periods.

2.4.2.4 The person(s) assigned to the fire watch must know where fire extinguishers and fire blankets are kept, and how to use them. They must also know the EMERGENCY phone number (5555 or 222P) and the location of the nearest telephone.

3.0 FLAME/SPARK PRODUCING EQUIPMENT CARE

3.1 Facility Maintenance, Contractor/Owner shall:

3.1.1 Inspect flame or spark-producing equipment prior to use:

3.1.2 Keep flame or spark producing equipment in good repair.

3.1.3 Ensure flairback and other safety equipment is working properly.

SECTION
7

CONTENTS

Paragraph		Page
1.0	SCOPE	1
2.0	REQUIREMENTS	1
3.0	TYPES OF LOCKOUTS AND METHODS OF LOCKING	2
4.0	SAFETY PRECAUTIONS	2
5.0	TWO-PERSON WORK CREWS	4
6.0	AUTHORIZED LOCKOUT REMOVAL	4

1.0 SCOPE

This policy establishes a uniform method for locking out electrical circuits and power-driven equipment while personnel are working in a position in which activation of electrical circuit or power-driven equipment creates an undue hazard.

2.0 REQUIREMENTS AND EXCEPTIONS

2.1 Only qualified craftspersons shall work on electrical, mechanical and automatic starting equipment. Qualified shall mean as having training equal to, or technical experience and familiarity with, similar equipment and associated hazards.

2.2 Lockout devices are required on equipment or machines which use electricity as either the primary source of power or as the control for other sources of power such as steam, water, oil and gas. Lockout devices should be used while any guard is out of place, while changing any component of a machine or while repairing any electrically-powered machinery or equipment except:

2.2.1 In those cases where the electronic equipment is required to be in operation while repairs are being made. (See Section 2.3 below).

2.2.2 On extremely small-powered drives such as instrument-balancing motors and chart drives.

2.2.3 If equipment receives its power through a portable cord, the plug shall be removed form its receptacle and the cord tagged with a DANGER tag.

2.3 Electronic Equipment Exception

Performance repairs on electronic equipment is exempted from the lockout requirements only if all other safeguards, equipment barriers, or procedures of equal or superior protection as necessary to prevent accidental contacts is ensured.

2.4 Lockouts are Required

2.4.1 On electrical control switches while at work on de-energized electrical lines where the maximum voltage exceeds 70 volts.

2.4.2 On valves or pipelines containing hazardous substances or pressures to prevent the unintentional turn-on while under repair or adjustment.

2.4.3 On all automatic starting equipment such as compressors and generators, while under repair or adjustment.

2.4.4 On any electrical work while the view of a switch is obstructed and the unintentional activation of that switch may occur.

2.5 Equipment Required for Lockout

2.5.1 A lockout device not keyed like any other, with two keys.

2.5.2 A lockout device suitable for the intended use.

2.5.3 A DANGER sign or tag to denote on-going repairs.

2.6 Equipment for Electronic Equipment Exception

2.6.1 A suitable portable grounding rod(s).

2.6.2 A pair of rubber insulating gloves (ANSI J6-6).

2.6.3 Rubber matting.

2.6.4 Rubber insulating hood.

2.6.5 Rubber insulating blanket.

2.6.6 Rubber insulating sleeves.

2.6.7 Any other equipment, barriers, or procedures necessary to prevent accidental contact.

3.0 TYPES OF LOCKOUTS AND METHODS OF LOCKING

3.1 A control switch with a pull-down handle has an attachment so that the handle can be locked in the open position.

3.2 A sliding rod device can be attached to a machine so that when the rod is extended and locked the control handle cannot be operated to energize the equipment.

3.3 Attaching a common hasp with the padlock to the electrical switch box cover.

4.0 SAFETY PRECAUTIONS

4.1 In all operations or processes that endanger the safety of employees, lockout devices shall be used where feasible. Supervisors shall enforce correct procedures in the use of lockout devices.

4.2 Lockout will be accomplished as follows:

4.2.1 When work is being performed on electrical circuits or power-driven equipment, the employee performing the work will lockout the nearest suitable control switch. If components are capable of storing an electrical charge, the equipment will also be discharged to ground.

4.2.2 Upon completion of the job, the employee shall remove the lock and notify the supervisor concerned that the equipment is read for use. Equipment will not be restarted until checked and all lockouts, signs, and equipment have been removed.

4.2.3 With one craft working only one lock is required, but when two or more crafts are involved, a multiple lockout procedure must be used.

4.2.4 Each craft shall use their own distinctive lock on the multiple lockout device so that the equipment cannot be activated until each craft has removed its lock.

4.2.5 Supervisors who wish to make a final check before final re-energizing the circuit should also add their lock in line with the others.

4.2.6 Whenever a lock is used a DANGER tag shall be completed and attached to the lock.

4.2.7 The safety lockout device shall accommodate at least six padlocks at one time and must be maintained in good condition at all times.

4.2.8 All personnel who perform work requiring positive lockout protection must be issued a padlock stamped with the appropriate number or code corresponding to the employee's name and department. No two padlocks may be keyed alike. Duplicate keys to the padlock are to be retained and controlled by the responsible supervisor. Crafts persons are not to wear jewelry while repairing electrical equipment.

4.2.9 Where it is impossible to follow a positive lockout procedure the circuit breaker, branch feeder, sub-main or main panel shall be locked out. If this is not possible, a DANGER tag will be installed over the control device and immediate steps to correct the condition will be implemented. A two-person work crew shall be used on all non-lockout of electrical equipment.

4.2.10 Locks will be left on the equipment only during actual shift when work is being performed. Any padlocks left on the equipment overnight must be authorized by the responsible supervisor. Incomplete jobs will be continued

to be locked out and the DANGER tag will be adjusted to reflect those to contact if questions occur.

4.2.11 Barriers and sign to denote "DANGER Authorized Personnel Only" are required to assure positive control in areas of multiple high hazard exposures.

4.3 Equipment Interlocks

Safety interlocks and/or required protective paneling shall not be passed or defeated in any way during repair or adjustment operations unless other safeguards of equal or superior protected is afforded.

5.0 TWO-PERSON WORK CREWS

5.1 Whenever it is impractical to observe a positive lockout procedure, then a two-person work crew shall be used.

5.2 The first person will manually switch off the circuits and the second will check and verify that the correct switches have been switched off.

5.3 The first person will then stand by the main power switch and be prepared to throw the switch in an emergency situation.

5.4 The first person will continue to act as an observer until the repairs have been completed and the guard(s) reinstalled.

6.0 AUTHORIZED LOCKOUT REMOVAL

Lockouts will not be removed by anyone other than the craftsperson who installed it. The responsible supervisor may remove a lockout in an emergency situation, and only after checking the entire line. Any other person removing lockouts not belonging to that person shall receive immediate corrective action.

SECTION
8

CONTENTS

Paragraph		Page
1.0	SCOPE	1
2.0	PURPOSE	1
3.0	RESPONSIBILITIES	1
4.0	DEVIATION	1
5.0	REQUIREMENTS	2
6.0	MECHANICAL POWER TRANSMISSION PROTECTION	5
7.0	POSITIONS GUARDING	5

1.0 SCOPE

This Section covers requirements and responsibilities for machine guarding throughout HR Textron Facilities.

2.0 PURPOSE

The purpose of this section is to establish machine guarding requirements in order to minimize hazards associates with moving parts of machinery.

3.0 RESPONSIBILITIES

3.1 Department Manager

It is the responsibility of the Department Manager to see that all machines comply with requirements of this Standard.

3.2 Supervisor

(A) Train employees in safe practices and see that machine guards are installed when necessary.

(B) See that machines are systematically and routinely inspected and maintained, and records kept.

3.3 Safety Department

It is the responsibility of the Safety Department to assist supervisors in complying with the requirements of this Section, and to evaluate conditions which may require mechanical guarding.

4.0 DEVIATION

Deviations from the requirements of this Standard are not permitted, except in cases where local regulations are more stringent.

5.0 REQUIREMENTS

5.1 Mechanisms Requiring Guards

(a) Rotating mechanisms

(b) Cutting or shearing mechanisms

(c) Inrunning nip points

(d) Screw or worm mechanisms

(e) Forming or bending mechanisms

(f) Belts and pulleys

5.2 Point-of-Operation Guards

To be effective, a point-of-operation guard shall:

(a) Be considered a permanent part of the machine.

(b) Be substantially designed to protect the operator.

(c) Prevent access to the danger zone during operation.

(d) Not weaken the structure of the machine.

(e) Be convenient, neither interfering with efficient operation of the machine, nor causing discomfort to the operator.

(f) Be designed for the specific job and specific machine, with provisions made for safe and easy oiling, inspecting, adjusting, and repairing of parts.

(g) Be resistant to fire and corrosion.

(h) Be durable and constructed to resist normal wear and shock.

(i) Present no hazard, such as splinters, pinch points, shear points, or sharp corners, rough edges, exposure to electrical shock, or other sources of injury.

5.3 Classification of Guards in Order of Desirability

(a) Enclosure Guards

(1) Fixed enclosures

(2) Adjustable enclosures

(b) Interlocking Guards

(1) Enclosure or gate guard with electrical or mechanical interlock.

(2) Barrier with electrical or mechanical interlock activating a brake.

(3) Electronic or other type field or beam connected with operating and stopping mechanism.

(c) Remove Control, Placement, Feeding Ejecting

(1) Two-handed tripping devices (also multiple operation).

(2) Automatic or semiautomatic feed.

(3) Special jogs or holding devices.

(4) Special ejecting devices.

(d) Automatic Guards

(1) Limitation of stroke

(2) Automatic pressure release devices.

5.4 Enclosure Guards

Fixed or adjustable enclosure guards should be used in preference to all other types. A major design consideration of enclosure guards is work visibility, which can be achieved by use of parallel bars, expanded metal, wire mesh, and clear polycarbonate plastic 0.0250 minimum thick. Enclosure guards admits the stock but will not admit hands into the danger zone because of feed opening size, remote location, or unusual shape.

5.5 Interlocking Guards

An interlocking enclosure guard should do three things:

(a) Shut off or disengage the power to prevent the starting of the machine when the guard is open.

(b) Guard the danger point before the machine can be operated.

(c) Keep the guard closed until the dangerous part is at rest, or stop the machine when the guard is opened.

Electrical interlocking devices should be so designed that if they fail, they fail safely, making the guarded machine inoperative.

5.6 Remote Control, Placement, Feeding and Ejecting

These devices require simultaneous action of both hands of the operator on electrical switch buttons, air control valves, or mechanical levers. The actuating controls should be so located as to make it impossible for the operator to be able to move his hands from the controls to the danger zone before the machine has completed its closing cycle.

5.6.1 Remote Control. Special jogs, holding devices, and dies may be used to manipulate stock at the point of operation, yet keep hands safe.

5.6.2 Placement

(a) Buttons shall be 21 inches minimum spacing from one another.

(b) Distance from buttons to point of operating die (danger zone) shall be sufficient to prevent operator from getting hands in die after buttons have activated. The distance shall be dependent on the speed of the operation of the machine.

5.6.3 Feeding and Ejecting. Mechanical means for feeding, and air operated means for ejecting, may be used to manipulate parts while in the danger zone.

5.7 Automatic Guards

Push-away, hold-out and pull-back devices which restrain the hands are the least acceptable methods of machine guards and are not recommended. Alternative work processes should be designed, for example, vacuum devices for handling the work.

6.0 MECHANICAL POWER TRANSMISSION PROTECTION

(a) Power transmission apparatus such as flywheels, shafting pulleys, belts, and couplings shall be guarded when they are located or extended 9 feet or less from the floor.

(b) Fixed barrier guards of solid sheet metal are best for power transmission apparatus. The sheet metal must be heavy enough to withstand pressure and not come into contact with apparatus being guarded.

(c) All moving, sliding or hinged panels and gates should be interlocked with machine operation.

7.0 POSITIONS GUARDING

Dangerous machinery not easily accessible shall be guarded.

SECTION
9

CONTENTS

Paragraph		Page
1.0	SCOPE	1
2.0	PURPOSE	1
3.0	RESPONSIBILITIES	1
4.0	DEVIATIONS	1
5.0	REQUIREMENTS	1

1.0 SCOPE

This Section covers requirements and responsibilities for the use and care of grinding machines and wheels.

2.0 PURPOSE

The purpose of this Section is to establish operating practices to minimize the hazards associated with the use and maintenance of grinding machines and wheels.

3.0 RESPONSIBILITIES

3.1 Department Supervisors

It is the responsibility of the supervisor to see that only fully-trained employees operate machinery. The supervisor will insure all equipment is properly adjusted and maintained.

3.2 Employee

It is the responsibility of the employee to observe all safety requirements.

3.3 Safety Department

It is the responsibility of the Safety and Health Administrator to assist Department Managers and Supervisors in complying with the requirements of this Section.

4.0 DEVIATION

Deviations from the requirements of this Standard are not permitted, except in cases where local regulations are more stringent.

5.0 REQUIREMENTS

5.1 Abrasive Wheel Guards

All abrasive wheels shall be guarded. Wheel exposure angles shall not exceed the OSHA standards as defined in Title 29, Chapter XVII, Part 1910.215.

5.2 Wheel Exposure Adjustments

Wheel exposure adjustments shall not be made with the wheel in motion.

5.3 Adjustable Tongue

The constantly decreasing diameter of the abrasive wheel is guarded by an adjustable tongue. The distance between the wheel and the tongue shall not exceed 1/8 inch.

5.4 Cup Wheel

Revolving cup guard clearances shall not exceed 1/16 inch.

5.5 Work Rests

Work rests shall be adjusted closely to the wheel. The distance between the wheel and the work rest shall not exceed 1/8 inch.

5.6 Mounting and Inspection of Abrasive Wheels

Immediately before mounting, all wheels shall be closely inspected and ring tested by the user. Wheels must be dry and free from sawdust when applying the "ring test", otherwise the sound will be deadened. "Tap" wheels about 45 degrees each side of the vertical centerline and about 1 or 2 inches from the periphery. Then rotate the wheel 45 degrees and repeat the test. A sound and undamaged wheel will give a clear metallic tone. If cracked, there will be a dead sound and not a clear "ring."

There shall be no excessive tightness between wheel mounting and machine spindle, a safety clearance shall be maintained between the two. The grinding wheel shall fit freely on the spindle and remain free under all grinding conditions.

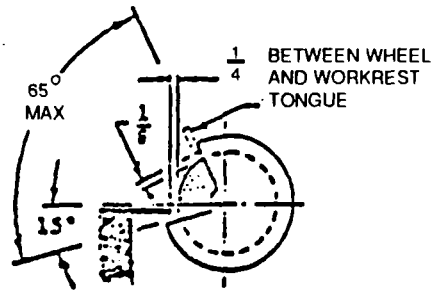
Mounting surfaces of wheels, blotters and flanges shall be flat and free of foreign matter.

Grinding machines shall be equipped with flanges designed for the particular type of wheel being guarded. Blotters (compressible washers) are sometimes required between flanges and wheel mounting surfaces to insure uniform distribution of flange pressure.

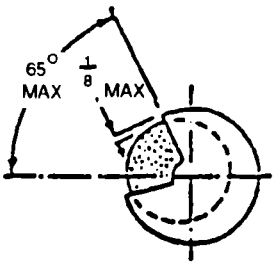
5.7 Abrasive Wheel Storage

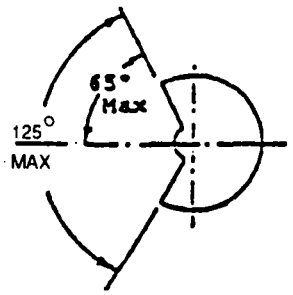
Store in a dry area, in racks, bins or drawers to fit type and size of wheel. Alternate use of wheels to insure against lengthy storage time.

Abrasive wheels shall not be exposed to high temperatures, humidity, dampness, freezing temperatures, condensation, or physical abuse of any kind while in storage.



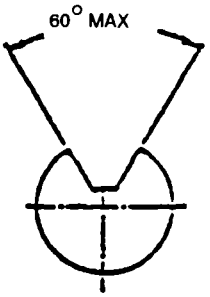
EXPOSURE ADJUSTMENTS FOR BENCH AND FLOOR STANDS



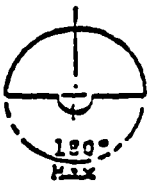


WHERE THE NATURE OF THE WORK REQUIRES CONTACT WITH THE WHEEL BELOW THE HORIZONTAL PLANE

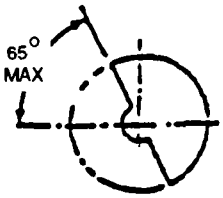
MAXIMUM EXPOSURE FOR SURFACE GRINDERS AND CUTTING OFF MACHINES



MAXIMUM EXPOSURE FOR TOP GRINDING



MAXIMUM EXPOSURE FOR AUTOMATIC SNAGGING MACHINES



MAXIMUM EXPOSURE FOR CYLINDRICAL GRINDERS

CUPWHEEL CLEARANCE

a0775.pcx

Diagram of Grinding Machines and Abrasive Wheels

5.8 Exhaust Ventilation

Exhaust ventilation systems shall be provided for grinding, buffing, and polishing operations which produce grinding dust such that employee exposure to airborne contamination could exceed prescribed limits.

5.9 Safe Operating Practices

(a) Use eye protection with side shields.

(b) Check all adjustments.

(c) Never use a poorly maintained or imbalanced wheel.

(d) Never grind on the side of a peripheral grinding wheel.

(e) Never take too heavy a cut.

(f) Approach work with care, especially on a cold wheel.

(g) Use compressible washers (blotters), when required.

(h) Never exceed recommended speeds.

(i) If the wheel vibrates, don't use it.

SECTION
10

CONTENTS

Section		Page
1.0	SCOPE	1
2.0	PURPOSE	1
3.0	RESPONSIBILITIES	1
4.0	DEVIATIONS	1
5.0	REQUIREMENTS	2

1.0 SCOPE

This Section covers requirements for the use of compressed air as a means of cleaning, or replenishing air-supplied respirators.

2.0 PURPOSE

The purpose of this Section is to establish safe operating practices in the use of compressed air.

3.0 RESPONSIBILITIES

3.1 Department Supervisor

It is the responsibility of the Department Supervisor to see that compressed air is used only for its intended purpose, and to see that equipment is inspected and maintained routinely.

3.2 Facilities Engineering

It is the responsibility of the Facilities Engineering Department to see that the installation of compressed air equipment meets OSHA Standards.

3.3 Safety Department

It is the responsibility of the Safety Department to assist the Department Manager and Facilities Engineering Department in complying with the OSHA standards.

3.4 Employees

It is the responsibility of the employee to comply with these standards, and not to alter equipment such as air guns by defeating the pressure limiting mechanism.

4.0 DEVIATIONS

Deviations from the requirements of this Standard are not permitted, except in cases where local regulations are more stringent.

5.0 REQUIREMENTS

5.1 General

(a) Compressed air used for cleaning chips and dirt from machinery shall be less than 30 psi, and then only with effective chip guarding and personal protective equipment.

(b) Air guns used for cleaning purposes shall be of a type that limits the static pressure at the main orifice to less than 30 psi when dead-ending occurs.

(c) Compressed air shall not be used to fill or empty containers of liquids.

(d) Safety glasses shall be worn while using compressed air.

SECTION
11

CONTENTS

Paragraph		Page
1.0	SCOPE	1
2.0	PURPOSE	1
3.0	RESPONSIBILITIES	1
4.0	REQUIREMENTS	2
5.0	INSPECTIONS	3
Appendix		
A	Sling Configurations	7

1.0 SCOPE

This Section covers HR requirements and responsibilities for the installation and maintenance of electrically powered stationary hoisting equipment.

2.0 PURPOSE

The purpose of this Section is to establish operating procedures and practices to minimize hazards associated with the installation, use and maintenance of electrically powered stationary hoisting equipment.

3.0 RESPONSIBILITIES

3.1 Department Manager

It is the responsibility of the Department Manager to see that all stationary hoisting equipment is in safe operating condition, and complies with the requirements of this Section. He shall also see that safe operating procedures are established and followed.

3.2 Supervisor

It is the responsibility of the Supervisor to see that only trained employees operate the equipment, and that inspection reports are accurately maintained.

3.3 Employees

It is the responsibility of the employee to visually check the equipment, and to report any observable wear to the Supervisor. He shall also report all equipment malfunctions immediately.

3.4 Safety Department

It is the responsibility of the Safety Department to:

(a) Select the site
(b) Verify the supporting structure is safe
(c) Test the equipment after installation and prior to use.
(d) Establish and maintain a monthly and annual inspection program.
(e) Set up and record keeping log on safety checks, maintenance and repairs.
(f) Post current monthly inspection reports in the vicinity of the hoist.
(g) Assist the Facilities Engineering Department in complying with Federal and State safety requirements.
(h) Monitor the inspection program.

4.0 REQUIREMENTS

4.1 Only fully trained employees shall operate hoisting equipment.

4.2 Limit Device

Each overhead electric hoist shall be equipped with an enclosed limit device which will stop the travel before the hook passes the highest and, where applicable, the lowest point of travel.

4.3 Brakes

The braking system shall perform the following functions.

(a) Arrest and hold up to 125 percent of rated load when controls are released.

(b) Limit the speed of load during lowering to a maximum of 120 percent of rated lower speed.

4.4 Capacity Marking

Each hoist shall have its rated load marked clearly and conspicuously.

4.5 Control Equipment

Operating controls shall be plainly marked to indicate the direction of travel.

4.6 Slings and Hooks

Slings and hooks must be capable of carrying up to 125 percent of rated load, and hooks shall be equipped with safety latches.

4.7 Electrical Equipment

(a) Electrical equipment shall be located or enclosed so that no live parts shall be exposed to accidental contact under normal operating conditions.

(b) Electric equipment shall be protected from dirt, grease, oil and moisture.

(c) Guards for live parts shall be substantial and so located that they cannot be accidentally deformed so as to make contact with live parts.

4.8 Handling the Load

4.8.1 Size of Load. The equipment shall not be loaded beyond its rated capacity except for rated load test in accordance with OSHA Regulations.

4.8.2 Attaching the Load.

(a) The load shall be attached to the hook by means of slings or other suitable and effective means which shall be properly rigged to ensure the safe handling of the load.

(b) Chain and rope slings shall be freed of kinks or twists before use.

(c) Baskets, tubs, skips, or similar containers used for hoisting bulk materials shall be loaded so as not to exceed their safe carrying capacity.

(d) The hoist rope shall not be wrapped around the load.

(e) Never move the load without checking the balance, and the brakes. Check the brakes by raising the load a few inches and then applying them.

4.8.3 Moving the Load.

(a) Never move loads over people.

(b) Never leave the controls while a load is suspended.

(c) Never suddenly accelerate or decelerate a moving load.

(d) Be sure the load is well balanced before moving more than a few inches.

5.0 INSPECTIONS

5.1 Daily

(a) The hoist for proper operation.

(b) The limit switches without load on hook.

(c) The hook for deformation and cracks.

(d) The cable and cable slings for excessive wear, broken wires, stretch, kinking and twisting.

(e) The load attachment chain for excessive wear, distorted or stretched links.

Any defects should be immediately brought to the attention of Facilities Engineering and corrected before the hoist is used.

No written report is required of the daily inspection.

5.2 Monthly

An inspection and written signed report must be made by Facilities Engineering of all components used on or associated with the hoist. Components checked must include:

(a) Hoist or load attachment

(b) Chains and their end connections

(c) Wire rope slings

(d) Hook and hook latches

(e) Motor and brakes

(f) Pushbuttons and other electrical control equipment

(g) Hardware, sheaves, bolts, rivets, pins and drums

Any defects should be corrected before the hoist is used. The report must be dated and signed by the person performing the inspection.

5.3 Yearly

Once each year a more detailed inspection must be made by Facilities Engineering (or a qualified service company selected by Facilities Engineering). After completing the annual inspection, the report must be filled out and signed by the person performing the inspection. Hoisting equipment records will be maintained in the Facility Engineering office.

5.4 Check List for Inspection

The following check list shall be used as a guide for inspection of hoisting equipment.

(a) The safe working load shall be posted on each hoisting unit.

(b) A swivel type self-latching safety hook shall be used for the load hook. The cable shall be secured to the load hook by the use of two approved cable clamps.

(c) Load hooks shall not be deformed or damaged in any way. The hook is normally designed to be the weakest part of the hoisting unit so it should be the first point to indicate overload.

(d) Load hooks shall not be deformed or damaged in any way. The hook is normally designed to be the weakest part of the hoisting unit so it should be the first point to indicate overload.

(e) The hoist chain shall not show excessive wear and shall not have twisted or cracked or distorted links.

(f) The cable shall be inspected for signs of kinking. It shall be free from broken strands and wind smoothly and evenly on the drum.

(g) On electric hoists, both an upper and lower limit switch are required and they shall be adjusted properly.

(h) The hoist track shall be level with carefully matched joints.

(i) The track stops shall be located to prevent the carriage from traveling beyond the last rack hanger. Each hanger shall be capable of supporting, with a factor of five, the entire weight of the track, carriage and load.

(j) Double-wheel stops shall be securely fastened on both tracks and at both ends (total of eight).

(k) The entire hoist mechanism must be grounded. A positive grounding means, such as a bus bar and shoes, shall be used. It is not satisfactory to ground through wheel-track contact.

(l) Protective covers shall be installed over the track bus bars.

(m) The carriage on an electric hoist shall be provided with limit stops to prevent excess travel and strain on electrical connections.

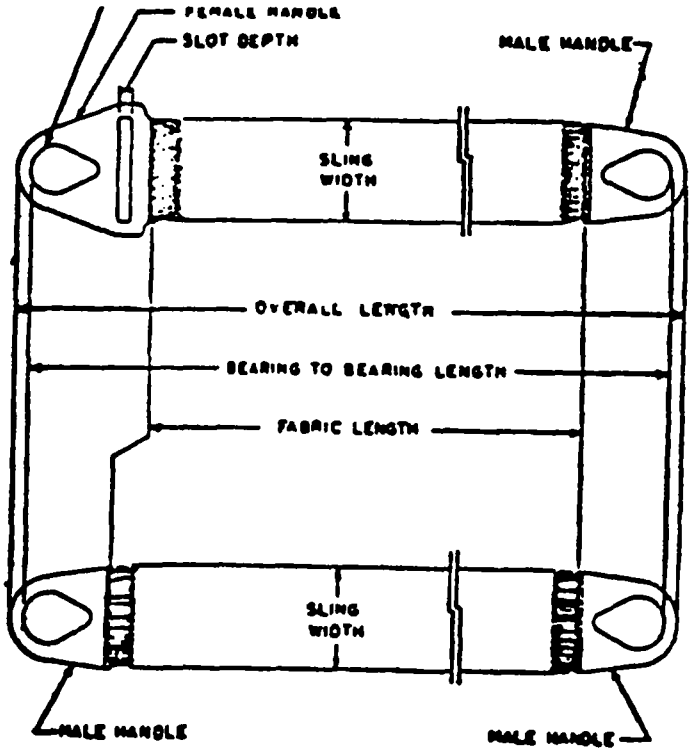
(n) Where two or more electrical hoist carriages operate on the same track, a small bumper shall be attached to each end of each carriage so that nothing can impinge against any part of the electrical apparatus of any hoist.

5.5 Eyebolt Inspections

A six-month inspection program shall be set up systematically magnaflux and x-ray inspect eyebolts for defects. After each inspection, eyebolts shall be freshly color-coded.

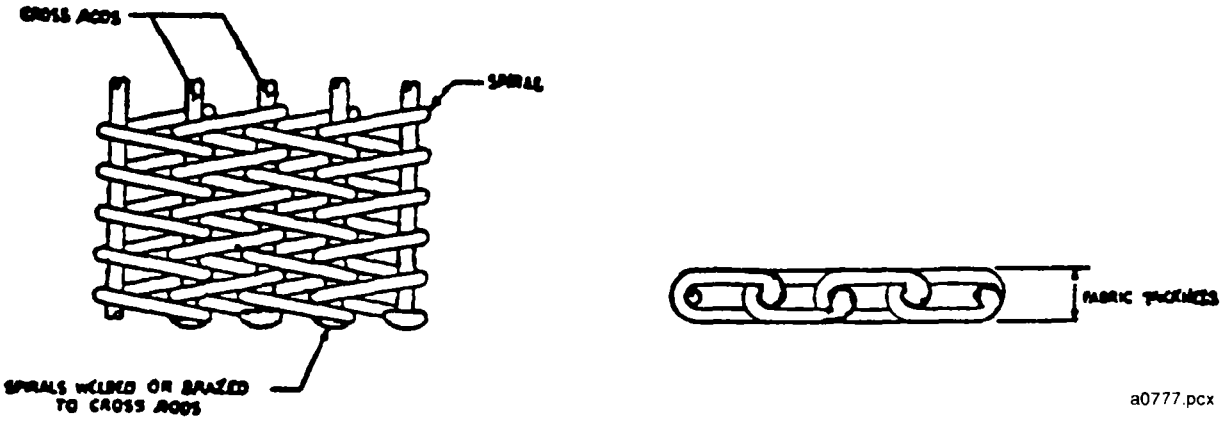
APPENDIX A

SLING CONFIGURATIONS



a0776.pcx

Metal Mesh Sling (Typical)

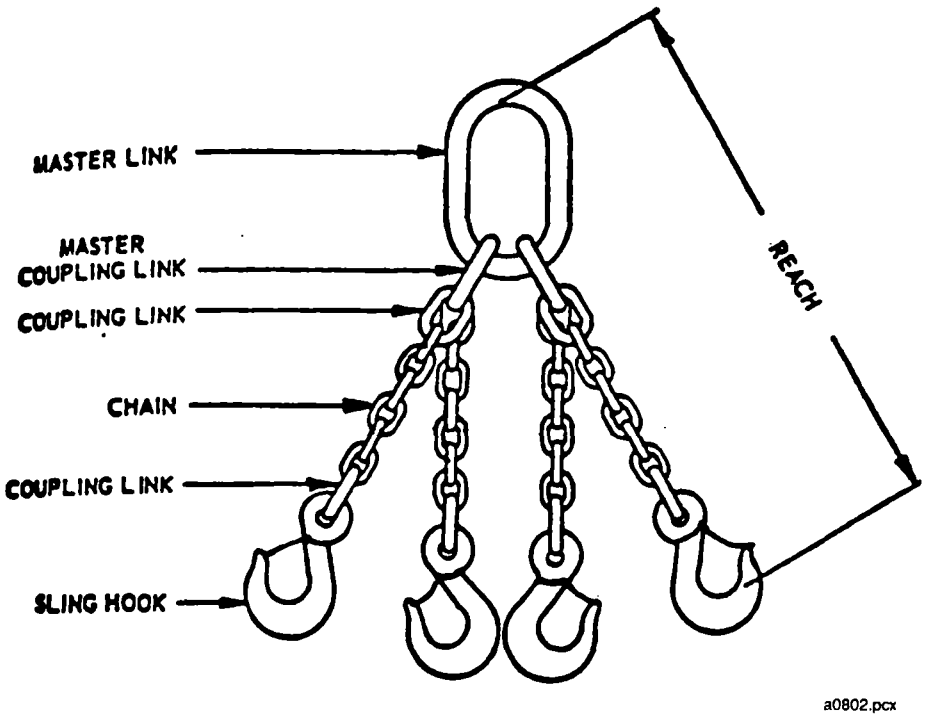


a0777.pcx

Metal Mesh Construction

APPENDIX A

SLING CONFIGURATION (Continued)

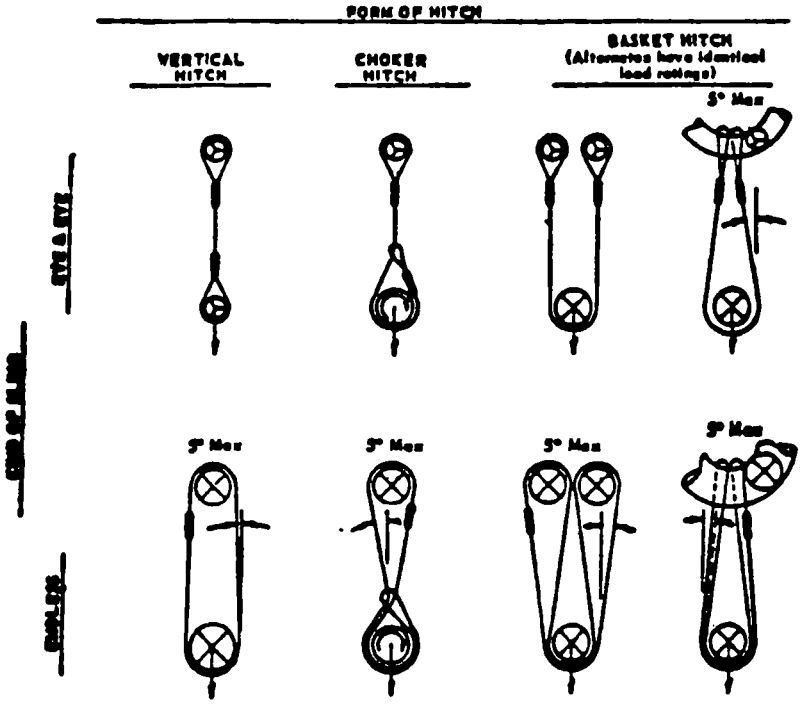


Major Components of a Quadruple Sling

APPENDIX A

SLING CONFIGURATION (Continued)

Basic Sling Configurations with Vertical Legs



NOTES: Angles 5° or less from the vertical may be considered vertical angles.

For slings with legs more than 5° off vertical, the actual angle as shown in Figure N-184-5 must be considered.

EXPLANATION OF SYMBOLS: MINIMUM DIAMETER OF CURVATURE

Represents a contact surface which shall have a diameter of curvature at least double the diameter of the rope from which the sling is made.

Represents a contact surface which shall have a diameter of curvature at least 8 times the diameter of the rope.

Represents a load in a choker hitch and illustrates the rotary force on the load and/or the slippage of the rope in contact with the load. Diameter of curvature of load surface shall be at least double the diameter of the rope.

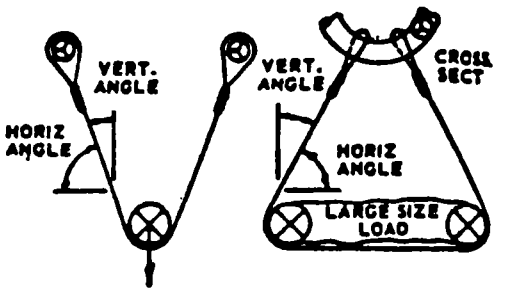
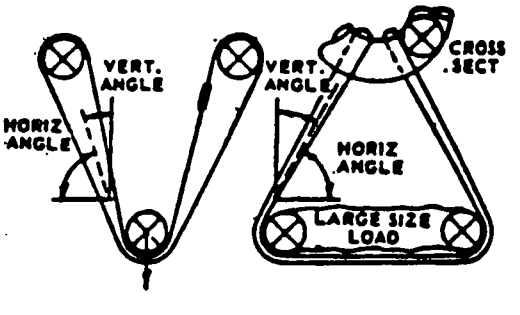
a0803.pcx

Basic Sling Configurations with Vertical Legs

APPENDIX A

SLING CONFIGURATION (Continued)

Sling Configurations with Angled Legs

END OF SLING	FORM OF HITCH: VERTICAL HITCH	CHOKER HITCH	BASKET HITCH (Alternates have identical load ratings)
EYE & EYE	NOT APPLICABLE	NOT APPLICABLE	
HOOKLESS	NOT APPLICABLE	NOT APPLICABLE	

NOTES: For vertical angles of 5° or less, "Basic Sling Configurations with Vertical Legs".

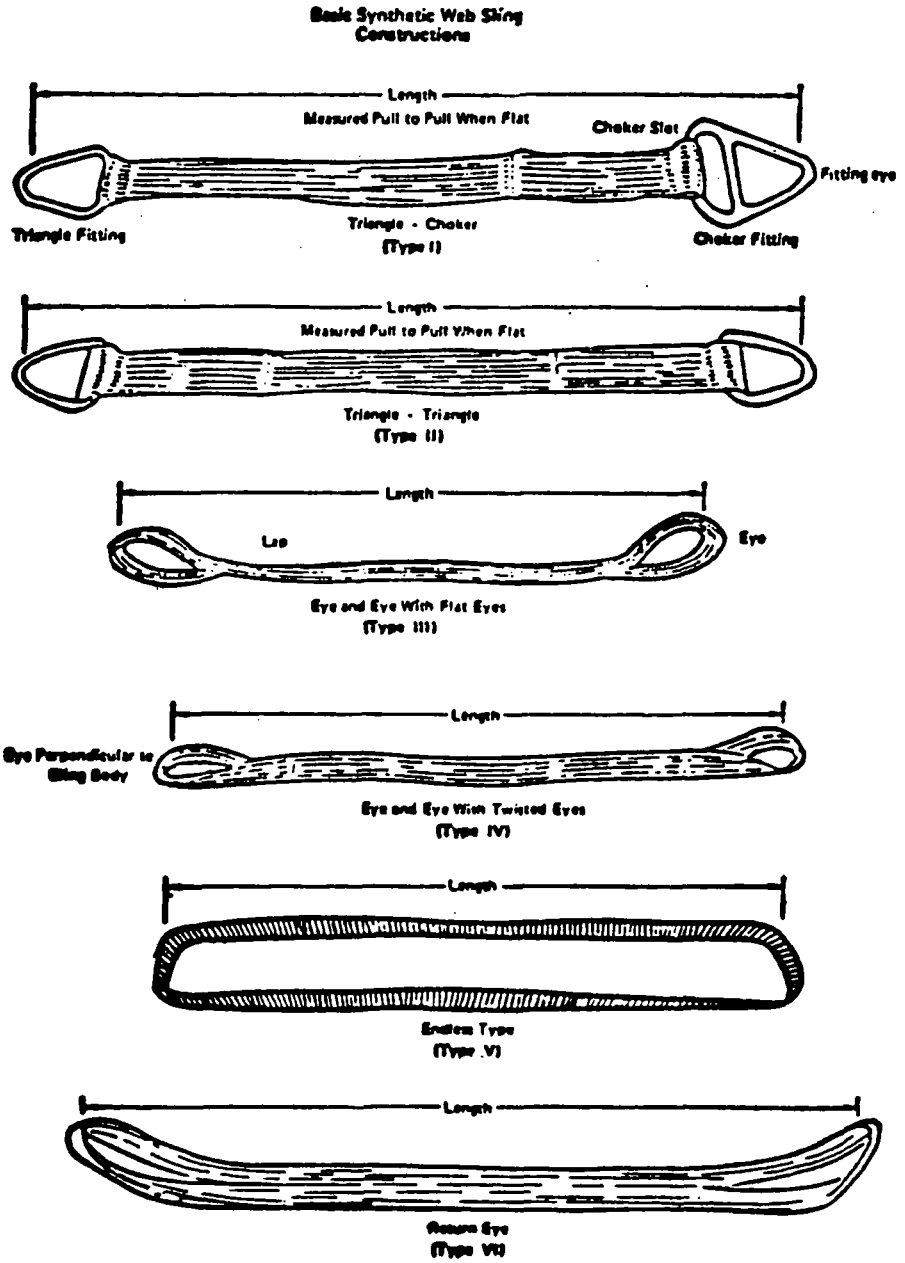
for explanation of symbols.

a0804.pcx

Sling Configurations with Angled Legs

APPENDIX A

SLING CONFIGURATION (Continued)



a0805.pcx

Basic Synthetic Web Sling Construction

SECTION
12

CONTENTS

Paragraph		Page
1.0	SCOPE	1
2.0	PURPOSE	1
3.0	RESPONSIBILITIES	1
4.0	REQUIREMENTS	1
5.0	OPERATOR TRAINING	3
6.0	RECOMMENDED OPERATOR IDENTIFICATION	3
7.0	POSTING OPERATING REQUIREMENTS	3
8.0	UNATTENDED VEHICLES	5
9.0	MAINTENANCE OF INDUSTRIAL TRUCKS	5
10.0	OPERATOR'S DAILY CHECK LIST	6

1.0 SCOPE

This Section covers requirements and responsibilities for the operation and maintenance of powered industrial vehicles, which include LP gas and electric lift trucks.

2.0 PURPOSE

The purpose of this Section is to establish operating procedures and practices to minimize the hazards associated with the use and maintenance of LP gas and electric lift trucks.

3.0 RESPONSIBILITIES

3.1 Department Manager

It is the responsibility of the Department Manager to see that all vehicles procured for the department meet the American National Standard for Powered Industrial Trucks, ANSI B56.1975. The Department Manager shall also see that safe operating procedures are established, posted and followed.

3.2 Supervisors

It is the responsibility of the Supervisor to see that only fully trained employees operate vehicles.

3.3 Employee

It is the responsibility of the employee to comply with established safety requirements.

3.4 Safety Department

It is the responsibility of the Safety Department to assist Department Managers and Supervisors in complying with the requirements of this Section and the training of operators.

4.0 REQUIREMENTS

4.1 Approval

All vehicles shall carry a label of approval which indicates that they have been tested using nationally recognized testing standards, e.g., Underwriters' Laboratories, Inc., Factory Mutual Engineering Corporation.

4.2 Control of Noxious Gases and Fumes

Levels of carbon monoxide gas caused by industrial trucks shall not exceed the levels specified in the "Code of Federal Regulation," Title 29, Chapter XVII, Part 1910.1000.

4.3 Fuel Handling and Storage

Gasoline, diesel fuel, and liquified petroleum gas shall be handled and stored according to codes NFPA No. 30-1969 and NFPA No. 58-1969.

4.4 Vehicle Guard

An overhead guard appropriate for the job application, shall be used for protection against falling objects.

4.5 Warning Devices

Vehicles shall be equipped with warning devices such as flashing lights, bells and/or horns.

4.6 Electric Trucks

Electric trucks should not be parked on asphalt pavement and should be driven on asphalt areas as little as possible. They are not designed to operate on uneven surfaces, run on ramps, or to be used for pushing power.

4.7 Keys

Only authorized fork lift operators will be issued keys. Keys shall not be left in unattended vehicles.

4.8 Changing and Charging Batteries

(a) Battery charging installations shall be in specific areas, which are adequately ventilated. Facilities shall be provided for flushing and neutralizing a spilled electrolyte.

(b) Support racks for batteries shall be nonconductive, or insulated.

(c) Material handling equipment shall be provided for handling batteries.

(d) A carbon filter or siphon shall be provided for handling electrolyte.

(e) When charging batteries, the vent caps should be kept in place to avoid electrolyte spray. See that vent caps are working. The battery cover shall be open to dissipate heat and hydrogen.

(f) Take care to prevent open flames, sparks, or electric arcs in battery charging area. Smoking shall be prohibited, and a "No Smoking" sign posted, in the area.

(g) Metallic objects shall be kept away from the top of uncovered batteries.

5.0 OPERATOR TRAINING

Specific qualifications prior to training shall include a valid driver's license. Classroom instruction shall be given in safe vehicle operation, safe handling and securing of materials, actual power vehicle operation, and movement of materials.

6.0 RECOMMENDED OPERATOR IDENTIFICATION

An HRT Operator's Name Plate with a yellow background and black lettering and an engraved forklift silhouette as shown below shall be worn to identify all certified vehicle operations.

Data Systems

John Doe

7.0 POSTING OPERATING REQUIREMENTS

The following operating rules shall be conspicuously posted.

(a) Only authorized drivers shall operate vehicles.

(b) Vehicles shall be checked at least once per shift, see Paragraphs 10.1 and 10.2.

(c) Do not permit others to ride.

(d) Maintain a safe speed, and safe distance (3 truck-lengths) between moving vehicles.

(e) Stunt driving and horseplay are prohibited.

(f) Unattended vehicles shall have power shutoff, brakes set, the mast brought to the vertical position, and forks left in the down position. When left on an incline, the wheels shall be blocked.

(g) The rated load capacity of the truck shall not be exceeded.

(h) Trucks shall not be driven up to anyone standing in front of a bench or other fixed object of such size that the person could be caught between the truck and the object.

(i) No one shall stand, or pass under the elevated portion of any truck.

(j) Grades up and down shall be maneuvered slowly.

(k) When ascending or descending grades in excess of 10 percent, loaded trucks shall be driven with the load upgrade.

(l) On all grades, the load and load engaging means shall be tilted back, if applicable, and raised only as far as necessary to clear the road surface.

(m) Motorized hand and hand/rider trucks shall be operated on all grades with the load/ engaging means downgrade.

(n) Loaded vehicles shall not be moved until the load is safe and secure.

(o) Operators shall look in the direction of travel and shall not move a vehicle until certain that all persons are in the clear.

(p) Vehicles shall not be operated on floors, sidewalk doors, or platforms that will not safely support the loaded vehicle.

(q) The forks shall always be carried as low as possible, consistent with safe operations.

(r) The reverse gear shall not be used as a brake.

(s) Vehicles shall not be drive in and out of highway trucks and trailers at unloading docks until such trucks are securely blocked and brakes set.

(t) Employees shall not place any part of their body outside the running lines of the industrial truck or between mast uprights or other parts of the truck where shear or crushing hazards exist.

(u) Other trucks traveling in the same direction shall not be passed at intersections, blind spots, or dangerous locations.

(v) The driver shall slow down and sound the horn at cross aisles and other locations where vision is obstructed. If the load being carried obstructs forward view, the driver shall be required to travel with the load trailing.

(w) No truck shall be operated with a leak in the fuel system.

(x) Extreme care shall be taken when tilting loads. Tilting forward with the load engaging means elevated shall be prohibited except when picking up a load. Elevated loads shall not be tilted forward except when the load is being deposited onto a storage rack or

equivalent. When stacking or tiering, backward tilt shall be limited to that necessary to stabilize the load.

(y) The load engaging device shall be placed in such a manner that the load will be securely held or supported.

(z) Special precautions shall be taken in the securing and handling of loads by trucks equipped with trailer attachments, and during the operation of these trucks after the loads have been removed.

8.0 UNATTENDED VEHICLES

A powered industrial vehicle is unattended when the operator is more than 25 feet from the vehicle, or the vehicle is out of his sight.

When a powered industrial truck is left unattended, load engaging means shall be fully lowered, controls shall be neutralized, power shall be shut off, and brakes set. Wheels shall be blocked if the truck is parked on an incline. The key shall be removed.

When the operator is dismounted and within 25 feet of the vehicle still in his view, the load engaging means shall be fully lowered, controls neutralized and the brakes set to prevent movement.

9.0 MAINTENANCE OF INDUSTRIAL TRUCKS

(a) Defective trucks shall not be used until repaired by authorized personnel.

(b) Repairs shall not be made in hazardous areas, i.e., where there are flammable gases, combustible dust, or ignitable fibers.

(c) Repairs to fuel and ignition systems which involve fire hazards shall be made in appropriate safety areas.

(d) Prior to repair, the electrical system shall be disconnected form the battery.

(e) Open flames shall not be used for checking the electrolyte level in storage batteries or the gasoline level in fuel tanks.

(f) Maintenance area shall be kept clean.

(g) Vehicle servicing records shall be maintained.

10.0 OPERATOR'S DAILY CHECK LIST

10.1 Gas or LPG Truck Driver's Daily Check List

To be completed each shift change.

Date: _____ Truck # _____
Operator: _____
Hour Meter Reading: _____

****

Space OK or NA (Needs Attention)

Visual Checks	O.K.	N.A.
Engine Oil Level	( )	( )
Radiator Water Level	( )	( )
Battery	( )	( )
Tire Condition	( )	( )
Forks	( )	( )
Lights	( )	( )
Obvious Damage/Leaks	( )	( )
Gauges & Instruments	( )	( )
Fire Extinguisher	( )	( )

Operational Checks		
Horn ( )	( )	
Steering	( )	( )
Service Brake	( )	( )
Parking Brake	( )	( )
Hydraulic Controls	( )	( )

Explain below all items needed attention or repair which show up during the inspection or any time while operating the truck:

--THEN NOTIFY YOUR SUPERVISOR --

_____
_____
_____
_____

The Supervisor certifies that:

( ) He has been made aware of the problem(s) checked/described.
( ) He will notify Maintenance to have repair done.
( ) The problem is such that the truck is still operational.
( ) The truck should not be used until repaired. TAG TRUCK

Supervisor: _____

10.2 Electric Truck Driver's Daily Check List

To be completed each shift change.
Date: _____ Truck # _____
Operator: _____
Hour Meter Reading: _____

****
Space OK or NA (Needs Attention)

Visual Checks	O.K.	N.A.
Battery Plugged In	( )	( )
Tire Condition	( )	( )
Forks	( )	( )
Lights	( )	( )
Obvious Damage/Leaks	( )	( )
Gauges & Instruments	( )	( )

Operational Checks		
Horn ( )	( )	
Steering	( )	( )
Service Brake	( )	( )
Parking Brake	( )	( )
Hydraulic Controls	( )	( )

Explain below all items needed attention or repair which show up during the inspection or any time while operating the truck:

--THEN NOTIFY YOUR SUPERVISOR --

_____
_____
_____
_____

The Supervisor certifies that:

( ) He has been made aware of the problem(s) checked/described.
( ) He will notify Maintenance to have repair done.
( ) The problem is such that the truck is still operational.
( ) The truck should not be used until repaired. TAG TRUCK

Supervisor: _____

SECTION
13

CONTENTS

Section		Page
1.0	SCOPE	1
2.0	EMPLOYEE INDOCTRINATION	1
3.0	PERSONNEL MONITOR CONTROL	3
4.0	RADIATION SURVEY INSTRUMENTS	4
5.0	EMERGENCY PROCEDURES	4
6.0	CABINET RADIOGRAPHY SAFETY PRECAUTIONS	5
Appendix		
A	Health Physics Survey Record	7

1.0 SCOPE

This Radiation Safety Manual is designed to provide basic operation, emergency and safety procedures pursuant to the California Radiation Control Regulations and the Radiation Safety Program at HR Textron, Inc.

2.0 EMPLOYEE INDOCTRINATION

Each new employee who requires entrance to the controlled area will be instructed in radiation safety. Instruction will be conducted by the Radiation Safety Officer and responsible supervisor.

The Lesson Plan:

* Definitions
* X-Ray machines and production of x-rays
* Nature of ionizing radiation and its effects on man
* The control of radiation exposure
* California Radiation Control Regulations

2.1 Definitions

(a) "Controlled Area" means any area access to which is controlled for purposes of radiation safety pursuant to State regulations.

(b) "Dose" means radiation energy absorbed per unit mass. Dose to the whole body or major portion shall mean head and trunk, reproductive organs, lens of eye, or active blood forming organs.

(c) "High Radiation Area" means any area, accessible to individuals, in which there exists radiation at such levels that an individual could receive any one hour a dose to the whole body in excess of 100 millirem.

(d) "Occupational Dose" means the dose received by any individual:

(1) in a controlled area; or

(2) in the course of employment, education, training, or other activities which involve exposure to radiation: except that occupational dose shall not include the dose from exposure to radiation for the purpose of medical or dental diagnosis or medical therapy of the individual.

(e) "Personnel monitoring equipment" means devices designed to be worn or carried by an individual for the purpose of measuring the dose received by that individual

(e.g. film badges, pocket chambers, pocket dosimeters, film rings, thermolumenscent dosimeters, etc.)

(f) "Possess" means to receive, possess, use, transfer or dispose of a source of radiation.

(g) "Rad" is the unit of absorbed dose. One rad is the dose corresponding to the absorption of 100 ergs per gram.

(h) "Radiation" means gamma rays and x-rays, alpha and beta particles, neutrons, protrons, high speed electrons and other nuclear particles. This manual specifically addresses x-rays.

(i) "Radiation area" means any area, accessible to individuals, in which there exists radiation at such levels that an individual could receive in any one hour a dose to the whole body in excess of 5 millirem, or in any 5 consecutive days a dose in excess of 100 milligrams.

(j) "Radiation machine" means any device capable of producing radiation when the associated control devices are operated, but excluding devices which produce radiation only by the use of radioactive material.

(k) "Rem" is the unit of dose of any radiation to body tissue in terms of its estimated biological effects relative to an exposure of one roenten of x-rays or gamma rays. Millirem is one-onethousandth of one rem.(mr).

(l) "Roenten" is the unit of exposure to x or gamma radiation.

(m) "Source of radiation" means a quantity of radioactive material or a single radiation machine.

(n) "Survey" means an evaluation of the radiation hazards incident to the production, use, release, disposal or presence of source of radiation under a specific set or conditions.

(o) "Uncontrolled area" means any area which is not a controlled area.

2.2 Controlling Radiation Exposures

* The cabinet Radiography system is in an enclosed, interlocked cabinet and shall not be operated unless the cabinet is securely closed.

* The door interlock system shall be operational and inspected at the beginning of each shift.

* Interlocks shall not be by-passed.
* A radiation survey shall be conducted, minimumally, once each day and after servicing the radiation machine, prior to full operation.

2.3 California Radiation Control Regulations

Title 17, California Administrative Code, Chapter 5, Subchapter 4 entitled "RADIATION" is the controlling regulator statutes for any source of radiation within California.

This manual has been developed and any future changes will remain consistent to this regulation.

3.0 PERSONNEL MONITOR CONTROL

All personnel assigned to the NDT department will be assigned a film badge. This monitoring device will be issued to and worn only by one individual.

Each person required to work in the semi-controlled area on a short term basis (less than 20/hours week) will be assigned a film badge.

3.1 Film Badges

The film badge consists of a film packet and a film holder. The film packet must always be inside the film holder. A film badge must be worn by any individual that enters the test area.

3.1.1 Each film badge will be assigned to and worn only by one individual.

3.1.2 All films will be collected and a new film issued on the first day of each month. These films will be processed and any employee having received an exposure will be notified. Any employee receiving an exposure above 50mr for the period of one month will submit a written explanation to the R.S.O. The higher the exposure the more detailed the explanation must be to satisfy State Inspectors.

3.1.3 Accidental loss of a film badge shall be reported as soon as possible to the R.S.O. and Supervisor. A replacement badge will be issued.

3.1.4 Actual or suspected overexposure shall be reported immediately in person, or by telephone, to the Supervisor and R.S.O., who shall specify the subsequent action. An overexposure of a film badge assigned to an individual is considered evidence of an exposure to the individual, and the R.S.O. shall notify the Department of Industrial Relations, Division of Radiologic Health as soon as possible.

In the event of an overexposure, a thorough investigation will be performed.

4.0 RADIATION SURVEY INSTRUMENTS

4.1 A calibrated and operable radiation survey instrument, having a range such that 2 milliroentgens per hour through 1 roentgen per hour can be measured, must all times be available to make physical radiation surveys as required.

4.2 Each radiation survey instrument shall be calibrated at intervals not to exceed 3 months and after each instrument servicing, a record of the latest date of calibration shall be maintained and kept available for inspection. These records will be maintained by the calibration department.

5.0 EMERGENCY PROCEDURES

This emergency procedure is to be followed in the event of a radiation accident involving the cabinet radiography system and employee(s). Radiation emergencies are incidents which involve actual or suspected exposure to any part of the body.

5.1 Shut-off radiography system

5.2 Log time of the accident, machine output, individual's position, and other pertinent conditions as accurately as possible.

5.3 Notify supervisor and Radiation Safety Officer (RSO) immediately. Circumstances may require film badge to be immediately developed.

5.3.1 The badges will be sent "express-mail" to:

Radiation Detection Company
168 Wolfe Road
Sunnyvale, CA 94086

5.3.2 Radiation Detection Company will be notified of the delivery.
Telephone: (908) 75-8700..

5.4 Radiography is immediately suspended until the cause of the accident has been determined. Preserve ALL conditions contributing to the accident to allow retrospective dose measurements. Radiography will not continue until authorized by the R.S.O.

5.5 The R.S.O. will notify the Department of Industrial Relations, Division of Radiologic Health as soon as possible.

6.0 CABINET RADIOGRAPHY SAFETY PRECAUTIONS

The objective of our Radiation Safety Program is the ability to perform radiography under protected conditions, and to prevent personnel from receiving an exposure to penetrating radiation in excess of:

(1) two millirem in any one hour; or

(2) one hundred millirems in any seven (7) consecutive days; or

(3) 0.5 rem in any one year

6.1 A Permanent Worker is an individual whose duties require that he or she spend more than 20 hours per week in the semi controlled area. Permanent workers are required to receive:

- Film Badge
- Radiation Safety Instructions

6.2 An Occasional Worker is an individual whose duties require that he or she spend less than 20 hours per week in the semi controlled area. This includes, but is not limited to, visitors, managers, engineers, and support personnel.

Required equipment:

- Film Badge
- Radiation Safety Instructions

6.3 Individuals working in, on or in the immediate area of the x-ray machine shall wear the aforementioned personnel monitoring device. There shall be No Exceptions.

6.4 Cabinet Door Interlocks

These interlock switches are located at the top, inside of each door opening. When the door is opened, the switch activates and de-energizes x-ray production.

The operation of these switches shall be checked at the beginning of each shift. The interlock switches must be fully operational when conducting radiographic tests.

6.5 Warning Light

A red warning light is located above the operators control panel. This warning light must be illuminated during production of x-rays.

6.6 The x-ray machine is equipped with a key-switch for the "off-on" function. Radiographers have control of the key.

6.7 Radiographers will not leave the area when the x-ray machine is operating.

6.8 The x-ray machine shall be locked "off" when not in service, and the key removed and secured.

APPENDIX A

HEALTH PHYSICS SURVEY RECORD

Date _____

A) Radiation leakage survey conducted with _____ survey meter.
(make, model, serial number)

B) Survey meter is _____ in, _____ out of calibration.

C) Calibration date _____.

D) Machine surveyed _____
(make, model, serial number)

E) Machine operated at _____ MA, _____KVP

F) Radiation detected _____MR/HR.

G) If radiation leakage is detected, please provide machine layout and radiation detected.

H) Survey conducted by: _____
Name (please print)

_____
Signature

CONTENTS

Paragraph		Page
1.0	SCOPE	1
2.0	POLICY	1
3.0	DEFINITIONS	1
4.0	RESPONSIBILITIES	2
5.0	ACCIDENT REPORTING	3
6.0	CORRECTIVE ACTION	4
Example 1	Supervisor's Accident Investigation Report	5
Example 2	Employee's Report of Industrial Injury	6

1.0 SCOPE

The purpose of this policy is to provide instructions for investigating and reporting all accidents, injuries and occupational illness that result in property damage and/or personal injuries to employees and non-employees.

2.0 POLICY

The establishment and maintenance of an effective safety and accident prevention program if fundamental to the operation of all HR Textron activities. All personnel are charged with the responsibility of observing and enforcing safety regulations and maintaining safe working conditions. Any injury or illness of an employee or non-employee, which is known or suspected as being caused by their occupation shall be reported according to this procedure.

3.0 DEFINITIONS

3.1 Accident

An unexpected event occurring by chance or arising from unknown causes or carelessness or a combination of causes which results in physical/bodily harm or damage to equipment.

3.2 Hazard

Any existing or potential condition in the workplace which, by itself or by interacting with other variables, can result in the unwanted effects of deaths, injuries, property damage, and other losses.

3.3 Incident

Any observable human activity sufficiently complete in itself to permit references and predictions to be made regarding the person performing the act in order to ensure and increase safety.

3.4 Occupational Safety and Health Act (OSHA) Recordable Accidents

Any work related accident resulting in death, injuries which include; lost workdays (either days away from work or days of restricted work activity), medical treatment other than first aid, loss of consciousness, restriction of work or motion, temporary or permanent transfer to another job, termination of injured or employees, illnesses including but not limited to the following categories and examples: occupational skin diseases of the lung, respiratory conditions due to toxic agents, poisoning, disorders due to physical agents such as heat, cold, radiation, disorders associated with repeated trauma, such as noise, vibrations, motion, or pressure.

3.5 Vehicle Accident

Employee occupant of any company owned vehicle involved in an accident either on or off the company property resulting in personal injury.

4.0 RESPONSIBILITIES

4.1 Supervisor

4.1.1 Each Supervisor is responsible for the safety of employees, employee safety training and safety for their respective department.

4.1.2 Each Supervisor must conduct a prompt accident investigation and report all accidents occurring within his/her jurisdiction, that requires first aid or medical attention.

4.1.3 Each Supervisor will ensure that all employees operate in accordance with safety rules and regulations (See Example 1)

4.1.4 Each Supervisor shall take corrective action as required to prevent recurrence of accident or injury.

4.2 Managers

4.2.1 Shall ensure that employees under their jurisdiction know and abide by all safety rules and regulations.

4.2.2 Review all accident/injury/illness reports and ensure corrective action.

4.3 Employees

4.3.1 Shall be familiar and comply with the safety rules and regulations of HR Textron.

4.3.2 Immediately notify management of any accident/incident and accurately completing "Employee Report of Industrial Injury" before the end of the shift unless physically unable to do so. (See Example 2)

4.4 Safety Department See additional page.

5.0 PROCEDURE

In conducting an accident investigation where equipment or vehicles are involved, the accident area must not be disturbed. Only accident investigators and emergency personnel are permitted to enter the area. Once the investigation is concluded, the area may be released for normal activities. Accident/incident investigations involving injury or illness must be complete and accurate. You must obtain answers to these questions:

a) Who were the people involved in, or witness to, the accident?

b) Where did the accident take place? (i.e., Lap & Hone machine number 2364)

c) What actions took place that contributed to the accident? What was the extent of damage?

d) When did the accident occur? (Wednesday March 15,1988 at 9:05 am)

e) Why did the accident occur? What are the reasons or causes for the incident? What can be done to prevent repetition?

f) Were guards in place? Were operational procedures followed?

5.1 Accident Reporting

5.1.1 Any employee observing an accident involving personal injury to an employee or non-employee, fire, significant property damage or any other emergency situation shall notify management and/or Emergency Control at (Valencia) ext. 5555 or (Pacoima) ext. 222.

5.1.2 The duty Security Officer will notify Emergency Response Team personnel to respond to the scene of the accident. The ERT Coordinator, Company Nurse or Safety Department will determine if further internal or external emergency service personnel are required.

The duty Security Office will file a written report on the accident/incident.

5.1.3 The Supervisor will initiate the "Supervisor Accident Investigation Report." (See Example #1). All sections of the report are to be completed. If a section does not apply, put "N/A" in the space. Do not leave any sections blank. This repprt shall be submitted to the Company Nurse within 48 hours.

5.1.4 The Supervisor will provide the employee with the "Employee Report of Industrial Injury" form (See Example #2). The employee will complete the report, if physically able to do so, and submit it to the Supervisor. The Supervisor will forward the report to the Company Nurse within 48 hours.

6.0 CORRECTIVE ACTION

6.1 Based on the Accident Investigation, Supervision shall apply corrective measures, such as retraining employees, eliminating unsafe conditions, repairing equipment or tools that may be unsafe.

6.2 The Safety Department may be contacted to provide recommendations, or the Safety Department may provide specific items for corrective action.

6.3 In order to protect personnel and equipment, it is the intent of HR Textron to comply with all Federal, State and Local safety rules and regulations. Accordingly, disciplinary action will be administered for the following reasons:

6.3.1 Failure to immediately report an accident/incident to supervision or upper management.

6.3.2 Failure to comply with HR Textron Policy and Procedure.

6.3.3 Failure to properly utilize safety equipment.

6.3.4 Deliberately endangering other personnel or equipment regardless of injury or damage.

6.4 Discipline will be administered in the following manner:

a) First Offense - verbal warning supported by written document noting date, time and type of incident.

b) Second Offense - written warning signed by the supervisor and employee.

c) Third Offense - written warning signed by the supervisor and employee, and a three (3) day suspension from work without pay.

d) Fourth Offense - probable termination or appropriate action upon review of the employee's record the the Director of Human Resources and the employee's management. If circumstances surrounding the accumulation of violations by the employee or supervisor are deemed to warrant termination of employment, the Director of Human Resources will initiate termination procedures. Written documentation of all actions taken and conclusions reached are to be filed in the employee's personnel file.

e) No employee shall be allowed to have four offenses in any calendar two year period. Two years after any offense, the offense will be kept on record, but will not count towards any further disciplinary action.

EXAMPLE #1

SUPERVISOR'S ACCIDENT INVESTIGATION REPORT **PLEASE USE BLACK INK PEN**

THIS REPORT MUST BE COMPLETED AND SENT TO PLANT NURSE
WITHIN TWENTY-FOUR (24) HOURS AFTER ACCIDENT OR THE NEXT WORKING DAY.

NAME OF COMPANY _____

YOU CAN'T STOP THEM UNLESS YOU KNOW HOW AND WHY THEY HAPPEN.
FIRST, FIND OUT WHAT CAUSED THE ACCIDENT AND CORRECT OR REMOVE THE CAUSE.

NAME OF INJURED _____ DEPARTMENT _____

DATE OF ACCIDENT _____ TIME _____ ☐AM ☐PM CLOCK NO. _____

BRIEF DESCRIPTION OF ACCIDENT AND INJURY:

1. Place (Address of accident) _____
   (If accident happened on other than H. R. premises – indicate location as accurately as possible.)
2. Department by number(s) in which accident occurred _____
3. WHAT WAS EMPLOYEE DOING WHEN ACCIDENT OCCURRED? (Describe briefly such as: operating drill press, removing chips, etc.) _____
4. HOW DID ACCIDENT HAPPEN: (Describe fully, stating whether injured fell, was struck, etc.) _____
5. NATURE OF INJURY AND PART OF BODY AFFECTED: (Abrasion – laceration – contusion / right index finger, etc.) _____

NAMES OF WITNESSES: _____

WHAT DO YOU BELIEVE CAUSED THE ACCIDENT?

- ☐ Unsafe method.
- ☐ Unsafe condition or equipment.
- ☐ Lack of Personal Protective Equipment.
- ☐ Poor Maintenance.
- ☐ Insufficient Training.
- ☐ Inadequate Supervision.
- ☐ Employee's Physical Condition.
- ☐ Failure to Use Protection Furnished.
- ☐ Unnecessary Haste.
- ☐ Inattention.
- ☐ Violation of Rules and Procedures.
- ☐ Caused by Others.
- ☐ Cause Unknown.
- ☐ Not Investigated.

WHAT SHOULD BE DONE TO PREVENT REPETITION? (State the specific preventive measures that can be taken by employer and workers. DO NOT SAY "By being more careful". *SPECIFY WHAT SHOULD OR SHOULD NOT BE DONE.* _____

HAS IT BEEN DONE? ☐ YES ☐ NO IF NOT, GIVE REASON _____

Date of Investigation _____ Signature of Supervisor _____

PS-003 (4/74) a0783.pcx

EXAMPLE #2

EMPLOYEE REPORT OF INDUSTRIAL INJURY

Name _____ Clock No. _____ Dept. No. _____

Home Address _____ City _____ Zip _____

Home Phone _____ S.S.A. No. _____ Classification _____

Date of injury ___/___/___ Time ____ ___ am ___ pm Date you first reported injury ___/___/___

Did injury occur at work ___ Yes ___ No If yes, state where _____

What were you doing when injured? (Describe exact thing you were doing) _____

How did the accident happen? (Describe in detail the events which caused the accident) _____

Have you been instructed or trained in the safe method(s) of performing this operation? ___ Yes ___ No

Were machine guards used at time of injury? Yes ____ No ____

Identify part of body injured and personal protective equipment used _____

What is your recommendation to prevent this type of accident from happening again? _____

Name of Treating Physician _____

Name of Witnesses _____

Name of supervisor in charge at time of injury _____

Are you familiar with Workers' Compensation? Yes _____ No _____

_____ Signature _____

a0784.pcx

SECTION
15

CONTENTS

Section		Page
1.0	PURPOSE	1
2.0	COVERED FACILITIES	1
3.0	EMERGENCY	1
4.0	DEFINITIONS	4
5.0	RESPONSIBILITIES	5
6.0	EVACUATION GUIDELINES	11
7.0	EVACUATION	13
8.0	EVACUATION GROUPING AREAS	15
9.0	EMERGENCY SITUATIONS	20

1.0 PURPOSE

1.1 The intent of this Policy is to provide instructions, guidelines, and procedures for evacuation due to unforeseen accidents, chemical releases or acts of nature occurring at the work place.

1.2 The procedures for Emergency Evacuation of personnel are delineated in this procedure.

2.0 COVERED FACILITIES

2.1 All facilities of HR Textron Inc. in Pacoima and Valencia are covered by this procedure.

3.0 EMERGENCY NUMBERS

3.1 Pacoima 24 hour emergency, extension 222.
Valencia 24 hour emergency, extension 5555

3.2 In the event of a transmission of one pound or more of a reportable quantity of hazardous substance into the air, land, subsurface strata or ground water, the following authorities must be notified by the hazardous waste director or a designee.

A. Local:

California Highway Patrol
Valencia, 259-1210

L.A. County Sheriff
Valencia, 255-1121 (911)

L.A. County Health Department
Pacoima, 213/744-3223

Henry Mayo Newhall Memorial Hospital
Valencia, 253-8000

Pacoima Memorial Hospital
Pacoima 818/896-1121

State:

California Department of Health Services
916/324-1809

Office of Emergency Services
800/324-7500

Federal:

Environmental Protection Agency (EPA)
1-800/974-8131

Federal: (Continued)

National Response Center
1-800/424-8802

EPA Hot Line (Information on Regulations)
1-800/424-9346

EPA Industry Assistance
415/974-7472

3.3 Public Emergency Telephone Numbers

Valencia

Fire Department/Paramedics 911

Sheriff's Department 911

Ambulance 911

Hospital - Henry Mayo Newhall Memorial Hospital (805) 255-8100

Telephone - Pacific Telephone Company (9) 611

Electricity - Southern California Edison Company (805) 626-6270

Gas - Southern California Gas Company (800) 626-7588

Water - Valencia Water Company (805) 757-3566

Pacoima

Fire Department/Paramedics 911

Sheriff's Department 911

Ambulance 911

Hospital - San Fernando Hospital (818) 361-7331

Telephone - General Telephone Company (9) 611

Electricity - Los Angeles City Department of Water & Power (800) 821-5279

Gas - Southern California Gas Company (800) 883-3130

Water - Los Angeles City Department of Water & Power (818) 909-3000

COMPANY CONFIDENTIAL

Emergency Telephone Contacts

Primary Contacts - All Locations

Title	Name	Ext.	Home Phone No.
President	R. Millman	5211	(213) 306-0602
Sr. VP Aero. Operations	D. Steward	5507	(818) 996-0605
VP Finance	A. Grillo	5890	(805) 298-2206
Dir., Facilities Engr.	W.C. Moses	5601	(818) 360-6237
Alternate - Valencia	T. Swiger	5336	(805) 255-6148
Alternate - Pacoima	B. Jette	344	(805) 524-0950
Dir., Human Resources	D. Pilling	5256	(805) 259-1018
Alternate	D. Themm	5251	(805)
Security Manager	D.E. Basey	5254	(805) 253-1685
Safety Engineer	R.E. Hanson	5338	(805)
Aetna Life & Casualty Injury - Disaster Building Damage Fire Damage - Factory Mutual	J.E. Haase		(213) 902-2170

Secondary Contacts - Individual Locations Affected

Building	Name	Ext.	Home Phone No.
Valencia, Bldg. 1 Controls	K. Bailie	5324	(805) 296-4322
	R. Pascoe	5668	(805) 296-2812
Valencia, Bldg. Servo	K. Bailie	5324	(805) 296-4322
Valencia, Bldg. 10	D. Ehlers	5624	(818) 705-1294
	J. Hedges	5461	(805) 254-6804
Valencia, Bldg. 11	N. Torrey	5757	(805) 492-5548
	W.G. Wood	5279	(805) 251-5255
Valencia, Bldg. 14	D. Cameron	5431	(805) 272-1938
	C. Arrington	5328	(805) 253-0580
Pacoima - Fuel and Pneumatics	R. Sumner	228	(805) 379-2488
	R. Rippe	229	(818) 363-9195
	H. Amundson	381	(805) 254-8861

4.0 DEFINITIONS

4.1 Emergency Coordinator

An emergency coordinator is the HR representative responsible to organize and ensure any necessary emergency action required.

4.2 Emergency Response Team (ERT)

A group of employees who have completed a course of instruction given by the Safety Department. Each individual has been certified as an Emergency Response Team member and responds to major emergencies.

4.3 Hazardous Production Material (HPM)

A solid, liquid, or gas that is classified as a National Fire Protection Class 1-4 hazard and is used in research, laboratory, or production process. Generally, all materials displaying characteristics of corrosivity, reactivity, ignitability, and toxicity, are considered HPM.

4.4 Spill Cleanup Team

A group of employees from the Maintenance Department who have been trained in chemical handling and the proper methods of neutralizing, controlling, and cleaning up spills.

4.5 Environment

Air, water, soil, or any device, construction, or drainage, etc., which provides a conduit to the public domain.

4.6 Incident

Any spill or release, either accidental or deliberate, of an HPM into the workplace or the environment. Three types of incidents may occur.

4.6.1 Major - Requires evacuation or personnel from a building.

4.6.2 Intermediate - Requires personnel evacuations on a limited scale.

4.6.3 Minor - No evacuation required.

5.0 RESPONSIBILITIES

5.1 General

The containment of any hazardous waste or hazardous constituents to soil, or surface water at HR Textron facilities due to fire, explosions, unplanned releases due to accidents or equipment failures will be the responsibility of the Emergency Response Coordinator or his/her alternate) and the Emergency Facilities Coordinators.

5.2 Discovery and Notification Procedures

A. Upon discovery of a spill or accidental discharge of a hazardous material spill or accidental discharge of hazardous waste, Facilities personnel must immediately notify the Emergency Response Coordinator, the Safety Coordinator and the Hazardous Materials Manager:

Emergency Response Coordinator:	Bill Moses	5601
Hazardous Materials/Waster Director:	Bill Moses	5601
Safety Coordinator:	Bob Hanson	5338
Emergency Facility Coordinator:		
Valencia	Tom Swiger	5602
Pacoima	Bob Jette	344
24-hour Valencia Emergency		5555
24-hour Pacoima Emergency		222

B. The person or persons making the discovery should proceed with preliminary containment or abatement activities only if he/she has knowledge of the physical or chemical characteristics of the waste and/or sufficient technical knowledge to take appropriate action.

5.3 Emergency Coordinator

A. Shall supervise the development of the Company's emergency plans and organization of the emergency personnel.

B. The Emergency Coordinator shall maintain constant liaison with the executive branch, in addition to reporting situation changes and events, as often as needed.

C. The Emergency Coordinator shall maintain liaison with indicated Civil Authorities, as required, to fully utilize Los Angeles County or City governmental services.

D. Set up, as required or desirable, cooperative disaster arrangements with other firms in the area.

E. The Emergency Coordinator, or his designee with proper clearance, shall be responsible for safeguarding any classified material, pursuant to the Industrial Security Manual and the Company Standard Practice and Procedure Manual.

F. The Emergency Coordinator will then notify either the President or the Senior Vice President if deemed necessary.

G. After authorization by the President or Senior Vice President, and in accordance with 40CFR on reportable quantities, the Hazardous Materials Director will notify the following external authorities:

1.	Neighbors	
2.	State Offices of Emergency Services	1-800/852-7550 1-916/427-4341
3.	California Highway Patrol	805/259-1210
4.	State Department of Health	1-800/852-7550
5.	LA County Department of Health Services - (911)	916/324-1809

5.4 Duties of Emergency Response Coordinator

A. Activate internal and emergency response personnel.

B. Notify the Hazardous Waste and Materials Director and the Security and Safety Manager.

C. Identify character, exact source, amount, and extent of any release materials.

D. Act immediately to determine if a portion of the entire plant should be evacuated (follow direction in Emergency Response Book).

E. Assess possible hazards to human health or environment that may result (both direct and indirect). If a hazard exists, call security in Valencia, 5555, in Pacoima, 222.

F. Take all reasonable measures necessary to ensure that fire, explosions and releases do not occur, recur, or spread to other hazardous waster at the facility (i.e., stopping processes, operations, collecting and containing release waste and removing or isolating containers).

G. Monitor for leaks, pressure build-up, gas generation of rupture of valves, pipes, or other equipment.

H. Provide for treating, storing, or disposing of recovered waste, contaminated soils or surface water in accordance with RCRA regulations.

I. Before operations are resumed in affected areas:

1. See that no more waste is generated until cleanup procedures are completed.

2. See that all emergency equipment listed in contingency plan is cleaned and fit for its intended use.

3. Notify Hazardous Waste Director that the facility is in compliance with I.1 and 2.

4. Follow these steps:

a) Keep people away from the scene.

b) Avoid contact with the spilled substance - don't touch it or walk in it.

c. Don't inhale any gases, fumes, or smoke.

d. Be on your guard against gases or vapors. Don't assume that they are harmless just because you cannot smell them.

e. Stop the source, if possible. Secure valves, close pumps, transfer materials, if feasible.

f. Contain the spill.

5.5 Emergency Response Teams

The Director of Facilities Engineering assumes the role of Fire/Rescue Marshal during the emergency. He shall train and acquire equipment necessary to accomplish this task. The teams, augmented by Company employees on a voluntary basis, previously named by the Director, shall consist of the following:

A. This team, to be trained in fire control, shall respond as indicated in the Appendix under "Fire."

1. The team will be selected by the Director, Fire/Rescue Marshal, and report directly to that position during emergencies. They will respond to the predetermined meeting area when instructions are announced over the public address system or any other method or when there is a general fire alarm.

ERT members will be issued red hard hats for their use during emergencies only. The company will provide specialized training in fire suppression techniques, and team members are expected to be knowledgeable of special suppression conditions in their area that could cause major problems if they became ignited: i.e., alcohol, magnesium, etc. ERT members are also charged with the responsibility of ensuring that all Company fire equipment is maintained in a ready-to-use state at all times. Spent extinguishers are refilled weekly, and the necessary type of fire extinguishers/equipment are available within a reasonable distance from sources of serious hazards. ERT members will suppress incipient stage fires. Structural fires will be handled by the Fire Department.

2. Alternate ERT members will be selected by the Fire/Rescue Marshal, and they will be equally trained in fire fighting techniques, as are the regular Brigade members; however, their function is to replace absent members or assist, as directed.

B. Rescue Team

1. This team shall be comprised of the same personnel as above, assigned as necessary by the Director, and reports to that person during emergencies. They will report to a predetermined meeting place upon being instructed. In emergencies, such as earthquake or explosion, where a public address system may be inoperable or non-existent, they will report immediately to the area of the Command Post and await instructions from the Director or his alternate. The Director will select from this team specially designated team members to accompany any handicapped employees out of the facility. These employees will be evacuated to an assembly area immediately, without need of direction by an authority.

2. The only other time this team will effect an evacuation without orders from the Director or the Emergency Coordinator is if the involved area is heavily damaged by the disaster and immediate evacuation is necessary to prevent serious injury or death.

3. Whenever possible, two or more evacuation routes leading in different directions have been designated on the Facility Maps of this Plan. Rescue Team members are to be knowledgeable of these routes and responsible for their being free from obstacles at all times. The Rescue Team will remain with their evacuation group during an evacuation and assemble in an area designated outside the plant. There they will separate the group into the original operating departments and note the names of any missing persons. The group will remain in the assembly area until instructed by the Emergency Coordinator or other competent authority. If the group is released to

return home, they will do so by the route determined by the Civil Authorities and be subject to their orders once off HR Textron property.

5.6 Security Manager

A. The Company Security Manager shall function in this capacity during any emergency.

B. It shall be his responsibility to assist key emergency personnel in liaison and communications with Civil Authorities, as needed. He shall immediately transmit emergency requests to appropriate agencies (fire, paramedic, police, etc.). He shall direct those authorities, responding quickly, to the location of the emergency.

C. Shall set up proper protective or security measures, in the event of an emergency to:

1. Prevent unauthorized persons from entering unsafe areas.

2. Prevent the unauthorized removal of property from the emergency area.

3. Provide traffic control so that all emergency equipment and materials can be quickly deployed and ambulances and relief vehicles rapidly dispatched from the scene.

D. Set up and train an auxiliary guard force for use in emegencies.

E. Provide an emergency communications network.

5.7 Occupation Health Nurse

A. Shall establish a "field hospital" area. The hospital shall be established at the safest convenient location.

B. Shall be responsible for summoning any outside medical assistance the situation demands. Maintains liaison with all local agencies where medical assistance could be obtained.

C. Shall instruct or arrange for first-aid training for certain plant personnel. These trained employees shall be used to assist with first aid at the accident location or in the "field hospital" area, under the direction of the Occupational Health Nurse or outside medical personnel.

D. In the event of a prolonged emergency, supervises sanitary conditions, including control of toilet facilities, garbage and trash disposal, and hygienic procedures. Inspects food supplies and other conditions for safe use.

E. First Aid Teams

1. These teams will be comprised of qualified first aiders and will report directly to the Occupational Health Nurse. The Occupational Health Nurse shall name a member of the First Aid Team as Coordinator of the team and will respond directly to the Field Hospital, pending the arrival of the Occupational Health Nurse.

2. First Aid Teams will report to the field hospital area indicated on the appropriate evacuation map.

3. The Occupational Health Nurse or Team Coordinator will decide if a field hospital is necessary. If so, the first aiders will carry medical supplies to that site, as directed to do so. The Nurse shall also maintain a portable medical supply case which can be transported to an emergency site with minimal time loss. All First Aid Team members will be issued green hard hats. The Nurse/Coordinator will direct the nearest available person to call the established emergency number and request the amount and type of outside help needed: i.e., paramedics, ambulances, hospital notification, etc.

4. In the event of a prolonged emergency, the First Aid Coordinator will supervise sanitary conditions such as toile facilities, garbage and trash disposal, as well as hygiene procedures. Water and food supplies will be supervised by this team, and they will determine the rationing of such items.

5.8 Safety Personnel

A. Respond to and evaluate the incident, and render emergency first aid of necessary.

B. Take necessary action to ensure employees' safety and health, and protect HR property from damage or loss.

C. Recommend proper methods for control and cleanup of the workplace affected.

D. Release the workplace area for use after the emergency or incident has been corrected.

E. Investigate all emergencies and incidents to determine corrective action, and make necessary reports to state and local agencies.

5.9 Area Supervisor

A. Supervise orderly evacuations when required, using evacuation procedures.

B. Assist with incident control by identifying the source and shutting down contributing equipment if possible.

C. Where necessary, designate a "power-out" team to shutdown or startup equipment when the need arises. The team should have written procedures for shutdown or startup in addition to other actions deemed necessary to minimize personnel hazards and product loss during the incident. Copies of these procedures must be sent to the Safety Engineer.

D. Cleanup of HPM spills of less than one gallon in quantity, assist Spill Cleanup Team with larger spills. It should be noted that spills greater than one gallon constitute a bonafide emergency.

6.0 EVACUATION GUIDELINES

6.1 Any employee witnessing an incident or emergency situation is required to notify Emergency Control on the telephone. If evacuation is deemed necessary, it should be requested.

6.2 Evacuation of a building or space is required when there is a severe threat to life and property such as a fire, explosion, toxic gas leak, major chemical spill, or complete power failure.

6.3 Normally, Emergency Control will initiate evacuation notices for specified areas or building. Depending on the nature of the emergency, evacuation may be accomplished by the public address system.

6.4 Evacuation Criteria - Three types of incidents may occur: Major, Intermediate, and Minor.

6.4.1 Major Incident. Requires evacuation of the entire building(s) if the person requesting the evacuation feels it is necessary to protect the health and safety of the employee.

6.4.1.1 Types of incidents which are classified as major:

A. Fire
B. Explosions
C. Flood
D. Earthquakes

E. Major chemical spills
F. Toxic gas leaks
G. Structural collapse.

6.4.1.2 Evacuation Procedures must be followed.

6.4.2 Intermediate Incident. Requires evacuation on a limited scale as in a production or process area within a building.

6.4.2.1 Types of incidents which are classified intermediate:

A. Strong irritant odor sufficient to cause coughing, gagging, or irritation of the yes, nose, and throat.

B. Chemical spills of less than one gallon when accompanied by symptoms above.

C. Toxic gas, carbon monoxide, or oxygen deficiency alarms.

D. A small fire may also qualify.

6.4.3 Minor Incidents. No evacuation is required, but incident should be reported to Emergency Control personnel.

6.4.3.1 Types of incidents classified as minor:

A. Unusual odors not previously described such as those from natural gas, burning rubber, etc.

B. Minor accidents.

C. Minor spills of nontoxic chemicals.

6.4.3.2 These types of incidents generally do not require evacuation. Area supervisors should try to determine the source of the odor and eliminate it. If the source cannot be found, Safety may be called for assistance.

6.4.3.3 When unusual odors reach a level that interferes with employees work, an evacuation may be ordered.

6.5 Not all situations which require an evacuation can be addressed in this policy. Any situation where a supervisor determines there is threat to the health and safety of employees can justify an evacuation or shutting down of an area. An example being a large

amount of water spilled where employees must stand or work adjacent to live electrical equipment.

USE COMMON SENSE

7.0 EVACUATION

A building evacuation should be ordered when the health and safety of personnel is endangered. It is not always possible for one individual to determine the extent of actual damage caused by an emergency/disaster or what physical hazards may exist in particular portions of a facility, its surroundings, or the vicinity in which it is located. Therefore, established procedures to accommodate the complete and efficient evacuation of personnel to safe locations are set forth below.

7.1 Types of Evacuations

A. Immediate Evacuation

Immediate evacuation is the swiftest removal possible of personnel from an imminent danger area. This type of evacuation occurs without waiting for orders; however, once outside the immediate danger area, personnel are to follow the direction of emergency team members and assemble in the designated areas.

B. Partial Evacuation

Partial evacuation is the evacuation of a particular portion of the facility, due to hazardous conditions caused by some unusual circumstances. A partial evacuation usually is limited to a small portion of the facility and only requires those employees which are exposed to the affected area to be evacuated. Those employees will be directed to a safe location; however, the area selected will be contingent on the number of people evacuated. Except for the immediate need to remove personnel from danger areas, the orders to evacuate these personnel to another location shall be given by the Emergency Coordinator, Safety Department, or the senior executive at the location. During non-standard work times, the senior management person available will take command.

C. Total Evacuation

Total evacuation is the systematic removal of all personnel from a facility because of hazards or damage to the facility or because of the extreme probability of a disaster occurring. This shall include disasters that affect the Company, its surrounding vicinity, or the greater Los Angeles area. Any time it is known that emergency conditions exist, or it is highly probable that the health and safety of all personnel will be affected, total evacuation is mandated.

7.2 Evacuation Procedures (General Information)

7.2.1 Call the emergency number as soon as possible, considering the situation. (Request evacuation assistance.)

7.2.2 NO SMOKING.

7.2.3 Have employees move at a safe pace and leave the space or building (NO RUNNING).

7.2.4 Do not stop to gather personal belongings.

7.2.5 There is to be NO loitering in the building or exit area.

7.2.6 Flashlights will be kept and maintained by area supervisors and managers.

7.2.7 Supervisors will keep their employees in the grouping area.

7.2.8 Supervisors will check rest rooms and remote areas for personnel.

7.2.9 Supervisors will know all emergency exit routes out of their area and all the grouping areas associated with the different routes.

7.2.10 Regardless of the exit used, all personnel must report to their assigned grouping area for counting.

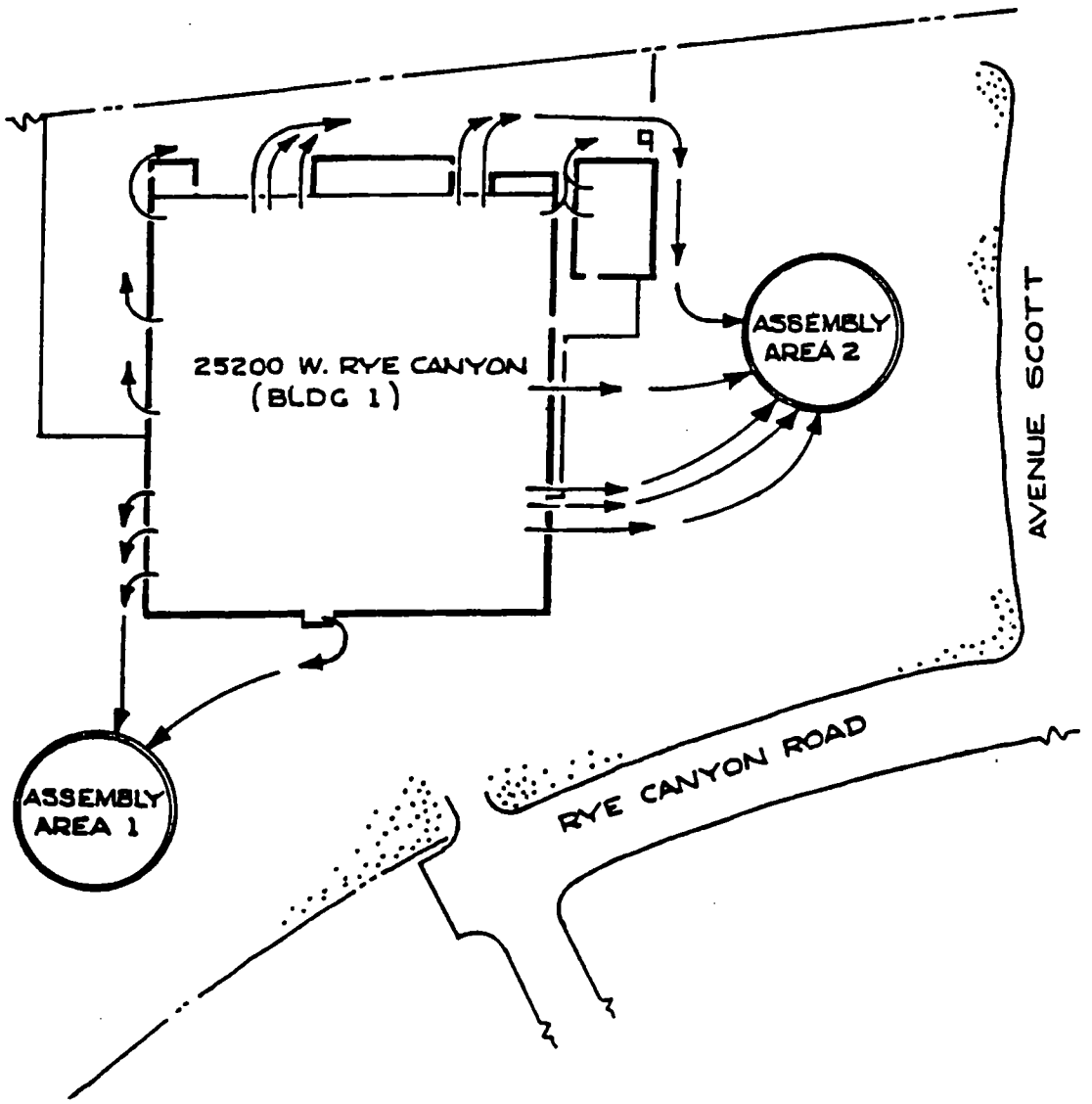
7.2.11 Supervisors will count their employees in the grouping area. Employees that are missing will be reported to Emergency Control.

7.2.12 After evacuation, emergency personnel will prevent entrance to the building except for authorized individuals.

7.2.13 When it has been determined that the emergency no longer exists, the Emergency Coordinator will advise employees to return to the buildings.

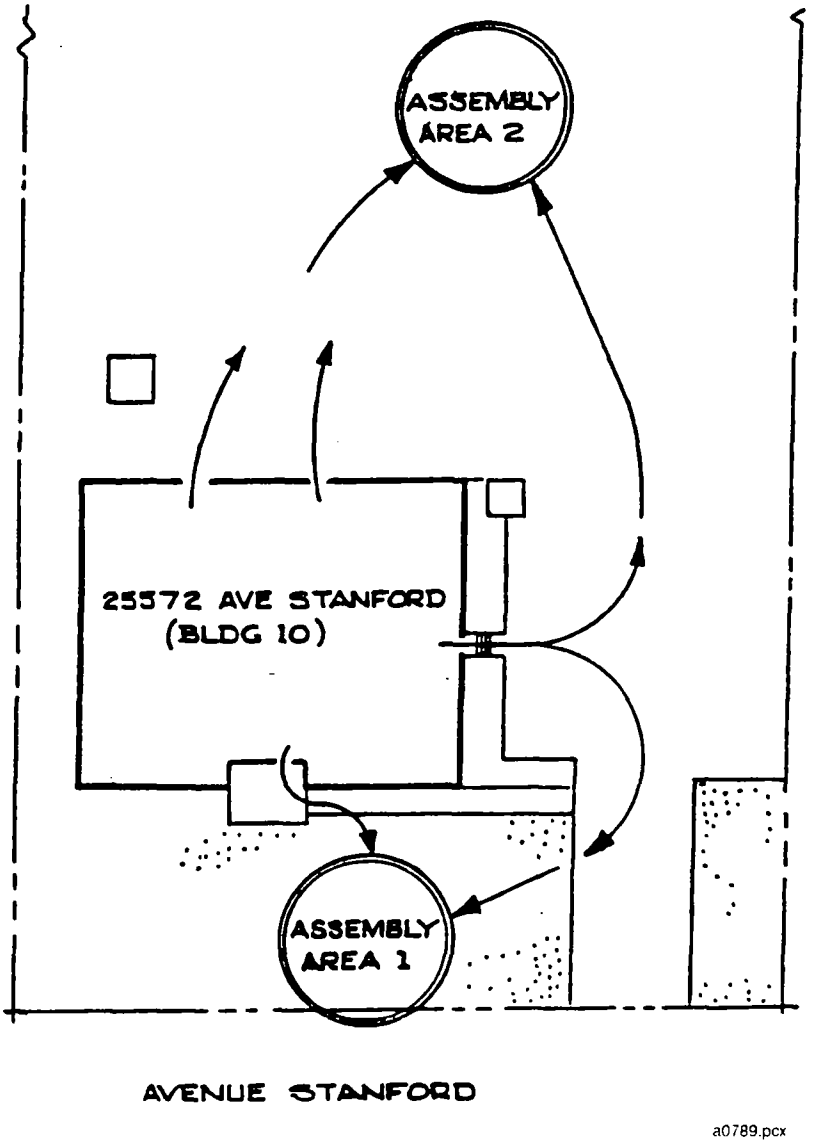
8.0 EVACUATION GROUPING AREAS

8.1 Valencia - 25200 W. Rye Canyon Road



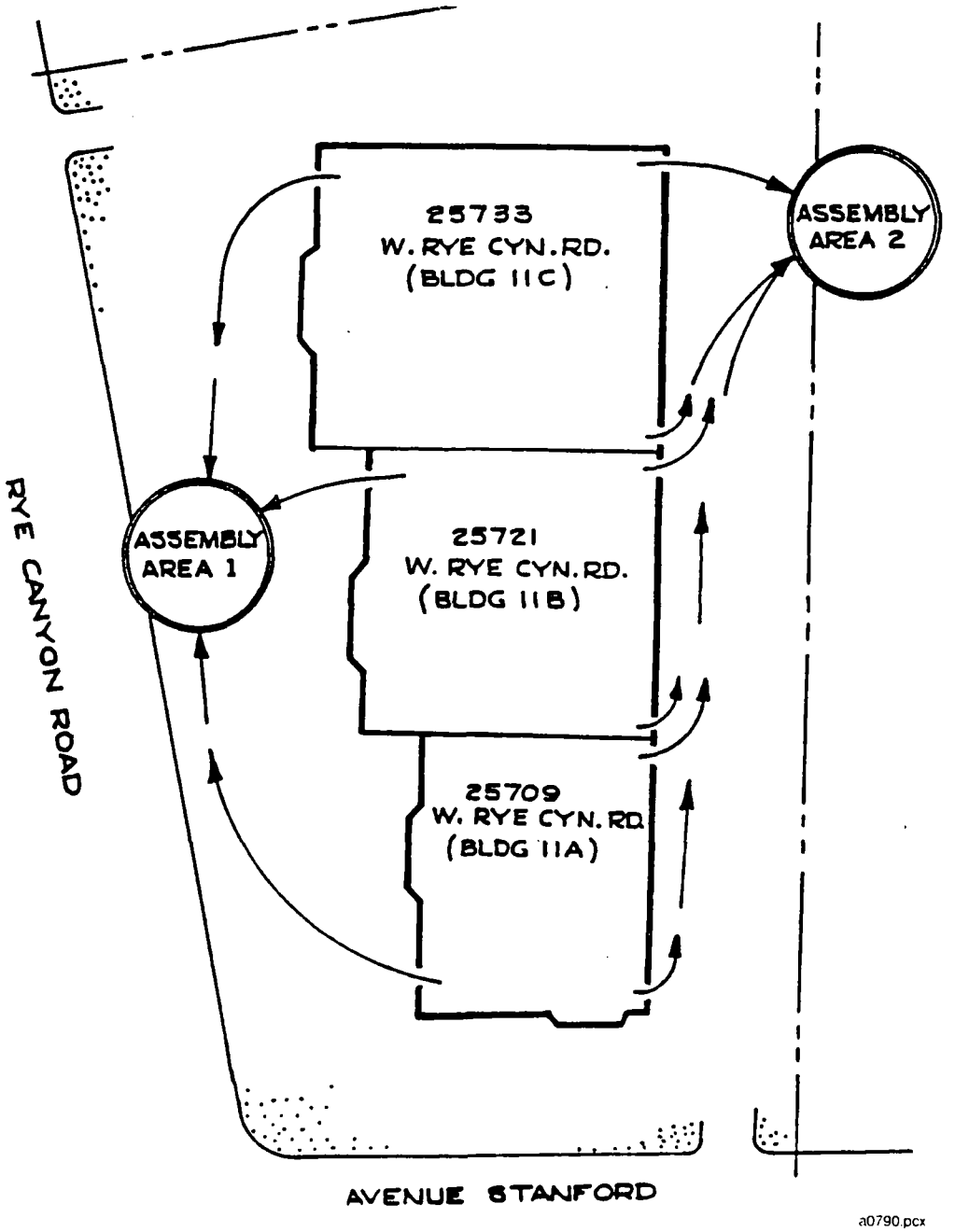
a0788.pcx

8.2 Building 10 - 25572 Avenue Stanford

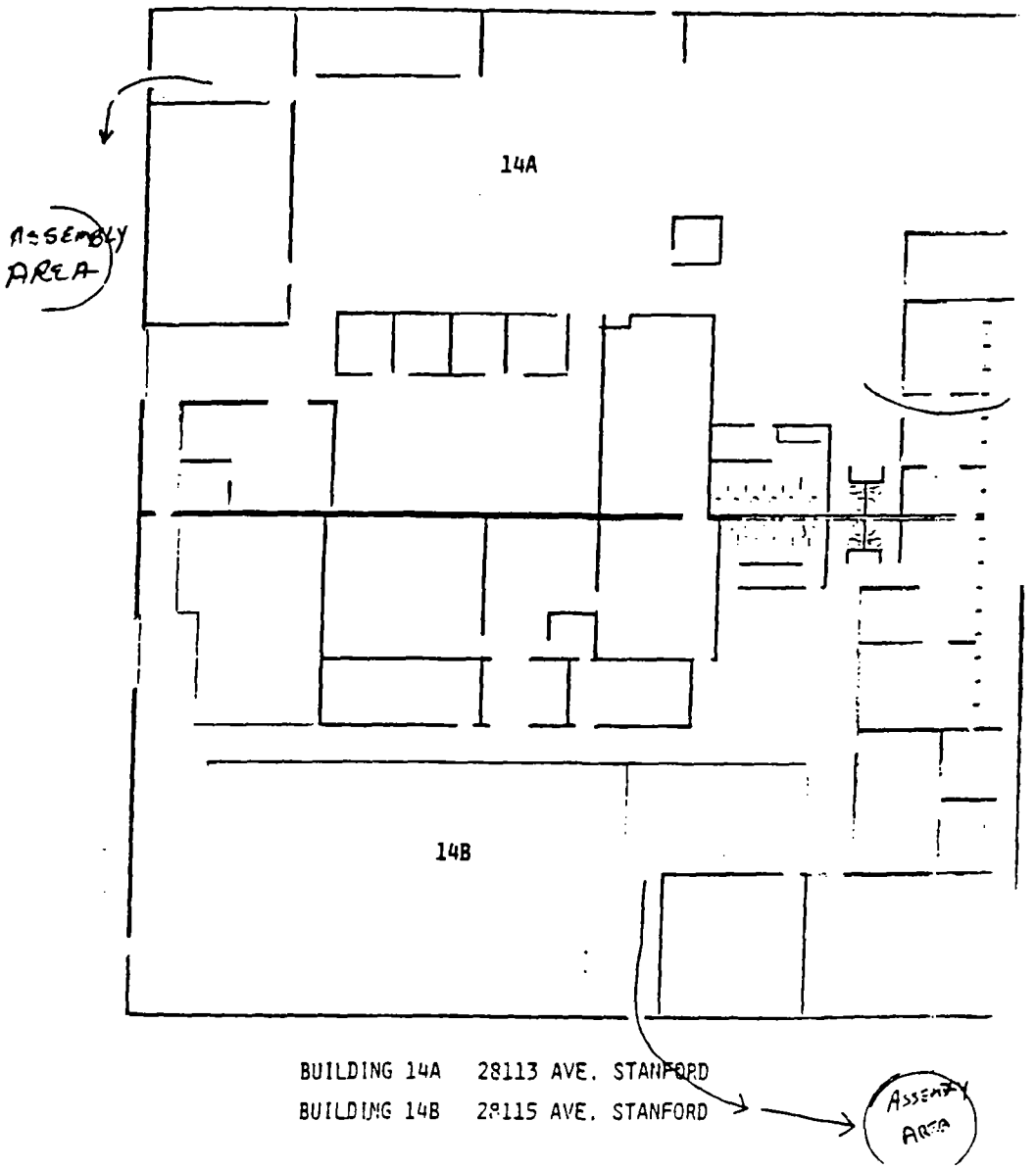


a0789.pcx

8.3 Building 11 - 25733/21/09 W. Rye Canyon Road

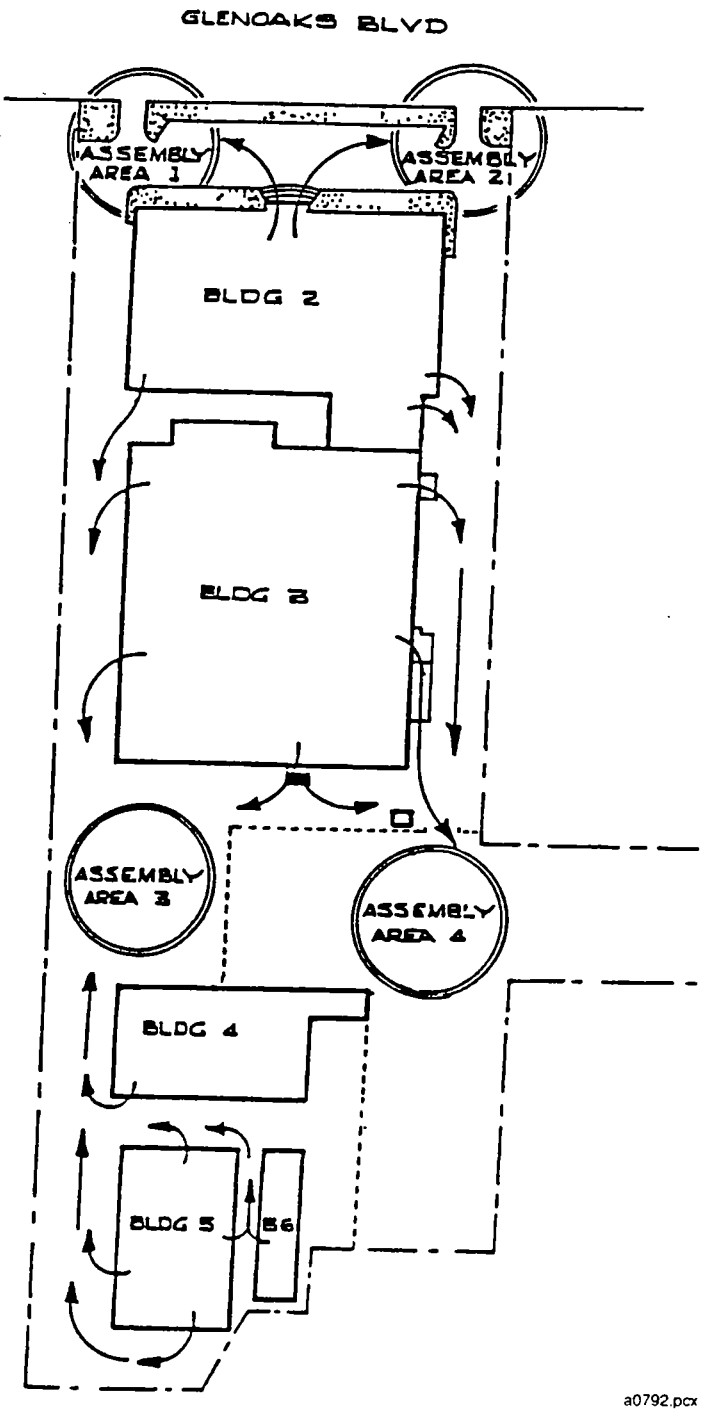


8.4 Building 14 - 28113/15 Avenue Stanford



a0791.pcx

8.5 Pacoima Facility - 10445 No. Glenoaks Blvd.



9.0 EMERGENCY SITUATIONS

9.1 Earthquake - General Procedures

9.1.1 THINK ... DON'T PANIC. The major hazard in any of our facilities is that of falling objects, such as light fixtures, ceiling panels, etc.

9.1.2 At the first shock, all personnel should immediately attempt to get under a strong table, bench, or design in their immediate area. They should stay under such protection as long as possible, even though they may slide around the room or building. Secondary safe locations would be to stand under doorway heads and arches, bracing yourself in position if necessary.

If at all possible, avoid these areas:

A. Under light fixtures

B. Near files, large shelves, and racks that could tumble

C. Concrete walls around periphery of building

D. Proximity to large pieces of machinery or equipment

9.1.3 Do not attempt to leave your area until the initial shock has subsided, then only if threatened by fire or serious overhead structural damage of the buildings. Emergency personnel will organize evacuation, especially in darkened areas by providing light, if possible, to assist in avoiding wreckage and dangerous overhead conditions.

9.1.4 Upon reaching outside of building, move away from walls and assemble in the designated assembly area as rapidly as possible.

9.1.5 If the quake is severe enough to cause serious damage with the possibility of personnel being trapped in wreckage, all supervision shall take an immediate head count, reporting all missing or unaccounted for personnel to the Emergency Coordinator so that Rescue Teams may be organized and search for missing persons begun. No person should leave the facility without notifying a member of supervision in his department, the Security Officer, or the area Evacuation Team Coordinator.

9.1.6 If indoors:

9.1.6.1 Do not leave the building or area unless ordered to.

9.1.6.2 Do not use matches, lighters, candles, or operate electrical equipment.

9.1.6.3 Watch for falling objects or furniture which could topple over.

9.1.6.4 Stay away from glass materials.

9.1.6.5 If in danger of falling objects, get under a table, desk or other protection from falling objects.

9.1.7 If outdoors:

9.1.7.1 Do not enter a building.

9.1.7.2 Avoid tall buildings, walls, power poles, or other tall items which could topple over.

9.1.7.3 If possible, get away from any object that may topple by at least 1 and 1/2 times the height of that object.

9.1.7.4 Do not use telephones except to apprise Emergency Control of conditions.

9.1.8 After the earthquake:

9.1.8.1 Do not use matches, lighter, candles; operate electrical switches.

9.1.8.2 Stay away from damaged structures.

9.1.8.3 Check for broken gas lines, chemical spills, and fires. If any are found, notify Emergency Control.

9.1.8.4 Check for damage to equipment or structures.

9.1.8.5 Do not touch broken and/or downed power lines.

9.1.8.6 Do not use the telephone except to report on conditions to Emergency Control.

9.1.8.7 Should an evacuation of the building be ordered, follow the normal evacuation procedure in Section 7.

9.2 Chemical Emergencies

A chemical emergency may be defined as a hazardous substance in the form of a solid, liquid, or gas that may be spilled or released, either accidentally or deliberately, into the workplace or the environment creating an exposure hazard.

The hazardous substance may be new or a waste material. Generally, all materials that display characteristics of corrosive, reactive, ignitable, or toxic, are considered a hazardous substance.

9.2.1 Spill Characteristics

A. A minor emergency is an incident which occurs in a relatively small area of the facility which does not seriously affect the overall production in the plant and does not pose a health or safety hazard to employees. Minor chemical emergencies will normally be controlled by an Emergency Facility Coordinator and Supervisory personnel.

B. A major chemical emergency is an incident which occurs within a building which poses a health and safety hazard to employees, and disrupts overall operation of an area of the plant.

9.2.2 Discovery and Notification Procedures

A. Upon discovery of a spill or accidental discharge or a hazardous substance, Emergency Control, the Emergency Response Coordinator, or Safety Manager must be immediately notified.

Valencia	Ext.
Emergency Response Coordinator: Bill Moses	5601
Alternate: Bob Hanson	5338
Environment, Health & Safety: Bob Hanson	5338
Emergency Control	5555
Pacoima	
Emergency Facility Coordinator: Bob Jette	344
Alternate: Paul Flores	332
Emergency Control	222

B. The person(s) making the discovery should proceed with preliminary containment activities,, but only if he/she has knowledge of the physical or chemical characteristics of the hazardous substance involved.

The area supervisor should have the Material Safety Data sheet (MSDS) available for review when the Emergency Coordinator arrives at the spill scene.

NOTE: The Emergency Coordinator, Emergency Facility Coordinator, or Safety may, depending on the type and size of the spill, evacuate the area(s) to protect the health and safety of personnel.

C. The Facilities Emergency Response team, under the direction of the Facilities Director, is the responsible cleanup unit in all facilities.

9.2.3 Explosions - Chemical

A. Explosions or threat of explosions could occur due to leaking gas, faulty pressure valve, spillage of volatile chemical, or from the effects of flammable fluids atomized, due to a rupture under pressure.

In this event, employees should:

1. Notify the Security Station, extension 5555 (Valencia) or 222 (Pacoima), if there is time.

2. Take cover under tables, desks, or other objects which will give protection against flying objects or debris.

3. After effects of explosion have subsided, evacuate as instructed by emergency personnel according to Evacuation Plan.

B. Prompt action to recognize potentially explosive conditions may prevent them from occurring.

1. If unusual amounts of gas are detected or if dangerous spills occur, immediately notify emergency personnel. Reduce the hazard by having the source disconnected or the spill isolated and cleaned up before it reaches hazardous concentrations.

2. Open doors and ventilate area.

9.2.4 Handling Hazardous Spills

The following information is of a general nature and should only be used as a guideline. Material Safety Data Sheets (MSDS) for specific materials should be consulted or the Toxic and Hazardous Chemical Chart in Facilities or in the PIP Director's office.

A. Material Safety Data Sheets for hazardous materials in the plant have been compiled into books available to all personnel. Health hazard information; spill, leak, and disposal procedures; and special protection and precaution information are listed. MSDS books are located in the Safety Manager's office in Valencia and in facilities in Pacoima and throughout the manufacturing areas.

B. A list of emergency equipment and the areas in which it is located follows:

Valencia - Maintenance Shop

(2) Full acid and dust suits
(4) Acid resistant overalls
(4) Full face shield with over-the-shoulder hood
(6) Pairs of acid resistant knee-high boots
(6) Acid and organic vapor respirator
(1) 25 person first aid kit

Pacoima - Machine Center

(2) Full acid and dust suits
(4) Acid resistant overalls
(4) Full face shield with over-the-shoulder hood
(6) Pairs of acid resistant knee-high boots
(6) Acid and organic vapor respirator
(1) 25 person first aid kit

NOTE: Stretchers, blankets, and fire extinguishers are placed strategically throughout the building.

9.2.5 Emergency Personnel Action

A. All personnel who are assigned to emergency duties should assemble, as soon as possible, in an area adjacent to the Command Post with any emergency equipment (flashlights, tools, etc.) they are able to accumulate. If the damage is severe, there is danger of personnel being trapped

in wreckage. Rescue Teams shall be dispatched to critical areas or areas where known missing persons may have been at the time.

B. Such Rescue Teams shall be assigned from qualified members of the Emergency Response Teams, on a voluntary basis, by the Director of Facilities engineering, his assistant, or the Emergency coordinator. No individual or groups of individuals shall enter the building(s) for any purpose, unless directed by proper authority. A record shall be maintained indicating the names of any personnel entering the facility and the area involved.

C. The Emergency Coordinator, Emergency Facility Coordinator, or Environmental and Safety Coordinator may elect to obtain outside Emergency Services Personnel to control the incident.

9.2.6 Notification of Authorities

In the event of a transmission of a reportable quantity of a hazardous substance into the air, land, subsurface strata, or groundwater, the appropriate authorities must be notified by the Hazardous Waste Manager or a designee.

A. Local: California Highway Patrol, Valencia 259-1210

L.A. County Sheriff - Valencia 255-1121

L.A. Police Dept. - 911

Ventury Co. Sheriff - 911

Henry Mayo Newhall Memorial Hospital - Valencia 253-8000

Pacoima Memorial Hospital - Pacoima 818/896-1121

Ventura Hospital

State: California Dept. of Health Services - Office of Emergency Services 800/852-7500

Federal: U.S. Coast Guard National Response Center - 800/424-8802 -

EPA (Environmental Protection Agency) 800/974-8131

B. Person reporting the transmission must give:

1. Name and telephone number of reporter.
2. Name and address of facility.
3. Time and type of incident.
4. Name and quantity of materials involved, to the extent known.
5. The extent of injuries, if any.
6. The possible hazards to human health, or the environment, outside the facility.

NOTE: Federal calls are recorded. Person placing these calls should have full knowledge of incident.

9.2.7 General Precautions

9.2.7.1 Acids

1. Acids are oxidizing agents and will react with many substances such as oil, grease, paper, alcohol, etc., enough to ignite them. Inhalation of mists will irritate the respiratory tract. Skin contact will cause burns; eyes may be permanently damaged.

2. First Aid - Always get medical attention.

3. Ingestion - Dilute acid immediately with large amounts of milk or water, then give Milk of Magnesia to neutralize. Do not induce vomiting.

4. Eye contact - Immediately flush eyes with plenty of running water for at least 15 minutes.

5. Skin Contact - Immediately flush affected are with water, removing contaminated clothing under the safety shower.

6. Inhalation - Remove to fresh air. Restore breathing. Call a physician immediately.

7. In case of spills, provide adequate ventilation. Neutralize with soda ash. Clean up crew should wear chemical safety goggles or face shield, rubber gloves, rubber clothing and boots.

9.2.7.2 Caustic Soda

Caustic soda can react violently with strong acids and many organic chemicals (it will react with trichloroethylene to form flammable dicloroacetylene). It generates heat and splattering when it dissolves in water. Caustic soda is a strong alkali and is destructive to all human tissue it contacts, producing severe burns. Use general first aid procedures and spill cleanup as with acids, except neutralization should be done with diluted acid.

9.2.7.3 Solvents

These materials can be hydrolyzed by water to form acids. They react with strong alkali, such as caustic soda, to form flammable, explosive material. Emergency procedures and protective equipment should include a self-contained breathing apparatus and protective gloves and clothes. Chemical goggles or face shields should be used for eye protection.

9.3 Power Failure - General Procedures

9.3.1 There are two kinds of power failures:

A. Planned Blackouts - by the power companies - In the case of pre-warned blackouts, personnel in critical dark areas will be evacuated prior to the blackout.

B. Unplanned or Accidental Power Outages - In the case of an unwarned power failure, all personnel should remain in place for a few minutes. If no information is forthcoming, evacuation teams shall begin evacuation, providing lights in areas where emergency light is sufficient.

1. Supervisory personnel will ensure that auxiliary systems, such as supplied rinse water or gas systems are secured prior to evacuating an area.

2. Specific ventilated areas, such as metal passivation, will have a buildup of chemical fumes. These areas will be secured (close doors) to prevent fumes from spreading. when electrical service is restored, these type of areas will not be entered until fumes are removed by the ventilation system, generally three minutes.

3. If the blackout is of significant duration, all personnel (if the event occurs on day shift) shall assemble in areas noted on the

Facility Evacuation Maps. No personnel, other than Emergency Teams, shall enter the dark portions of buildings until service is restored. If the event occurs at night, all personnel shall assemble in the designated assembly areas to await instructions.

4. No personnel shall leave the premises without permission or instruction during power outage, regardless of duration. When the duration of power outage is determined, an executive decision shall be made as to whether personnel shall be sent home or not.

9.4 Floods

A. Flooding

The flood threat which could affect the Company generally would be from:

1. Catastrophic failure of man-made dams.
2. Massive rainfall or flash flooding in adjacent canyons.

B. Location Affected

1. All buildings.
2. Travel routes to and from HR property, including bridges.

C. Actions

1. Warnings and information regarding actual and forecast conditions will be announced as they are received.
2. Employees are not to leave or evacuate until instructed by senior management personnel, after a determination has been made of safe evacuation routes.
3. If a dam break occurred, move quickly to high ground, north of main facility.

9.5 Violent Weather

Result of heavy snowstorm, severe wind and rain storms, etc. Hazards include:

A. Downed power lines, trees, and signs.

B. Blocked or closed highways or freeways.

C. Hazardous highways from ice or snow.

D. Weakened bridges.

9.6 Bomb Threat and Search

A. Employees receiving or discovering a bomb or receiving a bomb threat should immediately notify the Guard House, extension 222.

If a bomb threat is received by phone, ask:

1. When is the bomb set to explode?
2. Where is the bomb right now?
3. What kind of bomb is it?
4. What does it look like?
5. Why did you place the bomb?

B. **KEEP THE CALLER ON THE LINE AS LONG AS POSSIBLE.**

Record the following information:

1. Time of call.
2. Date of call.
3. Exact words of person.
4. Age, sex, adult, child.
5. Background noises.
6. Speech pattern, accent.

C. **DO NOT LEAVE DETAILS TO MEMORY - RECORD IMMEDIATELY**

If a bomb threat is received by mail, employee should:

1. Not handle the letter, envelope, or package after the contents have been determined.

2. Notify Human Resources, extension 5254.

3. Preserve all evidence for law enforcement officials.

D. Evacuation

If there is reasonable evidence to suspect that there is a bomb on the Company property, the person acting as the Emergency Coordinator will order an evacuation of the facility:

1. Evacuate as instructed by emergency personnel and according to the Evacuation Plan.

2. Move to assembly areas and remain there until released or cleared by emergency authorities to return to the facility.

9.7 Air Pollution

A. Specific actions by the Company are governed by the approved Air Pollution Episode Emergency Plan.

B. Warnings

Notices of forecast smog alert conditions will be received by the Company by:

1. An alert monitor radio receiver, located in the Guard House at Valencia.

2. Local radio and television stations.

The notice of forecast alerts will be transmitted to designated Company locations.

Employees may be notified by:

1. Special sign notices at the plant exits.

2. Public address system bulletins or supervisory personnel.

C. Depending on the severity of the forecast conditions, alerts will be designated:

1. First Stage Alert.

2. Second Stage Alert.

3. Third Stage Alert.

D. Actions

First Stage Alert:

1. Employees will be requested to utilize carpools or public transportations for commuting.

2. Certain equipment which emits air contaminants will be prepared for shutdown if Second Stage Alert levels are reached.

Second Stage Alert:

1. Employees will be strongly urged to utilize carpools or public transportation, if they have not already done so.

2. Company vehicles will not be dispatched into areas where Second Stage Alert levels have been reached.

3. Shutdown designated equipment which emits air contaminants.

4. Prepare plans for shutdown of plant if Third Stage Alert levels are reached.

Third Stage Alert:

1. All Company vehicles still out will be recalled to the plant.

2. If ordered by the Air Pollution Control Officer, the plant will be shut down. This will be performed under full Company supervision.

3. In the event of a complete shutdown, employees will be released to return directly to their homes.

FIGURE A

EMERGENCY SITUATION RESPONSE CHART

Emergency	ERT Coordinators	Security Systems Sub-Leader	Safety Medical	Major Systems Sub-Leader	Manufacuting Sub-Leader	Specialty(2) Advisors
Bomb Threat	Required	Required				
Civil Disturbance	Required	Required				
Major Chemical Spill	Required	Required	Required	Required	Required	Required
Earthquake	Required	Required		Required	Required	
Fire/Explosion	Required	Required	Required	Required	Required	
Major Gas Release	Required	Required	Required	Required	Required	Required
Flood	Required	Required		Required	Required	
Structural Collapse	Required	Required	Required	Required	Required	Required
Major Power Failure	Required	Required		Required	Required	

NOTES: (1) All required responses are at the discretion of the Coordinator.

(2) Specialist will be required for an emergency which occurs that requires specialized knowledge not available from other Emergency Team members.

FIGURE B

EXAMPLES OF POTENTIALLY INCOMPATIBLE WASTE

Below are examples of potentially incompatible wastes, waste components, and materials, along with the harmful consequences which result from mixing materials in one group with materials in another group. The list is intended as a guide to owners or operators or treatment, storage, and disposal facilities, and to enforcement and permit granting officials to indicate the need for special precautions when managing these potentially incompatible waste materials or components

This list is not intended to be exhaustive. An owner or operator must, as the regulations require, adequately analyze his wastes so that he can avoid creating uncontrolled substances or reactions of the type listed below, whether they are listed below or not.

It is possible for potentially incompatible wastes to be mixed in a way that precludes a reaction (e.g., adding acid to water rather than water to acid) or that neutralizes them (e.g., by generating flammable gases in a closed tank equipped so that ignition cannot occur, and burning the gases in an incinerator).

In the lists below, the mixing of a Group A material with a Group B material may have the potential consequences as noted.

GROUP 1-A

Acetylene sludge
Alkaline caustic liquids
Alkaline cleaner
Alkaline corrosive liquids
Alkaline Corrosive Battery fluid
Caustic Wastewater
Lime sludge and other corrosive alkalies
Lime wastewater
Lime and water
Spent caustic

GROUP 1-B

Acid sludge
Acid and water
Battery acid
Chemical cleaners
Electrolyte acid
Etching acid liquid or solvent
Pickling liquor and other corrosive acids
Spent acid
Spent mixed acid
Spent sulfuric acid

Potential consequences: Heat generation, violent reaction

GROUP 2-A

Aluminum
Beryllium
Calcium
Lithium
Magnesium
Potassium
Sodium
Zinc powder
Other reactive metals and metal hydrides

GROUP 2-B

Any waste in Group 1-A or 1-B

Potential consequences: Fire or explosion, generation of flammable hydrogen gas.

GROUP 3-A

Alcohols
Water

GROUP 3-B

Any concentrated waste in Groups 1-A or 1-B
Calcium
Lithium
Metal hydrides
Potassium
$S_2O_3Cl_4$, $SOCl_8$, PCl_2, CH_2SICl_3
Other water-reactive waste

Potential consequences: Fire, explosion, or heat generation of flammable or toxic gases

GROUP 4-A

Alcohols
Aldehydes
Halogenated hydrocarbons
Nitrated hydrocarbons
Unsaturated hydrocarbons
Other reactive organic compounds and solvents

GROUP 4-B

Concentrated Group 1-A or 1-B wastes
Group 2-A wastes

Potential consequences: Fire, explosion, or violent reaction

GROUP 5-A

Spent cyanide and suitable solutions

GROUP 5-B

Group 1-B wastes

Potential consequences: Generation of toxic hydrogen cyanide or hydrogen sulfide gas.

GROUP 6-A

Chlorates
Chlorine
Chlorites
Chromate acid
Hypochlorites
Nitrates
Nitric acid, fuming
Percholorates
Permagenates
Peroxides
Other strong oxidizers

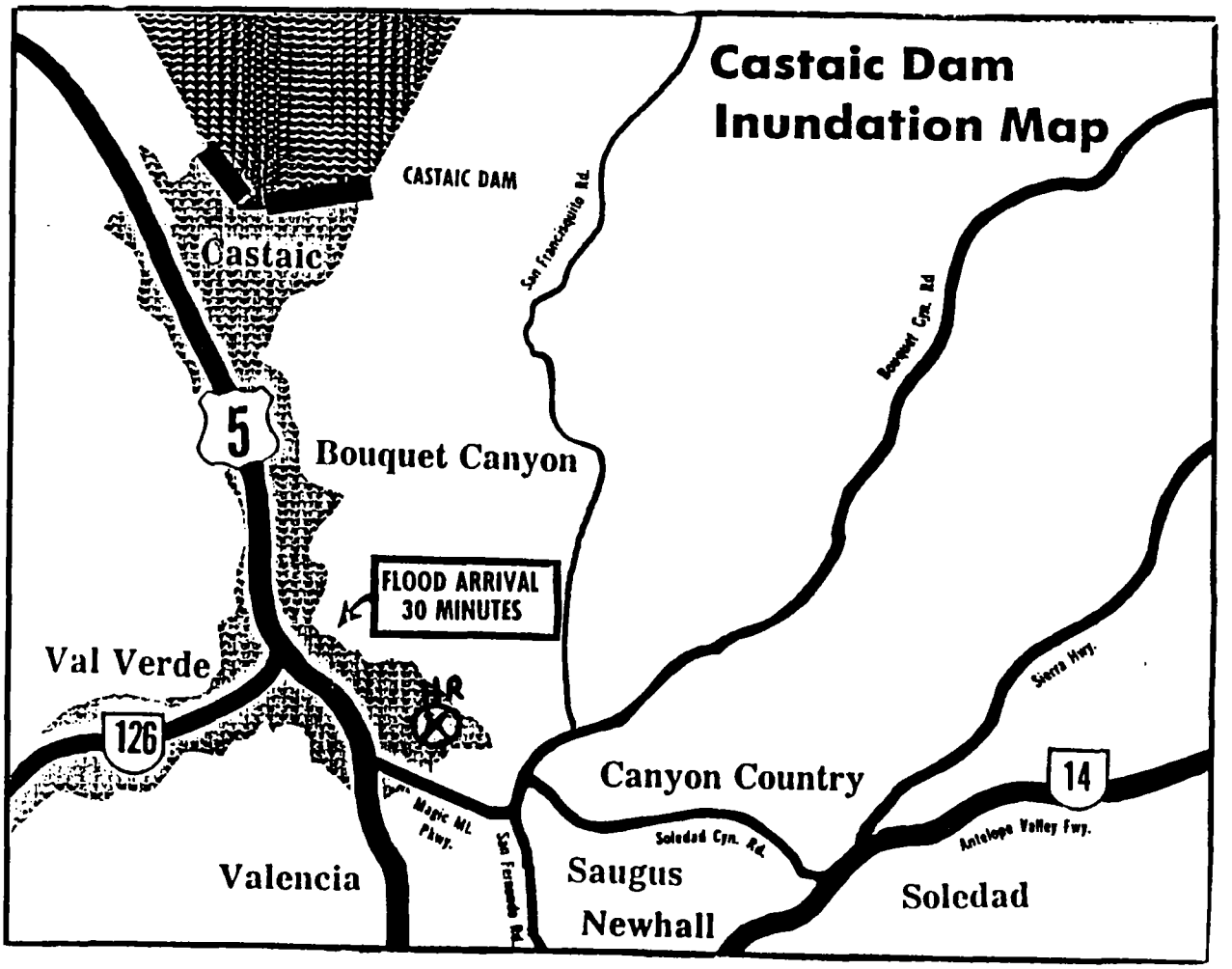
GROUP 6-B

Acetic acid and other organic acids
Concentrated mineral acids
Group 2-A wastes
Group 4-A wastes
Other flammable and combustible wastes

Potential consequences: Fire, explosion, or violent reaction

FIGURE C

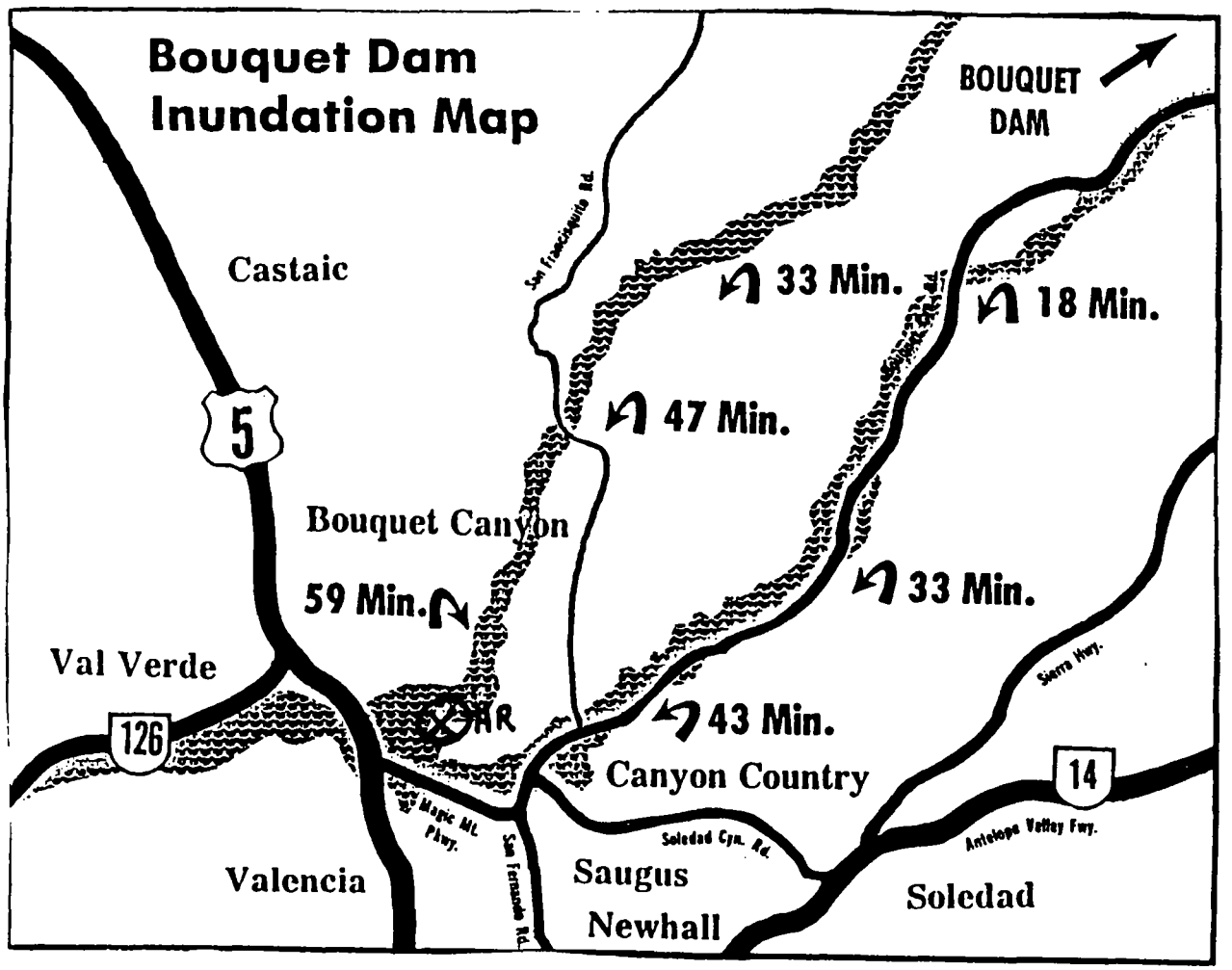
CASTAIC DAM INUNDATION MAP



a0799.pcx

FIGURE D

BOUQUET DAM INUNDATION MAP



a0800.pcx

SECTION
16

HR Textron Policy & Procedure Manual

SUBJECT: SAFETY TRAINING	PROCEDURE	NUMBER:	
		REVISION:	
APPROVED:	DATE: September 1, 1988	PAGE 1	OF 1

Every new hire receives a safety briefing as part of his/her orientation. This is a good start, but your real challenge is to make sure that all new people assigned to your organization receive the following:

1. A thorough briefing in the safety aspects of each job they will be required to perform, given as an integral part of their on-the-job training.

2. Specific information on job and environmental hazards and the safety practices they must use to avoid them.

3. A clear understanding that you expect their complete adherence to all company safety regulations, including the specific ones pertaining to their jobs.

Specialized types of safety training are available through both the Safety Manager and the Human Resources Training Section. Our Safety Department conducts a safety training course for supervisors on a continuing basis and will develop and conduct special safety classes for employees of any organization when requested by its supervisor. These special classes are usually given because of a safety problem or because of a rising accident rate.

Safety training given by the Training Section is developed as an integral part of the various industrial training classes sponsored and run by the Human Resources Department in such areas as machine shop, equipment operation, and the like. A third type of employee safety training consists of specialized programs developed by Facilities Engineering, whenever a new process or a major new equipment item is installed. Training is given both to supervision and those who will be required to operate or work in and around the new installation -- and includes all essential safety aspects and the precautions that must be observed by operating personnel.

In reality, safety training never ends. Any experienced Safety Representative will tell you that every new process, method, and machine introduces new hazards and new safety problems, as does every new generation of workers. Your responsibility for safety within your organization is to make sure that your people are properly instructed, that they develop safe work habits, that their tools and equipment are properly maintained, and that they consistently practice what they have been taught.

SECTION
17

CONTENTS

Section		Page
1.0	PURPOSE	1
2.0	SCOPE	1
3.0	SAFETY BULLETIN	1

1.0 PURPOSE

The HR Textron Safety Bulletins are informational bulletins published by the Health and Safety Department to:

A. Emphasize significant safety concerns applicable throughout HR Textron.

B. Provide timely notice of hazards unique to our specific operation, or those of a transient nature.

C. Establish interim practices and procedures unique to specific sites until they can be incorporated in policy.

These bulletins should be kept on file in the Safety, Policy and Procedure Manual for period review and successor pass on. Managers and Supervisors are encouraged to provide wide dissemination of this information to their employees so all can enjoy a safe and healthful work environment at HR Textron.

2.0 SCOPE

The HR Textron Safety Bulletins apply to all HR Textron locations and employees.

3.0 SAFETY BULLETIN

3.1 Earthquakes

Definition:

A shaking or trembling of the earth's crust caused by continental shifts, underground volcanic forces, breaking and shifting of rock beneath the surface. Intensity is usually measured on a Logarithmic (Richter) scale from 0 - 9. Following an initial shock that may last from a few seconds to as long as five minutes, slight tremors or aftershocks can occur over a period of several days.

The Dangers:

The actual movement of the ground in an earthquake is seldom the cause of injury or death. Most casualties result from falling objects and debris such as:

- Falling bricks/plaster/light fixtures and pictures.
- Flying glass from broken windows.
- Overturned bookcases, file cabinets, storage racks, and other fixtures and appliances.

- Fallen power lines.
- Fires due to broken gas lines, spillage of gas, chemicals, and other flammables -- a danger which may be aggravated by lack of water due to broken manes.
- Drastic human actions resulting from panic.

Earthquakes may also result in disrupted landline communications, lighting, and power outages. Very severe earthquakes can trigger landslides, tidal waves, and even result in total building collapse.

Personal Action Before an Earthquake:

In the workplace, check for earthquake hazards:

- Brace, bolt down, or provide other strong support for storage cabinets, bookcases, files, etc. in excess of 6 foot height.
- Do the same for compressed gas bottles, gas appliances, laminar flow hoods, and other top heavy equipment.
- Place large and heavy objects on lower shelves of storage areas.
- Do not store excessive chemicals and flammables (in excess of 1-day supply) in the workspace.
- Cover overhead lighting fixtures (bulb protection).
- Securely fasten shelves, bulletin boards, etc. to the walls.
- In new construction, follow building codes or other sound practices such as single piece process gas lines at eye level with welded fittings.
- Learn how to turn off electricity, gas, and water at main switches and valves.
- Ensure battery powered emergency lighting is operable.

Personal Action During an Earthquake:

- Remain calm. Think through the consequences of any action you plan to take. Try to be calm and reassure others.

- If Outside, avoid high buildings, walls, glass windows, power poles and lines, and other objects that could fall. If possible, move to an open area away from all hazards. If surrounded by tall buildings, take refuge in an entranceway of the nearest strong one.

- If in an automobile, stop in the safest place available, preferably in an open area. Stay in vehicle for the protection it offers.

- Inside a building, stay there and get under cover -- perhaps under a study bench, table, or desk in a corner away from windows, or in a strong doorway. Do not run outside. Stay away from windows, cabinets, shelves, or other equipment that may slide or topple. Do not use candles, matches, or other open flames during the tremor. Douse all fires.

- In a multi-story building, seek refuge under a desk. Do not dash for exits, since stairways may be broken or jammed with people. Power for elevators may fail.

- In a fabrication area, move away from hazardous processes. Try to exit the immediate fab area to a safer place within the same building. Follow procedures outlined above for "inside a building".

Action After an Earthquake:

- If building damage occurs, evacuate the building to predetermine clear assembly areas to check-in with your supervisor and report any injuries or damage. Be prepared for additional earthquake aftershocks.

- Do not attempt to move seriously injured personnel unless they are in danger of further injury.

- Do not use telephones except for genuine emergency calls (222 in Pacoima, 5555 in Valencia) to report damages or injuries.

- Respond to requests for assistance from police, fire-fighting, and relief organizations, but do not go into damaged areas unless your assistance has been requested.

- Supervisors, when possible, should check for fires, chemical spills, gas leaks, electrical damage, or flooding. Secure gas or fluid lines at the main valves, if possible. Do not use matches, lighters, or operate electrical switches if gas leaks are suspected. Report damages to Security Control.

- Check for structural damage.

- Do not touch downed/damaged power or electrical lines.

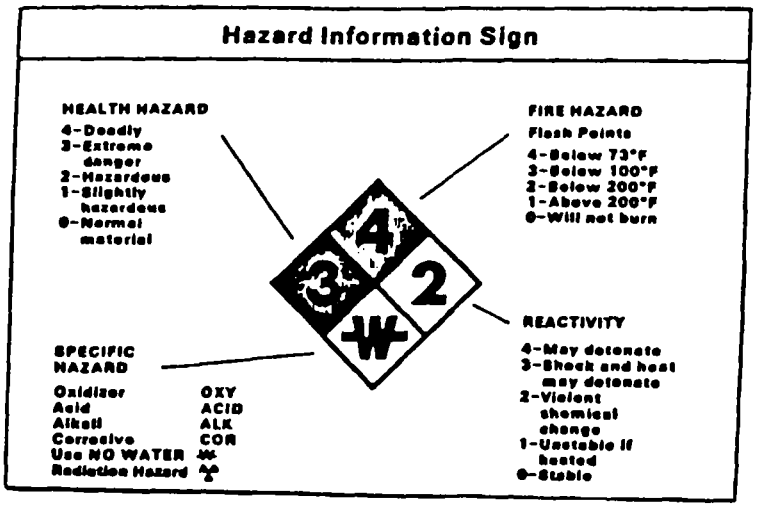
- Initiate clean-up actions as soon as feasible for chemicals, flammables, and other harmful materials.

- Do not go sightseeing in the area; keep streets and fire lanes clear for passage of emergency vehicles.

- Do not heed or spread rumors. They often do great harm following disasters.

3.2 NFPA - 704M Hazard Information Signs

Under the National Fire Protection Association Code 704M, signs are placed there to indicate the one worst hazard to a fireman within the room/area when he is responding to an emergency therein. Essentially, the marker is a diamond-shaped sticker with red, blue, yellow, and white fields. Inside the fields, numbers are attached showing the degree of hazard pertaining to Health (Blue), Flammability (Red), Reactivity (Yellow), or in the case of White Fields, a specific hazard as indicated below:



a0801.pcx

3.2.1 Butane Lighters

The popular "throwaway" butane lighter may be extremely dangerous. At least two deaths have been caused by the lighters. In both cases, welding sparks settled on the lighter and burned through the plastic cover down to the fuel which exploded.

According to the Illinois State University Health and Safety office, these lighters are like little LPG tanks and they carry an explosive power equal to about three sticks of dynamite.

Don't leave these lighters on stoves or heaters or where they are exposed to direct sunlight, such as a car dash.

Safety Suggestions

Any safety suggestions which you have or hazards you see can be sent to the Safety department (Bin 240-1) Attention: Robert Hanson (X5338).

When you submit an item, please outline the problem, where it is located, and your ideas on the corrective measures needed. All items submitted will be reviewed and, where necessary, corrective measures will be taken.

REMEMBER SAFETY IS NO ACCIDENT AND IS EVERYONE'S BUSINESS

3.3 HR Textron's Fire Corridors/Fire Exits

On numerous occasions in the past, there have been inquiries into the proper use of fire exit corridors in HR facilities. The purpose of the safety bulletin is to outline, in general terms, the various regulations governing the use of such exit corridors. All information is excerpted from the following references:

Uniform Building Code 1982
Uniform Fire Code 1982
NFPA-101 (Life Safety Code)
Title-29 CFR 1910 (Fed-OSHA)
Title-8 CAC (Cal-OSHA)

Exit corridors are constructed to give our employees a safe haven in emergencies and allow them a continuous and unobstructed means of egress to a public way outside the building. For this purpose, they are constructed of 1-hour fire-rated materials; all doors opening onto them must have self-closers and positive latching mechanisms; and their width is determined by total building occupant load.

Along with the physical construction requirements, there are numerous restrictions on obstructing exit corridors. Some of these are:

- Door may not be physically blocked open due to loss of 1-hour integrity.
- Doors may not open greater than 1/2 the corridor width.
- Nothing shall be placed in a corridor which obstructs its full width (i.e., no storage, construction equipment, carts, janitorial barrels, etc.).

- No exit enclosure, corridor, stairwell, etc. shall be used for any purpose which could interfere with its value as an exit, or render hazardous or obstruct the exit (i.e., no hazardous operations, gas cabinets, etc.).

- No storage of combustibles (paper, plastics, wood), flammables, or hazardous materials is allowed in corridors and stairwells.

- All hangings, decorations, bulletin boards, etc. shall be noncombustible or treated with flame retardant chemicals. These materials shall not block doors, fire alarms, hoses, or extinguishers.

- In case of deliveries (chemicals/stores items, etc.), immediate efforts must be made to remove all items from the corridor to proper storage.

Some of the things that are allowed within a fire corridor are shown below:

- Fire extinguishers, hoses, blankets, and other Fire and Life Safety equipment.
- Self-contained breathing appartus.
- Emergency lights and clearance mirrors installed higher than 7 feet.
- Fire arms and pull stations.
- Some trash and cigarette butt cans (metal and self-closing).

In designing these fire exit corridors, Facilities Engineering is asked to consider the above restrictions. Fab managers should also consider this in their routine daily operations. Only through constant vigilance and compliance with these regulations can we provide HR employees with a safe envelope within which to exit our building in an emergency. Please pass this information on to all of your affected employees and post this bulletin in your work spaces.

If there are any questions concerning these procedures, feel free to contact Bob Hanson at extension 5338.

3.4 Video Display Terminals

Video display terminals or V.D.T.s are frequently in the news today. Often, the media publicizes the unfilled demand for skilled computer programmers and word processing personnel. But rarely does the media mention the subject V.D.T. operators are most concerned about -- the health effects of using V.D.T.s. This latter issue, assessing the potential health effects of using V.D.T.s has taken on priority importance of safety and health professionals around the country due to the explosion of the computer age and the resultant numerous personnel exposed to V.D.T.s.

A video display terminal looks similar and operates similar to a television set. An electron gun (cathode ray tube) and the characteristic phosphorescent screen are two components common to each. In response to a stimulus (input from a keyboard or such), the cathode releases a narrow beam of electrons that is accelerated by high voltage to the anode or phosphorescent screen. The interaction of the electron with the phosphor changes the electron's kinetic energy into light. The viewed image is produced by modulating the number of electrons in the electron beam in response to an incoming electrical signal.

A video display terminal can produce both ionizing and nonionizing radiation. Ionizing radiation, such as x-rays, can be generated from the cathod ray tube and the electronic damper circuits. Nonionizing radiation emitted can be several types depending on the phosphor used. Ultraviolet (UV), visible, and infrared (IR) radiation can be emitted from the screen face. Radio frequency (RF) radiation can come from certain electronic components and circuits.

The good news is that two recent studies on the potential radiation hazards of using V.D.T.s came to the same conclusion -- there is no danger from radiation. However, both the National Institute of Occupational Safety and Health (NIOSH) and the Bell Telephone researchers involved in the two studies, concluded that problems associated with V.D.T.s are those of fatigue and especially eyestrain.

To improve the working conditions of V.D.T. operators, NIOSH suggested several actions which HR supports:

Glare Control

Eyestrain can be reduced by controlling glare with the use of screen hoods, anti-glare filters on screens, drapes or blinds on windows, or other means to eliminate direct lighting as a glare source. Any one, or a combination of these measures, should be used where glare is a problem.

Workstations

Flexibility is the key. Allow individuals to adapt their physical characteristics to a comfortable work position. Chairs should be available with adjustable seat pan height, backrest height, and tension. Operator viewing distance should be between 450 - 500 mm with exceptions based on individual needs. The viewing angle should be between 10 - 20 degrees, with the top of the screen no higher than operator eyelevel and the bottom edge of the screen no lower than 40 degrees below eye level. Keyboard height should be between 740 - 790 mm at the home row. The V.D.T.s with detachable keyboards are preferred because they allow independent adjustment of keyboard height and screen height.

By eliminating these recommendations, fatigue and strain can be reduced among V.D.T. operators. If you have any questions regarding V.D.T.s, please contact the safety office at extension 5338.

3.5 Housekeeping - Awareness - Responsibility

Safety's Charter, by law, is to provide a "safe workplace for the employee, free from hazard to his health and welfare..." Too often in Safety though, we see:

- Burned out lighting that is not reported.
- Missing or damaged ceiling tiles.
- Improper storage of boxes or other items.
- Trash and clutter left lying out.
- Hazardous chemicals in hallways and office space.
- Torn rugs, dripping faucets, damaged wall boards.

And the usual response is that it's the other guys responsibility -- the janitor, Facilities Maintenance, the plumber, telephone exchange, or a host of others.

Recent safety and regulatory inspection has revealed a need to create an awareness in all HR employees toward greater efforts in housekeeping, cleanliness of the workplace, and responsibility toward building maintenance. Housekeeping and cleanliness in all work areas are synonymous. Included also, should be an awareness of the HR desire to maintain the workplace in a safe and healthy atmosphere. And that is the responsibility of every HR Textron employee -- from top to bottom.

Supervisors should make periodic inspections of their assigned areas to ensure everything is maintained in a neat and orderly fashion. The discrepancies above, and many other housekeeping items need attention and should be taken care of at the time they are noticed by any employee. Notify the supervisor or call extension 5336 for items needing repairs. Facilities Maintenance is eager to keep our building in top shape. Let's all pull together to help them do this.

Building Safety Committees have been alerted to start a building awareness program to help in correcting these types of problems. The Safety Department will assist in all possible ways -- make recommendations, assist with inspections in your area, advise and train your people in inspection techniques and safety procedures.

It behooves all of us to STOP - THINK - TAKE A MOMENT to tidy up our workplace, and keep it free from hazard and accident potentials. It is YOUR responsibility.

SECTION
18

CONTENTS

Paragraph		Page
1.0	SCOPE	1
2.0	PURPOSE	1
3.0	APPLICATION REFERENCES	1
4.0	EMERGENCY TELEPHONE NUMBERS	1
5.0	TRAINING	2
6.0	RESPONSIBILITIES	2
7.0	MISCELLANEOUS PRECAUTIONS	5
8.0	EXPLOSIVE ACCOUNTABILITY LOGS	6
9.0	REQUIRED POSTING	6

1.0 SCOPE

1.1 This procedure shall encompass Group A Acceptance Testing of Hazardous Class-C Explosives per contract requirements.

2.0 PURPOSE

2.1 These procedures will provide reasonable and standardized minimum explosives safety principals, methods, and practices for the possession, storage, transportation, and use of Hazard Class C Explosives (Appendix A, MSDSs).

3.0 APPLICABLE REFERENCES

3.1 Department of Defense (DOD) Contractors Safety Manual, 4145.26-M.

3.2 Title 8, California Administrative Code, Chapter 4, Subchapter 7 entitled General Industry Safety Orders; Group 18 - Explosives and Pyrotechnics.

3.3 Additional specifications as required per individual contract.

NOTE: DOD Chapter 3, Section A states: "When these standards exceed or differ from local or national codes or standards, the more restrictive shall apply".

These Explosive Materials Handling Procedures are developed in compliance with title 8 CAC, Group 18 - Explosives and Pyrotechnics.

4.0 EMERGENCY TELEPHONE NUMBERS

4.1 The severity of the emergency, with special emphasis on fire, explosion, earthquakes, and major chemical spill, that will constitute a danger to employees and property requires immediate notification to **Emergency Control, extension 222.**

4.2 The following organizations should be contacted as appropriate:

DCASMA - Van Nuys	(818) 904-6338
Pacoima	9 + 911
Sheriff	9 + 911
California Highway Patrol	9 + 911
FBI	(714) 542-8825
CAL-OSHA 24-Hour Service (In event of severe injury or death)	(714) 558-4141

NOTE: HR Emergency Control **must** be notified when an outside Emergency Agency is contacted.

5.0 TRAINING

5.1 All persons who handle or transport detonators or explosives shall be trained in the hazards of the job and safe performance of their duties. Trainees handling explosives shall be under the direct supervision of a competent person.

5.2 Minimum training requirements for Hazard Class - C explosives will consist of the following:

5.2.1 Explosives must not be exposed to unnecessary shock.

5.2.2 Explosive materials shall be protected against electrical or static electric discharge.

5.2.3 Storage procedures.

5.2.4 Warning, caution signs.

5.2.5 Limitation of explosive materials.

5.2.6 Non-spark hand tools, static mats.

5.2.7 Static-free gloves.

5.2.8 Conductive shoes.

5.2.9 Misfire.

5.2.10 Miscellaneous precautions.

6.0 RESPONSIBILITIES

6.1 Each individual that may be required to receive, handle, inspect, transport, or use explosive materials shall do so in accordance with this Safety Policy.

6.2 Receiving Department

6.2.1 Upon receiving explosive materials from the transporter, appropriate receiving documents should be signed.

6.2.2 **Do not open** metal packaging cans.

6.2.3 Immediately notify the Fuel and Pneumatic stockroom for removal of explosive materials. Explosive materials will be removed to proper storage as soon as possible and shall not remain in the general Receiving Department.

6.3 Stores Area

6.3.1 The Second Class Magazine shall be a well-constructed box of not less than two-inch thickness of lumber covered on the exterior with a minimum of No. 20 standard gauge steel, or

Minimum No. 14 standard gauge steel, lined on the interior with one-inch thick plywood or material with equal strength and fire resistance.

6.3.2 Second-class magazines containing explosives and located in the building shall be provided with substantial wheels or casters to facilitate removal from a building in an emergency.

6.3.3 Indoor second-class magazines shall be painted "red" and shall bear lettering in "white" on sides and top, when size permits, at least three inches high with a one-half inch stroke which reads: "EXPLOSIVES - KEEP FIRE AWAY".

6.3.4 Covers for second-class magazines shall be provided with substantial means of locking. Openings shall be kept locked except during placement and removal of explosives. Magazines left at locations where no one else is in attendance shall be secured in place.

6.3.5 Second-class magazine keys will be assigned to the Store Room Supervisor and the supervisor/engineer responsible for conducting tests.

6.3.6 The storage area for the second-class magazine shall be posted prominently to indicate that a maximum of five pounds of explosive materials may be stored.

6.3.7 The second-class magazine storage area shall be maintained readily accessible at all times.

6.3.8 The second-class magazine area will be posted as "NO SMOKING".

6.3.9 Electrical appliances will not be used within ten feet of explosive materials.

6.3.10 Dessicants will remain with the explosive materials.

6.3.11 Document quantity received on the Explosive Accountability Log under Amount Received.

6.3.12 Transfer explosive materials to production as required. Enter quantity transferred under "Amount Used".

6.3.13 Forward shipping paperwork to Contracts.

6.4 User Groups of Explosive Materials

6.4.1 Employees required to handle or load explosive materials should use non-sparking tools whenever possible. Static mats shall be adequately positioned on the floor and work table. Hand tools constructed of wood or materials such as bronze, lead, beryllium alloys, and "K" Monel metal should be used for work in locations that contain exposed explosives or hazardous concentrations of flammable vapors, gases, or dusts.

6.4.2 Employees handling or loading explosive materials shall not wear shoes or boots with metal on the soles or as ornaments.

6.4.3 Gloves - Clothing

6.4.3.1 To prevent static electric discharge, employees handling or loading explosive materials shall wear certified static-free nylon lab coats. Visitors shall also wear these coats. Static-free certification must be maintained for audit.

6.4.4 No smoking within fifty feet of explosive materials.

6.4.5 Only the actual required amount of explosive material shall be transported from the second class magazine to the testing site. The materials shall be hand carried only by trained personnel.

6.4.6 Detailed instructions are provided under Group A Test Procedure.

6.5 Misfire

6.5.1 In the event of a misfire (failure of an explosive component to fire or explode as intended), the following precautions **must** be observed.

6.5.1.1 **Do not attempt to remove explosive cartridge** from the firing chamber until the following procedures are completed:

6.5.1.1.1 Disconnect all initiation lines from cartridge.

6.5.1.1.2 Allow a cool-down period of at least one hour.

6.5.1.1.3 Notify test supervisor of misfire condition.

6.5.1.1.4 If possible, remove cartridge by mechanical means; do not handle with fingers.

6.5.1.1.5 Place misfired cartridge in an explosion-proof container, in an isolated or bonded area.

6.5.1.1.6 Contact Pacoima Police Disposal Unit at 9 + 911 for proper disposal.

7.0 MISCELLANEOUS PRECAUTIONS

7.1 The test supervisor has the responsibility to ensure all safe procedures are followed. The Safety Engineer may require additional practices to reduce risk of injury or property damage.

7.2 No person under the age of 21 years shall be permitted to use, handle, transport, or engage in any activity utilizing explosive materials.

7.3 No smoking within fifty feet of explosive materials.

7.4 Workmen shall not be permitted to eat or consume beverages.

7.5 Except as authorized, personnel must not carry matches, cigarette lighters, or other flame-producing devices into areas containing explosive materials.

7.6 Portable fire suppression equipment shall be adequate, well maintained, and kept clear at all times.

7.7 Individuals that use, handle, transport, or load explosive cartridges shall wear safety glasses.

7.8 If fire occurs, it is nearly impossible to extinguish these cartridges. Evacuate the area and make no attempt to approach the burning materials.

7.9 In the event of an area or structural fire, evacuation of the area is mandatory. The Emergency Coordinator and/or emergency services personnel must be informed of the location and type of explosive materials.

8.0 EXPLOSIVE ACCOUNTABILITY LOGS (Appendix B)

8.1 Explosive accountability logs shall be completed as follows:

8.1.1 Inventories shall be accurate at all times. All entries are to be dated under Column A and signed under Column I by the person adding or removing explosives to the storage container. Each log sheet will have the Part Number, Name of Explosive Item, Weight of Explosive Item, D.O.T. Explosive Class, and Contract Number. When more than one contract is applicable, enter the word "various".

8.1.2 Column B will be used to reflect the quantity of new units received. Column C will be used to reflect the quantity of units removed from the container. Column D will be used to balance the quantity changes in Columns B and C. Column E will be used to reflect units returned. Column F will be the total balance and should be completed at the end of each day changes are made in Columns A - E. Column G will be used to indicate monthly inspections. Column H *is not* used.

8.1.3 Corrections to the Explosive Accountability log shall be as follows:

Line out the entire line containing the error from Columns A - H and sign under Column I. Make the correct entry on the following line.

(See Appendices A & B attached.)

9.0 REQUIRED POSTING

9.1 These procedures are incorporated in the HR Textron Inc. Safety Manual.

9.2 Personnel who use, handle, store, inspect, transport, or load explosive materials shall be given a copy of this procedure.

9.3 Training records and receipts of information received by employees shall be maintained by the Safety Department.

9.4 Copies of the procedure shall be maintained at the following:

9.4.1 Receiving Department

9.4.2 Quality Control/A&T Inspection

9.4.3 Class II Magazine Storage Area

9.4.4 Explosive Material Test Site

APPENDIX A

MSDS SHEETS

4629-1, 4629-2

ACTUATORS

MFG HOLEX

(PC020)

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

H 0
F 1
R 0

MATERIAL SAFETY DATA SHEET

917AS223

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

RECEIVED JUN 25 1987

SECTION I

MANUFACTURER'S NAME: HOLEX Incorporated	EMERGENCY TELEPHONE NO.: (408) 637-5851
ADDRESS (Number, Street, City, State, and ZIP Code): 2751 San Juan Road, Hollister, CA 95023	
CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS: 4629-1 & -2 Actuator
CHEMICAL FAMILY	FORMULA

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS	0		BASE METAL	0	
CATALYST	0		ALLOYS	0	
VEHICLE	0		METALLIC COATINGS	0	
SOLVENTS	0		FILLER METAL PLUS COATING OR CORE FLUX	0	
ADDITIVES	0		OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
Sealed explosive charge of zirconium, barium chromate, ammonium	.15	5mg/cm^3
perchlorate and ammonium dichromate prime and a main load of granulated		
(35 mesh) ammonium perchlorate solid propellant		

SECTION III - PHYSICAL DATA N/A

BOILING POINT (°F.)		SPECIFIC GRAVITY (H_2O=1)	
VAPOR PRESSURE (mm Hg.)		PERCENT, VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER			
APPEARANCE AND ODOR			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used): Auto-Ignition 525°F	FLAMMABLE LIMITS	LEL	UEL
EXTINGUISHING MEDIA			
SPECIAL FIRE FIGHTING PROCEDURES: Treat as Class C Explosive Unit			
UNUSUAL FIRE AND EXPLOSION HAZARDS: Keep away from fire and do not store with high explosives.			

RECEIVED MAY 13 1986 SECURITY/SAFETY

(Continued on reverse side)

Form OSHA-20
Rev. May 72

HOLEX FORM NO. HA-238A (11/81)

SECTION V · HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE
Products of combustion are minute amounts of toxic gases of zirconium and nitrous oxides which are contained within sealed unit.

EMERGENCY AND FIRST AID PROCEDURES

SECTION VI · REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	XX	

INCOMPATABILITY *(Materials to avoid)*

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	XX	

SECTION VII · SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED N/A

WASTE DISPOSAL METHOD
N/A

SECTION VIII · SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)* N/A

VENTILATION	LOCAL EXHAUST	SPECIAL
N/A	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
N/A	N/A

OTHER PROTECTIVE EQUIPMENT
Test in contained or remote condition

SECTION IX · SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Store, transport and handle as Class C Explosive, Class 1, Division 4.

OTHER PRECAUTIONS
Keep unit shunted and safety caps on until installed in test vehicle.

GPO 834-180

Form OSHA-20
Rev. May 72

HOLEX FORM NO. HA-2348 (11/81)

APPENDIX B

EXPLOSIVES ACCOUNTABILITY LOG

(PCO20)

EXPLOSIVES ACCOUNTABILITY LOG

APPENDIX B (PCO20)

PART NUMBER:

NAME OF EXPLOSIVE ITEM	WT. OF EXPLOSIVE EA. ITEM	D.O.T. EXPLOSIVE CLASS	CONTRACT NO.

A DATE	B AMOUNT RECEIVED	C AMOUNT USED	D BALANCE	E AMOUNT RETURNED	F BALANCE	G SAFETY APPROVAL	H TEST OR USE LOCATION	I SIGNATURE	CAP NO.

HR TEXTRON

HR TEXTRON INC.
a Subsidiary of Textron Inc.
25200 West Rye Canyon Road
Valencia, California 91355
805/259-4030