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PACOIMA REMEDIATION 1990

RESPONSE TO QUESTION 7 PAGE 9

HR TEXTRON INC.
INTEROFFICE COMMUNICATION

In reply refer to:
JLW:90-001

DATE: FEBRUARY 14, 1990
TO: DISTRIBUTION
FROM: J.L. WHEELER
SUBJECT: REGIONAL WATER QUALITY CONTROL BOARD VISIT TO PACOIMA

Today, February 14, 1990, E.G. Solomon and Phillip B. Chandler of California Regional Water Quality Control Board (RWQCB) visited our Pacoima plant, accompanied by W. Moses, myself, Bruce Stearns and David Dunbar of ERM-West, Inc. The stated purpose of the visit was to see locations of excavation for the previous underground storage tank and soil borings. RWQCB viewed and photographed locations of tank excavation, soil borings and adjacent drum storage areas. Soil borings LB-2 and LB-1 were not located - believed covered by paving or fence around tank excavation. Borings TH-1 and TH-2 were not located because these were not on HRT property and are also covered by paving.

While on-site, RWQCB also asked about and viewed the underground spill control tank for Stoddard Solvent, three vapor degreasers, and an oil interceptor on the sewer line. They also asked about waste movement procedures. It appeared the intent of those questions was to determine if other potential oil or solvent sources existed that might contaminate soil or groundwater.

JLW:lr

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350087

TECHNICAL EVALUATION OF RWQCB CONTENTIONS 2, 4 AND 7

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March 1990

350088

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ERM-WEST Qualifications and Experience

CONTENTION 2

The RWQCB has raised four issues:

1) "Depth to groundwater at the site is unknown. Historical fluctuations in the area have ranged from 95-200 feet below ground surface (bgs)."

2) "No clay barrier has been established underlying the site which would naturally contain solvents and other waste discharge. Discontinuous sandy silty clay lenses have been described."

3) "Typical permeabilities of such materials are less than specified under Subchapter 15 for landfill barriers."

4) "Inability to function as an adequate barrier is further shown by analytical results which indicate waste material within and below the purported barrier horizon."

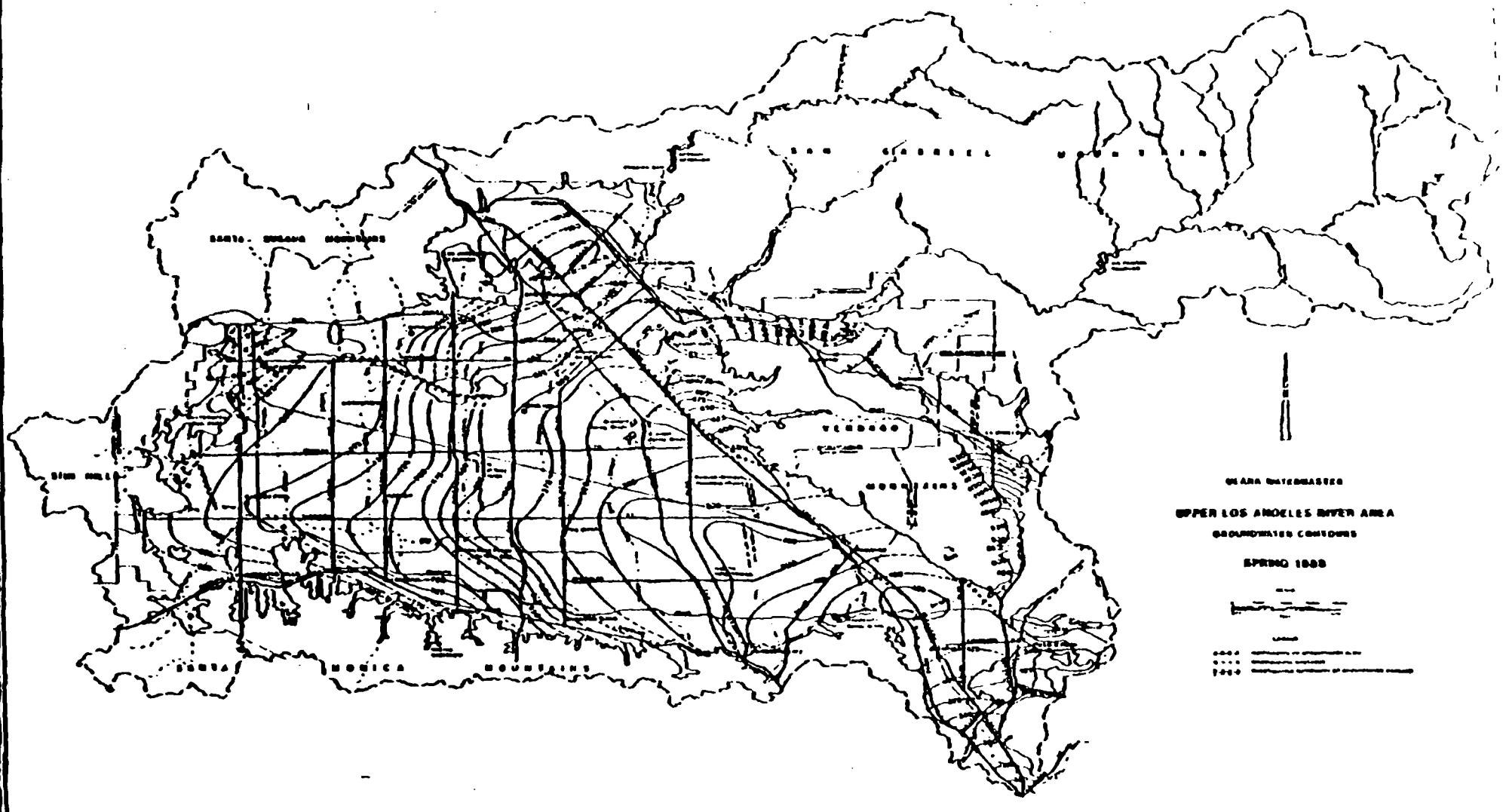
These issues are discussed separately below.

Depth to Ground Water

Present depth to ground water beneath the site is unknown. Interpretation of the historical information on water levels indicates that the water level may have risen to approximately 95 feet bgs since the 1920's (Mel Blevins, ULARA Water Master, personal communication, March 5, 1990). The monitoring wells on which this interpretation is based were located approximately one half mile to over one mile south and east of the site. Those wells were destroyed and have not been available for measuring water levels since the late 1970's. No wells now in existence establish the depth to ground water at the Textron site.

Current estimates of the depth to ground water are based solely on extrapolation from wells outside the area of the site. The close proximity of the Hansen flood control facility to the site complicates interpretation of the

PLATE 7



regional ground water information for the purpose of developing an estimate of the depth to ground water. The mean sea level elevation at HR Textron's Pacoima facility is 960 feet. An interpolation of the regional ground water table from the May 1987 and May 1989 ULARA Water Master reports shows that the ground water elevation probably ranges between 750 and 800 feet. A copy of the Spring 1988 ground water contour map is attached from the May 1989 report. Since there are no existing monitoring wells within the immediate vicinity of the Hansen Dam, no water level elevation contours are included in that map near the vicinity of the site. The absence of even broken line contours in the vicinity of the site reflects the uncertainty of the depth to ground water.

Historical ground water elevation maps for the area indicate that the water table is somewhat elevated within the vicinity of the Hansen Dam and the associated spreading grounds when compared with the regional data. This condition occurs due to the high percolation rates of water stored in Hansen Dam and spread below the dam. The water is derived from runoff of precipitation within the water basin above the dam.

Based on the regional historical information, ground water beneath the site is at least as deep as 125 feet bgs and possibly as deep as 150 feet bgs (a water table elevation of 810 to 835 feet). Borings LB-101 and LB-102A established a minimum depth to ground water of 120 feet in September 1988 because these borings did not encounter ground water to that depth. According to Mel Blevins (personal communication), ground water has not likely risen above the deepest levels (120 feet) penetrated by soil borings in September 1988 because precipitation in the area has been below normal since then.

Presence of Clay Layers

In the Technical Evaluation, we described the stratigraphy of the soils underlying the facility. Specifically we noted that the geologic logs from boreholes showed that a "...fine-grained layer consisting of sandy, silty clay was found at depths of 46.5± to 52.5± feet below grade. Thickness of this fine-grained layer ranges from 2 to 4 feet." As described in more detail in Contention 4 below, this clay layer was encountered consistently in the

boreholes drilled at the site, and must therefore be considered as continuous over the site. It is our opinion that this clay layer has retarded the migration of chemicals such that there is no indication of the presence of VOCs below the clay layer.

Permeability of Clay Layer

We do not disagree that typical permeabilities for these materials may be less than those specified under Subchapter 15 for landfill barriers. However, the clay layer is acting as a restraint to contaminant migration. To protect ground water, the clay must only be effective through the remediation process.

Analytical Results

Finally, for reasons that were presented in our previous Technical Evaluation and in the discussion concerning Contentions 4 and 7, we disagree with this finding that analytical results indicate the presence of waste material below the clay horizon.

CONTENTION 4

The RWQCB stated that the pre-existing body of data includes:

> "...descriptions of clayey materials encountered as discontinuous lenses, solvents encountered at depths greater than these lenses, hydrocarbons which extend to bottom of at least one boring at 110 feet below ground surface, and an indication of historical ground water fluctuation to 95 feet below ground surface. This is technically sufficient to request ground water investigation."

Clayey Materials as Discontinuous Lenses

The previous ERM-West Technical Evaluation presented substantial evidence that demonstrated that the "clayey materials" form a continuous sandy silty clay layer beneath the site within the area covered by the boreholes. A compilation of the descriptions of soil materials encountered in the boreholes at the site is presented in Table 1 and demonstrates that this clay layer is continuous over the site.

Solvents Below Clay Layer

The presence of solvents has not been confirmed below the clay layer. Elsewhere in this and other documents the RWQCB cited VOC contamination at 78 feet (methylene chloride, in particular) as indicative of this solvent contamination. These methylene chloride analyses have been demonstrated in the previous ERM-West Technical Evaluation to be the result of laboratory contamination.

Additional VOCs Reported in Soil Samples Below Clay Layer

Additional VOCs were reported at sporadic and anomalous concentrations in five samples below the clay layer (see Table 2):

- 68 feet in borehole LB-3 (1,1,1-trichloroethane);
- 54.5 feet in borehole LB-103 (toluene);

TABLE 1 - THICKNESS AND DESCRIPTION OF THE CLAY LAYER IN BORING LOG DATA

BORING NUMBER	DATE	TOTAL DEPTH (FEET)	THICKNESS OF CLAY LAYER	DEPTH AND SOIL DESCRIPTION
TH-1	4/29/86	38	NP*	
TH-2	4/29/86	120	1.5 FEET	50-51.5 feet: "Yellowish brown sandy to silty clay." Minimum thickness because the log was limited to descriptions at 5-foot intervals.
LB-1	5/30/85	50	NP*	Drilled at a 23-degree slant. Vertical penetration was 46 feet. Sample at "50" feet was not described in the log.
LB-2	5/30/85	50	ND**	Sampled at 10-foot intervals. Soils at 39 feet were described as brown silty sand. Sample at 50 feet was not described in the log.
LB-3#	1/6/88	110	4 FEET	46 feet: "Yellowish brown silty clay...grades to a dense, massive, firm, [reddish brown] low plasticity clay..." 48 feet: "Clay: Reddish brown, dense, firm, as above."
LB-4	1/6/88	108	2.4 FEET	45 feet: "Sand...overlying a dark reddish brown, massive, dense, low plasicity clay w/ scattered granules and pebbles, dry, no odor." 48 feet: "Dark reddish brown, firm, dense, low plasticity clay, sandy w/ scattered pebbles and occasional cobble, dry, no odor."
LB-100	9/13/88	116	4.5 FEET	46.5-48 feet: "Dk reddish brown clay, tr. crse sand & granules, massive texture, cohesive, dense, sl damp." 48-49 feet: "Dk brn clay, tr. crse sand, massive, cohesive, dense..." 49-49.5 feet: "Above grades into Dk brn sandy clay, sl. damp." 49.5-51 feet: "Dk brn crse sandy clay, tr granules, sl. damp."

* NP= Not Penetrated. These borings were terminated before the clay was encountered.

**ND= Not Described. In these borings, the clay layer was not described.

#LB-3, LB-103 and LB-103A were all completed within 5 feet of each other.
Total clay thickness at this location is probably five feet (46-51 feet).

TABLE 1 - THICKNESS AND DESCRIPTION OF THE CLAY LAYER IN BORING LOG DATA (continued)

BORING NUMBER	DATE	TOTAL DEPTH (FEET)	THICKNESS OF CLAY LAYER	DEPTH AND SOIL DESCRIPTION
LB-101	9/15/88	122	3 FEET	46-47.5 feet: "Reddish brn silty clay, fr crse sand & granules, dense, massive, sl. damp to dry." 47.5-49 feet: "Reddish brn sandy clay, fr. granules & pbls, dense but only mod. cohesive, damp, pble zone at base."
LB-102	9/19/88	90	3.5 FEET	47.5-49 feet: "Sand...grades into a dense clay - red brown, sm rk frag..." 49-50.5 feet: "Clay - Red brwn, dense, sm rk frag, qtz, feld, friable, moist." 51-52.5 feet: "Clay - Red-brwn, dense, sm rk frag, qtz, feld, friable..."
LB-102A	9/23/88	121	ND**	Sampled and described only below 90 feet.
LB-103#	9/13/88	70	12 INCHES	50 feet: "Dense, cohesive clay."
LB-103A#	9/21/88	70	1.5 FEET	48 feet: "Clay, red-brwn, dense, minor amounts of sm rk frag, qtz, feld silt, sl. damp, no odor."
LB-104 (Background)	10/3/88	115	ND**	Drilled 400 feet to the north and sampled at 10-foot intervals. No clay was described in this boring at 50 feet.

**ND= Not Described. In these borings, the clay layer was not described.

#LB-3, LB-103 and LB-103A were all completed within 5 feet of each other. Total clay thickness at this location is probably five feet (46-51 feet).

Table 2. Additional VOCs Reported Below the Clay Layer

Borehole	Depth	Constituents	Concentration*
LB-3	68	1,1,1-TCA	0.700
LB-103	54.5	toluene	0.024
LB-103	56	toluene	0.027
		1,1,1-TCA	0.020
LB-103A	68	toluene	0.009
		acetone	0.012
		ethylbenzene	0.009
		xylenes	0.034
LB-100	101.5	acetone	2.400

*- Concentrations are in mg/kg

- 56 feet in borehole LB-103 (toluene);
- 68 feet in LB-103A (toluene, acetone, ethylbenzene and xylenes); and
- 101.5 feet in LB-100 (acetone)

None of these reported concentrations can be considered valid because, as discussed below, there is strong evidence that these reported concentrations are the result of contamination during drilling and sampling and/or during laboratory procedures.

The pattern of VOCs reported in samples above the clay layer was consistent in boreholes LB-3, LB-103, and LB-103A. However, such a consistency of pattern of VOCs was not reported in these boreholes from samples below the clay layer. Furthermore, many of these VOCs were reported in internal laboratory quality assurance/quality control samples which indicate that contamination was introduced during sample preparation at the laboratory.

Boreholes LB-3, LB-103 and LB-103A were completed within five feet of each other southwest of the tank excavation. Anomalous and low concentrations of VOCs were detected sporadically in two soil samples in borehole LB-3 below the clay layer. Boreholes LB-103 and LB-103A were then completed and sampled within approximately 5 feet of LB-3 to confirm the reported concentrations in LB-3. Because the VOCs reported in LB-3 could not be duplicated in LB-103 and LB-103A, the VOCs in LB-3 should be considered to be the result of contamination during drilling and sampling and/or during laboratory preparation of the samples.

A total of 70 samples below the 52.5 foot level in the nine borings at the tank site were tested for 35 VOCs. From this total of 2450 analytical results, 2436 were non-detectable below laboratory detection limits for VOCs as compared to only 14 analytical results above laboratory detection limits from five samples. As for TPH, the range of TPH concentrations in the eleven samples analyzed above the clay layer in the contaminant plume was 1,200 mg/kg to 20,000 mg/kg, with significantly lower concentrations 1 to 32 mg/kg in samples below the clay layer. (Leighton and Associates,

"Progress Report Number 3 for Phase II Subsurface Investigations at HR Textron's Pacoima Facility", Appendix E, February 15, 1989)

1,1,1-Trichloroethane (TCA)

The reported chemical constituents in LB-3 that triggered the installation of boreholes LB-103 and LB-103A was 1,1,1-trichloroethane (TCA) at 68 feet. None of the samples below the clay layer in either LB-103 or LB-103A contained TCA at the same 68-foot depth as found in LB-3. Although TCA was reported at 56 feet in LB-103, this result was not confirmed from samples taken at or near 56 feet in either LB-3 or LB-103A.

The most likely cause of the TCA contamination in borehole LB-3 is cross-contamination during drilling. This borehole was completed to a depth of 68 feet and left to stand open through the clay layer overnight. The first sample obtained the following morning before drilling began again was at the bottom of the borehole (68 feet).

Toluene

Toluene was reported in three samples from below the clay layer: at 54.5 and 56 feet in LB-103, and at 68 feet in LB-103A. For each case, these are sporadically distributed, and in low concentrations that were not confirmed at the same depth intervals in either of the other two boreholes within five feet. Furthermore, toluene was reported in the quality assurance/quality control samples (the reagent blanks) for these samples. Toluene is a common solvent used in analytical laboratories and was most likely introduced during laboratory extraction procedures. This is further supported by the absence of confirmation of toluene in samples from adjacent boreholes at the same depth intervals.

Other VOCs

Finally, acetone, ethylbenzene and xylenes were reported at low levels at 68 feet in LB-103A. As to the acetone, the analytical laboratory noted on the data sheet that the acetone was likely the result of laboratory

contamination. Furthermore, none of these three constituents were reported in any samples obtained below the clay layer in LB-3 or LB-103.

The internal laboratory quality assurance/quality control samples (the reagant blanks) for the sample at 101.5 feet in LB-100 contained acetone, toluene and methylene chloride (all common laboratory cleaning and extraction solvents), which indicates the strong possibility of contamination in the laboratory during sample preparation. For this reason, further supported by the absence of any VOC (or elevated concentrations of TPH) anywhere else in the borehole above or below the clay layer, this reported concentration is not valid.

Hydrocarbons Below Clay Layer

Finally, as discussed in the previous ERM-West Technical Evaluation and in the response concerning Contention 7, the hydrocarbons detected at 110 feet "in at least one borehole" and elsewhere at the same reported depth and concentrations in other boreholes must be considered as background.

Technical Sufficiency

These data are not technically sufficient to request ground water investigation because of the lack of evidence of TPH or VOC contamination beneath the clay layer and at least 65 feet above the current estimated ground water level.

CONTENTION 7

The RWQCB has raised three issues:

> 1) "Hydrocarbon 'fingerprinting' by an HRT consultant indicates that hydrocarbons found at these depths are the same as those of the waste discharged at the surface."
>
> 2) "Surface derived waste materials cannot be considered background when encountered at 110 feet below ground surface, but are instead evidence of vertical transport, the penetrability of the purported barrier and the reality of a threat to ground water"
>
> 3) "Laboratory errors on the order of 150 mg/kg for methylene chloride require more explanation than provided in the petition"

Fingerprinting Analysis

The Staff findings in Contention 7 interpret the fingerprint analysis performed by Global Geochemistry Corporation (GGC) as indicating that TPH at the depth of 110 feet was derived from waste from the tank release. That report reaches no such conclusion. The conclusion set forth at page 5 of its November 1988 report was that:

> In summary, based on the results obtained for the soil samples, it is concluded that the hydrocarbons present in both shallow and deep soil samples could have been derived from the same oil source. (Emphasis added).

The actual conclusion was that TPH at that depth could have been derived from the same source as materials found at 30.5 feet. That conclusion is also consistent with there being background TPH from a common oil source (such as naturally occurring hydrocarbons) other than the tank release present both above and below the clay layer.

The results of the fingerprinting analysis performed by GGC (Global Geochemistry Corporation, Appendix F to Leighton and Associates, February 1989) on samples from 30.5 and 70-85.5 feet in Boring LB-102 must be considered as inconclusive concerning the direct correlation of hydrocarbons above and below the clay layer. This is demonstrated by an examination of the results of the specific fingerprinting techniques used. Specifically, the fingerprinting techniques used by the laboratory indicate both differences and similarities in the type and composition of the hydrocarbons from these two depths.

The distribution of the alkane parameters is particularly dissimilar for the two samples. According to the Leighton and Associates February 1989 report, three specific ratios of alkanes sensitive to biodegradation indicate that hydrocarbons in the sample from 30.5 feet have been in the subsurface a much shorter period of time than the sample from 70-85.5 feet. During a subsurface release of hydrocarbons, the soil adsorbs hydrocarbons until saturation is attained and then downward migration by gravity can take place. The hydrocarbons that migrate are the ones released after the initial saturation is attained. For the hydrocarbons to be related by a release and downward migration, the deeper sample of hydrocarbons should be less affected by biodegradation processes.

The extracted bitumens from the two samples also differed in the amount of hydrocarbons present in the bitumen (95% at 30.5 feet versus 77% at 70-85.5 feet). The samples also strongly differed in the ratios (19 at 30.5 feet versus 3.3 at 70-85.5 feet) of hydrocarbons to naturally occurring polar constituents (such as humic acids). The large difference in the ratio of hydrocarbons to polar constituents indicates a strong lack of correlation between the two samples because polar constituents are present in high concentrations in "crude oils", but are present in very low concentrations in petroleum distillates such as the cutting and lubrication oils that were stored in the underground tanks.

Inconclusive results were obtained in the comparison of hydrogen isotopes and biomarkers for the two soil samples. Hydrogen isotope data are good indicators of correlation between petroleum hydrocarbons, yet GGC

attributes the differences to "experimental problems" and discounts the evidence provided by these analyses. The sterane and terpane representative biomarkers are also good indicators of whether one hydrocarbon is related to another. However, the ratios between identical biomarker compounds are higher than one for eight constituents and lower than one for seven constituents when the sample from 30.5 feet is compared to the sample from 70-85.5 feet. In summary, inconclusive results were obtained from a good fingerprinting technique.

According to the GGC report (pages 3-4), the "alkane distribution patterns is typical of severely biodegraded crude oils (emphasis added). The similarity in the CGC [capillary gas chromatography] pattern between both bitumens analyzed based on their alkane distributions suggests a common source rock for these two bitumens." This statement indicates a visual similarity between the two samples in the distribution of alkanes but cannot be construed to indicate that one is derived from the other.

In the same manner, the data on the triterpanes also indicate that the petroleum hydrocarbons in both samples could have been "generated from a starting organic matter common to both." GGC also concluded that "Carbon isotope values obtained from the saturate and aromatic fractions of soil bitumens are very similar to each other ... and support the conclusions reached from GC and GC-MS results that hydrocarbons present in the soil samples are derived from the same organic source." If the crude oil stock that provided the raw material for the petroleum distillates used at the site were derived from LA Basin crude oils as it reasonable to expect, the naturally occurring petroleum hydrocarbons would likely have a similar source signature as the refined material. The fingerprinting analysis referred to by the Staff does not, therefore, constitute any conclusive evidence that TPH found at a depth of 110 feet migrated there from the tank release.

Lack of Evidence for Petroleum Hydrocarbons below Clay Layer as Surface Derived Waste Material

The petroleum hydrocarbons below the 50-foot clay layer cannot be considered to be surface derived waste materials on the basis of fingerprinting analyses cited by the RWQCB because the results of such fingerprinting analysis performed by GGC is inconclusive.

The Technical Evaluation provided a concise discussion of additional supporting evidence that the petroleum hydrocarbons below the 50-foot clay layer should be considered as background concentrations. The discussion concerning this evidence is quoted below:

"The "petroleum hydrocarbons ... detected at a depth of 110 feet on-site" refers to those constituents found in the following samples:

- LB3-S23(3) (5 mg/kg) and LB3-S23B (2 mg/kg) in borehole LB-3;
- LB-100-111.5 (8 mg/kg) in borehole LB-100;
- LB-101-110 (2 mg/kg) in borehole LB-101;
- LB4-S23A (2 mg/kg) in borehole LB-4;
- LB-102A-110 (9 mg/kg) in borehole LB-102A; and
- LB-104-110 (9 mg/kg) in borehole LB-104.

The presence of TPH at these concentrations are not attributable to the tank release for the following four reasons and do not demonstrate a probable threat of ground water contamination.

First, these TPH concentrations are low levels, between 2 and 10 mg/kg, that are in the range representative of background levels. Specifically, the magnitude of these levels are not consistent with, or attributable to a release from the tank, but are instead consistent with background TPH levels found throughout the area. Organic chemicals, some of which fall within the petroleum hydrocarbon range, are naturally present in soils. Deep borehole LB-4 completed approximately 400 feet from the tank area at a

location where there is no influence from the tank release represents background subsurface soil conditions.

Soil samples were obtained from this borehole beginning at a depth of 10 feet, and continuing every 10 feet to and including a depth of 105 feet, and included a sample at a depth of 110 feet. The range of reported TPH concentrations in all of these samples was approximately 1 to 10 mg/kg. Background TPH concentrations for the area should be considered to be, at minimum, in the range of 1 to at least 10 mg/kg. This range brackets those TPH values found at depths of 110 feet in boreholes at the site.

Second, there is no discernable spatial trend, either vertically or laterally, to the reported values of TPH in soil samples beneath the clay layer (at a depth greater that 53 feet). This is in direct contradiction to the clear vertical and lateral trends in reported TPH values in soil samples above the clay layer. These trends show a roughly cylindrical shape with a bottom at the clay layer (see Leighton and Associates, Progress Report No. 3, February 1989). The cylindrical pattern is consistent with a slow release from the underground tank over the period of several years. In contrast, the complete lack of trends beneath the clay layer do not support a hypothesis of movement of TPH in the soil through and beyond the clay layer.

Third, TPH concentrations below the clay layer are significantly lower than those in the plume attributable to the tank release. The range of TPH concentrations in the eleven samples analyzed above the clay layer in the contaminant plume was 1,200 mg/kg to 20,000 mg/kg, with significantly lower concentrations 1 to 32 mg/kg in samples below the clay layer. (Leighton and Associates, "Progress Report Number 3 for Phase II Subsurface Investigations at HR Textron's Pacoima Facility", Appendix E, February 15, 1989)

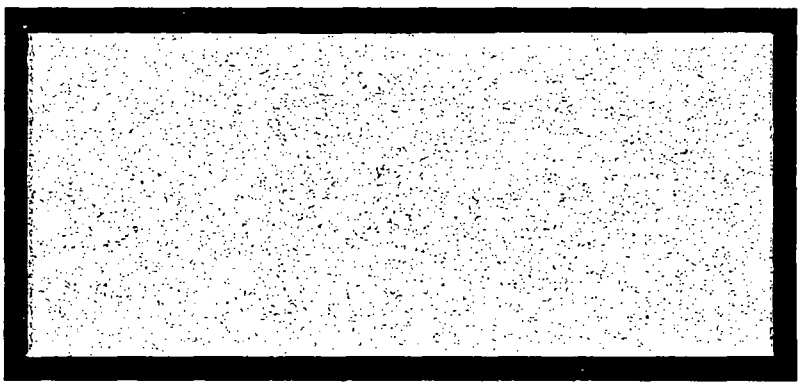
Fourth, no valid VOCs were associated with the TPH detected in any of the soil samples below the clay layer. In Contention 4, all of the VOC analyses from below the clay layer are demonstrated to be attributable to cross-contamination during sample collection or laboratory anomalies. The presence of such VOCs is a distinguishing characteristic of the chemical

release above the clay layer. Any postulated migration of TPH through and below the clay layer would also be accompanied by the VOCs which are closely associated with TPH above the clay layer.

VOCs as Laboratory Anomaly

The January 11, 1990 letter from Enseco-CRL (the analytical laboratory) to ERM-West attached to the Technical Evaluation provides an explanation for the presence of methylene chloride initially reported in the soil sample LB3-S16B from 78 feet in borehole LB-3. The analytical laboratory reviewed the detailed quality assurance/quality control records for that sample and for the two soil samples immediately above at depths of 63 and 68 feet which also contained methylene chloride. After review the laboratory concluded that the methylene chloride values "...should be considered incidental laboratory contamination at these low levels."

The laboratory also stated their current policy that methylene chloride results should not be considered valid unless the concentration in the sample exceeds five times the detection limit, and that all positive hits be accompanied by a note indicating such. Methylene chloride is a commonly used solvent in analytical laboratories for cleaning and extraction procedures. The originally reported methylene chloride concentrations would not be considered representative under the current laboratory policy because the concentration in the sample of 150 ppb is only three times the detection limit of 50 ppb. The sample report would also contain the appropriate warning. The serious concerns about solvent contamination in laboratory procedures is described in the EPA Reference Manuals for these analyses (USEPA, "Test Methods for Evaluating Solid Waste, Volume 1B: Laboratory Manual of Physical/Chemical Methods", SW-846, Nov. 1986).



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350087

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REMEDIAL ACTION PLAN

HR TEXTRON
PACOIMA FACILITY

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April 1990

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INTRODUCTION

This document presents a remediation plan for volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPH) removal from soil at HR Textron's Pacoima facility, which is located at 10445 Glen Oaks Boulevard, Pacoima, California. Because VOCs are the most mobile constituents and represent a higher hazard for the subsurface, immediate implementation of a vapor extraction system is recommended for the remediation plan at this site.

A leak from underground storage tanks occurred in the past at this site. The two underground storage tanks, 1,000 gallons capacity each, were used for waste oil storage. The tanks were removed in 1985, and the excavation (approximately 12 feet deep) was backfilled with imported clean soil. The investigations conducted subsequent to the removal of the tanks showed that the constituents in soil beneath the former tank pit consisted of oil hydrocarbons and VOCs to a maximum depth of 52.5 feet below the ground surface.

A clay layer, located at approximately 46 to 52.5 feet, retarded vertical migration of the soil contaminants. VOCs have not been detected below this layer, and TPH concentrations are generally in the range of 10 ppm or less in soils below the clay layer. This range of TPH values is considered to be representative of normal background organic concentrations in the sandy soils of the area. Lateral migration of constituents appears to be limited. Borings in the area of the former tank pit showed that VOCs were below laboratory detection limits east, north and northwest of the tank pit. Traces of VOCs were detected in soil samples collected above the clay layer in the cluster of borings LB-3, LB-103 and LB-103A southwest of the excavation.

The following steps are recommended for the implementation of the remediation plan:

Step 1 Installation of a production well for soil vapor extraction

Step 2 Installation of four air injection wells around the production well

Step 3 Design and installation of a soil vapor extraction and treatment system

Step 4 Bench tests to determine the feasibility of enhanced vapor recovery using heat and/or methanol

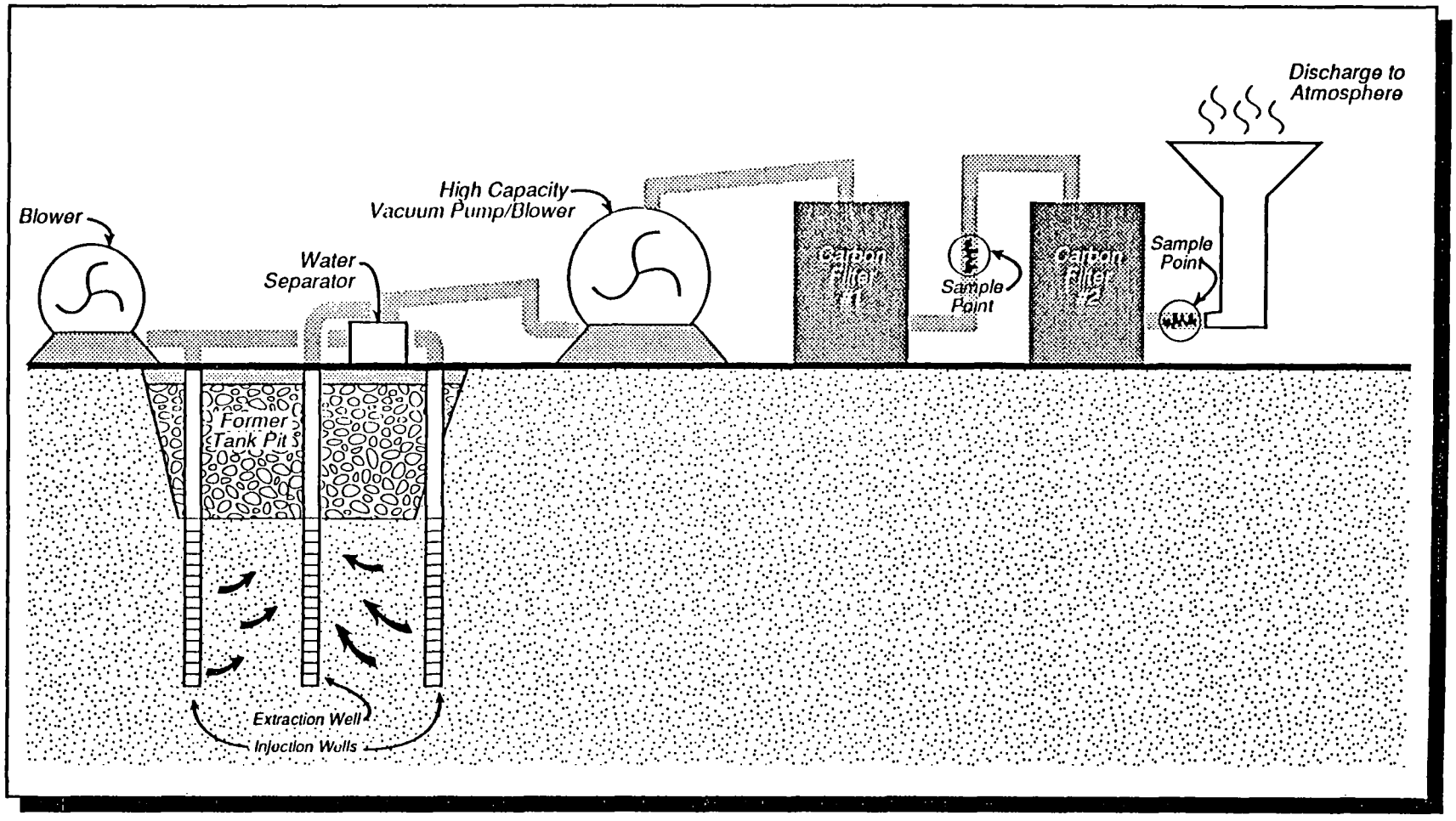
DESCRIPTION OF THE REMEDIATION PROCESS

In-situ vapor extraction or in-situ volatilization involves the removal of volatile organic compounds from subsurface soil by mechanically drawing or venting air through the soil matrix. The unit operations are common to most vapor extraction systems, although such systems may vary considerably in size and design because of site-specific conditions. The system consists of:

- Injection wells - slotted or screened pipes in the proper zone to assure the air sweep of the contaminated soil.
- Production well - slotted or screened pipe to allow the air flow loaded with constituents vapor to be transported to aboveground equipment.
- Vacuum pump/blower and associated aboveground piping used for loaded air suction from soil and transportation to subsequent processing equipment.
- Activated carbon filter for retention of contaminants before the air flow is released in the atmosphere or recycled to injection wells.
- Associated instrumentation, valves, wiring, electrical panel, etc.

In this system a pressure gradient is created by the vacuum pump through the production well. Due to the negative pressure, the air flows from the injection wells to the production well. This allows volatile chemicals in the soil to move through the air spaces between the soil particles to the production well. The air, loaded with chemicals in vapor form, is drawn into the vacuum pump/blower and transported to the carbon filter.

The efficiency of the system depends on the design sophistication and soil and constituents properties. Usually the injection wells are located equidistant around the central production well. The typical "unit" has four



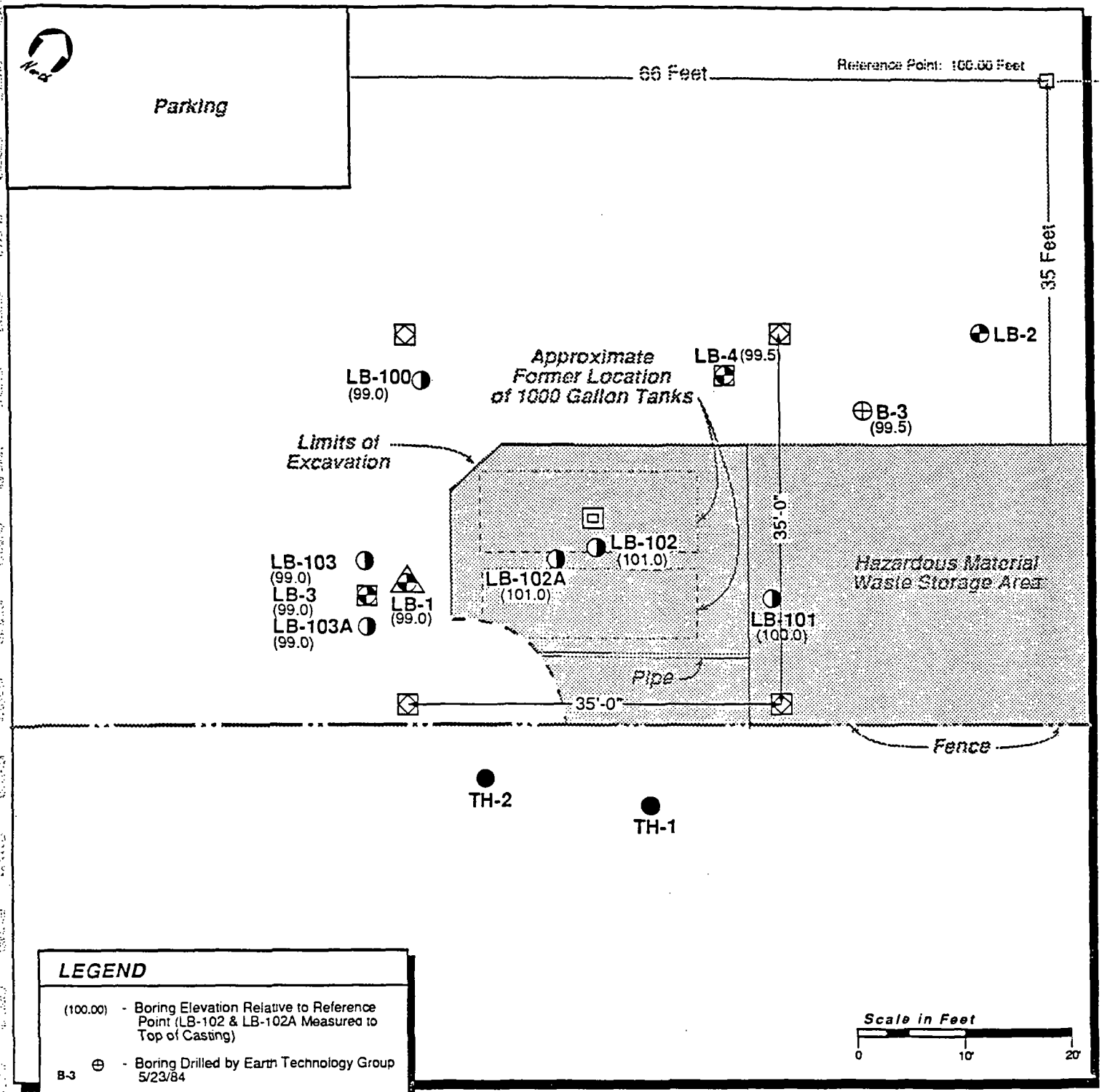
SCHEMATIC OF SOIL VAPOR VACUUM EXTRACTION SYSTEM HR TEXTRON FACILITY PACOIMA, CALIFORNIA

injection wells and one production well. The distance from the injection wells to the production well depends on soil structure, vacuum produced by the pump and other design specifics. Based on available data at this time, we propose to install a unit for soil vapor extraction. Depending on the performance of the system and lateral extent of chemical constituents, extensions to the system may be required.

The unit design will begin after the data collected during Steps 1 and 2 of this work plan are available. Four injection wells are going to be located equidistant from the production well. Based on soil structure and available information from the previous investigation on constituents occurrence in subsurface, our best estimate is that the injection wells will be located 25 to 30 feet from the extraction well as shown in the attached site plan map. In this remediation system, the entire volume of highly contaminated soil is included. The estimated surface area to be remediated will be 35 feet by 35 feet.

The process efficiency is directly related to constituents properties: compounds with high vapor pressure and low boiling point are most effectively removed from soil; volatile organics are removed easier by in-situ vapor extraction than kerosene or oils. Halocarbons will be removed faster than the oils in soil. This situation justifies consideration of enhancement of vapor extraction at this site. The bench scale tests will determine the feasibility of using air with a small percentage of methanol to enhance recovery of the oils.

The exhaust air flow is processed by retention of toxic vapors. Activated carbon, proposed here for vapor treatment, is often used for vapor extraction systems. Because activated carbon treatment involves significant operation and maintenance cost over time, alternative treatment methods may be considered as soil remediation progresses. Alternative treatment methods for the extracted soil vapors before final treatment in the activated carbon columns may include a condenser to remove volatile and semivolatile constituents or vapor biotreatment.



LEGEND

- (100.00) - Boring Elevation Relative to Reference Point (LB-102 & LB-102A Measured to Top of Casting)
- 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-2 - Borings Drilled by Leighton & Associates, Inc. -1/88
- LB-103 - Borings Drilled by Leighton & Associates, Inc. -9/88
- Approximate Location of Injection Wells
- Approximate Locaiton of Production Wells

WELL LOCATIONS FOR VAPOR EXTRACTION SYSTEM HR TEXTRON FACILITY PACOIMA, CALIFORNIA

ERM-West, Inc. 3/90
873/DMPV-3.29.90

Since the concentration of solvents in the soil comprise a very small fraction of the hydrocarbons to be remediated, the composition of the vapors removed from the soil may change significantly over time. During the latter stages of remediation, the vapors may consist only of non-halogenated hydrocarbons which could be safely incinerated.

The soil extraction system to be installed will be designed so that it could be adjusted to any enhancement of vapor extraction developed from bench tests. The system will also be designed to allow for the enhancement of activated carbon filters by biotechnology or replacement by vapor incineration.

Any new technique that appears applicable will be discussed with the RWQCB before any modification of the remedial plan techniques. The vapor extraction system for site remediation will operate until the cumulative contaminant removal approaches an asymptotic level (when the cumulative removal curve becomes horizontal).

WORK PLAN ACTIVITIES

STEP 1 Installation of an Extraction Well

Based upon available data from previous investigations, a production well for vapor extraction from soil will be located near the center of the limits of excavation (location of former tanks). This well has to be located such that the air flow in the soil will assure the movement of the vapors from areas of lowest concentrations (limits of the plume) to the highest concentration areas (the location of the former tanks).

The techniques to be used during the construction of the vapor extraction well are presented below. Soil samples from this boring will be analyzed to collect data on physical soil properties and chemical occurrence required to evaluate and design soil remediation using vapor extraction technique. These data on soil properties were not collected previously and are necessary for engineering and process design.

The soil boring will be installed with an 8-inch hollow stem auger. A 50 foot section of 4-inch diameter PVC pipe will be installed. The pipe will be perforated from approximately 10 feet to 50 feet below grade. Pea gravel or very coarse sand will be placed in the annulus between the 8-inch auger and the perforated pipe as the auger is withdrawn. The upper 10 feet of annular space will be grouted with cement.

Samples to be collected include 18-inch Shelby tubes from a depth of approximately 15 to 45 feet and 3-inch brass ring samples in the clay layer to a maximum depth of 51.5 feet. Care will be taken to ensure that the clay layer is not completely penetrated during sampling. However, if the clay layer is penetrated, the bottom of the bore hole will be sealed with bentonite prior to construction of the vapor extraction well. Three Shelby tubes taken from approximate depths of 15 to 18, 24 to 27 and 39 to 42 feet will be used for testing of soil physical properties; the remaining tubes will be used in bench tests for enhanced vapor recovery techniques.

To protect against the possible introduction of contaminants to the boring, the drill rig and augers will be steam cleaned prior to arrival. All sampling equipment will be cleaned in an Alconox solution and rinsed with distilled water between sampling intervals in the same hole.

Physical characteristics of sampled soils will be logged by a qualified ERM geologist. Soil samples will be screened for petroleum hydrocarbons with an HNu PID 101 meter or its equivalent. Samples will be labeled as to hole, depth, and time; placed in a chilled cooler and noted on chain of custody forms.

The 5-foot interval ring samples will be analyzed by EPA Methods 8010 and 8020 for volatile organics and 418.1 for total hydrocarbons. One sample selected from the ring samples may also be used for soil physical properties testing. The following tests will be performed for the soil physical properties that are required for remediation process and design engineering:

- engineering classification;
- moisture content;
- particle size analysis (fine sieve);
- permeability of soil matrix;
- thermal conductivity; and
- specific surface area.

STEP 2 Installation of Four Air Injection Wells

The soil borings for these wells will be installed with an 8-inch diameter hollow stem auger to a depth of approximately 50 feet. Ring samples will be collected using a modified California split-spoon sampler from ground level to the bottom of the borings at 5-foot intervals. Ring samples will be collected continuously through the clay unit to a maximum depth of 51.5 feet. Care will be taken to ensure that the clay layer is not completely penetrated during sampling. If the clay unit is penetrated, the bottom of the bore hole will be sealed with bentonite prior to construction of the well.

To protect against the possible introduction of contaminants to the borings, steam cleaned augers will be used on each boring. All sampling equipment will be steam cleaned between holes and cleaned in an Alconox solution and rinsed with distilled water between sampling intervals in the same hole.

Physical characteristics of sampled soils will be logged by a qualified ERM geologist. Soil samples will be screened for petroleum hydrocarbons with an HNu PID 101 meter or its equivalent. Samples will be labeled as to hole, depth, and time; placed in a chilled cooler and noted on chain of custody forms.

Samples for soil physical properties will be collected from each boring within distinct lithologic units. Soil samples will be analyzed by EPA Methods 8010 and 8020 (for volatile organics) and 418.1 (total hydrocarbons).

Drill cuttings and samples not designated for analyses from all borings will be stored on site until laboratory analyses of selected samples is completed. If these analyses indicate contaminants are present at concentrations that are below-regulatory action levels, the soils may be used for fill on site. If analyses indicate contaminant concentration at or above regulatory action levels, it may be necessary to dispose of the soils at an approved land fill or to remediate the soils on site prior to disposal.

Each boring will be converted to a vapor extraction well using 4-inch perforated pipe. The depth of the well is estimated to be approximately 50 feet and the screened portion of the well will extend from approximately 10 to 50 feet below the ground surface.

STEP 3 Design and Installation of a Soil Vapor Extraction and Treatment System

The activities in this step form a major part of the work required for completion of this project. There are four major tasks involved in this step:

- Design the vapor extraction and treatment system for soil remediation at the former tank pit.

- Identify and purchase remediation equipment.

- Obtain environmental and construction permits.

- Install the soil remediation equipment.

Design of the remediation system. The vapor extraction and treatment system will be designed based on the data collected during Steps 1 and 2. The attached schematic of the vapor extraction and treatment system shows the general arrangement of the remediation system. Two activated carbon vapor treatment columns will be connected in series to the line from the extraction well. When breakthrough occurs in the first column, it will be replaced by the supplier or steam regenerated on site. The replaced or regenerated column will then be connected to the outflow from the backup column. In this manner, the outflow emitted to the atmosphere will pass through a fresh activated carbon column prior to discharge.

Identify and purchase remediation equipment. ERM-West, Inc. will provide a list of equipment manufacturers and representatives who can provide the equipment and services to meet the design criteria. HR Textron will contract directly with the suppliers to obtain the equipment.

Obtain environmental and construction permits. HR Textron will obtain all permits associated with installation of the soil remediation system. ERM-West, Inc. will provide technical assistance on any aspects of permitting, if requested.

Install the soil remediation equipment. HR Textron will oversee installation of the soil remediation system that is designed. ERM-West, Inc. will provide technical assistance on any aspects of installation, if requested.

STEP 4 Bench Tests for Enhanced Vapor Recovery

Bench tests are recommended for determining methods of enhancing extraction of the oils released from the tanks. The use of these innovative techniques is necessary because the material to be removed from the soil has very low volatility. In the center of the affected area, for example, the organic phase contains 1,1,1-TCA in the range of 100 to 180 ppm and TPH (oils) in the range of 15,000 to 20,000 ppm. The material in the soil to be remediated is represented by a "solution" of these constituents. The 1,1,1-TCA has a low boiling point (74° C) and a high vapor pressure; whereas, the boiling point of the hydrocarbons in the oil fraction would be in the range of 200 to 400° C or higher and the vapor pressure is very low. Therefore, the enhancement of the volatility of this material is necessary in order to accelerate the remediation process.

The following techniques will be considered for bench tests:

- Vapor extraction with air at room temperature;
- Vapor extraction with hot air at approximately 150° C;
- Vapor extraction with solvent at room temperature; and
- Vapor extraction with solvent and hot air.

The first two techniques are known from commercial applications. The last two techniques are proprietary and will be tested for this application.

The bench tests will be performed by ERM-West and a specialized research laboratory. It is expected that 10-12 Shelby tubes collected during drilling of the extraction well will be used for these tests. The duration of each test will vary from 24 to 72 hours. The equipment for bench testing is designed to operate with minimum supervision. The confidentiality of data recorded will be assured.

POST-REMEDIATION SAMPLING FOR SITE CLOSURE

In order to verify that the remediation system was effective in removing volatile organic compounds and petroleum hydrocarbons to a level acceptable to the Regional Water Quality Control Board staff, sampling will be conducted in the area affected by the tank release. The criteria for what concentrations of contaminants are acceptable to remain after remediation and the number of confirmation borings necessary will be coordinated with the staff.

Verification will be conducted by installing each soil boring with an 10-inch diameter hollow stem auger to a depth of approximately 50 feet. Ring samples will be collected using a modified California split-spoon sampler from 5 feet below ground level to 50 feet at 5-foot intervals. The bottom sample from the 10-inch boring will be taken to verify that the bottom of the borehole is in the clay layer.

Physical characteristics of sampled soils will be logged by a qualified ERM geologist. Soil samples will be screened for petroleum hydrocarbons with an HNu PID 101 meter or its equivalent. Samples will be labeled as to hole, depth, and time; placed in a chilled cooler and noted on chain of custody forms.

To protect against the possible introduction of contaminants to the borings, steam cleaned augers will be used on each boring. All sampling equipment will be steam cleaned between holes and cleaned in an Alconox solution and rinsed with distilled water between sampling intervals in the same hole.

A steel conductor casing six inches in diameter will be placed inside the hollow stem auger and grouted into place by pumping a bentonite/cement slurry through a tremmie pipe into the bore hole while withdrawing the 10-inch augers. Once the augers are removed, a rubber plug will be pushed down through the steel conductor casing filled with grout to verify a good bottom-to-top seal in the bore hole and to remove grout from inside the casing. After the cement cures, The bottom plug will be drilled out, and 4-inch hollow stem augers will be used to complete the boring below the clay layer to a depth

of 80 feet. Ring samples will be collected at 5-foot intervals using a modified California split-spoon sampler.

Samples from the confirmation borings will be analyzed at 10-foot intervals for volatile organic compounds using EPA Methods 8010 and 8020 and for petroleum hydrocarbons using EPA Method 418.1. The samples not analyzed for chemical constituents will be held at the laboratory. In the event that a sample indicates concentrations near or exceeding the criteria developed by the Regional Water Quality Control Board, the held samples immediately above and below that sample interval will be analyzed for volatile organic compounds and petroleum hydrocarbons. Sample turnaround in the laboratory will be rapid enough that holding times will not be exceeded for the chemical analysis.

APPENDIX A

SCHEDULE

SCHEDULE

The following is the proposed schedule for the remediation plan. Scheduling the drilling subcontractor may take up to two weeks from notification to proceed.

Step 1	Week 1	Production well installation
Step 2	Weeks 1-2	Installation of air injection wells
	Weeks 1-4	Laboratory analyses of soil samples collected during installation
Step 3	Weeks 3-7	Design
	Weeks 8-9	Equipment order
	Weeks 8-20	Obtain environmental permits
	Weeks 10-20	Equipment and materials supply
	Weeks 20-22	Equipment installation
Step 4	Weeks 4-22	Enhanced recovery testing

Vapor Extraction System Start Up:

Weeks 23-24	Equipment testing
Week 24	Continuous operation

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STATE OF CALIFORNIA GEORGE DEUKMEJIAN, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CALIFORNIA 91754-2156
(213) 266-7500

RECEIVED
APR 25 1990
VP Legal and Contracts

April 19, 1990

John Hedges
H. R. Textron Inc.
252 W. Rye Canyon Road
Valencia, CA 91355

REMEDIAL ACTION PLAN FOR SOIL CLEANUP - H.R. TEXTRON FACILITY PACOIMA (CAO 89-104)

Your remedial action plan, received on April 3, 1990, has been reviewed in conjunction with the various available data concerning the subject site. Although the cover letter indicated that you are anxious to proceed with the remediation at the earliest possible time, and actually plan to commence field work on April 9, 1990, the workplan is inadequate. As presented, the workplan is a framework for remediation with very little support detail.

The following general comments are provided so that a revised remedial action plan may be prepared that is complete:

1. A specific summary of previous investigation work must be included in the RAP. Elements of the previous investigation have specific applicability for the RAP, e.g. assessment of whether determination of lateral and vertical extent of contamination in the vadose zone is sufficiently delineated for the design and placement of injection and extraction well(s).

2. Although some site specific physical tests are proposed for "soil" samples, others must be included as well. Discuss how these will be used in the "...remediation process and design engineering...". Some form of "strippability" evaluation is needed.

3. The crucial issue of cleanup levels is not discussed aside from a suggestion that these will be determined in conjunction with staff of this Regional Board. The RAP must discuss cleanup levels for all detected contaminants and propose appropriate means for their determination.

4. If the RAP is relying upon bench testing to provide key elements of remediation, then appropriate details must be provided. Referring to a "...specialized research laboratory" is not sufficient. Explain how results will be integrated into remediation.

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5. The general description of vapor extraction is appropriate. However, a discussion of applicability to the specific site contaminants and the various horizons within the vadose zone is necessary.

6. You have provided only a brief outline of the proposed systems. Additional details are required with respect to the extraction and treatment system. For example, at what point in the system does your consultant plan to obtain samples of the process stream?

7. Operation and maintenance are keys to achieving the described cleanup. No specifics have been provided.

8. Monitoring during the operation of the system is a necessity, yet there is virtually no discussion of it. Provide sufficient details of synchronous monitoring to allow evaluation.

9. No health and safety plan was included. This deficiency should be corrected.

10. Simply stating that your consultant will acquire all permits is not adequate. Describe what permits will be necessary and determine scheduling effects. Indicate all parties who must be notified or involved in the review process.

11. There is no description of how field operations will be documented. Provide sufficient detail to convey that all operation and monitoring will be adequately documented.

12. The proposed post-remedial verification is inadequate. For example soil gas concentrations must be monitored and "rebound" phenomenon evaluated.

13. Sampling protocols are not complete. For example, is your consultant planning to sample gas at the extraction well head and to monitor flow rates?

14. Analytical protocols are not provided. Utilize appropriate EPA and ASTM documentation to develop protocols and procedures. QA/QC procedures are absent.

15. There is no mention of reporting. The schedule shows no progress reports and a final technical report is apparently not planned. You must describe in the RAP how you will meet this requirement.

16. It is unlikely that under this proposed remediation program that all contaminants will be removed from the soil. Please discuss what implications this will have on future land use of this property.

These are general comments. It is left up to you and your consultant to provide sufficient details in the RAP to enable evaluation by staff of this Regional Board. A revised RAP is due by May 18, 1990. Meanwhile, you may proceed with the soil characterization portion of the plan to generate the needed data for the development of the final RAP.

If you have any questions, please contact me at (213) 266-7522.

HANK H. YACOUB
Supervising Water Resource
Control Engineer

HHY:PBC:ES:mht

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REMEDIAL ACTION PLAN
HR TEXTRON
PACOIMA FACILITY

Prepared for

HR Textron

Prepared by

ERM-West, Inc.
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May 1990

✓cc J. Hedges
W. Moses
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6-19-90

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SECTION 1

INTRODUCTION

This document presents a remediation plan for volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPH) removal from soil at HR Textron's Pacoima facility, which is located at 10445 Glen Oaks Boulevard, Pacoima, California. Because VOCs are the most mobile constituents and represent a higher hazard for the subsurface, immediate implementation of a vapor extraction system is recommended for the remediation plan at this site.

A leak from underground storage tanks occurred in the past at this site. The two underground storage tanks, 1,000 gallons capacity each, were used for waste oil storage. The tanks were removed in 1985, and the excavation (approximately 12 feet deep) was backfilled with imported clean soil. The investigations conducted subsequent to the removal of the tanks showed that the constituents in soil beneath the former tank pit consisted of oil hydrocarbons and VOCs to a maximum depth of 52.5 feet below the ground surface.

A clay layer, located at approximately 46 to 52.5 feet, retarded vertical migration of the soil contaminants. VOCs have not been detected below this layer, and TPH concentrations are generally in the range of 10 ppm or less in soils below the clay layer. This range of TPH values is considered to be representative of normal background organic concentrations in the sandy soils of the area. Lateral migration of constituents appears to be limited. Borings in the area of the former tank pit showed that VOCs were below laboratory detection limits east, north and northwest of the tank pit. Traces of VOCs were detected in soil samples collected above the clay layer in the cluster of borings LB-3, LB-103 and LB-103A southwest of the excavation.

A substantial amount of previous investigative work has been performed to characterize the lateral and vertical extent of the tank release. In particular, reports have been prepared by ERM-West, Inc. and Leighton and Associates (L&A), and a summary of the data in these reports is presented herein.

A review of the site geology and hydrogeology provides key supporting information for determining the lateral and vertical extent of the tank release. The lithologic and stratigraphic characteristics of the soil profile have a major influence on the movement of chemicals released from the tank, while the site hydrogeology determines the

depth to, as well as the direction and magnitude of ground water velocity.

For example, the clay layer at a depth of 46.5 to 52.5 feet (which is approximately 100 feet above ground water) in the soil profile has caused the chemical release to form a roughly cylindrical volume extending from the tank release to, but not through the clay layer.

General Soil Profile

Leighton and Associates in their Progress Report Number 3 presented a summary interpretation of the subsurface soil conditions at the site through interpretations of logs from borings drilled at the site. We find no reason to disagree with these interpretations of subsurface soil conditions. Presented below is L&A's description of the subsurface soil conditions.

"A total of 13 borings have been drilled at the site adjacent to and within the Tank 2 excavation. These borings range in depth from 38 to 120 feet.

The stratigraphic sequence underlying the subject site is a thick sequence of unsaturated stream deposits. These deposits consist mostly of loose and unconsolidated, poorly sorted, alternating layers of coarse sands, silty sands and clays... The source of this material is the surrounding hill sides and mountains which consist of Tertiary marine and non-marine sedimentary and older crystalline bedrock.

Three sand layers have been identified and were encountered at depths of 12 to 20 feet, 30 to 35 feet, and 40 to 45 feet below grade... The thickness of these sands range from 9 to 20 feet, 11 to 19 feet, and greater than 52.5 feet thick, respectively. These sands range from very fine- to coarse-grained with the finer silty sands being encountered in the upper portions of each sand layer. The deeper coarse sand layer (greater than 52.5 feet below grade) becomes progressively coarser with depth and appears to grade into the underlying cobble/boulder bed. The top of this continuous cobble/boulder bed begins at 110± feet below grade. Drilling rates and sample recovery dropped considerably in this very coarse zone.

Interbedded in these sands are two fine-grained clay layers, except for Boring LB-100 which encountered a clay localized layer of 2± feet in thickness at a depth of 10 to 15 feet below grade. The first continuous clay layer was encountered at a depth of 20 to 23 feet below grade and has a thickness of 3 to 9 feet. The second fine-grained layer consisting of a fine sandy, silty clay was found at depths of 46.5± to 52.5± feet below grade. Thickness of this fine-grained layer ranges

from 2 to 4 feet. These clays were observed to be reddish-brown, [with] scattered, thin, discontinuous lenses of coarse sands and granules.

No indication of refuse fill material was encountered in the borings drilled during this phase of our investigation. On the adjacent property to the southeast, indications of the presence of an fill materials have been observed. This evidence included brick and asphalt debris present in the southeast wall of the tank excavation, brick and wire cable present from 5 to 8 feet below grade in Boring TH-1 located southeast of the excavation on the adjacent property in the lack of a complete stratigraphic sequence in Borings TH-1 and TH-2 as observed in the L&A boring."

Depth to Ground Water

The site is located within the Upper Los Angeles River Area (ULARA) on the northeast side of the San Fernando Valley. To the east and south of the site, the Los Angeles Flood Control District operates the Hansen Spreading Grounds, a flood control and ground water recharge facility. According to the May 1987 ULARA Watermaster report, the site is located north and east of the Verdugo Fault, a ground water barrier in the San Fernando Valley. Only a few water supply wells are present in the vicinity and most are located near the Verdugo Fault to take advantage of the relatively higher elevation of ground water north of the fault.

The close proximity of the Hansen flood control facility to the site complicates interpretation of the regional ground water information. The mean sea level elevation at HR Textron's Pacoima facility ranges from approximately 950 to 960 feet. An interpolation of the regional ground water table from the May 1987 ULARA Watermaster report shows that ground water elevation probably ranges between 750 and 800 feet. Mr. Melvin Blevins, the ULARA water master, confirms this interpretation. The regional ground water gradient is generally toward the south. The nearby spreading grounds likely induce strong fluctuations in the ground water table and local ground water gradients with periods of quickly rising water table following precipitation and snow melt events and periods of steady declines during dry seasons.

Based on the regional information combined with the probable influences of the spreading grounds, ground water beneath the site may be present as shallow as 150 feet below the ground surface, but probably averages less than 200 feet deep. Short-term influences of drier seasons and droughts likely create conditions where the ground water table may decline to a depth of 200 feet or greater. Locally, ground water gradients probably vary from the regional southerly

flow direction, particularly following events which fill Hansen Lake and increase dramatically the percolation rates.

Analytical Results from Soils

The extent of chemicals released into the soil from the tank forms a roughly cylindrical volume with a estimated radius of approximately 25 feet and which extends from the base of the tank excavation to an underlying clay layer from approximately 46.5 to 52.5 feet below the ground surface. The lateral and vertical extent of the chemical release has been well-defined, and to such an extent that remediation will begin in the near future.

The investigative program for the chemical release was performed by L&A and consisted of the drilling and sampling and chemical analyses of soil samples from 13 boreholes.

The "fingerprint" of the chemical release from the tank exhibits two consistent distinguishing characteristics. The first characteristic is concentrations of TPH (from EPA Test Method 418.1) in the range of 1,000 to 20,000 mg/kg. The second characteristic is a certain suite of volatile organic constituents from EPA Test Methods 8240 or 8010) that are consistently an order of magnitude less, in the range of 10 to 200 mg/kg, than the TPH concentrations. The VOCs consist primarily of 1,1,1-trichloroethane (TCA), with the occasional presence of low concentrations (usually less than 5 mg/kg) of toluene, tetrachloroethylene (PERC), trichloroethylene (TCE), xylene, benzene and dichloroethane (DCA).

This fingerprint is clearly seen in the reported concentrations for soil samples in boreholes LB-102 and LB-1 that were drilled through the central portion of the chemical release. Laboratory analyses of soil samples taken above the 50-foot clay layer show this pattern of TPH and VOCs; however, soil samples taken below the clay layer show only background levels (less than 10 mg/kg) of TPH.

During the 13 borehole investigative program, soil samples were obtained and analyzed primarily for VOCs, TPH, and less frequently oil and grease, chromium and lead. The specific distribution of sample analyses is:

- VOCs (EPA Methods 8240 or 8010) - 146 samples;
- TPH (EPA Method 418.1) - 145 samples;
- Oil and Grease (EPA Method 413.2) - 75 samples; and

- Chromium and lead (CAC Title 22, Wet Method/EPA Method 6010 and 7241) - 45 samples.

The samples are distributed equally above and below the major clay layer from 49.5 to 52.5 feet that forms the bottom of the chemical release. As described previously, the samples above the clay layer show a roughly cylindrical volume, while samples below the clay layer show TPH concentrations at background levels.

Extensive sampling and chemical analyses to date have adequately characterized site conditions to allow design and installation of a site remediation system to address the TPH and VOCs above the clay layer.

The following steps are recommended for the implementation of the remediation plan:

- Step 1 - Installation of a production well for soil vapor extraction;
- Step 2 - Installation of four air injection wells around the production well;
- Step 3 - Design and installation of a soil vapor extraction and treatment system; and
- Step 4 - Bench tests to determine the feasibility of enhanced vapor recovery using heat and/or methanol.

SECTION 2

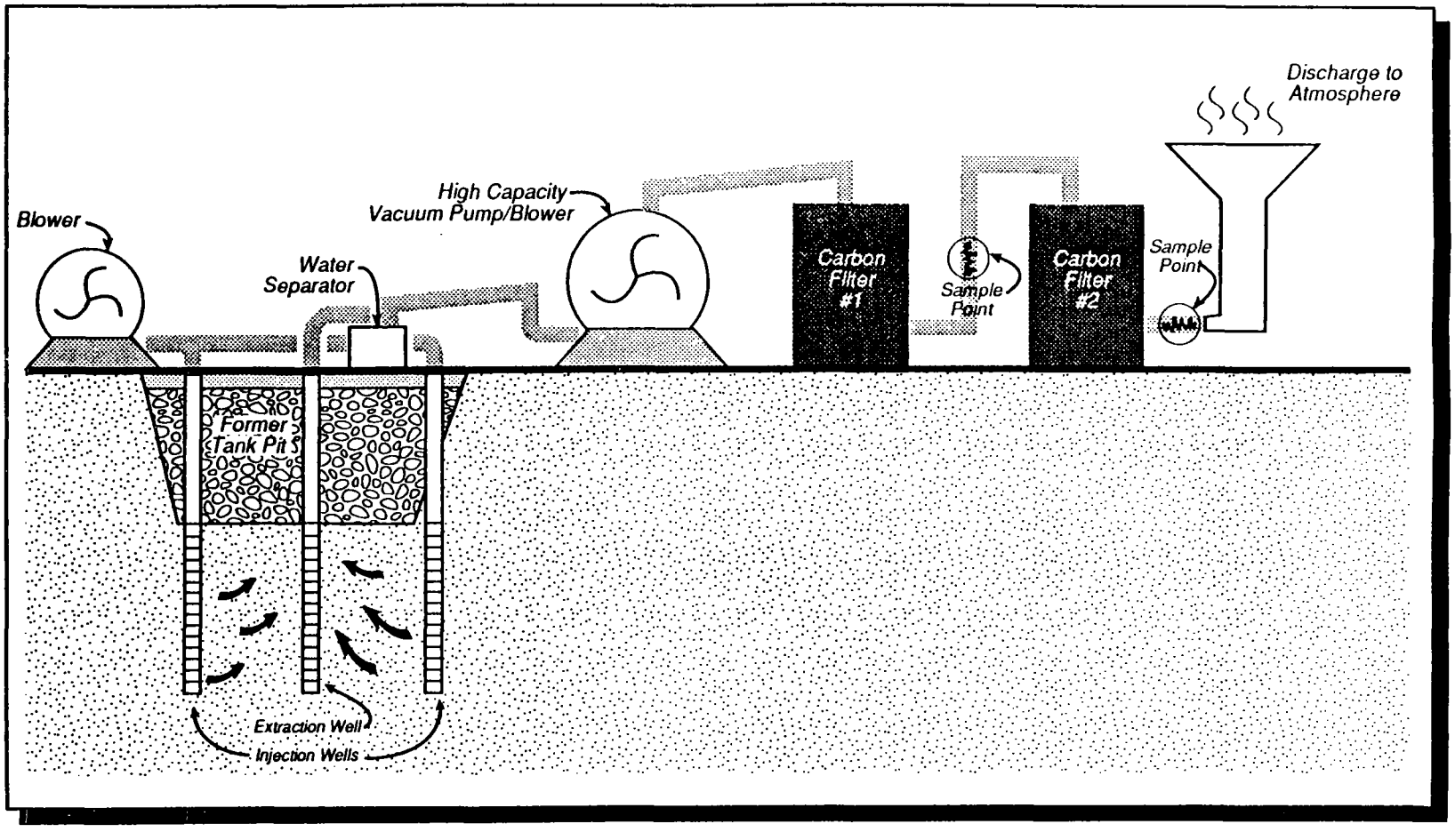
DESCRIPTION OF THE REMEDIATION PROCESS

In-situ vapor extraction or in-situ volatilization involves the removal of VOCs from subsurface soil by mechanically drawing or venting air through the soil matrix. The unit operations are common to most vapor extraction systems, although such systems may vary considerably in size and design because of site-specific conditions. The system consists of:

- Injection wells - slotted or screened pipes in the proper zone to assure the air sweep of the contaminated soil.
- Production well - slotted or screened pipe to allow the air flow loaded with constituents vapor to be transported to aboveground equipment.
- Vacuum pump/blower and associated aboveground piping used for loaded air suction from soil and transportation to subsequent processing equipment.
- Activated carbon filter for retention of contaminants before the air flow is released in the atmosphere or recycled to injection wells.
- Associated instrumentation, valves, wiring, electrical panel, etc.

In this system a pressure gradient is created by the vacuum pump through the production well. Due to the negative pressure, the air flows from the injection wells to the production well. This allows volatile chemicals in the soil to move through the air spaces between the soil particles to the production well. The air, loaded with chemicals in vapor form, is drawn into the vacuum pump/blower and transported to the carbon filter.

The efficiency of the system depends on the design sophistication and soil and constituents properties. Usually the injection wells are located equidistant around the central production well. The typical "unit" has four injection wells and one production well. The distance from the injection wells to the production well depends on soil structure, vacuum produced by the pump and other design specifics. Based on available data at this time, we propose to install a unit for soil vapor extraction. Depending on the performance of the system



SCHEMATIC OF SOIL VAPOR VACUUM EXTRACTION SYSTEM HR TEXTRON FACILITY PACOIMA, CALIFORNIA

and lateral extent of chemical constituents, extensions to the system may be required.

The unit design will begin after the data collected during Steps 1 and 2 of this work plan are available. Four injection wells are going to be located equidistant from the production well. Based on soil structure and available information from the previous investigation on constituents occurrence in subsurface, our best estimate is that the injection wells will be located 25 to 30 feet from the extraction well as shown in the attached site plan map. In this remediation system, the entire volume of highly contaminated soil is included. The estimated surface area to be remediated will be 35 feet by 35 feet.

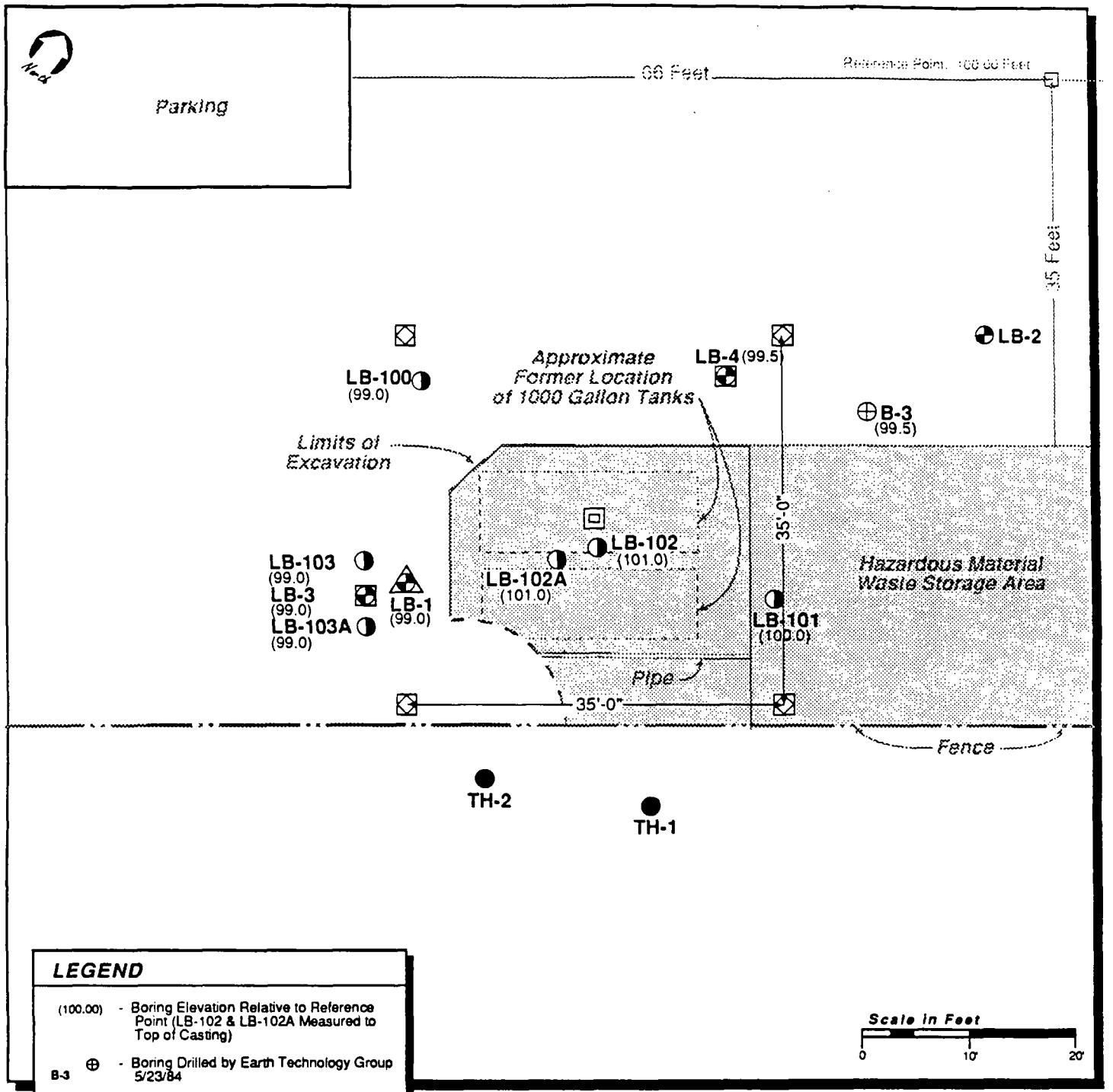
The process efficiency is directly related to constituents properties: compounds with high vapor pressure and low boiling point are most effectively removed from soil; volatile organics are removed easier by in-situ vapor extraction than kerosene or oils. Halocarbons will be removed faster than the oils in soil. This situation justifies consideration of enhancement of vapor extraction at this site. The bench scale tests, as discussed in Step 4 of Section 3, will determine the feasibility of using air with a small percentage of methanol to enhance recovery of the oils.

The exhaust air flow is processed by retention of toxic vapors. Activated carbon, proposed here for vapor treatment, is often used for vapor extraction systems. Because activated carbon treatment involves significant operation and maintenance cost over time, alternative treatment methods may be considered as soil remediation progresses. Alternative treatment methods for the extracted soil vapors before final treatment in the activated carbon columns may include a condenser to remove volatile and semi-volatile constituents or vapor biotreatment.

Since the concentration of solvents in the soil comprise a very small fraction of the hydrocarbons to be remediated, the composition of the vapors removed from the soil may change significantly over time. During the latter stages of remediation, the vapors may consist only of non-halogenated hydrocarbons which could be safely incinerated.

The soil extraction system to be installed will be designed so that it could be adjusted to any enhancement of vapor extraction developed from bench tests. The system will also be designed to allow for the enhancement of activated carbon filters by biotechnology or replacement by vapor incineration.

Any new technique that appears applicable will be discussed with the Regional Water Quality Control Board (RWQCB) before any modification of the remedial plan techniques. The vapor extraction system for site remediation will operate until the cumulative



LEGEND

(100.00)	- Boring Elevation Relative to Reference Point (LB-102 & LB-102A Measured to Top of Casting)
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-2 ◘	- Borings Drilled by Leighton & Associates, Inc. -1/88
LB-103 ◑	- Borings Drilled by Leighton & Associates, Inc. -9/88
⊠	- Approximate Location of Injection Wells
⊡	- Approximate Locaiton of Production Wells

WELL LOCATIONS FOR VAPOR EXTRACTION SYSTEM HR TEXTRON FACILITY PACOIMA, CALIFORNIA

ERM-West, Inc. 3/90
873/DMPV-3.29.90

contaminant removal approaches an asymptotic level (when the cumulative removal curve becomes horizontal).

SECTION 3

WORK PLAN ACTIVITIES

Step 1 - Installation of an Extraction Well

Based upon available data from previous investigations, a production well for vapor extraction from soil will be located near the center of the limits of excavation (location of former tanks). This well has to be located such that the air flow in the soil will assure the movement of the vapors from areas of lowest concentrations (limits of the plume) to the highest concentration areas (the location of the former tanks).

The techniques to be used during the construction of the vapor extraction well are presented below. Soil samples from this boring will be analyzed to collect data on physical soil properties and chemical occurrence required to evaluate and design soil remediation using vapor extraction technique. These data on soil properties were not collected previously and are necessary for engineering and process design.

The soil boring will be installed with an 8-inch hollow stem auger. A 50 foot section of 4-inch diameter PVC pipe will be installed. The pipe will be perforated from approximately 10 feet to 50 feet below grade. Pea gravel or very coarse sand will be placed in the annulus between the 8-inch auger and the perforated pipe as the auger is withdrawn. The upper 10 feet of annular space will be grouted with cement.

Samples to be collected include 18-inch Shelby tubes from a depth of approximately 15 to 45 feet and 3-inch brass ring samples in the clay layer to a maximum depth of 51.5 feet. Care will be taken to ensure that the clay layer is not completely penetrated during sampling. However, if the clay layer is penetrated, the bottom of the bore hole will be sealed with bentonite prior to construction of the vapor extraction well. Three Shelby tubes taken from approximate depths of 15 to 18, 24 to 27 and 39 to 42 feet will be used for testing of soil physical properties; the remaining tubes will be used in bench tests for enhanced vapor recovery techniques.

To protect against the possible introduction of contaminants to the boring, the drill rig and augers will be steam cleaned prior to arrival. All sampling equipment will be cleaned in an Alconox solution and rinsed with distilled water between sampling intervals in the same hole.

Physical characteristics of sampled soils will be logged by a qualified ERM geologist. Soil samples will be screened for petroleum hydrocarbons with an HNu PID 101 meter or its equivalent. Samples will be labeled as to hole, depth and time; placed in a chilled cooler and noted on chain of custody forms.

The 5-foot interval ring samples will be analyzed by EPA Methods 8010 and 8020 for volatile organics and 418.1 for total hydrocarbons. One sample selected from the ring samples may also be used for soil physical properties testing. The following tests will be performed for the soil physical properties that are required for remediation process and design engineering:

- engineering classification;
- moisture content;
- particle size analysis (fine sieve);
- permeability of soil matrix;
- thermal conductivity; and
- specific surface area.

Step 2 - Installation of Four Air Injection Wells

The soil borings for these wells will be installed with an 8-inch diameter hollow stem auger to a depth of approximately 50 feet. Ring samples will be collected using a modified California split-spoon sampler from ground level to the bottom of the borings at 5-foot intervals. Ring samples will be collected continuously through the clay unit to a maximum depth of 51.5 feet. Care will be taken to ensure that the clay layer is not completely penetrated during sampling. If the clay unit is penetrated, the bottom of the bore hole will be sealed with bentonite prior to construction of the well.

To protect against the possible introduction of contaminants to the borings, steam cleaned augers will be used on each boring. All sampling equipment will be steam cleaned between holes and cleaned in an Alconox solution and rinsed with distilled water between sampling intervals in the same hole.

Physical characteristics of sampled soils will be logged by a qualified ERM geologist. Soil samples will be screened for petroleum hydrocarbons with an HNu PID 101 meter or its equivalent. Samples

will be labeled as to hole, depth and time; placed in a chilled cooler and noted on chain of custody forms.

Samples for soil physical properties will be collected from each boring within distinct lithologic units. Soil samples will be analyzed by EPA Methods 8010 and 8020 (for volatile organics) and 418.1 (total hydrocarbons).

Drill cuttings and samples not designated for analyses from all borings will be stored on site until laboratory analyses of selected samples is completed. If these analyses indicate contaminants are present at concentrations that are below-regulatory action levels, the soils may be used for fill on site. If analyses indicate contaminant concentration at or above regulatory action levels, it may be necessary to dispose of the soils at an approved land fill or to remediate the soils on site prior to disposal.

Each boring will be converted to a vapor extraction well using 4-inch perforated pipe. The depth of the well is estimated to be approximately 50 feet and the screened portion of the well will extend from approximately 10 to 50 feet below the ground surface.

Step 3 - Design and Installation of a Soil Vapor Extraction and Treatment System

The activities in this step form a major part of the work required for completion of this project. There are four major tasks involved in this step:

- Design the vapor extraction and treatment system for soil remediation at the former tank pit;
- Identify and purchase remediation equipment;
- Obtain environmental and construction permits; and
- Install the soil remediation equipment.

Design of the Remediation System

The vapor extraction and treatment system will be designed based on the data collected during Steps 1 and 2. The attached schematic of the vapor extraction and treatment system shows the general arrangement of the remediation system. Two activated carbon vapor treatment columns will be connected in series to the line from the extraction well. When breakthrough occurs in the first column, it will be replaced by the supplier or steam regenerated on site. The

replaced or regenerated column will then be connected to the outflow from the backup column. In this manner, the outflow emitted to the atmosphere will pass through a fresh activated carbon column prior to discharge.

Applicability of Vapor Extraction to the Pacoima Facility Site

The "fingerprint" of the chemical release from the tank exhibits two consistent distinguishing characteristics. The first characteristic is concentrations of TPH (from EPA Test Method 418.1) in the range of 1,000 to 20,000 mg/kg. The second characteristic is a certain suite of volatile organic constituents from EPA Test Methods 8240 or 8010) that are consistently two or more orders of magnitude less than the TPH concentrations in the range of 10 to 200 mg/kg. The VOCs consist primarily of 1,1,1-trichloroethane (TCA), with the occasional presence of low concentrations (usually less than 50 mg/kg) of toluene, tetrachloroethylene (PERC), trichloroethylene (TCE), xylene, benzene, and dichloroethane (DCA).

The vapor pressures of these VOCs are high enough that a vapor extraction system will remove these compounds from soil. The primary factor affecting the remediation of VOCs by vapor extraction is the permeability of the soil matrix. Permeability of various soil types in both horizontal and vertical directions will be measured as part of the physical tests on soil samples described in Step 1.

Applicability of the vapor extraction system to the TPH constituents is complicated. The vapor pressures of most TPH constituents is low, and stripping of the soil with air alone is not anticipated to be greatly successful. For this reason, ERM-West, Inc. will be investigating enhanced vapor extraction techniques described in Step 4.

Identify and Purchase Remediation Equipment

ERM-West, Inc. will provide a list of equipment manufacturers and representatives who can provide the equipment and services to meet the design criteria. HR Textron will contract directly with the suppliers to obtain the equipment.

Prepare Construction and Installation Procedures

Specific procedures for construction and operation of the remedial system will be prepared prior to the final engineering design, to include:

- operation and maintenance;

- health and safety;
- sampling and analysis protocols for the remedial system; and
- quality assurance/quality control.

Obtain Environmental and Construction Permits

HR Textron will obtain all permits associated with installation of the soil remediation system. ERM-West, Inc. will provide technical assistance on any aspects of permitting, if requested.

Install the Soil Remediation Equipment

HR Textron will oversee installation of the soil remediation system that is designed. ERM-West, Inc. will provide technical assistance on any aspects of installation, if requested.

Reporting

During construction and startup of the remedial system, monthly progress reports will be prepared that summarize such items as recent and upcoming activities, deliverables submitted, and any problems encountered and steps taken to resolve such. At the end of construction and startup a final technical report will be issued that presents installation and startup activities, the final design of the system, and other related activities such as the results of installation and sampling of injection and extraction wells and bench testing. During full operation of the remedial system, quarterly progress reports will be prepared.

Step 4 - Bench Tests for Enhanced Vapor Recovery

Bench tests are recommended for determining methods of enhancing extraction of the oils released from the tanks. The use of these innovative techniques is necessary because the material to be removed from the soil has very low volatility. In the center of the affected area, for example, the organic phase contains 1,1,1-TCA in the range of 100 to 180 ppm and TPH (oils) in the range of 15,000 to 20,000 ppm. The material in the soil to be remediated is represented by a "solution" of these constituents. The 1,1,1-TCA has a low boiling point (74° C) and a high vapor pressure; whereas, the boiling point of the hydrocarbons in the oil fraction would be in the range of 200 to 400° C or higher and the vapor pressure is very low. Therefore, the

enhancement of the volatility of this material is necessary in order to accelerate the remediation process.

The following techniques will be considered for bench tests:

- vapor extraction with air at room temperature;
- vapor extraction with hot air at approximately 150° C;
- vapor extraction with solvent at room temperature; and
- vapor extraction with solvent and hot air.

The first two techniques are known from commercial applications. The last two techniques are proprietary and will be tested for this application.

The bench tests will be performed by ERM-West, Inc. and Global Geochemistry Corporation. It is expected that 10-12 Shelby tubes collected during drilling of the extraction well will be used for these tests. The duration of each test will vary from 24 to 72 hours. The equipment for bench testing is designed to operate with minimum supervision. The confidentiality of data recorded will be assured.

Data from the bench tests will be used to evaluate the effectiveness of potential modifications to the vapor extraction system. If the tests using heated air or vapors of an environmentally acceptable solvent indicate successful reduction of TPH constituents in the soil, HR Textron will apply for a permit to operate the vapor extraction system using these techniques. ERM-West, Inc. anticipates that use of the vapor solvent will be in a "closed loop" through a carbon filter. The solvent used will be one that is not readily adsorbed by activated carbon. In this case, no release of vapors to the air will occur. Solvent vapor laden air will be injected into the formation, extracted through the central well, pumped through the carbon filters and then reinjected. Modification of the system to include only heated air would require a minor modification of the environmental permits.

SECTION 4

POST-REMEDIATION SAMPLING FOR SITE CLOSURE

In order to verify that the remediation system was effective in removing VOCs and petroleum hydrocarbons to a level acceptable to the RWQCB staff, sampling will be conducted in the area affected by the tank release. The criteria for what concentrations of contaminants are acceptable to remain after remediation and the number of confirmation borings necessary will be coordinated with the staff.

Verification will be conducted by installing each soil boring with a 10-inch diameter hollow stem auger to a depth of approximately 50 feet. Ring samples will be collected using a modified California split-spoon sampler from 5 feet below ground level to 50 feet at 5-foot intervals. The bottom sample from the 10-inch boring will be taken to verify that the bottom of the bore hole is in the clay layer.

Physical characteristics of sampled soils will be logged by a qualified ERM geologist. Soil samples will be screened for petroleum hydrocarbons with an HNu PID 101 meter or its equivalent. Samples will be labeled as to hole, depth and time; placed in a chilled cooler and noted on chain of custody forms.

To protect against the possible introduction of contaminants to the borings, steam cleaned augers will be used on each boring. All sampling equipment will be steam cleaned between holes and cleaned in an Alconox solution and rinsed with distilled water between sampling intervals in the same hole.

A steel conductor casing six inches in diameter will be placed inside the hollow stem auger and grouted into place by pumping a bentonite/cement slurry through a tremmie pipe into the bore hole while withdrawing the 10-inch augers. Once the augers are removed, a rubber plug will be pushed down through the steel conductor casing filled with grout to verify a good bottom-to-top seal in the bore hole and to remove grout from inside the casing. After the cement cures, the bottom plug will be drilled out, and 4-inch hollow stem augers will be used to complete the boring below the clay layer to a depth of 80 feet. Ring samples will be collected at 5-foot intervals using a modified California split-spoon sampler.

Samples from the confirmation borings will be analyzed at 10-foot intervals for VOCs using EPA Methods 8010 and 8020 and for petroleum hydrocarbons using EPA Method 418.1. The samples not analyzed for chemical constituents will be held at the laboratory. In the event that a sample indicates concentrations near or exceeding the criteria developed by the RWQCB, the held samples immediately above and below that sample interval will be analyzed for VOCs and petroleum hydrocarbons. Sample turnaround in the laboratory will be rapid enough that holding times will not be exceeded for the chemical analysis.

APPENDIX A

SCHEDULE

SCHEDULE

The following is the proposed schedule for the remediation plan. Scheduling the drilling subcontractor may take up to two weeks from notification to proceed.

Step 1

Week 1	Production Well Installation

Step 2

Weeks 1-2	Installation of Air Injection Wells
Weeks 1-4	Laboratory Analyses of Soil Samples Collected During Installation

Step 3

Weeks 3-7	Design
Weeks 8-9	Equipment Order
Weeks 8-20	Obtain Environmental Permits
Weeks 10-20	Equipment and Materials Supply
Weeks 20-22	Equipment Installation

Step 4

Weeks 4-22	Enhanced Recovery Testing

Vapor Extraction System Startup

Weeks 23-24	Equipment Testing
Week 24	Continuous Operation

J. Wheeler

STATE OF CALIFORNIA — GEORGE DEUKMEJIAN, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CALIFORNIA 91754-2156
(213) 266-7500

6/12/90 Telecopy to: L. Allderdice
I. Kaplan
D. Dunbar

RECEIVED
JUN 18 1990
FACILITIES ENGINEERING

RECEIVED
JUN 12 1990
VP Legal and Contracts

6/15/90 cc: P. Duff
M. Bell
W. Moses
copies in file

June 11, 1990

John Hedges
HR Textron Inc.
25200 West Rye Canyon Road
Valencia, CA 91355

REMEDIAL ACTION PLAN FOR SOIL CLEANUP - HR TEXTRON FACILITY, PACOIMA (CAO NO. 89-104)

The revised remedial action plan (RAP), received May 21, 1990, has been reviewed. Although you have provided some additional material, the overall workplan for Soil Vapor Extraction (SVE) remains a framework and support detail still must be provided for the proposed program. It is understood that some additional subsurface investigation has been performed to provide specific design information. This soil characterization information was not included in the RAP.

In interest of providing you the maximum opportunity to remediate your long-standing waste discharge, we will approve a vadose zone sampling and characterization phase including Step 1 and Step 2 of this workplan. Since Steps 1 and 2 are not sufficient to characterize site conditions for SVE evaluation the approval is made with the proviso that the following comments be incorporated into implementation:

(1) Even without appropriate determination of soil vapor distribution, it is obvious that contamination reported at soil boring B-3 will be forced away from the extraction well. The entire circumferential effect of injection must be considered for the proposed extraction/injection well geometry to be acceptable design-wise. Because of the on-going dispute over relative permeabilities of various horizons defined by existing data, it is even more obvious that the proposed continuous screening may be inappropriate. Review placement of the proposed extraction/injection wells. Utilize <u>all</u> information concerning contamination and physical characteristics of material comprising the site stratigraphy. As per the findings of your March 14, 1988 report, prepared by Leighton and Associates, the lateral limits of contamination to the west and in the area of the hazardous waste storage must be determined.

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(2) In order that proper evaluation be made of the proposed design for cleanup, the following additional parameters must be measured for a representative number of samples for each of the major lithologies present. According to your March 14, 1988 report, the upper fifty (50) feet of the area is comprised of silty sand interspersed with discontinuous layers of clay and poorly sorted sands and gravels.

(a) bulk density
(b) percent organic carbon content
(c) total porosity
(d) field air and hydraulic permeabilities
(e) laboratory solvent permeability
(f) site specific partitioning coefficients

(3) Provide, in a tabular form, the following physical properties for the compounds encountered as waste discharge:

(a) compound molecular weight
(b) water solubility
(c) vapor pressure
(d) Henry's Law Constant
(e) water organic carbon distribution coefficient (indicate sources)

(4) The strippability of the various major lithologic units must be determined to support the design. Your approach must be submitted as part of a characterization progress report.

(5) Sampling at five (5) foot intervals is not acceptable. Given the stratigraphic control and available analytical chemistry you must obtain undisturbed driven samples obtained for physical and chemical testing from representative units or at lithologic or contaminant changes. The change between Shelby Tube sampling, proposed for the extraction well under Step I, and California Split Spoon, at the injection wells under Step II, is puzzling. Unless there is a specific rationale, use only the California Split Spoon. Continuous sampling and logging must be performed at those locations not previously drilled. All logging must include percent recovery for each sampling interval. The data from these and earlier logs must be compiled into isopach maps and elevation maps for the tops of the upper and lower postulated clayey horizons.

(6) The PID, proposed as a screening device, is not appropriate as a sole criterion for selection of samples for laboratory analyses. Determine whether the device's lamp is appropriate for the photoionization constants of the various contaminants.

(7) The proposed EPA Methods 418.1 is required to be supplemented by EPA Method 8015 (modified). The modification must be an extended version, not just the shortened fuels version. Detection limits of at most 1 mg/kg are required. Raw chromatograms must be submitted for the EPA Method 8015 (modified). The proposed EPA methods 8010/8020 are acceptable provided the practical quantitation limits (PQLs) of 5-10 ug/kg are met.

(8) Complete QA/QC documentation must be provided for all analytical results. Although this is a typical requirement, it assumes even greater importance due to previous retroactive representations concerning crucial laboratory error by HR Textron. QA/QC must include the following, at a minimum:

(a) Calibration or column check
(b) Check samples
(c) Laboratory control samples
(d) Blanks (field, trip, sample, equipment and reagent)
(e) Surrogate spikes
(f) Duplicates
(g) Matrix spike and spike duplicates

In addition:

(a) Total recoverables must be reported, blank adjustment is not acceptable
(b) Report and explain all QC reruns or other corrective actions. Take appropriate corrective action if recoveries are outside limits
(c) Report all tentatively identifiable compounds even if non-quantifiable or non-target
(d) Describe "sub-sampling" methodology
(e) Report limits of detection, not merely method detection limits
(f) Explain matrix limitations and detection limit calculation
(g) Explain and justify extraction method
(h) Provide collection, sample receipt, preparation or extraction, analysis and reporting dates on laboratory sheets

(9) A multi-level soil gas survey must be performed with respect to the former waste storage tanks to establish baseline vapor distribution condition, prior to initiating any extraction/injection program. Details may be provided to this Regional Board as part of a characterization progress report. Permanent installation of some probes will be required for

monitoring during the vapor extraction program and for post-extraction monitoring.

You must provide a minimum of seven (7) days notice in advance of initiating field work, in order to allow staff of this Regional Board to be present and to obtain split samples if desired. The remaining "Steps" in the RAP must be revised in accordance with our previous letter, dated April 19, 1990 and resubmitted. A final report on Steps I and II is due to this Regional Board by July 31, 1990. It should be accompanied by the revisions to the remainder of the RAP.

If you have any questions, please call me at (213) 266-7522.

Hank H. Yacoub

HANK H. YACOUB
Supervising Water Resource
Control Engineer

cc: SEE MAILING LIST

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bcc/without attch.: R. J. Millman
D. T. Stewart
M. D. Bell
B. Stearns (ERM)

HR TEXTRON

with attch: J. Wheeler → B. Millman/file 7-26-90

HR Textron Inc.
a Subsidiary of Textron Inc.

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JUL 26 1990
ENVIRONMENTAL

July 16, 1990 JWH-90-37

Mr. Hank Yacoub
California Regional Water
Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Subject: Response to Comments on Steps 1 and 2 in the Remedial Action Plan for Soil Vapor Extraction - HR Textron Facility, Pacoima

Dear Mr. Yacoub:

As reported in our May 31, 1990 progress report, the status of our remediation is that ERM-West has completed the drilling, soil sampling and installation of the vapor extraction wells as described in the April 3 and revised May 21, 1990 RAP's. The technical methods for collecting and analyzing the soil samples did not significantly change in the revised May 21 RAP. ERM-West proceeded to implement the soil characterization portion (Steps 1 and 2) of the RAP based on the closing statement in your April 19, 1990 letter: "Meanwhile, you may proceed with the soil characterization portion of the plan to generate the needed data for the development of the final RAP."

Concerning the points raised in your June 11, 1990 letter:

(1) ERM-West reviewed placement of the extraction/injection wells, and they are satisfied that the placement is appropriate. The extraction well is located at the center of the cylindrical plume, and the injection wells are located at or near the margins of soil contamination. In particular, the results from chemical analyses of the soil samples collected during Steps 1 and 2 (attached) indicate that the wells are located at the perimeter of the plume.

The attached data support the description of the lateral and vertical extent of the tank release above the "50-foot clay" as set forth in the data supplied to the RWQCB by HR Textron's consultants.

Based on the results from soil samples collected from IW-2, soil

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contamination to the west is limited to trace (low ppb range) concentrations in the soils between the shallow clay layer and the "50-foot" clay layer.

Initial use of the vapor extraction system (VES) will be to remove volatile vapors from the soil with minimal (if any) pressure added to the injection wells surrounding the extraction well. We have no reason to expect that contamination in the area will be forced away from the extraction well. The next phase of the VES may incorporate use of injection of air containing some solvent in the vapor phase if the laboratory bench scale tests are successful.

(2) A representative number of samples from the soil borings were submitted to a geotechnical laboratory for analysis for the parameters listed in Steps 1 and 2 of the RAP. The entire soil sample was used in testing for the parameters that were approved in your April 19 comments.

Once the VES is operating, the area around the extraction well will no longer be in equilibrium. The full spectrum of volatile organic compounds and the more volatile portions of the cutting oils will be drawn toward the extraction well. ERM-West assumes that air samples will be required on a regular basis to determine the constituents entering the carbon adsorption units. Partitioning and natural adsorption/desorption processes would appear to be academic to the process.

Once the VES operation appears complete, confirmation sampling will be required to close the site.

If you wish to pursue requiring these geotechnical and field analytical tests, please explain why the tests are necessary to determining whether the VES will operate effectively.

(3) HR Textron can provide a table of the physical properties of the compounds discharged. However, this information is readily available in standard chemical reference texts, and we request an explanation for the need to separately tabulate this data. Vapor extraction is a standard technology that will remove volatile organic compounds. The bench scale tests for the nonstandard portion of the VES will either prove to be likely successful based on laboratory data or will not be used for remediation.

(4) The strippability of the major lithologic units will be evaluated during the bench scale tests. Part of the bench scale process will be to evaluate the effectiveness of air stripping without enhancement with solvent. In this way, we can investigate

what the proposed method can accomplish beyond standard vapor extraction.

(5) As stated in the opening of this letter, ERM-West has already completed the soil characterization phase of the RAP as approved in your April 19 letter. The field sampling effort was described in the May 31, 1990 progress report. Soil samples were collected using a California split spoon. The amount of sample recovered in each interval was recorded on the boring logs.

Continuous sampling was not conducted at any of the boring locations except in the lower part of the borings where the "50-foot" clay was expected, and in fact was, encountered. No boring was drilled more than 10 feet from a previously sampled location. Based on the consistency of the boring logs for the previously installed borings, continuous sampling is not deemed necessary. The boring logs for the injection/extraction well locations were consistent with the previous geologic logs.

With the density of data that is available from all the boring logs in the area of the tank release, isopach and elevation maps for the clay horizons will be developed as requested in your letter.

(6) The photoionization detector (PID) that was used at the site was an Environmental Instruments 580A calibrated to benzene equivalent. The lamp in the unit was a 10.0 ev lamp capable of detecting chlorinated compounds. The response factor on the unit was enhanced to 1.8 to give a more direct reading of trichloroethane and tetrachloroethene concentrations. All soil samples collected were analyzed for chemical constituents as shown on the attached report.

(7) As stated above, soil characterization proceeded as approved by you and according to the RAP. Analysis of soil samples for EPA method 8015 (modified) was not considered because there was no reason to believe that fuels were stored in the tanks. Volatile compounds in solvents that were stored in the tanks also occur in fuels. Analysis by this method could have therefore misleading indicated fuels.

The long version of the modified 8015 methodology is not an approved standard analysis. The Department of Health services (DHS) does not have an approved standard methodology for conducting this test. Each laboratory that provides this analysis does so by its own internal methods. Such an analysis is therefore

inappropriate except for informational purposes.

Attached are the analytical results from the soils samples collected during Steps 1 and 2. The practical quantitation limits of 5-10 ug/kg were met except in the strongly contaminated samples from the center of the tank release (Boring EX-1).

(8) Chemical analysis of the soil samples collected during Steps 1 and 2 were performed by Global Geochemistry Corporation (GGC) in Canoga Park, California. GGC is certified by DHS and conforms to the standards for quality in the reporting of chemical analyses required by DHS. ERM-West is satisfied with the level and scope of QA/QC information supplied by GGC.

(9) Based on the limited extent of the contamination determined from direct analytical results from soil samples, a multi-level soil gas survey does not seem warranted. Soil gas surveys are normally used as a reconnaissance tool to detect areas where contamination may exist so that drilling and soil and water sampling operations may be conducted more efficiently.

The analytical results of soil samples attached to this letter provide direct evidence of the concentration and extent of the soil affected by the tank release to much greater detail than a soil gas survey could provide. HR Textron therefore does not plan to conduct a soil gas survey at the facility.

Installation of probes within the area to be remediated may adversely affect the progress of remediation by further disturbing the soils and by potentially obstructing air flow through the soils with impermeable grout seals. When operation of the VES is completed, the confirmation sampling program can address the presence and concentrations of residual chemical constituents.

The May 31 progress report combined with the attached chemical analyses comprises the sum total of information that would be provided in the final report for Steps 1 and 2. If you agree, isopach and elevation maps of the clay layers will be included in a subsequent progress report.

ERM-West will be developing a revised RAP for submission by July 31, 1990.

Thank you for your courtesy and consideration.

Should you have any concerns or questions about these or other matters, please contact me so that we may achieve our mutual objections.

Very truly yours,

J. W. Hedges
Vice President
Contracts and Legal

JWH:rb

Attachments

STATE OF CALIFORNIA

GEORGE DEUKMEJIAN, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CALIFORNIA 91754-2156
(213) 266-7500

Copy: R. J. Millman
D. T. Stewart
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W. C. Moses
J. F. Wheeler
reb
8/17/90

RECEIVED
AUG 17 1990
VP Legal and Contracts

FAX to ERM-West
D. Dunbar / B. Stearns } 8-17-90

August 14, 1990

John W. Hedges
HR Textron
25200 West Rye Canyon Road
Valencia, CA 91355-1265

REMEDIAL ACTION PLAN - HR TEXTRON FACILITY, PACOIMA (CAO 89-104;

Your letter dated July 16, received July 26, 1990, did not provide information and data as required to allow full evaluation of your resubmitted remediation plan. It indicates that you do not plan to completely delineate contamination at your site or to develop a responsive remediation plan. The following are merely examples of the situation: (1) although you have often cited the "barrier" properties of the underlying "clay layer", important measurements such as gas or hydraulic permeabilities have not been provided, (2) substantial amounts of analytical data from this site are demonstrably suspect, not due to laboratory contamination or "cross-contamination", but due to improper sampling protocols and missing or incomplete QA/QC.

Without heeding staff's questions and data requirements, you cite our April 19, 1990, letter as if it were a carte blanche for site characterization. Specific conditions were contained in that letter and it was called to your attention that "Although some site specific physical tests are proposed for "soil" samples, others must be included as well." [emphasis added]. In fact "...general comments were provided so that a revised remedial action plan may be prepared that is complete...". You were allowed to proceed with Steps 1 and 2 to "...generate the needed data for development of a final RAP." Subsequent submittals by you made it clear that guidance was required in this, thus our June 11, 1990 letter indicated relatively specific informational needs to you. These were based upon Board staff experience in other vapor extraction programs and upon consideration of various EPA experiences.

Although it is of great concern to us that the time schedule for remediation will suffer, your May 31, 1990, progress report and the

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recent submittal of laboratory analyses do not adequately satisfy the required site characterization. Since "Steps 1 and 2" are not complete, a supplemental workplan, which responds to the information needs expressed in our June 11 and July 24, 1990 letters and to the necessity to complete the delineation of site contamination, is due to this Regional Board by September 5, 1990. Note that you must meet specific elements of the CAO as well as Subchapter 16 regulations, which require you to satisfy this Regional Board that remediation will be effective.

Staff will be providing specific comments on your resubmitted remediation plan which was received on July 31, 1990. If you have any questions, contact Hank Yacoub at (213) 266-7522.

Robert P. Ghirelli, D. Env.
for Executive Officer

cc: Jorge Leon, SWRCB, Office of Chief Counsel

Copy 9/24 Lot - D Dunbar

STATE OF CALIFORNIA GEORGE DEUKMEJIAN, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
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101 CENTRE PLAZA DRIVE
MONTEREY PARK, CALIFORNIA 91754-2156
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Woody

cc D Stewart
W. Moses
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9-24-90

September 20, 1990

RECEIVED
SEP 24 1990
VP Legal and Contracts

John Hedges
H.R. Textron Inc.
252 W. Rye Canyon Road
Valencia, CA 91355

REMEDIAL ACTION PLAN FOR SOIL CLEANUP H.R. TEXTRON FACILITY PACOIMA (CAO 89-104)

Your revised remedial action plan, received on July 31, 1990, has been reviewed in conjunction with the various available data concerning the subject site. We are anxious for you to proceed with the remediation at the earliest possible time but the workplan itself remains inadequate and the site characterization is still incomplete.

The following general comments are provided to enable you to prepare acceptable revisions to the remedial action plan (RAP):

1. The summary of previous investigative work in the RAP, including elements of the previous investigations having specific applicability for the RAP, is incomplete. Lateral and vertical extents of contamination in the vadose zone have not been determined since most samples below the "clay barrier" were disturbed, the eastern side of the excavation was not investigated fully and the area around B-3 has not been evaluated.

2. Site specific physical tests were proposed for "soil" samples but no results have been presented. You have not explained how any of the tests have been used in the "...remediation process and design engineering....". Some form of "strippability" evaluation is still needed, especially since you have chosen to screen across a number of horizons with varying gas permeabilities. Your supplementary workplan, September 1990, indicated that you wish to discuss further tests with us.

3. The crucial issue of cleanup levels is still not discussed aside from a suggestion that these will be determined in conjunction with staff of this Regional Board. The RAP must discuss cleanup levels for all detected contaminants and

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original in file

propose appropriate means for their determination.

4. If the RAP is relying upon bench testing to provide key elements of remediation, then appropriate details must be provided. Referring to a "...specialized research laboratory..." is not sufficient. Explain how test results will be integrated into remediation. Simply stating that "...depending on system performance..." there may be extensions to the system or that any new technique will be discussed with the RWQCB does not allow evaluation in the RAP. If the data are "confidential" then the bench test results will be difficult to accept and evaluate.

5. You have cited four possible techniques for vapor extraction. Further discussion of their applicability to the specific site contaminants and to the various horizons within the vadose zone is still necessary.

6. You have still provided only a brief outline of the proposed systems. Additional details are required with respect to the extraction and treatment system.

7. Operation and maintenance are keys to achieving the described cleanup. Specifics have still not been provided. Despite the lack of a formal design, operation and maintenance can still be described.

8. Monitoring during the operation of the system is a necessity. Provide sufficient details of monitoring procedures and protocols to allow evaluation, e.g. Tedlar bags for gas sample transport will not be acceptable. Vapor stream sampling is only part of the monitoring that must take place. An array of sampling points must be installed to monitor the effectiveness of the extraction process. Gas sampling protocols are not completly described.

9. A health and safety plan has not been included. This deficiency should be corrected with more than a four line statement that it depends on final design.

10. The SCAQMD permit is a definite necessity. Also describe any other appropriate permitting requirements. Indicate any other parties who may need to be notified or involved in the review process.

11. There is still no description of how field operations will be documented. Provide sufficient detail to convey that all operations and monitoring will be adequately documented.

12. The proposed post-remedial verification is still inadequate. For example soil gas concentrations must be monitored and "rebound" phenomenon evaluated. Any modeling decisions must be made before RAP approval. Simple driven soil samples will not be enough to demonstrate clean since you are using vapor

phase cleanup techniques.

13. Analytical protocols are not provided. Utilize apropriate EPA and ASTM documentation to develop protocols and procedures. QA/QC procedures are not described. Note that analytical results from sampling in May 1990 for Steps 1 and 2 are still not documented.

14. Progress reports will be on a monthly basis, not quarterly as proposed. A technical report is necessary at the completion of installation and startup. Another must be prepared which summarizes the cleanup and provides verification that cleanup is complete.

15. It is still unlikely under this proposed remediation program that all contaminants will be removed from the soil. Please discuss what implications this will have on future land use of this property.

These are general comments. It is left up to you and your consultant to provide sufficient details in the RAP to enable evaluation by staff of this Regional Board. Another revised RAP is due by October 9, 1990. Meanwhile, you must provide the soil characterization which was not covered in Step 1 and Step 2.

If you have any questions, please contact me at (213) 266-7522.

for HANK H. YACOUB
Supervising Water Resource
Control Engineer

HHY:PBC:ES:wl

cc: Jorge Leon, SWRCB, Office of Chief Counsel
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TECHNICAL EVALUATION OF RWQCB'S AUGUST 31, 1990 RESPONSE

Prepared For

HR Textron

Prepared By

ERM-West, Inc.
1920 Main Street, Suite 600
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October 1990

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INTRODUCTION

ERM-West, Inc. has been retained by HR Textron to provide environmental consulting services for HR Textron's Pacoima facility. These services are in three areas: (1) assist in performing remediation of shallow soil containing volatile organic chemicals (VOCs) and petroleum hydrocarbons, (2) review the administrative record concerning actions at the facility regarding Cleanup and Abatement Order 89-104 (CAO), and (3) provide technical opinions on migration of contaminants from an underground tank release at the HR Textron facility at 10445 Glenoaks Boulevard, Pacoima, California.

This document addresses the technical issues raised in the August 31, 1990 Response of the Los Angeles Region Water Quality Control Board (RWQCB) to the petition filed by HR Textron with the State Water Resources Control Board (State File No. A-684). The issues raised by the RWQCB are summarized on page 16 of the Response:

> Therefore: (a) leakage has had up to 24 years to migrate downward, (b) significant concentrations of liquid, dissolved or adsorbed phase VOCs have been measured from the surface to inside the last fine-grained horizon, (c) low levels of VOCs represent gas phase transport in the underlying coarse-grained intervals, (d) petroleum hydrocarbons, tracking from surface discharge to the lowest depths drilled, represent residual waste, (e) downward travel of contaminants has not been effectively, and (f) ground water fluctuations place the water table historically higher.

Issues (b) through (f) are discussed below, while item (a), the possible time of the tank release is discussed separately.

Much of the detailed technical support concerning these issues is contained in the Technical Evaluations submitted by ERM-West, Inc. in January and March 1990. Additional technical discussion is contained in testimony by various experts at the RWQCB Hearing on this matter.

VAPOR PHASE TRANSPORT

In the RWQCB analysis of extent of contamination, the August 1990 Staff findings mention (2d, page 5) that there is a "tendency of VOCs to volatilize and migrate as dense gases,..." and later state (page 16) that "(c) low levels of VOCs represent gas phase transport in the underlying [below 50 feet] coarse-grained intervals,..."

This was a new transport mechanism argument raised by the RWQCB Staff at the April 1990 hearing transcript. VOCs generally occur as a "halo" around liquid or solid phase releases containing VOCs into soil. The VOCs do occur as an associated vapor phase because they are generally less soluble in the released liquid than in air.

In the January 1990 Technical Evaluation by ERM-West, Inc., the phenomena related to finger migration of non-aqueous phase VOCs through soil was discussed. Reference 13 (Hern and Melancon, 1986) to the January 1990 Technical Evaluation addresses the volatilization process (page 45):

> Volatilization of chemical vapor to the atmosphere is an extremely complex process controlled by soil, chemical and atmospheric influences. As a general rule, however, chemicals with a large value of Henry's Constant Kh [VOCs] are more volatile than those with a low Kh and tend to be relatively independent of atmospheric conditions. Since volatilization takes place in the vapor phase, processes which limit vapor diffusion, such as increased adsorption and increased water content, can decrease the amount of volatilization. Conversely, processes which increase vapor diffusion such as increased temperature and increased total concentration will increase the amount of volatilization.

Since the atmosphere contains a low concentration of VOCs, the natural tendency of VOCs is to migrate through the soil air toward the ground

surface once released into soil. This tendency is the basis for using soil gas surveys at a relatively shallow depth to detect deeper releases of VOCs detected identical to those released at the HR Textron site. Soil gas surveys are a proven reconnaissance tool for detecting releases of VOCs.

For vapor phase migration to occur independently, the vapor phase must be sufficiently concentrated to create a much denser than air phase. At those concentrations, some partitioning to the soil water as well as adsorption onto natural organic carbon and hydrocarbons must occur. This condition would leave a detectable residue of VOCs bound to the soil along the migration pathway beneath the clayey layer. No pattern of VOCs in soil to substantiate an independent vapor migration process was detected below the clayey layer using accepted engineering practice for soil sampling and required EPA methodology for laboratory analysis (Appendix A).

Theoretically under special conditions, VOCs can migrate independently as a vapor, but the required conditions for independent dense vapor migration include the subsequent creation of liquid and adsorbed phases in the soil by the descending vapor (i.e., dense vapor migration will leave significant concentrations of liquid and adsorbed VOCs on the soil). According to Devitt et al, 1987 (Soil Gas Sensing for Detection and Mapping of Volatile Organics, page 109), the following are required conditions for dense vertical vapor migration:

> The volatile components of the oil material will...sink through the soil air if the partial pressure of the vapor is sufficiently high and if the vapor is denser than air. The rate of migration will be a function of the soil resistance to vapor flow, of the amount which is redissolved into the liquid phase, and of the amount which is adsorbed or degraded.

According to Reference 8 in the January 1990 Technical Evaluation (Dragun, 1988, pages 263-264), diffusion is the dominant mechanism for vapor migration:

Diffusion in this text is defined as the average rate of migration or velocity of a chemical in air. Diffusion can be caused by three different gradients. First, diffusion can be caused by a concentration gradient. Chemicals should migrate from regions of higher concentration to regions of lower concentration; the greater the difference, the greater the diffusion rate. Diffusion which is primarily dependent upon concentration gradient is known as concentration diffusion or ordinary diffusion. (Emphasis added)

Second, diffusion can be caused by a total pressure gradient. For example, helium and other light elements will concentrate in the upper portions of the earth's atmosphere due to diffusion driven by pressure differences in the atmosphere; these gases respond to the pressure gradient created by gravity, but they do not respond directly to gravity. Diffusion which is primarily dependent on a pressure gradient is known as pressure diffusion.

Third, diffusion can be caused by temperature differences. In a gas mixture, the lighter components will concentrate near the warmer zone. If the temperature gradient is maintained, the gases will continue to separate until concentration diffusion balances thermal diffusion. Diffusion which is primarily dependent upon thermal gradients is known as thermal diffusion.

Concentration diffusion, pressure diffusion and thermal diffusion affect the velocity of a chemical in the atmosphere. However, it is important to note that, under normal circumstances in soil systems, only concentration diffusion is important. (Emphasis added)

Since the lowest concentration condition is ultimately the atmosphere above the ground surface, the most probable pathway for migration of VOCs is toward the ground surface. This trend of VOC migration is the property

that reconnaissance soil gas survey techniques utilize to detect the presence of VOCs whose molecular weight is greater than the molecular weight of air.

On pages 270 through 272 in Dragun (1988), soil properties affecting diffusion and volatilization are discussed. The diffusion rate for vapor phase VOCs in soil are affected by four soil properties:

- Physical reduction in the volume of air available through which diffusion may occur due to the physical presence of soil particles, the tortuous path which VOC molecules must follow and the presence of some blocked off areas in the soil which contain air space unavailable for diffusion;

- The physical presence of soil moisture which further reduces the air volume in the soil through which VOCs may migrate;

- Adsorption sites in the soil (primarily associated with organic matter and clay particles) which slow the migration rate by binding VOC molecules to the soil (more effective if soil conditions are dry); and

- Presence of dissolved higher molecular weight organics (like the TPH constituents present in the tank release) increase the solubility of VOCs in soil water.

Independent vapor phase transport is an unlikely mechanism. If it did occur, concentrations of the vapors would have to be high enough where partitioning into the soil water phase plus adsorption onto the soil would have to occur.

The data set provided from the analyses below the 50-foot clay layer are most consistent with the conclusion that the materials from the tank release have not migrated below the 50-foot clay layer. These readings that have been attributed by the RWQCB to migration through the clay layer have instead been shown to be naturally occurring background, cross-contamination or laboratory error. The new analytical data generated from

borings installed by ERM-West, Inc. from drive samples through a section of the 50-foot clay directly below the release reveal that the TPH and VOCs from the tank release have not to date penetrated the 50-foot clay to coarse-grained materials below (Appendix B).

PETROLEUM HYDROCARBONS

Concentrations of total petroleum hydrocarbons (TPH) have been reported in nearly every soil sample obtained at the site. Significant concentrations have been reported in the cylindrical plume of contamination above the 50-foot clay layer. Low concentrations of TPH (less than approximately 20 ppm and in some cases less than the laboratory detection limit) were found in a background boring 400 feet away from the site, in soil above the 50-foot clay layer away from the cylindrical plume, and in soil below the 50-foot clay layer.

Of special interest are the concentrations of TPH reported below the 50-foot clay layer. As noted in the Mr. Dunbar's testimony, these TPH concentrations represent naturally occurring background concentrations of TPH, or cross-contamination (in the case of spikes of TPH in excess of approximately 10 ppm).

There are three potential mechanisms for the occurrence of TPH below the clay layer: (1) as naturally occurring background, (2) as the result of cross-contamination during drilling and sampling, and (3) the migration of contaminants through the clay layer. The first two mechanisms are strongly supported by the data collected at the site for four reasons. A detailed discussion of the technical support is in pages. 11-13 of Exhibit B of March 1990 Response to Staff Findings, and in the testimony of Professor Ian Kaplan and Mr. David Dunbar before the Regional Board in April 1990, as summarized below:

(1) TPH concentrations are at low levels, almost all between 2 and 10 ppm, consistent with the range of concentrations found in the background boring 400 feet away.

(2) There is no discernable spatial trend, either vertically or laterally to the values of TPH in soil samples beneath the clay layer. This is in direct contradiction to the clear vertical and lateral trends in TPH above the clay layer that define the cylindrical plume.

(3) TPH concentrations below the clay layer are three orders of magnitude lower (from 1 to 32 ppm below compared to 1,200 to 20,000 ppm in the tank release) than those above the clay layer attributable to the tank release.

(4) No valid VOCs were associated with the TPH detected in any of the soil samples below the clay layer. The presence of VOCs is a distinguishing characteristic in the TPH values above the clay layer that are part of the tank release. These VOCs migrate faster through soil than do TPH, and would be found in conjunction with any TPH that had migrated through the 50-foot clay layer.

The Regional Water Quality Control Board has proposed that fingerprinting analyses that show a correlation between a sample containing below the clay layer with hydrocarbons from a sample from the contaminant release above the clay layer implies migration of TPH through the clay layer (August 1990 pages 6 and 15). For the reasons discussed above, and confirmed through testimony by Professor Ian Kaplan who performed the fingerprinting, this correlation does not imply migration through the clay layer, but instead indicates cross-contamination in the samples composited and analyzed below the 50-foot clay layer. Cross-contamination could have occurred with extremely small particles of relatively high TPH concentration particles. VOCs in a high TPH particle transported downward through the drilling process would likely be removed through volatilization. This cross-contamination material would have been either removed through sampling or immobilized through the grouting process.

Although the hollow-stem auger drilling and sampling process does provide appreciable protection against cross-contamination, such protection is not complete. The degree of concern about cross-

contamination is reflected in the strenuous decontamination procedures employed during drilling and sampling.

For these reasons the RWQCB's contention (pages. 15 and 16 of the RWB Petition) that the TPH found below the clay layer represents residual waste from TPH migration (through retardation of TPH on soil particles) through the clay layer and the sandy layers below is not consistent with the data and represents an unlikely interpretation.

CONTINUITY OF THE CLAY LAYER

A review of the site geology and hydrogeology provides key supporting information for continuity of the clay layer at 50 feet. The lithologic and stratigraphic characteristics of the soil profile based on soil information prior to the installation of the 1990 borings is summarized in the January 1990 (pages 3-4 and attached boring logs) and March 1990 (pages 2-4 and Table 1) Technical Evaluations by ERM-West, Inc. attached to petitions by HR Textron to the RWQCB.

Boring logs from one extraction well and four injection wells (Attachment A) were provided to the RWQCB on July 31, 1990. With the completion of these borings, there are now 18 borings in the immediate vicinity of the tank release, 16 of which penetrated through and/or into the 50-foot clay layer. ERM-West, Inc.'s current evaluation of the data concerning the clayey layer is consistent with the interpretation from the Technical Evaluations:

"... fine-grained layer consisting of a fine sandy, silty clay was found at depths of 46.5± to 52.5± feet below grade. Thickness of this fine-grained layer ranges from 2 to 4 feet."

Since the clayey layer is described in 13 borings that penetrate to 50 feet (Table 1 and new data in Appendix B), and since the area described by the borings is approximately 70 feet by 50 feet encompassing the former location of the tank, the clay layer is therefore justifiably interpreted as continuous beneath the area of the tank release.

The RWQCB contentions in support of their hypothesis that "the downward travel of contaminants has not been effectively blocked" are generally divided in two parts: (1) that the clay barrier is not continuous beneath the site, and (2) that the clay layer does not retard migration of contaminants. These contentions are addressed separately below.

The RWQCB has contended that the alluvial materials of the unsaturated zone include both coarse-grained materials (primarily sands and gravels) and fine-grained materials (including sandy and clayey silt to sandy and silty clays), and that the upper 50 feet seem to represent channel deposits, while the lower 50 feet may represent fan deposits. Regardless of the depositional environment, the 50-foot clay layer is representative of the alluvial materials described by the RWQCB, and as shown in the January and March 1990 Technical Evaluations, is continuous beneath the site.

The RWQCB has contended (pages 17-18) that early interpretations of the 50-foot clay layer by Leighton & Associates as a clay lens imply that the clay layer is discontinuous. However, as additional data concerning the subsurface soil conditions was collected, Leighton & Associates revised their interpretation of the 50-foot clay layer to that of one being continuous beneath the site (Leighton & Associates, 1989). As additional data was collected by ERM-West, Inc., this later interpretation was confirmed. It is a common and accepted professional engineering practice to update interpretations of subsurface conditions as additional data are obtained.

The RWQCB has stated that varying descriptions of the 50-foot clay layer between several boreholes imply a discontinuity, or a "window" in the clay layer. The RWQCB does not cite specific borehole locations and/or lithologic descriptions in question. However, we have reviewed the descriptions of the subsurface lithology as presented in the Leighton & Associates and ERM-West, Inc. investigations (as discussed in the Technical Evaluations, Transcripts and Table 1 herein) and find them entirely consistent with a 50-foot clay layer that is continuous beneath the site.

The RWQCB has stated that the possibility that the 50-foot clay layer may not meet the permeability requirements of a Subchapter 15 landfill liner implies that the material will not act as a barrier to contaminant migration. The 50-foot clay layer material is not intended to act as a landfill barrier, but instead as a retardant to contaminant migration while remediation takes effect. The RWQCB confirmed the retardation potential of the 50-foot clay layer in their most recent Petition.

The RWQCB (August 1990, page 18) has stated that the penetration by contaminants of the uppermost clay layer at the approximate 20 to 23 feet depth interval implies that the 50-foot clay layer, which is similar in characteristics, will not serve as a significant barrier. Movement of contaminants through a low permeability clay layer is a function of elapsed time and the volume of contaminants. In the case of the 25-foot clay layer, there has been sufficient time for a large enough volume of contaminants to reach, saturate and then move through the uppermost clay layer.

While the contaminants have reached the 50-foot clay layer, there has not been sufficient time for the contaminants to fully penetrate and saturate the 50-foot clay layer, much less migrate through into the coarse-grained materials below. The distribution of contaminants that correspond to this process have been described by the earlier Leighton & Associates investigations (1988, 1989), and confirmed by the recent ERM-West, Inc. investigations (Appendix B), performed as part of the remediation program, demonstrated that contaminants have penetrated into, but have not saturated nor moved through the 50-foot clay layer. The ongoing remediation efforts are designed to remove the contaminants prior to the potential migration of contaminants through the 50-foot clay layer.

Finally, the RWQCB (August 1990, page 18) has contended that the reported varying thickness of the 50-foot clay layer implies that the 50-foot clay layer is not a barrier to contaminant migration. The thickness of the 50-foot clay layer as reported in boreholes sampled using a 5-foot sampling interval represents a <u>minimum</u> thickness. In any case, as demonstrated in the preceding discussions, the attached Table 1, our Technical Evaluations, our

transcripts), the soil samples from boreholes at the site show a continuous 50-foot clay layer beneath the area of the tank release.

Finally, the RWQCB (August 1990, page 19) has contended that the presence of VOCs and/or TPH in the coarse-grained material beneath the 50-foot clay layer, combined with the contentions described above, indicate that the 50-foot clay layer does not function to retard migration of contaminants. As described in Appendix B, these VOCs and TPH values are due to cross-contamination, laboratory error, or for the large majority of the TPH values, to naturally occurring background.

The RWQCB has hypothesized that (1) improper sampling and analytical procedures have resulted in invalid and erratic results (see pages. 5, 15 and 18), and (2) that cross-contamination and/or laboratory error cannot be cited as evidence to discount anomalous data values. Attachment A to this evaluation provides a specific of review of the sample recovery and sample handling procedures used during the project, and demonstrates that accepted engineering procedures were used and that the results provide both representative and valid data.

A detailed discussion of supporting evidence for laboratory error and cross-contamination as the causes for the anomalous VOCs reported below the clay layer is on pages, 4-7 of March 1990 Technical Evaluation. For example,

- VOCs were reported in only a total of five widely and sporadically distributed samples from four boreholes (LB-3, LB-100, LB-103, and LB-103A) beneath the clay layer;

- 1,1,1-TCA was detected at 68 feet in borehole LB-3, but not reported above this interval to the clay layer at 50-feet, nor in any samples below 68 feet. The borehole was completed to a depth of 68 feet and left to stand open through the clay layer overnight. The first sample obtained the following morning was a drive sample at 68 feet .

- The analytical laboratory has confirmed (see January 11, 1990 letter from Ensco-CRL in the January 1990 Technical Evaluation) that the methylene chloride detected in samples below the clay layer is caused by "incidental laboratory contamination". The EPA laboratory procedure specifically notes the possibility of incidental laboratory contamination in this analysis.

Cross-contamination during drilling, sampling and/or analysis is commonly accepted concern in the engineering profession. The use of hollow-stem auger techniques for sampling and specified analytical techniques provide appreciable, but not complete, protection against cross-contamination. It is because of much more frequent occurrences of cross-contamination in the past that comprehensive decontamination procedures have been developed to attempt to minimize the risk.

Laboratory protocol requires that the extraction procedure at the for EPA Methods 8010, 8020, 8240, and 418.1 require extraction and analysis within 14 days. The RWQCB contends (August 1990, pg 18) that soil samples were "subjected to lengthy holding times at the laboratory..." ERM-West reviewed the laboratory data sheets to determine when the analyses were conducted, and all sample analyses were analyzed within the 14-day requirement.

In summary, the various RWQCB hypotheses concerning the discontinuity of the 50-foot clay layer and its inability to act as a retardant to contaminant migration are unlikely and not supported by the available chemical data.

DEPTH TO GROUND WATER

The recent RWQCB Reply Petition has cited "historical ground water fluctuations from 95 to 200 feet below ground surface" (pages 4, 15 and 16) in conjunction with the presence of TPH in soil samples below the 50-foot clay layer (that indicate the migration of TPH through the 50-foot clay layer) as mutually supporting hypotheses implying a threat to ground water.

The issue of historical fluctuations in the depth to ground water has been addressed in detail in Exhibit B (Technical Evaluations) of the March 20, 1990 Reply Petition. In summary, the historical fluctuations, and especially the high-water levels of 95 feet below ground surface noted in 1944 are historical extrapolations of data from monitoring wells (since destroyed), the closest of which is approximately one half mile to over one mile south and east of the site.

The present depth to ground water at the site is unknown; however, the lack of ground water in the deepest borehole at the site (122 feet below land surface) supports a minimum depth of approximately 125 feet. We note that in his testimony Mr. Mel Blevins, ULARA Water Master, appearing as an expert for the RWQCB, stated his current working hypothesis (based again on extrapolations without field data) that the current estimated depth to ground water of 150 to 170 feet.

The most recently indicated occurrence of elevated ground water levels was in 1969, five years the tank was installed. This fluctuation would have placed ground water at or about the same level as that in 1944 - at an estimated 95-foot depth. This highest postulated ground water level of 95 feet below ground surface leaves an approximately 45-foot interval between 50-foot clay layer.

The RWQCB contention that historical ground water fluctuations may have placed ground water in contact with residual waste material and presented a threat to ground water is improbable and not supported by the evidence. As discussed earlier, the TPH cited by the RWQCB below the clay layer is not representative of migration of TPH through the 50-foot clay layer into the sandy layer below.

TABLE 1 - THICKNESS AND DESCRIPTION OF THE CLAY LAYER IN BORING LOG DATA

BORING NUMBER	DATE	TOTAL DEPTH (FEET)	THICKNESS OF CLAY LAYER	DEPTH AND SOIL DESCRIPTION
TH-1	4/29/86	38	NP*	
TH-2	4/29/86	120	1.5 FEET	50-51.5 feet: "Yellowish brown sandy to silty clay." Minimum thickness because the log was limited to descriptions at 5-foot intervals.
LB-1	5/30/85	50	NP*	Drilled at a 23-degree slant. Vertical penetration was 46 feet. Sample at "50" feet was not described in the log.
LB-2	5/30/85	50	ND**	Sampled at 10-foot intervals. Soils at 39 feet were described as brown silty sand. Sample at 50 feet was not described in the log.
LB-3#	1/6/88	110	4 FEET	46 feet: "Yellowish brown silty clay...grades to a dense, massive, firm, [reddish brown] low plasticity clay..." 48 feet: "Clay: Reddish brown, dense, firm, as above."
LB-4	1/8/88	108	2.4 FEET	45 feet: "Sand...overlying a dark reddish brown, massive, dense, low plasicity clay w/ scattered granules and pebbles, dry, no odor." 48 feet: "Dark reddish brown, firm, dense, low plasticity clay, sandy w/ scattered pebbles and occasional cobble, dry, no odor."
LB-100	9/13/88	116	4.5 FEET	46.5-48 feet: "Dk reddish brown clay, tr. crse sand & granules, massive texture, cohesive, dense, sl damp." 48-49 feet: "Dk brn clay, tr. crse sand, massive, cohesive, dense..." 49-49.5 feet: "Above grades into Dk brn sandy clay, sl. damp." 49.5-51 feet: "Dk brn crse sandy clay, tr granules, sl. damp."

* NP= Not Penetrated. These borings were terminated before the clay was encountered.

**ND= Not Described. In these borings, the clay layer was not described.

#LB-3, LB-103 and LB-103A were all completed within 5 feet of each other.
Total clay thickness at this location is probably five feet (46-51 feet).

TABLE 1 - THICKNESS AND DESCRIPTION OF THE CLAY LAYER IN BORING LOG DATA (continued)

BORING NUMBER	DATE	TOTAL DEPTH (FEET)	THICKNESS OF CLAY LAYER	DEPTH AND SOIL DESCRIPTION
LB-101	9/15/88	122	3 FEET	46-47.5 feet: "Reddish brn silty clay, tr crse sand & granules, dense, massive, sl. damp to dry." 47.5-49 feet: "Reddish brn sandy clay, tr. granules & pbls, dense but only mod. cohesive, damp, pble zone at base."
LB-102	9/19/88	90	3.5 FEET	47.5-49 feet: "Sand...grades into a dense clay - red brown, sm rk frag..." 49-50.5 feet: "Clay - Red brwn, dense, sm rk frag, qtz, feld, friable, moist." 51-52.5 feet: "Clay - Red-brwn, dense, sm rk frag, qtz, feld, friable..."
LB-102A	9/23/88	121	ND**	Sampled and described only below 90 feet.
LB-103#	9/13/88	70	12 INCHES	50 feet: "Dense, cohesive clay."
LB-103A#	9/21/88	70	1.5 FEET	48 feet: "Clay, red-brwn, dense, minor amounts of sm rk frag, qtz, feld silt, sl. damp, no odor."
LB-104 (Background)	10/3/88	115	ND**	Drilled 400 feet to the north and sampled at 10-foot intervals. No clay was described in this boring at 50 feet.

**ND= Not Described. In these borings, the clay layer was not described.

#LB-3, LB-103 and LB-103A were all completed within 5 feet of each other. Total clay thickness at this location is probably five feet (46-51 feet).

APPENDIX A

FIELD SAMPLING PROTOCOLS

FIELD SAMPLING PROTOCOLS

Field sampling protocols and procedures have been described in the Leighton & Associates reports (March 1988, page 16 and February 1989, Appendix C). The field work is also described on the boring logs from those investigations. Soil sampling procedures as described generally followed ASTM D 1586-84, the engineering standard for penetration tests and split-barrel sampling of soils. Soil descriptions in the boring logs followed ASTM D 2488, the visual-manual engineering procedure for description and identification of soils. The vast majority of soil samples were collected by Leighton & Associates, and were analyzed for chemical constituents according to accepted and approved engineering practice.

In their August 31, 1990 response, the RWQCB contends that the sampling protocols and procedures used by Leighton & Associates in their field sampling efforts below the 50-foot clay layer were inappropriate (pages 5, 14, 15, 17 and 18). Page 5 specifically refers to "significant disturbance of samples during acquisition and handling" without specifying the sample intervals.

Two samples from Boring LB-3 below 100 feet and samples from 45, 65 and 105 feet in Boring LB-4 were indicated directly in the boring logs as repacked samples generally from continuously sampled zones between drive sample runs. Repacked samples are not normally analyzed for VOC concentrations except as a matter of interest because the concentrations are not considered reliable. TPH analyses for repacked samples are more reliable than VOC data because the TPH constituents are not volatile compounds.

Current standard engineering practice for collecting soil samples for VOC analysis requires that a full six-inch tube of soil be recovered, sealed to avoid loss of VOCs and transported at four degrees Centigrade to the laboratory under chain-of-custody forms. A full six inches of soil is important to minimize physical disruption of the sample during transport which could result in some loss of VOCs to the vapor phase. VOC analyses

on soil samples transported in less than full tubes provide useful, but not conclusive, data.

Leighton & Associates describes their procedures as following all of the current standard engineering protocols except that nine of the sample intervals were analyzed with less than six inches of recovery. The boring logs provide data on sample recovery. The following are sample intervals where less than six inches of recovery are indicated:

- Boring LB-3 at 68, 73, 78, 83, and 98 feet;
- Boring LB-4 at 38 and 73 feet; and
- Boring LB-101 at 15, 88.5 and 101 feet.

Due to the very coarse-grained nature of the sand and gravel deposits below the 50-foot clay layer, sample recovery greater than six inches on 45 out of 57 samples is a very good record. Proper field procedures were employed by Leighton & Associates for collecting soil samples for VOC analysis, where exceptions to proper procedures occurred, the field geologist noted the information on the boring logs. The data provides an accurate representation of the TPH and VOC concentrations as well as the lithology below the 50-foot clay layer.

Based on repacking and less than optimal recovery, 12 of the 57 samples collected for VOC analysis by Leighton & Associates below the 50-foot clay layer are questionable. Seven of those 12 soil samples are from Boring LB-3 below 65 feet and the remaining soil samples are scattered vertically in Borings LB-4 and LB-101. Samples collected immediately below the clay layer in all borings are valid based on following proper and accepted soil sampling procedures.

The RWQCB stated (August 1990, pg 5) that there was "an inability of HRT's sampling method to include gas phase" and "lack of direct measurement of gas phase VOCs which contributed to the negative analytical results." These statements were presented for the first time at the April 1990 RWQCB hearing. No factual basis for these statements were presented because soil sampling specifically to detect vapor phase VOCs is not a standard practice.

Soil sampling for the purpose of collecting undisturbed or minimally disturbed samples of the gas phase is a recent experimental exercise. The application has not been standardized for EPA or ASTM protocol because direct extraction and laboratory analysis from soil collected by following the protocols discussed above yields a sample that is in approximate equilibrium with any vapor phases. The field protocol followed by Leighton & Associates (1988, 1989) is a proven method for obtaining and preserving representative soil samples for VOC analysis.

APPENDIX B

MAY 1990 PROGRESS REPORT

ATTACHMENT

FIELD ACTIVITIES

This document describes the field methods employed to install the vapor extraction system at HR Textron's facility located at 10445 Glenoaks Boulevard, Pacoima, California. Field activities involved the installation of soil borings and extraction/injection wells and sampling of the soil.

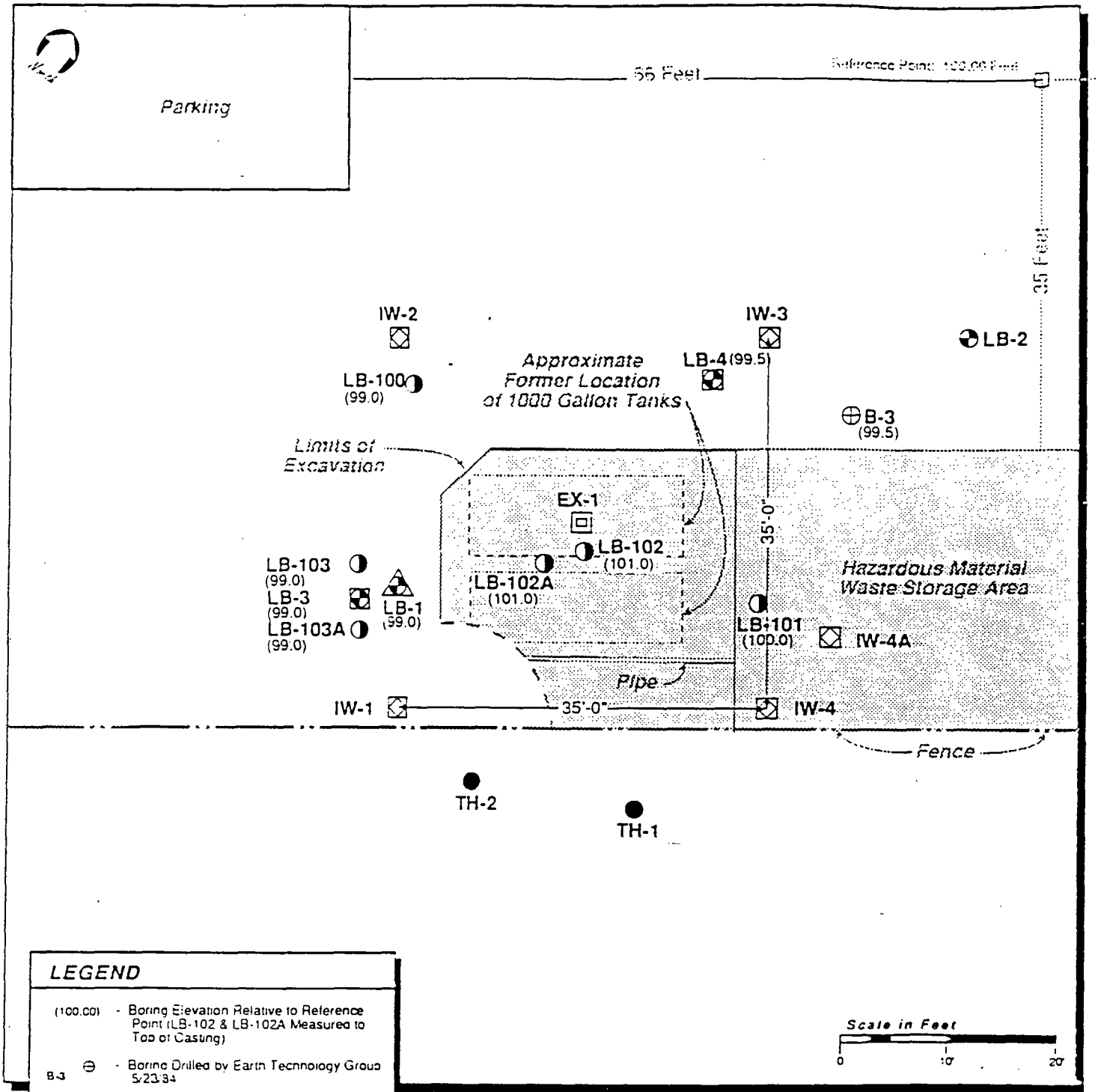
Soil data was obtained through the installation and sampling of five soil borings, four of which were converted to air injection wells. One boring in the center of the former tank excavation was converted to a vapor extraction well. Boring and well locations are presented on Figure 1.

Installation and Sampling of Soil Borings

Soil borings were installed using a CME-55 truck-mounted drilling rig equipped with 10-inch continuous-flight hollow-stem augers. Soil borings converted to wells were installed to a depth of up to 52 feet below grade, depending on the thickness of the clay layer at approximately 50 feet. Relatively undisturbed soil samples were collected from all borings at 5-foot intervals except as noted in the boring logs. Soil samples were collected by pounding a California modified split-spoon sampler ahead of the augers with a 140-pound hammer dropped from a height of 30 inches.

Soil sample tubes were examined in 6-inch sections for classification and lithologic description. Soil samples and drill cuttings were visually inspected and classified according to the Unified Soil Classification System (USCS). A boring log was generated at each location which records vertical variations in lithology, moisture content, color, texture, odor and organic vapor concentration of the soil. Boring logs from this investigation are included in Appendix A.

A portion of the soil from each sample interval was selected for headspace measurement of soil organic vapor concentration. The sample was extruded into a Zip-lock bag, sealed and allowed to equilibrate in the sunlight for approximately 15 minutes. The organic vapor concentration in the sample headspace was then measured with a photoionization detector calibrated to benzene. The organic vapor concentration of the soil was recorded on the boring log.



WELL LOCATIONS FOR VAPOR EXTRACTION SYSTEM HR TEXTRON FACILITY PACOIMA, CALIFORNIA

Soil samples for chemical analysis were collected in 2-inch diameter by 6-inch brass tubes. The sample tubes were covered at each end with Teflon® film and air-tight plastic caps. Each sample was labeled indicating sample number, depth, time, job number, and client. Following sample labeling, the samples were immediately placed in a Zip-lock bag and enclosed in an iced cooler for transport to the analytical laboratory. Chain of Custody forms were completed in the field and accompanied the samples to the analytical laboratory.

Injection/Extraction Well Design and Construction

Of the five soil borings installed during these field activities, four were converted to vapor wells in accordance with the investigation workplan. A boulder was encountered at 42.5 feet below grade at IW-4, and that well was completed to 40 feet. In general the wells were constructed using 4" diameter schedule 40 polyvinyl chloride (PVC) blank well casing and 40 feet of 0.03-inch slotted PVC well screen.

Well casing and screen were installed through the hollow stem augers. As the augers were removed, the annular space between the borehole wall and the well screen was backfilled with a medium aquarium grade sand filter pack compatible with screen perforation size. The sand pack extended approximately one foot above the well screen. A one- to two-foot thick bentonite pellet well seal was placed directly above the sand pack and hydrated with approximately three gallons of tap water.

The remainder of the annular space was filled with Volclay grout to approximately 1 to 2 feet below grade. A PVC slip cap was placed over the well orifice, and the well head was enclosed in a utility box at IW-1, IW-2 and IW-3 to provide well security and to prevent surface water infiltration. IW-4 was finished to grade with concrete because it was located on the hazardous materials pad. EX-1 was left open to two feet below grade and covered with the tarpaulin that normally covers the excavated area (to prevent infiltration of precipitation) where the underground tanks were located. A well construction diagram is provided with each boring log in Appendix A.

Installation of IW-4A

Since IW-4 could not be completed to the design depth of 50 feet, an air rotary drilling rig was used to complete a nearby well to 50 feet. The air rotary rig operates using compressed air to drive a hammer bit, and the air stream carries cuttings to the ground surface within an 8-inch diameter steel casing. The air stream was enhanced with

soap foam to improve the air viscosity to lift sticky clay cuttings to the surface.

IW-4A was installed on May 11-12, 1990 at the location shown on the boring log sketch for IW-4. This well was installed using 40 feet of 4" diameter schedule 40 polyvinyl chloride (PVC) blank well casing and 10 feet of 0.03-inch slotted PVC well screen. Well casing and screen were installed through the steel casing. As the casing was removed, the annular space between the borehole wall and the PVC was backfilled with a medium aquarium grade sand filter pack compatible with screen perforation size. The sand pack extended to 10.25 feet below the top of the concrete pad. A one-foot thick bentonite pellet well seal was placed directly above the sand pack and hydrated with approximately three gallons of tap water.

The remainder of the annular space was filled with Volclay grout to 2.5 feet below grade. IW-4A was finished to grade with concrete because it was located on the hazardous materials pad. A PVC locking snap-cap was installed at the surface to provide security for the injection well.

Analytical Results

Total Petroleum Hydrocarbons

In borehole EX-1 (which was installed through the cylindrical plume) the concentrations of total petroleum hydrocarbons (TPH) in soil samples taken in the interval from land surface to the top of the 50-foot clay layer ranged from approximately 1,000 to 20,000 parts per million (ppm) with most concentrations above 8,000 ppm.

Immediately above the 50-foot clay layer these elevated soil concentrations dropped to 900 ppm. Within the clay layer itself, concentrations of TPH were reported at 400 ppm in the upper portion and at non-detectable levels in the lower portion of the clay.

In the four boreholes installed and sampled outside the cylindrical plume (IW-1 through IW-4) TPH concentrations were at the non-detectable level. The only exception to this was trace levels of TPH (less than 20 ppm) at 15 and 20 feet depth in one borehole. All soil samples below these two were reported as non-detectable for TPH.

Volatile Organic Compounds

In borehole EX-1 the concentrations of volatile organic compounds (VOCs) in soil samples taken in the interval from land surface to the

top of the 50-foot clay layer ranged from approximately 2,000 to 40,000 parts per billion (ppb).

Immediately above the 50-foot clay layer these elevated soil concentrations dropped to 1000 ppb. Within the clay layer itself, concentrations of VOCs were reported at 500 ppb in the upper portion and at trace levels (40 ppb) in the lower portion of the clay.

In the four boreholes installed and sampled outside the cylindrical plume (IW-1 through IW-4) VOC concentrations were at the non-detectable level except for trace levels (less than 10 ppb) in the uppermost portion of the clay layer itself. The only exception to this was trace levels of VOC (less than 10 ppb) at depths less than 30 feet in one borehole.

Benzene, Toluene, Ethylbenzene and Xylene

In borehole EX-1 the concentrations of benzene, toluene, ethylbenzene and xylene (BTEX) in soil samples taken in the interval from land surface to the top of the 50-foot clay layer ranged from approximately 50 to 21,000 parts per billion (ppb).

Immediately above the 50-foot clay layer and within the clay layer itself these elevated soil concentrations dropped to non-detectable levels.

APPENDIX A

BORING LOGS

Environmental Resources Management

Drilling Log

Project HA Textron Owner

Location Pacoima W.O. Number 873.01

Well Number EX-1 Total Depth 52.5 Diameter 10"

Surface Elevation Water Level: Initial 24-hrs.

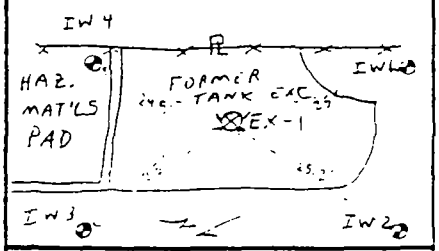
Screen: Dia. 4" Length 40' PVC Slot Size .02

Casing: Dia. 4" Length 10' Type PVC

Drilling Company Spectrum Explor Drilling Method HSA

Driller Terry Sund Log By BGS Date Drilled 4-22-97

Sketch Map



Notes
PVC slipcap on top of casing. Borehole covered by tarp.

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
0	SW Fill			BROWN SILTY FINE TO COARSE SAND FILL, sl. moist
2				PID (cuttings) = 0.0 ppm
6				PID (cuttings) = 0.0 ppm
12	SW		5 6 8 12/18	Native soil encountered at approximately 12 feet cobbly 12.5 to 15 feet LIGHT BROWN FINE TO COARSE SAND, sl. moist, loose, grades in to LIGHT GRAY SILTY FINE TO MED SAND, sl moist PID=395ppm
14	ML			LIGHT GRAY SANDY SILT, sl. moist, some clayey thin layers, primarily very fine to fine sand, mod. stiff PID=458ppm
16	SP			
18	ML		4 6 8 13/18	
20				gray-green below 20 feet PID = 417 ppm
22			4 6 7 15/18	
24	CL		5 10 16 15/18	BROWN SILTY SANDY CLAY, sl. moist, stiff, fine to med. sand, some thin layers of clayey sandy silt. PID peak in breathing zone > 50ppm PID = 162ppm

Environmental Resources Management

Drilling Log

Project: HR Textron Owner:
Location: Pacoima W.O. Number: 823.01
Well Number: EX-1 Total Depth: Diameter:
Surface Elevation: Water Level: Initial: 24-hrs.:
Screen: Dia.: Length: Slot Size:
Casing: Dia.: Length: Type:
Drilling Company: Drilling Method:
Driller: Log By: BGS Date Drilled: 4-22-90

Sketch Map: See p. 1

Notes:

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
25	CL		7 15 13 / 15/18	PID = 353 ppm
27				
29	ML			GRAY CLAYEY SANDY SILT, sl. moist, mod dense, fine to med. sand, less clay more sand toward base
31			4 7 10 / 18/18	LIGHT GRAY FINE TO MEDIUM SAND, tr. moisture, tr. silt PID = 432 ppm
33	SP			
35			6 9 15 / 14/18	light brown, tr. coarse sand below 35 feet PID = 466 ppm
37				
39	SW		17 30 50 / 17/18	LIGHT GRAY FINE TO COARSE SAND, dry, tr. silt, tr. to some gravel, very dense PID = 376 ppm
41			33 52 55 / 18/18	with gravel below 41 feet PID = 1121 ppm
43	SW/GW		[illegible]	LIGHT GRAY SAND AND GRAVEL, dry, very dense, fine to coarse sand, subang to subrounded. Gravel is angular to subrounded PID = 663 ppm
45			[illegible] / 0/6	
47	CL		5 8 20 / 15/18	RED BROWN SILTY CLAY WITH SAND, sl. moist, tr. to some gravel, sand med to coarse, hard PID = 95 ppm
49				

Environmental Resources Management

Drilling Log

Project HR Textron Owner

Location Pacoima W.O. Number 823.01

Well Number EX-1 Total Depth Diameter

Surface Elevation Water Level: Initial 24-hrs.

Screen: Dia. Length Slot Size

Casing: Dia. Length Type

Drilling Company Drilling Method

Driller Log By BGS Date Drilled 4-22-90

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
50	CL		25 54 15/18	with some sand, 50 - 51 feet PID = 184 ppm
52			9 20 10/12	increasing sand content 51.5 - 52.5 feet PID = 13.3 ppm
				End of Boring 52.5 feet
54				

Environmental Resources Management

Drilling Log

Project HR Textron Owner

Location Pacoima W.O. Number 273.02

Well Number IW-1 Total Depth 50.5' Diameter 10"

Surface Elevation Water Level: Initial 24-hrs.

Screen: Dia. 4" Length 40' PVC Slot Size .03

Casing: Dia. 4" Length 9' PVC Type

Drilling Company Spectrum Explor Drilling Method HSA

Driller Terry Sund Log By BGS Date Drilled 4-21-90

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
0				1.5" Asphalt
2	SM			DARK BROWN SILTY SAND FILL WITH GRAVEL, sl. moist.
4				cobbles 2.5 to 3 feet
6	SP		10/16/18	GRAY MEDIUM TO COARSE SAND, dry, mod. dense, tr. fine gravel PID = 0 ppm
8				
10				dense below 10 feet
12			12/18/18	PID = 0 ppm
14				
16			12/17/18	trace med. sand, no gravel 15-16 feet PID = 0 ppm
18				mod. dense below 15 feet
20			12/15/18	RED BROWN SANDY SILTY CLAY, sl. moist, mod. stiff, fine to med sand, some thin layers of clayey sandy silt
22	CL			PID = 0 ppm
24				

Environmental Resources Management

Drilling Log

Project: UA Textron — Owner:

Location: Pacoima — W.O. Number: 873.02

Well Number: IW-1 — Total Depth: — Diameter:

Surface Elevation: — Water Level: Initial: — 24-hrs.:

Screen: Dia.: — Length: — Slot Size:

Casing: Dia.: — Length: — Type:

Drilling Company: — Drilling Method:

Driller: — Log By: BGS — Date Drilled: 4-21-90

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
25	CL		6 15 22 / 17/18	less silt, tr. organic matter scattered in soil matrix below 25 feet PID = 0ppm
27				
29				
31			4 8 12 / 15/18	Clay becomes sandier below 30.5 feet LIGHT BROWN SILTY FINE TO COARSE SAND, dry, dense, tr. very coarse sand PID = 0ppm
33	SW			
35			6 13 20 / 18/18	red brown sandy silt and silty fine sand 35-35.4 feet brown very fine to med sand with trace moisture below 35.4 feet PID = 0ppm
37				
39				
41			13 23 47 / 5/18	brown silty v. fine to coarse sand with tr. igneous cobbles below 40.5 feet PID = 1.0ppm Lost nylon measuring tape attached to a steel handle at 41 feet during well construction with gravel below 43 feet
43				
45			41 52 / 4/5	PID = 1.0ppm
47			43 57 50 / 18/18	RED BROWN SANDY SILTY CLAY, sl. moist, hard, primarily med. to coarse sand PID = 1.0ppm
49	CL			
50	ML		14 24 50 / 1/18	RED BROWN SANDY CLAYEY SILT, sl. moist, fine to coarse sand End of Boring 50.5 Feet

Environmental Resources Management

Drilling Log

Project HR-Textron Pacioma Owner HR Textron

Location Pacoima W.O. Number 873.02

Well Number IW2 Total Depth 49' Diameter 10"

Surface Elevation ____ Water Level: Initial ____ 24-hrs. ____

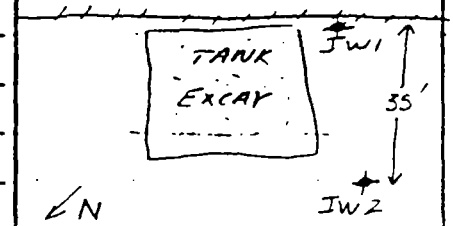
Screen: Dia. ____ Length ____ Slot Size ____

Casing: Dia. ____ Length ____ Type ____

Drilling Company Spectrum Drilling Method HSA

Driller Grea Log By RLL Date Drilled 4/1/90

Sketch Map



Notes

Depth (Feet)	Graphic Log	Well Construction	Blow Count / Sample Number	Description/Soil Classification (Color, Texture, Structures)
0940 HRS 0				~2 in. of Asphalt at surface
2	SW w/ gravel			Gravelly sand, lt. grey-tan, granule, m-v.c. grained, moist, angular, 70% quartz, 15% dk. lithics, 5% mafic minerals, no odors
4				
6		PVC	5 15 20 IW2 S 5-6	As above, sample IW2/5.5-6 taken at 0912 HRS. Rec. 14/18" Physical test sample not feasible at this depth. PID = 0 ppm headspace at 6'.
8				Sand w/ some granule gravel, as above, some cobbles, granitic.
10			6 12 19 IW2 10 S-11	
12	ML			Sandy Clayey SILT, dk. brn-reddish brn, sl moist, m-c. grained sand, med. dense, no odors/staining Sample IW2/10.5-11 taken at 0925 HRS. Sample IW2/11-11.5 taken at 0925 HRS for physical tests. PID = 0 ppm headspace at 11'.
14				
16			6 7 13 IW2 15 S-16	Sandy SILT w/some clay, brn-reddish brn, sl. moist, f. gr. sand, med. stiff, no odors/stains. PID = 0 ppm headspace Sample IW2/15.5-16 taken at 0940HRS. Sample IW2/16-16.5 taken at 0940HRS for physical tests.
18				
20	SM		11 11 19 IW2 20 S-21	Clayey Silty SAND, v f-f grained, grading to sandy silty Clay at 21.8', brn, moist, med stiff, some black organic material, no odors/stains. PID = 1.0 ppm headspace. Sample IW2/20 S-21 taken at 1022 HRS. Sample IW2/21-21.5 taken at 1022 HRS for physical tests.
22	CL			
24	w/ gravel SW		12 19 IW2	Some gravel (granules) in cuttings at ~23'.

Environmental Resources Management

Drilling Log

Project HR Tex - Pacoima Owner HR Textron

Location Pacoima W.O. Number

Well Number IW2 Total Depth 49' Diameter 10"

Surface Elevation Water Level: Initial 24-hrs.

Screen: Dia. Length Slot Size

Casing: Dia. Length Type

Drilling Company Spectrum Drilling Method HSA

Driller Greg Log By RLC Date Drilled 4/21/90

Sketch Map

See P 1

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
28	ML			Sample IW2/25.5-26 taken at 1022 HRS Sample 26-26.5 taken at 1022 HRS for physical tests. Very slow drilling.
30				
32	SM		6 14 15 IW2 30.5-31	Silty SAND, lt. brn-buff, f-m. grained, quartzose, med. dense, sl. moist, no odors/stains. Rec. 16/18". PID = 0.3 ppm headspace at 31'. Samples IW2/30.5 and IW2/30.5-31 (physical) taken at 1045 HRS.
34				Slow drilling.
36	SM		25 27 27 IW2 35.5-36	SAND w/ some gravel (granitic, weathered), angular to subrounded, granule-pebble, f-v.c. grained, brn-grey brn, med. dense, no odors/stains. Sand contains abundant angular plagioclase from weathered granitic gravel. Samples IW2/35.5-36 and IW2/36-36.5 (physical tests) taken at 1116 HRS.
38	w/ gravel			PID = NR ppm headspace at 36'.
40			37 40 45 IW2 40.5-41	
42				As above, poorly sorted, f-v.c. grained, abundant quartz, feldspar (granitic sand). Sample IW2/40.5-41 and IW2/41-41.5 (physical) taken at 1244 HRS. Rec. 16/18" PID = 1.6 ppm headspace at 41'.
44				
46	ML		34 71 14 IW2 43.5-44	As above to 46.2'. Sandy SILT, V.f-f. grained, brn-reddish brn, dry, med. dense, no odors/stains. 580A = 1.0 ppm headspace at 45.5'. Rec. 16/18". Samples IW2/45.5-46 and IW2/46-46.5 (physical tests) taken at 1525 HRS.
48	ML/CL		12 26 48 IW2 47.5-48	Grading to Sandy Clayey SILT at 47.0', stiff, dry, white mottles (altered feldspar), some rare gravel, no odors/stains Samples IW2/47.5-48 and IW2/48-48.5 taken at 1511 HRS Rec. 17/18"
50				
52				

1200 HRS

Down for Rig Repair 1245 ~ 1410 HRS

1500 HRS

Environmental Resources Management

Drilling Log

Project: HR Textron Pacioma Owner: HR Textron

Location: Pacoima W.O. Number: 873.02

Well Number: IW-3 Total Depth: ____ Diameter: 10"

Surface Elevation: ____ Water Level: Initial ____ 24-hrs. ____

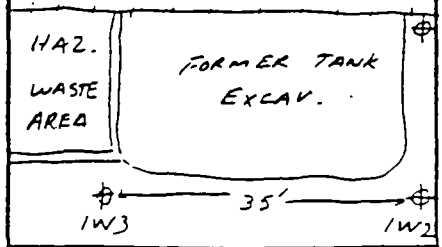
Screen: Dia. 4" Length 40' Slot Size ____

Casing: Dia. ____ Length ____ Type ____

Drilling Company: Spectrum Expl. Drilling Method: HSA

Driller: Gloe Lawler Log By: RLL Date Drilled: 4/28/90

Sketch Map



Notes: Set Bentonite Seal at bottom of borehole. Casing starts at 49' 11"

0815 HRS

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
0				~3in asphalt at surface.
				Upper 1-2 feet dk-grey, odorous
2	SW w/ grani			Gravelly SAND, granule-pebble, f-v.c. grained, sl. moist, brn-grey, no odors/stains.
4				
6			3 14 20 IW3 5.5-6	As above, louse, weak odor, ~15% lithics, mafics, 85% quartz, plagioclase, k-spar. Pebbles granitic, volcanic(?) Sample IW3/5.5-6 taken at 0830 HRS. Rec. 12/18". PID = 0 ppm headspace.
8				-17"
10	SM/SC		4 9 12 IW3 10.1-10.6	Clayey, silty, SAND w/ trace granule gravel, brn-greenish brn, loose-med. dense, m-v.c. grained, sl moist, weak odor(?). Sample IW3/10.1-10.6 taken at 0840 HRS. Rec. 16/18". PID reading not taken. Sample IW3/10.6-11.1. Abundant Chlorite.
12				
14				Dioritic and gneissic pebbles in cuttings
16			4 7 8 IW3 15.1-15.6	As above without gravel, sl moist, no odors/stains. Samples IW3/15.6-16.1 and IW3/15.1-15.6 (Physical Tests) taken at 0855 HRS. Rec. 11/18" PID = 0 ppm headspace.
18	CL			Increasing clay content in cuttings
20			5 13 22 IW3 20.5-21	Silty CLAY w/ trace v.f. sand and rare gravel, dry-sl. moist, med stiff-stiff, brn, no odors/stains. Samples IW3/20.5-21 and IW3/21.0-21.5 (physial tests) taken at 920 HRS. Rec. 16/18". PID = 0 ppm headspace.
22				
24	SC/ML		5 15 IW3	Clayey Silty SAND, v.f-f. grained, dry-sl. moist brn, med. stiff, no odors

Environmental Resources Management

Drilling Log

Project HR Textron - Pacoima Owner HR Textron

Location Pacoima W.O. Number 873.02

Well Number IW3 Total Depth _____ Diameter 10"

Surface Elevation _____ Water Level: Initial _____ 24-hrs. _____

Screen: Dia. _____ Length _____ Slot Size _____

Casing: Dia. _____ Length _____ Type _____

Drilling Company Spectrum Drilling Method HSA

Driller Greg Log By RLL Date Drilled 4/28/90

Sketch Map

See P.1

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
28	CL/ML			Increasing clay content, mafic granule - pebbles (diorite?)
30	SW		7 11 10 IW3 30.5-31	SAND w/ rare granule gravel, f-v.c grained, sl. moist, buff - lt. brn, loose - med. dense, no odors/stains Samples IW3/30.5-31 and IW3/31-31.5 (physical tests) taken at 1005 HRS Rec. 16/18". PID = 0 ppm headspace. Sand is quartzitic. Thin silty layer at ~33-34'
32				
34	ML			
36	SW		12 18 21 IW3 35.7-35.9	As above, m-v.c. grained. Samples IW3/35.3-35.8 and IW3/35.8-36.4 taken at 1035 HRS Rec. 15/18". PID = 0 ppm headspace.
38				Increasing gravel
40				
42	GW		43 50/3" IW3 40.5-40.7	Sandy Gravel, pebble - cobble, m.-v.c. grained, dry - sl. moist, buff, quartzitic, loose - med. dense, no odors. Gravel clast > 2in dia in sample tube. Rec. 9/9" Sample IW3/40.0-40.5 taken at 1105 HRS. PID = 0 ppm headspace. Gravel is pegmatite clast, 40% quartz, 60% feldspar.
44				
46	ML		32 60 27 IW3 45.5-46	GRAVEL, as above to 46.2'
48	ML/SM		10 24 42 IW3 48-48.5	SILT w/ some clay, dk. brn w/ some black organic mottling, dry, med. stiff, no odors Rec. 16/18" Samples IW3/45.5-46 and IW3/46-46.5' (physical tests) taken at 1140 HRS. PID = 0 ppm headspace
50	SW		13 29 36 IW3	Becoming sandy at ~47', with abundant organic matter. Sample IW3/48-48.5 taken at 1250 HRS. Rec. 15/18" PID = 0 ppm headspace
52				Gravelly SAND at 49.7', m-v.c. grained, angular, quartzitic, no odors/stains. Rec. 16/18" PID = Not taken. Samples IW3/49.5-50 and

Environmental Resources Management

Drilling Log

Project: 4R Textron — Owner:

Location: Paccima — W.O. Number: 873.02

Well Number: IW-4 — Total Depth: 42.75' — Diameter: 10"

Surface Elevation: — Water Level: Initial: — 24-hrs.:

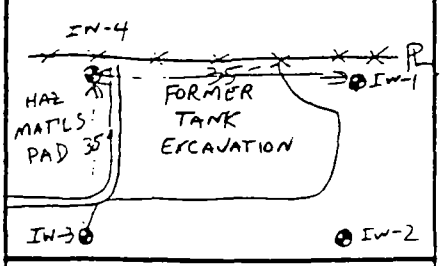
Screen: Dia.: 4" — Length: 20' PVC — Slot Size: 0.03

Casing: Dia.: 4" — Length: 9' — Type: PVC

Drilling Company: Spectrum Explor — Drilling Method: HSA

Driller: Greg Lawler — Log By: BGS — Date Drilled: 4/28-29/90

Sketch Map



Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
0				7-inches concrete at surface
2	SW			BROWN-GRAY GRAVELLY SAND, sl. moist, fine to very coarse sand, pebbles to boulders, mod. dense
4				Note: Cave-in to 3.5 feet during well construction
6			4 5 7 13/18	gray and no gravel below 5 feet PID = 0ppm
8	GW			GRAY SANDY GRAVEL, sl. moist, dense, pebble to boulder, tr. brick and glass, sand layer 8.5 to 9 feet
10	SW		11 22 18 15/18	GRAY GRAVELLY SAND, sl. moist, fine to v. coarse sand, pebble size gravel PID = 0 ppm
12				gravel layer 12.5 to 13 feet
14	GW			GRAY SANDY GRAVEL, sl. moist, very dense, pebble to boulder, coarse sand PID = 0ppm
16			16 50/3 5/16	
18	SW			GRAY GRAVELLY SAND, sl. moist, fine to v. coarse sand, pebble size gravel, mild rig chatter 18 to 18.5 feet
20	ML		4 7 9 15/18	RED BROWN SANDY CLAYEY SILT, moist, mod dense, v. fine to tr. med sand PID = 0ppm
22				
24				

Environmental Resources Management

Drilling Log

Project HP Textron Owner

Location Paxima W.O. Number 873.02

Well Number EW-4 Total Depth Diameter

Surface Elevation Water Level: Initial 24-hrs.

Screen: Dia. Length Slot Size

Casing: Dia. Length Type

Drilling Company Drilling Method

Driller Log By BGS Date Drilled 4/28-29/98

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
25	ML		3 13 15 2/18	with sand 25 to 26 feet PID = 0 ppm
27	CL			RED BROWN SILTY CLAY WITH SAND, moist, stiff, very fine to med sand
29	SM			LIGHT BROWN SILTY FINE SAND, sl. moist, mod. dense, tr. med. sand, tr. clay 30 to 30.5 feet
31			5 10 8 2/18	PID = 0 ppm
33	SP			LIGHT GRAY FINE TO MEDIUM SAND, dry, dense, tr. very coarse sand
35			3 18 27 2/18	PID = 0 ppm
37				
39	SW			LIGHT BROWN V. FINE TO V. COARSE SAND WITH GRAVEL, sl. moist, very dense, rounded to subang pebbles, trg chalter, no sample for PID
41			48 50/6 5/10	boulder at 42.5 feet.
43				End of Boring 42.75 feet
45				

ENVIRONMENTAL RESOURCES MANAGEMENT
ERM-WEST

FIELD WELL COMPLETION FORM

Job Name: HR Textron Owner: 5-11-90
Location: Pacoima Job #: 873.02
Logged By: BGS Reviewed By: _____ Project Manager: BGS
Well Number: IW-4A Driller: Don Arrington
Spectrum Exploration
Equipment: _____ Inch Hollow Stem Auger
8 Inch ~~Rotary Mud~~ Air Rotary Hours Drilled: _____
Gallons of Water Used During Drilling: _____ Gallons: _____
Method of Decontamination Prior to Drilling: _____

DEVELOPMENT

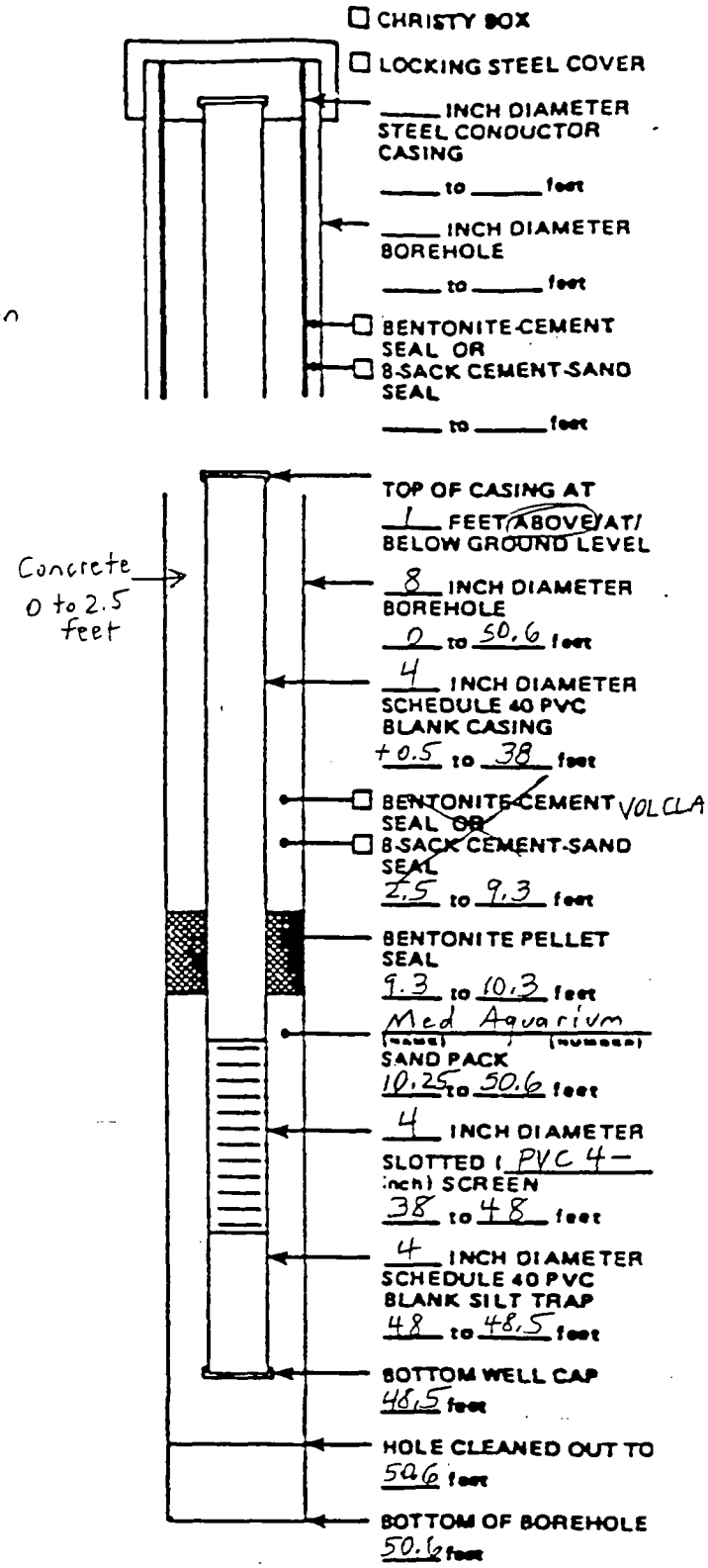
Method of Development: _____
Development Began Date: _____ Time: _____

Yield: GPM	Time: From:	To	Date:
Yield: GPM	Time: From:	To	Date:
Yield: GPM	Time: From:	To	Date:
Yield: GPM	Time: From:	To	Date:

Total Water Removed During Development: _____ Gallons
Description of Turbidity at End of Development: ☐ Clear ☐ Slightly cloudy ☐ Med. Turbid ☐ Very Muddy
Odor of Water: _____
Water Discharged To: ☐ Ground Surface ☐ Storm Sewers ☐ Drums ☐ Tank Truck ☐ Storage Tank ☐ Other
Depth to Water After Development: _____ Feet

MATERIALS USED

9 Sacks of Medium Aquarium Sand
2 Sacks of _____ Cement
_____ Gallons of Grout Used
_____ Sacks of Powdered Bentonite
50 Pounds of Bentonite Pellets
38.5 Feet of 4 Inch PVC Blank Casing
10 Feet of .03 Inch PVC Slotted Screen
_____ Feet of _____ Inch Steel Conductor Casing
_____ Yard³ Cement-Sand (Redi-Mix) Ordered
_____ Yard³ Cement-Sand (Redi-Mix) Used
Concrete Pumper Used? X No ____ Yes
Name _____



NOT TO SCALE

ADDITIONAL INFORMATION: NOTE! Cuttings from bottom of boring were SILTY SANDY CLAY

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RECEIVED
MAY 15 1990

Client: ERM-WEST, INC.

WO#:4965
Project:HR Textron
873.01
Date:05-04-90

Sample Matrix: Soil
Collector: Client
Receiving Date: 04/23/90
Analysis Date: 04/27/90

Method: EPA 418.1,8020
Sampling Date: 04/21,22/90
Extraction Date: 04/25/90
Completion Date: 05/03/90

Results:

EPA 418.1

GGC#	Sample I.D.		TPH Concentration ppm
Method Blank			ND
4965-1	EX-1	15.5-16	20955
4965-2	EX-1	17.5-18	8428
4965-3	EX-1	20.8-21.3	8540
4965-4	EX-1	24.5-25	1247
4965-5	EX-1	26.5-27	2075
4965-6	EX-1	31-31.5	10131
4965-7	EX-1	35.7-36.2	10182
4965-8	EX-1	40-40.5	12897
4965-9	EX-1	41.5-42	11937
4965-10	EX-1	43.2-43.7	11940
4965-11	EX-1	48-48.5	410
4965-12	EX-1	50.8-51.3	890
4965-13	EX-1	51.8-52.3	ND

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EPA 418.1

GGC#	Sample I.D.		TPH Concentration ppm
4965-14	IW-1	5.5-6	ND
4965-15	IW-1	10.5-11	ND
4965-16	IW-1	15.5-16	18
4965-17	IW-1	21-21.5	13
4965-18	IW-1	25.5-26	ND
4965-19	IW-1	30.3-30.8	ND
4965-20	IW-1	35.5-36	ND
4965-21	IW-1	40.5-41	ND
4965-22	IW-1	45.2-45.7	ND
4965-23	IW-1	48-48.5	ND
4965-24	IW-1	49.5-50	ND
4965-25	IW-2	5.5-6	ND
4965-26	IW-2	10.5-11	ND
4965-27	IW-2	16-16.5	ND
4965-28	IW-2	20.5-21	ND
4965-29	IW-2	25.5-26	ND
4965-30	IW-2	30.5-31	ND
4965-31	IW-2	35.5-36	ND
4965-32	IW-2	40.5-41	ND
4965-33	IW-2	45.5-46	ND
4965-34	IW-2	47.5-48	ND
Detection Limit:			5

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EPA 8020

GGC#	Sample I.D.	Benzene	Toluene	Ethyl Benzene	Total Xylenes
		Concentration ppb			
Method Blank		ND	ND	ND	ND
4965-1	EX-1 15.5-16	1825	843	1804	21179
4965-2	EX-1 17.5-18	623	715	677	10090
4965-3	EX-1 20.8-21.3	1223	1364	1001	13980
4965-4	EX-1 24.5-25	424	694	557	10095
4965-5	EX-1 26.5-27	896	1566	394	9132
4965-6	EX-1 31-31.5	462	1781	844	8625
4965-7	EX-1 35.7-36.2	451	1708	1757	15912
4965-8	EX-1 40-40.5	281	2174	1829	14583
4965-9	EX-1 41.5-42	463	1155	1288	9459
4965-10	EX-1 43.2-43.7	35	1154	902	8847
4965-11	EX-1 48-48.5	14	69	116	1865
4965-12	EX-1 50.8-51.3	67	52	176	1600
4965-13	EX-1 51.8-52.3	ND	ND	ND	ND
4965-14	IW-1 5.5-6	ND	ND	ND	ND
4965-15	IW-1 10.5-11	ND	ND	ND	ND
4965-16	IW-1 15.5-16	ND	ND	ND	ND
4965-17	IW-1 21-21.5	ND	ND	ND	ND
4965-18	IW-1 25.5-26	ND	ND	ND	ND

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EPA 8020

GGC#	Sample I.D.	Benzene	Toluene	Ethyl Benzene	Total Xylenes
		Concentration ppb			
4965-19	IW-1 30.3-30.8	ND	ND	ND	ND
4965-20	IW-1 35.5-36	ND	ND	ND	ND
4965-21	IW-1 40.5-41	ND	ND	ND	ND
4965-22	IW-1 45.2-45.7	ND	ND	ND	ND
4965-23	IW-1 48-48.5	ND	ND	ND	ND
4965-24	IW-1 49.5-50	ND	ND	ND	ND
4965-25	IW-2 5.5-6	ND	ND	ND	ND
4965-26	IW-2 10.5-11	ND	ND	ND	ND
4965-27	IW-2 16-16.5	ND	ND	ND	ND
4965-28	IW-2 20.5-21	ND	ND	ND	ND
4965-29	IW-2 25.5-26	ND	ND	ND	ND
4965-30	IW-2 30.5-31	ND	ND	ND	ND
4965-31	IW-2 35.5-36	ND	ND	ND	ND
4965-32	IW-2 40.5-41	ND	ND	ND	ND
4965-33	IW-2 45.5-46	ND	ND	ND	ND
4965-34	IW-2 47.5-48	ND	ND	ND	ND
Detection Limit:			5		

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Quality Control:
Duplicate:
EPA 418.1

GGC#	Sample I.D.	TPH Concentration ppm
4965-13	EX-1 51.8-52.3	ND
4965-13(D)	EX-1 51.8-52.3	ND
4965-16	IW-1 15.5-16	18
4965-16(D)	IW-1 15.5-16	13
4965-17	IW-1 21-21.5	13
4965-17(D)	IW-1 21-21.5	10

EPA 8020

GGC#	Sample I.D.	Benzene	Toluene	Ethyl Benzene	Total Xylenes
		Concentration ppb			
4965-2	EX-1 17.5-18	623	715	677	10090
4965-2(D)	EX-1 17.5-18	576	662	639	9128
4965-14	IW-1 5.5-6	ND	ND	ND	ND
4965-14(D)	IW-1 5.5-6	ND	ND	ND	ND
4965-27	IW-2 16-16.5	ND	ND	ND	ND
4965-27(D)	IW-2 16-16.5	ND	ND	ND	ND

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Spike
EPA 418.1

GGC#	Sample I.D.	TPH Recovery (%)
4965-20	IW-1 35.5-36	78
4965-30	IW-2 30.5-31	82

EPA 8020

GGC#	Sample I.D.	Benzene	Toluene Recovery	Ethyl Benzene (%)	Total Xylenes
4965-14	IW-1 5.5-6	76	78	79	81
4965-24	IW-1 49.5-50	79	81	81	84

Analyst Ru-Po Lee Supervisor Alan Jeffrey

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Client: ERM-WEST,INC.

WO#:4965
Project:HR Textron
873.02
Date:05-10-90

Sample Matrix: Soil
Collector: Client
Receiving Date: 04/30/90
Analysis Date: 05/05/90

Method: EPA 418.1,8020
Sampling Date: 04/28/90
Extraction Date: 05/03/90
Completion Date: 05/10/90

Results:

EPA 418.1

GGC#	Sample I.D.		TPH Concentration ppm
Method Blank			ND
4965-46	IW-3	5.5-6	ND
4965-47	IW-3	10.1-10.6	ND
4965-48	IW-3	15.6-16.1	ND
4965-49	IW-3	20.5-21	ND
4965-50	IW-3	25.1-25.6	ND
4965-51	IW-3	30.5-31	ND
4965-52	IW-3	35.3-35.8	ND
4965-53	IW-3	40.0-40.5	ND
4965-54	IW-3	45.5-46.0	ND
4965-55	IW-3	48.0-48.5	ND
4965-56	IW-3	49.5-50	ND
4965-57	IW-3	50-50.5	ND

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EPA 418.1

GGC#	Sample I.D.	TPH Concentration ppm
4965-58	IW-4 5.5-6	ND
4965-59	IW-4 10.5-11.0	ND
4965-60	IW-4 15.2-15.8	ND
4965-61	IW-4 20.8-21.3	ND
4965-62	IW-4 25.5-26.0	ND
4965-63	IW-4 30.0-30.5	ND
4965-64	IW-4 35.5-36	ND
4965-65	IW-4 40-40.5	ND
Detection Limit:		5

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EPA 8020

GGC#	Sample I.D.	Benzene	Toluene	Ethyl Benzene	Total Xylenes
		Concentration ppb			
Method Blank		ND	ND	ND	ND
4965-46	IW-3 5.5-6	ND	ND	ND	ND
4965-47	IW-3 10.1-10.6	ND	ND	ND	ND
4965-48	IW-3 15.6-16.1	ND	ND	ND	ND
4965-49	IW-3 20.5-21	ND	ND	ND	ND
4965-50	IW-3 25.1-25.6	ND	ND	ND	ND
4965-51	IW-3 30.5-31	ND	ND	ND	ND
4965-52	IW-3 35.3-35.8	ND	ND	ND	ND
4965-53	IW-3 40.0-40.5	ND	ND	ND	ND
4965-54	IW-3 45.5-46.0	ND	ND	ND	ND
4965-55	IW-3 48.0-48.5	ND	ND	ND	ND
4965-56	IW-3 49.5-50	ND	ND	ND	ND
4965-57	IW-3 50-50.5	ND	ND	ND	ND
4965-58	IW-4 5.5-6	ND	ND	ND	ND
4965-59	IW-4 10.5-11.0	ND	ND	ND	ND
4965-60	IW-4 15.2-15.8	ND	ND	ND	ND
4965-61	IW-4 20.8-21.3	ND	ND	ND	ND
4965-62	IW-4 25.5-26.0	ND	ND	ND	ND
4965-63	IW-4 30.0-30.5	ND	ND	ND	ND
4965-64	IW-4 35.5-36	ND	ND	ND	ND
4965-65	IW-4 40-40.5	ND	ND	ND	ND
Detection Limit:		5			

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Quality Control:
Duplicate:
EPA 418.1

GGC#	Sample I.D.	TPH Concentration ppm
4965-50	IW-3 25.1-25.6	ND
4965-50(D)	IW-3 25.1-25.6	ND
4965-60	IW-4 15.2-15.8	ND
4965-60(D)	IW-4 15.2-15.8	ND

EPA 8020

GGC#	Sample I.D.	Benzene	Toluene	Ethyl Benzene	Total Xylenes
		Concentration ppb			
4965-50	IW-3 25.1-25.6	ND	ND	ND	ND
4965-50(D)	IW-3 25.1-25.6	ND	ND	ND	ND
4965-62	IW-4 25.5-26.0	ND	ND	ND	ND
4965-62(D)	IW-4 25.5-26.0	ND	ND	ND	ND

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Spike
EPA 418.1

GGC#	Sample I.D.	TPH Recovery (%)
4965-50	IW-3 25.1-25.6	77

EPA 8020

GGC#	Sample I.D.	Benzene	Toluene	Ethyl Benzene	Total Xylenes
			Recovery (%)		
4965-55	IW-3 48.0-48.5	72	76	80	82

Analyst Ru-Po Lee Supervisor Alan Jeffrey

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Analytical Summary

Data 05-03-90

Client ERM-West, Inc. Samples collected:04-23-90
Samples received:04-24-90 Samples analysed: 05-01-90
Purgeable Halocarbons - EPA 8010 (GC/MS)

GGC ID #4965		1	2	3
Client ID EX-1		15.5-16	17.5-18	20.8-21.3
Compounds	DL ug/kg	Found ug/kg	Found ug/kg	Found ug/kg
Chloromethane	100	nd	nd	nd
Vinyl chloride	100	nd	nd	nd
Bromomethane	100	nd	nd	nd
Chloroethane	100	nd	nd	nd
Trichlorofluoromethane	50	nd	nd	nd
1,1-Dichloroethene	50	nd	nd	214
Dichloromethane	50	nd	nd	nd
Trans-1,2-Dichloroethene	50	nd	nd	nd
1,1-Dichloroethane	50	nd	nd	134
Chloroform	50	nd	nd	nd
1,1,1-Trichloroethane	50	861	2099	38500
1,2-Dichloroethane	50	83.9	227	3617
Carbon Tetrachloride	50	nd	nd	nd
Bromodichloromethane	50	nd	nd	nd
Cis-1,3-Dichloropropene	50	nd	nd	nd
Trans-1,3-Dichloropropene	50	nd	nd	nd
1,1,2-Trichloroethane	50	nd	nd	nd
Dibromochloromethane	50	nd	nd	nd
Tetrachloroethene	50	932	1014	4780
Chlorobenzene	50	nd	nd	nd
Bromoform	50	nd	nd	nd
1,1,2,2-Tetrachloroethane	50	nd	nd	720
1,2-Dichloropropane	50	nd	nd	nd
Trichloroethene	50	nd	nd	213
2-Chloroethyl Vinyl Ether	100	nd	nd	nd

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Analytical Summary

Data 05-03-90

Client ERM-West, Inc. Samples collected: 04-23-90
Samples received: 04-24-90 Samples analysed: 05-01-90
Purgeable Halocarbons - EPA 8010 (GC/MS)

GGC ID #4965		4	5	6
Client ID EX-1		24.5-25	26.5-27	31-31.5
Compounds	DL ug/kg	Found ug/kg	Found ug/kg	Found ug/kg
Chloromethane	100	nd	nd	nd
Vinyl chloride	100	nd	nd	nd
Bromomethane	100	nd	nd	nd
Chloroethane	100	nd	nd	nd
Trichlorofluoromethane	50	nd	nd	nd
1,1-Dichloroethene	50	576	331	358
Dichloromethane	50	nd	nd	nd
Trans-1,2-Dichloroethene	50	nd	nd	nd
1,1-Dichloroethane	50	180	81.1	196
Chloroform	50	nd	nd	nd
1,1,1-Trichloroethane	50	17690	10790	33830
1,2-Dichloroethane	50	1830	1140	3568
Carbon Tetrachloride	50	nd	nd	nd
Bromodichloromethane	50	nd	nd	nd
Cis-1,3-Dichloropropene	50	nd	nd	nd
Trans-1,3-Dichloropropene	50	nd	nd	nd
1,1,2-Trichloroethane	50	nd	276	167
Dibromochloromethane	50	nd	nd	nd
Tetrachloroethene	50	1160	1025	3064
Chlorobenzene	50	nd	nd	nd
Bromoform	50	nd	nd	nd
1,1,2,2-Tetrachloroethane	50	125	nd	278
1,2-Dichloropropane	50	nd	nd	nd
Trichloroethene	50	72.8	63.1	130
2-Chloroethyl Vinyl Ether	100	nd	nd	nd

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Analytical Summary

Data 05-03-90

Client ERM-West, Inc. Samples collected: 04-23-90
Samples received: 04-24-90 Samples analysed: 05-02-90
Purgeable Halocarbons - EPA 8010 (GC/MS)

GGC ID #4965	7	8	9
Client ID EX-1	35.7-36.2	40-40.5	41.5-42

Compounds	DL ug/kg	Found ug/kg	Found ug/kg	Found ug/kg
Chloromethane	100	nd	nd	nd
Vinyl chloride	100	nd	nd	nd
Bromomethane	100	nd	nd	nd
Chloroethane	100	nd	nd	nd
Trichlorofluoromethane	50	nd	nd	nd
1,1-Dichloroethene	50	nd	70.7	nd
Dichloromethane	50	nd	nd	nd
Trans-1,2-Dichloroethene	50	nd	nd	nd
1,1-Dichloroethane	50	nd	nd	nd
Chloroform	50	nd	nd	nd
1,1,1-Trichloroethane	50	4565	7275	4518
1,2-Dichloroethane	50	451	780	483
Carbon Tetrachloride	50	nd	nd	nd
Bromodichloromethane	50	nd	nd	nd
Cis-1,3-Dichloropropene	50	nd	nd	nd
Trans-1,3-Dichloropropene	50	nd	nd	nd
1,1,2-Trichloroethane	50	nd	nd	nd
Dibromochloromethane	50	nd	nd	nd
Tetrachloroethene	50	nd	388	214
Chlorobenzene	50	nd	nd	nd
Bromoform	50	nd	nd	nd
1,1,2,2-Tetrachloroethane	50	nd	nd	61.0
1,2-Dichloropropane	50	nd	nd	nd
Trichloroethene	50	nd	nd	nd
2-Chloroethyl Vinyl Ether	100	nd	nd	nd

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Analytical Summary

Data 05-03-90

Client ERM-West, Inc. Samples collected:04-23-90
Samples received:04-24-90 Samples analysed: 05-02-90
Purgeable Halocarbons - EPA 8010 (GC/MS)

GGC ID #4965	10	11
Client ID EX-1	35.7-36.2	40-40.5

Compounds	DL ug/kg	Found ug/kg	Found ug/kg
Chloromethane	100	nd	nd
Vinyl chloride	100	nd	nd
Bromomethane	100	nd	nd
Chloroethane	100	nd	nd
Trichlorofluoromethane	50	nd	nd
1,1-Dichloroethene	50	68.9	nd
Dichloromethane	50	nd	nd
Trans-1,2-Dichloroethene	50	nd	nd
1,1-Dichloroethane	50	nd	nd
Chloroform	50	nd	nd
1,1,1-Trichloroethane	50	12230	897
1,2-Dichloroethane	50	1298	107
Carbon Tetrachloride	50	nd	nd
Bromodichloromethane	50	nd	nd
Cis-1,3-Dichloropropene	50	nd	nd
Trans-1,3-Dichloropropene	50	nd	nd
1,1,2-Trichloroethane	50	161	nd
Dibromochloromethane	50	nd	nd
Tetrachloroethene	50	365	nd
Chlorobenzene	50	nd	nd
Bromoform	50	nd	nd
1,1,2,2-Tetrachloroethane	50	95.4	nd
1,2-Dichloropropane	50	nd	nd
Trichloroethene	50	nd	nd
2-Chloroethyl Vinyl Ether	100	nd	nd

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Analytical Summary

Data 05-03-90

Client ERM-West, Inc. Samples collected: 04-23-90
Samples received: 04-24-90 Samples analysed: 05-02-90
Purgeable Halocarbons - EPA 8010 (GC/MS)

GGC ID #4965		12	13
Client ID EX-1		50.8-51.3	51.8-52.3
Compounds	DL ug/kg	Found ug/kg	Found ug/kg
Chloromethane	10	nd	nd
Vinyl chloride	10	nd	nd
Bromomethane	10	nd	nd
Chloroethane	10	nd	nd
Trichlorofluoromethane	5	nd	nd
1,1-Dichloroethene	5	7.1	nd
Dichloromethane	5	nd	nd
Trans-1,2-Dichloroethene	5	nd	nd
1,1-Dichloroethane	5	6.3	5.0
Chloroform	5	nd	nd
1,1,1-Trichloroethane	5	445	38.3
1,2-Dichloroethane	5	53.5	nd
Carbon Tetrachloride	5	nd	nd
Bromodichloromethane	5	nd	nd
Cis-1,3-Dichloropropene	5	nd	nd
Trans-1,3-Dichloropropene	5	nd	nd
1,1,2-Trichloroethane	5	7.7	nd
Dibromochloromethane	5	nd	nd
Tetrachloroethene	5	6.3	nd
Chlorobenzene	5	nd	nd
Bromoform	5	nd	nd
1,1,2,2-Tetrachloroethane	5	95.4	nd
1,2-Dichloropropane	5	nd	nd
Trichloroethene	5	nd	nd
2-Chloroethyl Vinyl Ether	10	nd	nd

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Analytical Summary

Data 05-01-90

Client ERM-West, Inc. Samples collected:04-23-90
Samples received:04-24-90 Samples analysed: 04-27-90
Purgeable Halocarbons - EPA 8010 (GC/MS)

GGC ID #4965	14	15	16
Client ID IW-1	5.5-6	10.5-11	15.5-16

Compounds	DL ug/kg	Found ug/kg	Found ug/kg	Found ug/kg
Chloromethane	10	nd	nd	nd
Vinyl chloride	10	nd	nd	nd
Bromomethane	10	nd	nd	nd
Chloroethane	10	nd	nd	nd
Trichlorofluoromethane	5	nd	nd	nd
1,1-Dichloroethene	5	5.0	nd	nd
Dichloromethane	5	nd	nd	nd
Trans-1,2-Dichloroethene	5	nd	nd	nd
1,1-Dichloroethane	5	nd	nd	nd
Chloroform	5	nd	nd	nd
1,1,1-Trichloroethane	5	nd	nd	nd
1,2-Dichloroethane	5	nd	nd	nd
Carbon Tetrachloride	5	nd	nd	nd
Bromodichloromethane	5	nd	nd	nd
Cis-1,3-Dichloropropene	5	nd	nd	nd
Trans-1,3-Dichloropropene	5	nd	nd	nd
1,1,2-Trichloroethane	5	nd	nd	nd
Dibromochloromethane	5	nd	nd	nd
Tetrachloroethene	5	nd	nd	nd
Chlorobenzene	5	nd	nd	nd
Bromoform	5	nd	nd	nd
1,1,2,2-Tetrachloroethane	5	nd	nd	nd
1,2-Dichloropropane	5	nd	nd	nd
Trichloroethene	5	nd	nd	nd
2-Chloroethyl Vinyl Ether	10	nd	nd	nd

Remarks:Dichloromethane is a common laboratory solvent and may appear as background contamination on the report. This is well within the EPA allowed limit of 5 times the DL.

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Analytical Summary

Data 05-01-90

Client ERM-West, Inc. Samples collected:04-23-90
Samples received:04-24-90 Samples analysed: 04-27-90
Purgeable Halocarbons - EPA 8010 (GC/MS)

GGC ID #4965		17	18	19
Client ID IW-1		21-21.5	25.5-26	30.3-30.8
Compounds	DL ug/kg	Found ug/kg	Found ug/kg	Found ug/kg
Chloromethane	10	nd	nd	nd
Vinyl chloride	10	nd	nd	nd
Bromomethane	10	nd	nd	nd
Chloroethane	10	nd	nd	nd
Trichlorofluoromethane	5	nd	nd	nd
1,1-Dichloroethene	5	nd	nd	nd
Dichloromethane	5	nd	nd	nd
Trans-1,2-Dichloroethene	5	nd	nd	nd
1,1-Dichloroethane	5	nd	nd	nd
Chloroform	5	nd	nd	nd
1,1,1-Trichloroethane	5	nd	6.0	6.5
1,2-Dichloroethane	5	nd	nd	nd
Carbon Tetrachloride	5	nd	nd	nd
Bromodichloromethane	5	nd	nd	nd
Cis-1,3-Dichloropropene	5	nd	nd	nd
Trans-1,3-Dichloropropene	5	nd	nd	nd
1,1,2-Trichloroethane	5	nd	nd	nd
Dibromochloromethane	5	nd	nd	nd
Tetrachloroethene	5	nd	nd	nd
Chlorobenzene	5	nd	nd	nd
Bromoform	5	nd	nd	nd
1,1,2,2-Tetrachloroethane	5	nd	nd	nd
1,2-Dichloropropane	5	nd	nd	nd
Trichloroethene	5	nd	nd	nd
2-Chloroethyl Vinyl Ether	10	nd	nd	nd

Remarks:Dichloromethane is a common laboratory solvent and may appear as background contamination on the report. This is well within the EPA allowed limit of 5 times the DL.

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Analytical Summary

Data 05-01-90

Client ERM-West, Inc. Samples collected:04-23-90
Samples received:04-24-90 Samples analysed: 04-29-90
Purgeable Halocarbons - EPA 8010 (GC/MS)

GGC ID #4965		20	21	22
Client ID IW-1		35.5-36	25.5-26	30.3-30.8

Compounds	DL ug/kg	Found ug/kg	Found ug/kg	Found ug/kg
Chloromethane	10	nd	nd	nd
Vinyl chloride	10	nd	nd	nd
Bromomethane	10	nd	nd	nd
Chloroethane	10	nd	nd	nd
Trichlorofluoromethane	5	nd	nd	nd
1,1-Dichloroethene	5	nd	nd	nd
Dichloromethane	5	nd	nd	nd
Trans-1,2-Dichloroethene	5	nd	nd	nd
1,1-Dichloroethane	5	nd	nd	nd
Chloroform	5	nd	nd	nd
1,1,1-Trichloroethane	5	nd	nd	nd
1,2-Dichloroethane	5	nd	nd	nd
Carbon Tetrachloride	5	nd	nd	nd
Bromodichloromethane	5	nd	nd	nd
Cis-1,3-Dichloropropene	5	nd	nd	nd
Trans-1,3-Dichloropropene	5	nd	nd	nd
1,1,2-Trichloroethane	5	nd	nd	nd
Dibromochloromethane	5	nd	nd	nd
Tetrachloroethene	5	nd	nd	nd
Chlorobenzene	5	nd	nd	nd
Bromoform	5	nd	nd	nd
1,1,2,2-Tetrachloroethane	5	nd	nd	nd
1,2-Dichloropropane	5	nd	nd	nd
Trichloroethene	5	nd	nd	nd
2-Chloroethyl Vinyl Ether	10	nd	nd	nd

Remarks:Dichloromethane is a common laboratory solvent and may appear as background contamination on the report. This is well within the EPA allowed limit of 5 times the DL.

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Analytical Summary

Data 05-01-90

Client ERM-West, Inc. Samples collected:04-23-90
Samples received:04-24-90 Samples analysed: 04-29-90
Purgeable Halocarbons - EPA 8010 (GC/MS)

GGC ID #4965		23	23	24	24
Client ID IW-1		48-48.5 Upper1"	48-48.5 Lower1"	49.5-50 Upper1"	49.5-50 Lower1"
Compounds	DL ug/kg	Found ug/kg	Found ug/kg	Found ug/kg	Found ug/kg
Chloromethane	10	nd	nd	nd	nd
Vinyl chloride	10	nd	nd	nd	nd
Bromomethane	10	nd	nd	nd	nd
Chloroethane	10	nd	nd	nd	nd
Trichlorofluoromethane	5	nd	nd	nd	nd
1,1-Dichloroethene	5	7.3	nd	nd	nd
Dichloromethane	5	6.4	5.1	6.3	5.6
Trans-1,2-Dichloroethene	5	nd	nd	nd	nd
1,1-Dichloroethane	5	9.6	nd	nd	nd
Chloroform	5	nd	nd	nd	nd
1,1,1-Trichloroethane	5	54.1	nd	12.1	nd
1,2-Dichloroethane	5	6.5	nd	nd	nd
Carbon Tetrachloride	5	nd	nd	nd	nd
Bromodichloromethane	5	nd	nd	nd	nd
Cis-1,3-Dichloropropene	5	nd	nd	nd	nd
Trans-1,3-Dichloropropene	5	nd	nd	nd	nd
1,1,2-Trichloroethane	5	nd	nd	nd	nd
Dibromochloromethane	5	nd	nd	nd	nd
Tetrachloroethene	5	nd	nd	nd	nd
Chlorobenzene	5	nd	nd	nd	nd
Bromoform	5	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	5	nd	nd	nd	nd
1,2-Dichloropropane	5	nd	nd	nd	nd
Trichloroethene	5	nd	nd	nd	nd
2-Chloroethyl Vinyl Ether	10	nd	nd	nd	nd

Remarks:Dichloromethane is a common laboratory solvent and may appear as background contamination on the report. This is well within the EPA allowed limit of 5 times the DL.

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Analytical Summary

Data 04-27-90

Client ERM-West, Inc. Samples collected: 04-23-90
Samples received: 04-24-90 Samples analysed: 04-25-90
Purgeable Halocarbons - EPA 8010 (GC/MS)

GGC ID #4965	Blank	25	26	27
Client ID IW-2		5.5-6	10.5-11	16-16.5

Compounds	DL ug/kg	Found ug/kg	Found ug/kg	Found ug/kg	Found ug/kg
Chloromethane	10	nd	nd	nd	nd
Vinyl chloride	10	nd	nd	nd	nd
Bromomethane	10	nd	nd	nd	nd
Chloroethane	10	nd	nd	nd	nd
Trichlorofluoromethane	5	nd	nd	nd	nd
1,1-Dichloroethene	5	nd	nd	nd	nd
Dichloromethane	5	6.3	7.6	nd	nd
Trans-1,2-Dichloroethene	5	nd	nd	nd	nd
1,1-Dichloroethane	5	nd	nd	nd	nd
Chloroform	5	nd	nd	nd	nd
1,1,1-Trichloroethane	5	nd	nd	nd	nd
1,2-Dichloroethane	5	nd	nd	nd	nd
Carbon Tetrachloride	5	nd	nd	nd	nd
Bromodichloromethane	5	nd	nd	nd	nd
Cis-1,3-Dichloropropene	5	nd	nd	nd	nd
Trans-1,3-Dichloropropene	5	nd	nd	nd	nd
1,1,2-Trichloroethane	5	nd	nd	nd	nd
Dibromochloromethane	5	nd	nd	nd	nd
Tetrachloroethene	5	nd	nd	nd	nd
Chlorobenzene	5	nd	nd	nd	nd
Bromoform	5	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	5	nd	nd	nd	nd
1,2-Dichloropropane	5	nd	nd	nd	nd
Trichloroethene	5	nd	nd	nd	nd
2-Chloroethyl Vinyl Ether	10	nd	nd	nd	nd

Remarks: Dichloromethane is a common laboratory solvent and may appear as background contamination on the report. This is well within the EPA allowed limit of 5 times the DL.

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Analytical Summary

Data 04-27-90

Client ERM-West, Inc. Samples collected:04-23-90
Samples received:04-24-90 Samples analysed: 04-25-90
Purgeable Halocarbons - EPA 8010 (GC/MS)

GGC ID #4965		28	29	30	31
Client ID IW-2		20.5-21	25.5-26	30.5-31	35.5-36

Compounds	DL ug/kg	Found ug/kg	Found ug/kg	Found ug/kg	Found ug/kg
Chloromethane	10	nd	nd	nd	nd
Vinyl chloride	10	nd	nd	nd	nd
Bromomethane	10	nd	nd	nd	nd
Chloroethane	10	nd	nd	nd	nd
Trichlorofluoromethane	5	nd	nd	nd	nd
1,1-Dichloroethene	5	nd	nd	nd	nd
Dichloromethane	5	5.0	nd	nd	nd
Trans-1,2-Dichloroethene	5	nd	nd	nd	nd
1,1-Dichloroethane	5	nd	nd	nd	nd
Chloroform	5	nd	nd	nd	nd
1,1,1-Trichloroethane	5	nd	nd	nd	nd
1,2-Dichloroethane	5	nd	nd	nd	nd
Carbon Tetrachloride	5	nd	nd	nd	nd
Bromodichloromethane	5	nd	nd	nd	nd
Cis-1,3-Dichloropropene	5	nd	nd	nd	nd
Trans-1,3-Dichloropropene	5	nd	nd	nd	nd
1,1,2-Trichloroethane	5	nd	nd	nd	nd
Dibromochloromethane	5	nd	nd	nd	nd
Tetrachloroethene	5	nd	nd	nd	nd
Chlorobenzene	5	nd	nd	nd	nd
Bromoform	5	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	5	nd	nd	nd	nd
1,2-Dichloropropane	5	nd	nd	nd	nd
Trichloroethene	5	nd	nd	nd	nd
2-Chloroethyl Vinyl Ether	10	nd	nd	nd	nd

Remarks:Dichloromethane is a common laboratory solvent and may appear as background contamination on the report. This is well within the EPA allowed limit of 5 times the DL.

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Analytical Summary

Data 04-27-90

Client ERM-West, Inc. Samples collected: 04-23-90
Samples received: 04-24-90 Samples analysed: 04-25-90
Purgeable Halocarbons - EPA 8010 (GC/MS)

GGC ID #4965		32	33	34
Client ID IW-2		20.5-21	25.5-26	30.5-31 Upper1" Lower1"
Compounds	DL ug/kg	Found ug/kg	Found ug/kg	Found ug/kg	Found ug/kg
Chloromethane	10	nd	nd	nd	nd
Vinyl chloride	10	nd	nd	nd	nd
Bromomethane	10	nd	nd	nd	nd
Chloroethane	10	nd	nd	nd	nd
Trichlorofluoromethane	5	nd	nd	nd	nd
1,1-Dichloroethene	5	nd	nd	7.5	nd
Dichloromethane	5	nd	5.0	6.7	nd
Trans-1,2-Dichloroethene	5	nd	nd	nd	nd
1,1-Dichloroethane	5	nd	nd	nd	nd
Chloroform	5	nd	nd	nd	nd
1,1,1-Trichloroethane	5	nd	nd	21.6	nd
1,2-Dichloroethane	5	nd	nd	nd	nd
Carbon Tetrachloride	5	nd	nd	nd	nd
Bromodichloromethane	5	nd	nd	nd	nd
Cis-1,3-Dichloropropene	5	nd	nd	nd	nd
Trans-1,3-Dichloropropene	5	nd	nd	nd	nd
1,1,2-Trichloroethane	5	nd	nd	nd	nd
Dibromochloromethane	5	nd	nd	nd	nd
Tetrachloroethene	5	nd	nd	nd	nd
Chlorobenzene	5	nd	nd	nd	nd
Bromoform	5	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	5	nd	nd	nd	nd
1,2-Dichloropropane	5	nd	nd	nd	nd
Trichloroethene	5	nd	nd	nd	nd
2-Chloroethyl Vinyl Ether	10	nd	nd	nd	nd

Remarks: Dichloromethane is a common laboratory solvent and may appear as background contamination on the report. This is well within the EPA allowed limit of 5 times the DL.

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Analytical Summary

Data 05-08-90

Client ERM-West, Inc. Samples collected: 04-30-90
Samples received: 04-30-90 Samples analysed: 05-03-90
Purgeable Halocarbons - EPA 8010 (GC/MS)

GGC ID #4965	46	47	48
Client ID IW-3	5.5-61	10.1-10.6	15.5-16.1

Compounds	DL ug/kg	Found ug/kg	Found ug/kg	Found ug/kg
Chloromethane	10	nd	nd	nd
Vinyl chloride	10	nd	nd	nd
Bromomethane	10	nd	nd	nd
Chloroethane	10	nd	nd	nd
Trichlorofluoromethane	5	nd	nd	nd
1,1-Dichloroethene	5	nd	nd	nd
Dichloromethane	5	5.2	nd	nd
Trans-1,2-Dichloroethene	5	nd	nd	nd
1,1-Dichloroethane	5	nd	nd	nd
Chloroform	5	nd	nd	nd
1,1,1-Trichloroethane	5	nd	nd	nd
1,2-Dichloroethane	5	nd	nd	nd
Carbon Tetrachloride	5	nd	nd	nd
Bromodichloromethane	5	nd	nd	nd
Cis-1,3-Dichloropropene	5	nd	nd	nd
Trans-1,3-Dichloropropene	5	nd	nd	nd
1,1,2-Trichloroethane	5	nd	nd	nd
Dibromochloromethane	5	nd	nd	nd
Tetrachloroethene	5	nd	nd	nd
Chlorobenzene	5	nd	nd	nd
Bromoform	5	nd	nd	nd
1,1,2,2-Tetrachloroethane	5	nd	nd	nd
1,2-Dichloropropane	5	nd	nd	nd
Trichloroethene	5	nd	nd	nd
2-Chloroethyl Vinyl Ether	10	nd	nd	nd

Remarks: Dichloromethane is a common laboratory solvent and may appear as background contamination on the report. This is well within the EPA allowed limit of 5 times the DL.

Analyst [signature] Supervisor [signature]

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CORPORATION

TELEX: 4720127
FAX: (818) 992-8940

6919 ETON AVENUE • CANOGA PARK • CALIFORNIA 91303-2194

(818) 992-4103

Analytical Summary

Data 05-08-90

Client ERM-West, Inc. Samples collected: 04-30-90
Samples received: 04-30-90 Samples analysed: 05-05-90
Purgeable Halocarbons - EPA 8010 (GC/MS)

GGC ID #4965	49	50	51
Client ID IW-3	20.5-21	25.1-25.6	30.5-31

Compounds	DL ug/kg	Found ug/kg	Found ug/kg	Found ug/kg
Chloromethane	10	nd	nd	nd
Vinyl chloride	10	nd	nd	nd
Bromomethane	10	nd	nd	nd
Chloroethane	10	nd	nd	nd
Trichlorofluoromethane	5	nd	nd	nd
1,1-Dichloroethene	5	nd	nd	nd
Dichloromethane	5	5.0	nd	nd
Trans-1,2-Dichloroethene	5	nd	nd	nd
1,1-Dichloroethane	5	nd	nd	nd
Chloroform	5	nd	nd	nd
1,1,1-Trichloroethane	5	nd	nd	nd
1,2-Dichloroethane	5	nd	nd	nd
Carbon Tetrachloride	5	nd	nd	nd
Bromodichloromethane	5	nd	nd	nd
Cis-1,3-Dichloropropene	5	nd	nd	nd
Trans-1,3-Dichloropropene	5	nd	nd	nd
1,1,2-Trichloroethane	5	nd	nd	nd
Dibromochloromethane	5	nd	nd	nd
Tetrachloroethene	5	nd	nd	nd
Chlorobenzene	5	nd	nd	nd
Bromoform	5	nd	nd	nd
1,1,2,2-Tetrachloroethane	5	nd	nd	nd
1,2-Dichloropropane	5	nd	nd	nd
Trichloroethene	5	nd	nd	nd
2-Chloroethyl Vinyl Ether	10	nd	nd	nd

Remarks: Dichloromethane is a common laboratory solvent and may appear as background contamination on the report. This is well within the EPA allowed limit of 5 times the DL.

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Analytical Summary

Data 05-09-90

Client ERM-West, Inc. Samples collected: 04-30-90
Samples received: 04-30-90 Samples analysed: 05-07-90
Purgeable Halocarbons - EPA 8010 (GC/MS)

GGC ID #4965		52	53	54
Client ID IW-3		35.5-35.8	40-40.5	45.5-46

Compounds	DL ug/kg	Found ug/kg	Found ug/kg	Found ug/kg
Chloromethane	10	nd	nd	nd
Vinyl chloride	10	nd	nd	nd
Bromomethane	10	nd	nd	nd
Chloroethane	10	nd	nd	nd
Trichlorofluoromethane	5	nd	nd	nd
1,1-Dichloroethene	5	nd	nd	nd
Dichloromethane	5	6.3	nd	nd
Trans-1,2-Dichloroethene	5	nd	nd	nd
1,1-Dichloroethane	5	nd	nd	nd
Chloroform	5	nd	nd	nd
1,1,1-Trichloroethane	5	nd	nd	nd
1,2-Dichloroethane	5	nd	nd	nd
Carbon Tetrachloride	5	nd	nd	nd
Bromodichloromethane	5	nd	nd	nd
Cis-1,3-Dichloropropene	5	nd	nd	nd
Trans-1,3-Dichloropropene	5	nd	nd	nd
1,1,2-Trichloroethane	5	nd	nd	nd
Dibromochloromethane	5	nd	nd	nd
Tetrachloroethene	5	nd	nd	nd
Chlorobenzene	5	nd	nd	nd
Bromoform	5	nd	nd	nd
1,1,2,2-Tetrachloroethane	5	nd	nd	nd
1,2-Dichloropropane	5	nd	nd	nd
Trichloroethene	5	nd	nd	nd
2-Chloroethyl Vinyl Ether	10	nd	nd	nd

Remarks: Dichloromethane is a common laboratory solvent and may appear as background contamination on the report. This is well within the EPA allowed limit of 5 times the DL.

Analyst [signature] Supervisor [signature]

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Analytical Summary

Data 05-09-90

Client ERM-West, Inc. Samples collected: 04-30-90
Samples received: 04-30-90 Samples analysed: 05-07-90
Purgeable Halocarbons - EPA 8010 (GC/MS)

GGC ID #4965	55	56	57
Client ID IW-3	48-48.5	49.5-50	50-50.5

Compounds	DL ug/kg	Found ug/kg	Found ug/kg	Found ug/kg
Chloromethane	10	nd	nd	nd
Vinyl chloride	10	nd	nd	nd
Bromomethane	10	nd	nd	nd
Chloroethane	10	nd	nd	nd
Trichlorofluoromethane	5	nd	nd	nd
1,1-Dichloroethene	5	nd	nd	nd
Dichloromethane	5	nd	nd	nd
Trans-1,2-Dichloroethene	5	nd	nd	nd
1,1-Dichloroethane	5	nd	nd	nd
Chloroform	5	nd	nd	nd
1,1,1-Trichloroethane	5	9.1	nd	nd
1,2-Dichloroethane	5	nd	nd	nd
Carbon Tetrachloride	5	nd	nd	nd
Bromodichloromethane	5	nd	nd	nd
Cis-1,3-Dichloropropene	5	nd	nd	nd
Trans-1,3-Dichloropropene	5	nd	nd	nd
1,1,2-Trichloroethane	5	nd	nd	nd
Dibromochloromethane	5	nd	nd	nd
Tetrachloroethene	5	nd	nd	nd
Chlorobenzene	5	nd	nd	nd
Bromoform	5	nd	nd	nd
1,1,2,2-Tetrachloroethane	5	nd	nd	nd
1,2-Dichloropropane	5	nd	nd	nd
Trichloroethene	5	nd	nd	nd
2-Chloroethyl Vinyl Ether	10	nd	nd	nd

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Analytical Summary

Data 05-09-90

Client ERM-West, Inc. Samples collected:04-30-90
Samples received:04-30-90 Samples analysed: 05-08-90
Purgeable Halocarbons - EPA 8010 (GC/MS)

GGC ID #4965	58	59	60
Client ID IW-4	5.5-6	10.5-11	15.2-15.8

Compounds	DL ug/kg	Found ug/kg	Found ug/kg	Found ug/kg
Chloromethane	10	nd	nd	nd
Vinyl chloride	10	nd	nd	nd
Bromomethane	10	nd	nd	nd
Chloroethane	10	nd	nd	nd
Trichlorofluoromethane	5	nd	nd	nd
1,1-Dichloroethene	5	nd	nd	nd
Dichloromethane	5	nd	nd	nd
Trans-1,2-Dichloroethene	5	nd	nd	nd
1,1-Dichloroethane	5	nd	nd	nd
Chloroform	5	nd	nd	nd
1,1,1-Trichloroethane	5	nd	nd	nd
1,2-Dichloroethane	5	nd	nd	nd
Carbon Tetrachloride	5	nd	nd	nd
Bromodichloromethane	5	nd	nd	nd
Cis-1,3-Dichloropropene	5	nd	nd	nd
Trans-1,3-Dichloropropene	5	nd	nd	nd
1,1,2-Trichloroethane	5	nd	nd	nd
Dibromochloromethane	5	nd	nd	nd
Tetrachloroethene	5	nd	nd	nd
Chlorobenzene	5	nd	nd	nd
Bromoform	5	nd	nd	nd
1,1,2,2-Tetrachloroethane	5	nd	nd	nd
1,2-Dichloropropane	5	nd	nd	nd
Trichloroethene	5	nd	nd	nd
2-Chloroethyl Vinyl Ether	10	nd	nd	nd

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Analytical Summary

Data 05-09-90

Client ERM-West, Inc. Samples collected: 04-30-90
Samples received: 04-30-90 Samples analysed: 05-08-90
Purgeable Halocarbons - EPA 8010 (GC/MS)

GGC ID #4965	61	62	63
Client ID IW-4	20.8-21.3	25.5-26	30-30.5

Compounds	DL ug/kg	Found ug/kg	Found ug/kg	Found ug/kg
Chloromethane	10	nd	nd	nd
Vinyl chloride	10	nd	nd	nd
Bromomethane	10	nd	nd	nd
Chloroethane	10	nd	nd	nd
Trichlorofluoromethane	5	nd	nd	nd
1,1-Dichloroethene	5	nd	nd	nd
Dichloromethane	5	nd	nd	nd
Trans-1,2-Dichloroethene	5	nd	nd	nd
1,1-Dichloroethane	5	nd	nd	nd
Chloroform	5	nd	nd	nd
1,1,1-Trichloroethane	5	nd	nd	nd
1,2-Dichloroethane	5	nd	nd	nd
Carbon Tetrachloride	5	nd	nd	nd
Bromodichloromethane	5	nd	nd	nd
Cis-1,3-Dichloropropene	5	nd	nd	nd
Trans-1,3-Dichloropropene	5	nd	nd	nd
1,1,2-Trichloroethane	5	nd	nd	nd
Dibromochloromethane	5	nd	nd	nd
Tetrachloroethene	5	nd	nd	nd
Chlorobenzene	5	nd	nd	nd
Bromoform	5	nd	nd	nd
1,1,2,2-Tetrachloroethane	5	nd	nd	nd
1,2-Dichloropropane	5	nd	nd	nd
Trichloroethene	5	nd	nd	nd
2-Chloroethyl Vinyl Ether	10	nd	nd	nd

Analyst _____ Supervisor Alan Jeffreys

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Analytical Summary

Data 05-09-90

Client ERM-West, Inc. Samples collected:04-30-90
Samples received:04-30-90 Samples analysed: 05-08-90
Purgeable Halocarbons - EPA 8010 (GC/MS)

GGC ID #4965	64	65
Client ID IW-4	20.8-21.3	25.5-26

Compounds	DL ug/kg	Found ug/kg	Found ug/kg
Chloromethane	10	nd	nd
Vinyl chloride	10	nd	nd
Bromomethane	10	nd	nd
Chloroethane	10	nd	nd
Trichlorofluoromethane	5	nd	nd
1,1-Dichloroethene	5	nd	nd
Dichloromethane	5	nd	nd
Trans-1,2-Dichloroethene	5	nd	nd
1,1-Dichloroethane	5	nd	nd
Chloroform	5	nd	nd
1,1,1-Trichloroethane	5	nd	nd
1,2-Dichloroethane	5	nd	nd
Carbon Tetrachloride	5	nd	nd
Bromodichloromethane	5	nd	nd
Cis-1,3-Dichloropropene	5	nd	nd
Trans-1,3-Dichloropropene	5	nd	nd
1,1,2-Trichloroethane	5	nd	nd
Dibromochloromethane	5	nd	nd
Tetrachloroethene	5	nd	nd
Chlorobenzene	5	nd	nd
Bromoform	5	nd	nd
1,1,2,2-Tetrachloroethane	5	nd	nd
1,2-Dichloropropane	5	nd	nd
Trichloroethene	5	nd	nd
2-Chloroethyl Vinyl Ether	10	nd	nd

Analyst [signature] Supervisor [signature]

ERM-West, Inc.

Suite 600 • 1920 Main Street • Irvine, California 92714-7210 • (714) 476-3040 • Telefax (714) 476-3053

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ENVIRONMENTAL

6/5/90

cc: R. Pascoe
D. Stewart
J. Wheeler
W. Moses

P. Duff
A. Spacone

May 31, 1990

Mr. John Hedges
Vice President, Contracts and Production Programs
HR Textron, Inc.
25200 West Rye Canyon Road
Valencia, California 91355

Dear John,

Transmitted with this letter is the progress report that you requested for field activities related to installation and operation of a vapor extraction system at the Pacoima facility in April and May 1990.

Installation of the borings and wells proceeded as planned except during installation of IW-4. A boulder was encountered at 42.5 feet and could not be penetrated by hollow stem auger drilling techniques. IW-4A was therefore installed near IW-4 using an air rotary drilling rig. A description of this installation is included in the attached field activities summary.

Please call us at (714) 476-3040 if you have any questions.

Very truly yours,

ERM-WEST, INC.

Bruce G. Stearns
Project Manager

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VP Legal and Contracts

Attachment

cc: Jeff Wheeler, HR Textron, Inc.

350097

ATTACHMENT

FIELD ACTIVITIES

This document describes the field methods employed to install the vapor extraction system at HR Textron's facility located at 10445 Glenoaks Boulevard, Pacoima, California. Field activities involved the installation of soil borings and extraction/injection wells and sampling of the soil.

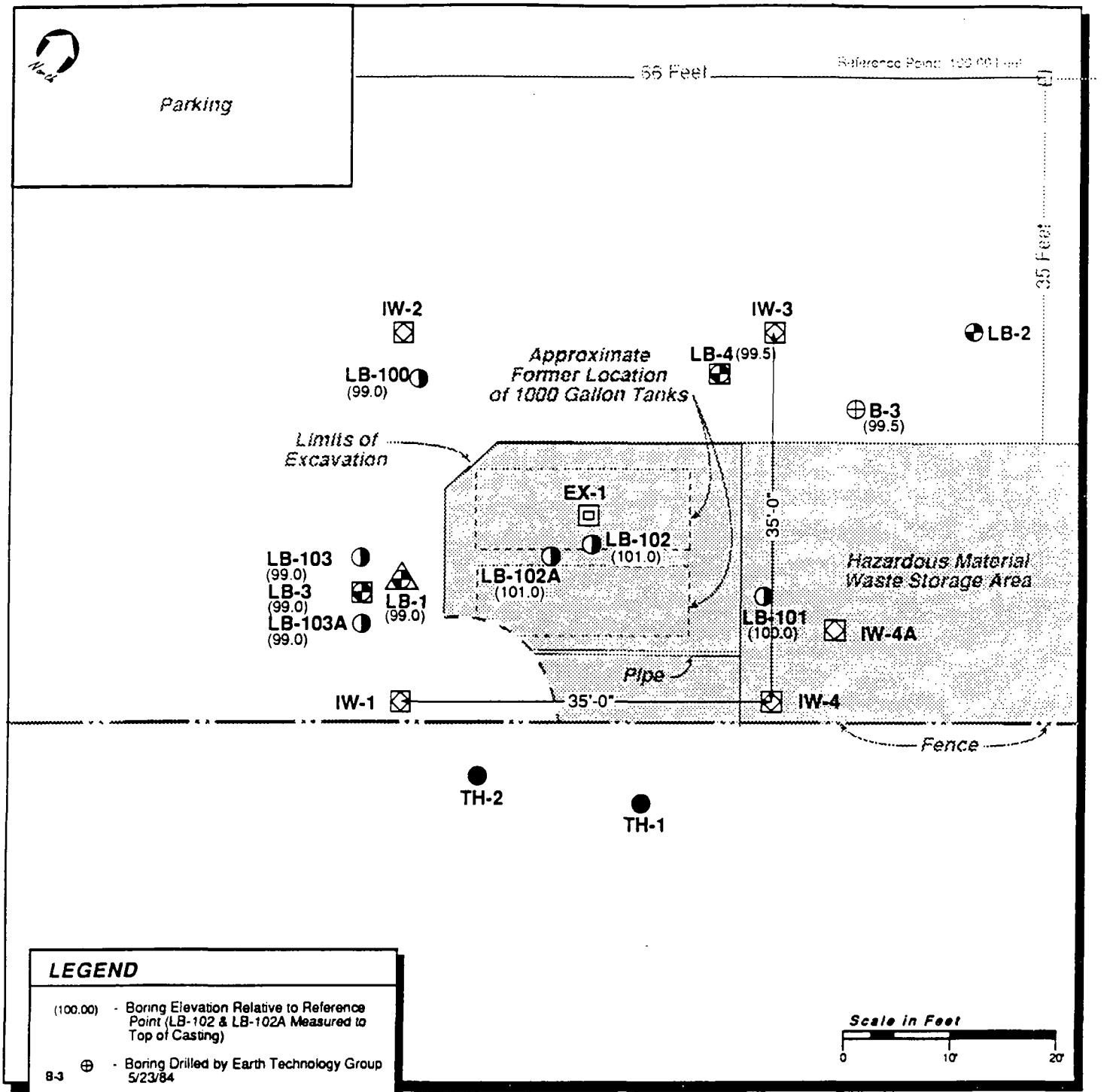
Soil data was obtained through the installation and sampling of five soil borings, four of which were converted to air injection wells. One boring in the center of the former tank excavation was converted to a vapor extraction well. Boring and well locations are presented on Figure 1.

Installation and Sampling of Soil Borings

Soil borings were installed using a CME-55 truck-mounted drilling rig equipped with 10-inch continuous-flight hollow-stem augers. Soil borings converted to wells were installed to a depth of up to 52 feet below grade, depending on the thickness of the clay layer at approximately 50 feet. Relatively undisturbed soil samples were collected from all borings at 5-foot intervals except as noted in the boring logs. Soil samples were collected by pounding a California modified split-spoon sampler ahead of the augers with a 140-pound hammer dropped from a height of 30 inches.

Soil sample tubes were examined in 6-inch sections for classification and lithologic description. Soil samples and drill cuttings were visually inspected and classified according to the Unified Soil Classification System (USCS). A boring log was generated at each location which records vertical variations in lithology, moisture content, color, texture, odor and organic vapor concentration of the soil. Boring logs from this investigation are included in Appendix A.

A portion of the soil from each sample interval was selected for headspace measurement of soil organic vapor concentration. The sample was extruded into a Zip-lock bag, sealed and allowed to equilibrate in the sunlight for approximately 15 minutes. The organic vapor concentration in the sample headspace was then measured with a photoionization detector calibrated to benzene. The organic vapor concentration of the soil was recorded on the boring log.



WELL LOCATIONS FOR VAPOR EXTRACTION SYSTEM HR TEXTRON FACILITY PACOIMA, CALIFORNIA

ERM-West, Inc. 3/90
873/DMPV-3.29.90

Soil samples for chemical analysis were collected in 2-inch diameter by 6-inch brass tubes. The sample tubes were covered at each end with Teflon® film and air-tight plastic caps. Each sample was labeled indicating sample number, depth, time, job number, and client. Following sample labeling, the samples were immediately placed in a Zip-lock bag and enclosed in an iced cooler for transport to the analytical laboratory. Chain of Custody forms were completed in the field and accompanied the samples to the analytical laboratory.

Injection/Extraction Well Design and Construction

Of the five soil borings installed during these field activities, four were converted to vapor wells in accordance with the investigation workplan. A boulder was encountered at 42.5 feet below grade at IW-4, and that well was completed to 40 feet. In general the wells were constructed using 4" diameter schedule 40 polyvinyl chloride (PVC) blank well casing and 40 feet of 0.03-inch slotted PVC well screen.

Well casing and screen were installed through the hollow stem augers. As the augers were removed, the annular space between the borehole wall and the well screen was backfilled with a medium aquarium grade sand filter pack compatible with screen perforation size. The sand pack extended approximately one foot above the well screen. A one- to two-foot thick bentonite pellet well seal was placed directly above the sand pack and hydrated with approximately three gallons of tap water.

The remainder of the annular space was filled with Volclay grout to approximately 1 to 2 feet below grade. A PVC slip cap was placed over the well orifice, and the well head was enclosed in a utility box at IW-1, IW-2 and IW-3 to provide well security and to prevent surface water infiltration. IW-4 was finished to grade with concrete because it was located on the hazardous materials pad. EX-1 was left open to two feet below grade and covered with the tarpaulin that normally covers the excavated area (to prevent infiltration of precipitation) where the underground tanks were located. A well construction diagram is provided with each boring log in Appendix A.

Installation of IW-4A

Since IW-4 could not be completed to the design depth of 50 feet, an air rotary drilling rig was used to complete a nearby well to 50 feet. The air rotary rig operates using compressed air to drive a hammer bit, and the air stream carries cuttings to the ground surface within an 8-inch diameter steel casing. The air stream was enhanced with

soap foam to improve the air viscosity to lift sticky clay cuttings to the surface.

IW-4A was installed on May 11-12, 1990 at the location shown on the boring log sketch for IW-4. This well was installed using 40 feet of 4" diameter schedule 40 polyvinyl chloride (PVC) blank well casing and 10 feet of 0.03-inch slotted PVC well screen. Well casing and screen were installed through the steel casing. As the casing was removed, the annular space between the borehole wall and the PVC was backfilled with a medium aquarium grade sand filter pack compatible with screen perforation size. The sand pack extended to 10.25 feet below the top of the concrete pad. A one-foot thick bentonite pellet well seal was placed directly above the sand pack and hydrated with approximately three gallons of tap water.

The remainder of the annular space was filled with Volclay grout to 2.5 feet below grade. IW-4A was finished to grade with concrete because it was located on the hazardous materials pad. A PVC locking snap-cap was installed at the surface to provide security for the injection well.

Analytical Results

Total Petroleum Hydrocarbons

In borehole EX-1 (which was installed through the cylindrical plume) the concentrations of total petroleum hydrocarbons (TPH) in soil samples taken in the interval from land surface to the top of the 50-foot clay layer ranged from approximately 1,000 to 20,000 parts per million (ppm) with most concentrations above 8,000 ppm.

Immediately above the 50-foot clay layer these elevated soil concentrations dropped to 900 ppm. Within the clay layer itself, concentrations of TPH were reported at 400 ppm in the upper portion and at non-detectable levels in the lower portion of the clay.

In the four boreholes installed and sampled outside the cylindrical plume (IW-1 through IW-4) TPH concentrations were at the non-detectable level. The only exception to this was trace levels of TPH (less than 20 ppm) at 15 and 20 feet depth in one borehole. All soil samples below these two were reported as non-detectable for TPH.

Volatile Organic Compounds

In borehole EX-1 the concentrations of volatile organic compounds (VOCs) in soil samples taken in the interval from land surface to the

top of the 50-foot clay layer ranged from approximately 2,000 to 40,000 parts per billion (ppb).

Immediately above the 50-foot clay layer these elevated soil concentrations dropped to 1000 ppb. Within the clay layer itself, concentrations of VOCs were reported at 500 ppb in the upper portion and at trace levels (40 ppb) in the lower portion of the clay.

In the four boreholes installed and sampled outside the cylindrical plume (IW-1 through IW-4) VOC concentrations were at the non-detectable level except for trace levels (less than 10 ppb) in the uppermost portion of the clay layer itself. The only exception to this was trace levels of VOC (less than 10 ppb) at depths less than 30 feet in one borehole.

Benzene, Toluene, Ethylbenzene and Xylene

In borehole EX-1 the concentrations of benzene, toluene, ethylbenzene and xylene (BTEX) in soil samples taken in the interval from land surface to the top of the 50-foot clay layer ranged from approximately 50 to 21,000 parts per billion (ppb).

Immediately above the 50-foot clay layer and within the clay layer itself these elevated soil concentrations dropped to non-detectable levels.

APPENDIX A

BORING LOGS

350098

Environmental Resources Management

Drilling Log

Project HR Textron Owner

Location Pacoima W.O. Number 873.01

Well Number EX-1 Total Depth 52.5 Diameter 10"

Surface Elevation Water Level: Initial 24-hrs.

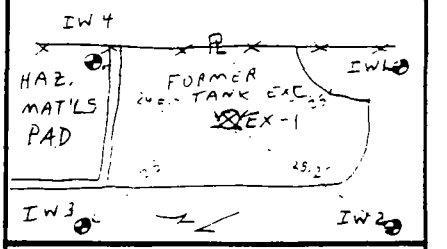
Screen: Dia. 4" Length 40' PVC Slot Size .02

Casing: Dia. 4" Length 10' Type PVC

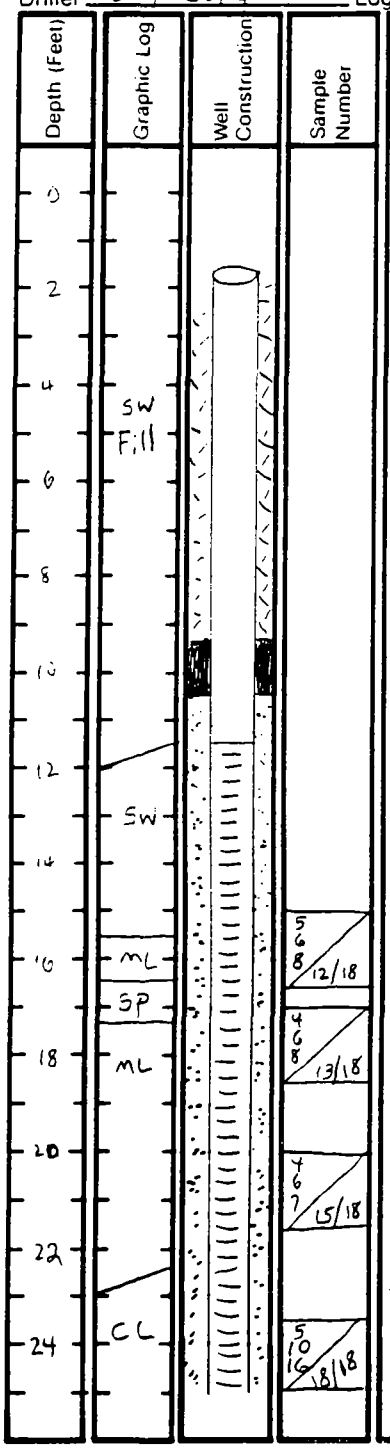
Drilling Company Spectrum Explor Drilling Method HSA

Driller Terry Sump Log By BGS Date Drilled 4-22-90

Sketch Map



Notes
PVC slipcap on top of casing. Borehole covered by tarp.



Description/Soil Classification
(Color, Texture, Structures)

BROWN SILTY FINE TO COARSE SAND FILL, sl. moist

PID (cuttings) = 0.0 ppm

PID (cuttings) = 0.0 ppm

Native soil encountered at approximately 12 feet
cobbly 12.5 to 15 feet
LIGHT BROWN FINE TO COARSE SAND, sl. moist, loose, grades into LIGHT GRAY SILTY FINE TO MED SAND, sl. moist PID=395ppm
LIGHT GRAY SANDY SILT, sl. moist, some clayey thin layers, primarily very fine to fine sand, mod. stiff PID=458ppm

gray-green below 20 feet PID = 417 ppm

BROWN SILTY SANDY CLAY, sl. moist, stiff, fine to med. sand, some thin layers of clayey sandy silt. PID peak in breathing zone > 50ppm PID = 162ppm

Environmental Resources Management

Drilling Log

Project HR Textron Owner

Location Pacoima W.O. Number 823.01

Well Number EX-1 Total Depth Diameter

Surface Elevation Water Level: Initial 24-hrs.

Screen: Dia. Length Slot Size

Casing: Dia. Length Type

Drilling Company Drilling Method

Driller Log By BGS Date Drilled 4-22-90

Sketch Map

See p. 1

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
25	CL		9 15 19 / 5/18	PID = 353 ppm
27				
29	ML			GRAY CLAYEY SANDY SILT, sl. moist, mod dense, fine to med. sand, less clay more sand toward base
31	SP		4 7 10 / 18/18	LIGHT GRAY FINE TO MEDIUM SAND, tr. moisture, tr. silt PID = 432 ppm
33				
35			6 9 15 / 14/18	light brown, tr. coarse sand below 35 Feet PID = 466 ppm
37	SW			LIGHT GRAY FINE TO COARSE SAND, dry, tr. silt, tr. to some gravel, very dense PID = 376 ppm
39			17 30 59 / 17/18	with gravel below 41 feet PID = 1121 ppm
41			33 52 55 / 18/18	
43	SW/GW		50/3 0/5	LIGHT GRAY SAND AND GRAVEL, dry, very dense, fine to coarse sand, subang to subrounded. Gravel is angular to subrounded PID = 663 ppm
45			100/6 0/6	
47	CL			RED BROWN SILTY CLAY WITH SAND, sl. moist, tr. to some gravel, sand med to coarse, hard PID = 95 ppm
49			5 8 20 / 18/18	

Environmental Resources Management

Drilling Log

Project HR Textron Owner

Location Pacoima W.O. Number 823.01

Well Number EX-1 Total Depth Diameter

Surface Elevation Water Level: Initial 24-hrs.

Screen: Dia. Length Slot Size

Casing: Dia. Length Type

Drilling Company Drilling Method

Driller Log By BGS Date Drilled 4-22-90

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
50	CL		9 25 54 15/18	with some sand, 50 - 51 feet PID = 184 ppm
52			9 20 10/12	increasing sand content 51.5 - 52.5 feet PID = 13.3 ppm
				End of Boring 52.5 feet
54				

Environmental Resources Management

Drilling Log

Project HR Textron Owner

Location Pacoima W.O. Number 823.02

Well Number IW-1 Total Depth 50.5' Diameter 10"

Surface Elevation Water Level: Initial 24-hrs.

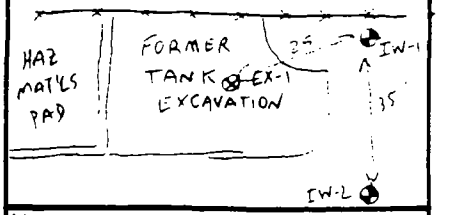
Screen: Dia. 4" Length 40' PVC Slot Size .03

Casing: Dia. 4" Length 9' PVC Type

Drilling Company Spectrum Explor Drilling Method HSA

Driller Terry Sump Log By BGS Date Drilled 4-21-90

Sketch Map



Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
0	SM		5 6 10 14/18	1.5" Asphalt DARK BROWN SILTY SAND FILL WITH GRAVEL, sl. moist
2				cobbles 2.5 to 3 feet
4				GRAY MEDIUM TO COARSE SAND, dry, mod. dense, tr. fine gravel PID = 0 ppm
6	SP			
8				
10			10 18 20 15/18	dense below 10 feet PID = 0 ppm
12				
14				
16			5 9 12 14/18	trace med. sand, no gravel 15-16 feet PID = 0 ppm mod. dense below 15 feet
18				
20	CL		3 3 4 15/18	RED BROWN SANDY SILTY CLAY, sl. moist, mod. stiff, fine to med. sand, some thin layers of clayey sandy silt PID = 0 ppm
22				
24				

Environmental Resources Management

Drilling Log

Project HR Textron Owner

Location Pacoima W.O. Number 873.02

Well Number IW-1 Total Depth Diameter

Surface Elevation Water Level: Initial 24-hrs.

Screen: Dia. Length Slot Size

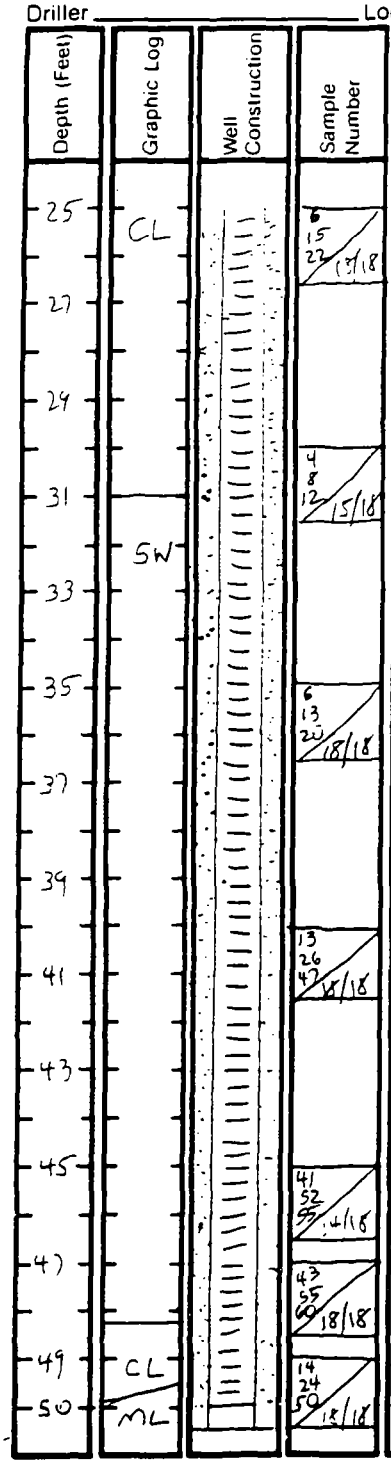
Casing: Dia. Length Type

Drilling Company Drilling Method

Driller Log By BGS Date Drilled 4-21-90

Sketch Map

Notes



Description/Soil Classification
(Color, Texture, Structures)

less silt, tr. organic matter scattered in soil matrix below 25 feet PID = 0 ppm

Clay becomes sandier below 30.5 feet

LIGHT BROWN SILTY FINE TO COARSE SAND, dry, dense, tr. very coarse sand PID = 0 ppm

red brown sandy silt and silty fine sand 35-35.4 feet

brown very fine to med sand with trace moisture below 35.4 feet PID = 0 ppm

brown silty v. fine to coarse sand with tr. igneous cobbles below 40.5 feet PID = 1.0 ppm

Lost nylon measuring tape attached to a steel handle at 41 feet during well construction with gravel below 43 feet

PID = 1.0 ppm

RED BROWN SANDY SILTY CLAY, sl. moist, hard, primarily med. to coarse sand PID = 1.0 ppm

RED BROWN SANDY CLAYEY SILT, sl. moist, fine to coarse sand

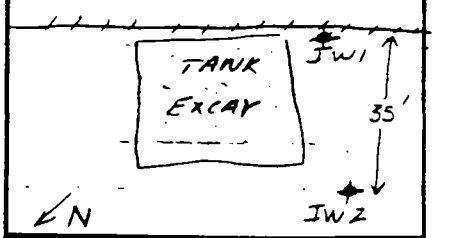
End of Boring 50.5 feet

Environmental Resources Management

Drilling Log

Project: HR-Textron Pacioma Owner: HR Textron
Location: Pacoima W.O. Number: 873.02
Well Number: IW2 Total Depth: 49' Diameter: 10"
Surface Elevation: ____ Water Level: Initial ____ 24-hrs. ____
Screen: Dia. ____ Length ____ Slot Size ____
Casing: Dia. ____ Length ____ Type ____
Drilling Company: Spectrum Drilling Method: HSA
Driller: Greg Log By: RLL Date Drilled: 4/1/90

Sketch Map



Notes

Depth (Feet)	Graphic Log	Well Construction	Blow Count / Sample Number	Description/Soil Classification (Color, Texture, Structures)
0940 HRS 0				~2 in. of Asphalt at surface
2	SW w/ gravel			Gravelly sand, lt. grey-tan, granule, m-v.c. grained, moist, angular, 70% quartz, 15% dk. lithics, 5% mafic minerals, no odors.
4				
6		PVC	5 15 20 IW2 5.5-6	As above, sample IW2/5.5-6 taken at 0912 HRS. Rec. 14/18" Physical test sample not feasible at this depth. PID = Ø ppm headspace at 6'.
8				Sand w/ some granule gravel, as above, some cobbles, granitic.
10			6 12 16 IW2 10.5-11	
12	ML			Sandy Clayey SILT, dk. brn-reddish brn, sl moist, m-c. grained sand, med. dense, no odors/staining Sample IW2/10.5-11 taken at 0925 HRS. Sample IW2/11-11.5 taken at 0925 HRS for physical tests. PID = Ø ppm headspace at 11'.
14				
16			6 7 13 IW2 15.5-16	Sandy SILT w/some clay, brn-reddish brn, sl. moist, f. gr. sand, med. stiff, no odors/stains. PID = Ø ppm headspace. Sample IW2/15.5-16 taken at 0940 HRS. Sample IW2/16-16.5 taken at 0940 HRS for physical tests.
18				
20	SM		11 11 10 IW2 20.5-21	Clayey silty SAND, v f-f. grained, grading to sandy silty Clay at 21.8', brn, moist, med. stiff, some black organic material, no odors/stains. PID = 1.Ø ppm headspace. Sample IW2/20.5-21 taken at 1022 HRS Sample IW2/21-21.5 taken at 1022 HRS for physical tests.
22	CL			
24	w/ gravel SW		12 18 23 IW2 25.5-26	Some gravel (granules) in cuttings at ~23'.
	ML			Gravelly sand to 25.7', m-c. grained, quartzose, med. dense,

Environmental Resources Management

Drilling Log

Project HR Tex - Pacoima Owner HR Textron

Location Pacoima W.O. Number

Well Number IW2 Total Depth 49' Diameter 10"

Surface Elevation Water Level: Initial 24-hrs.

Screen: Dia. Length Slot Size

Casing: Dia. Length Type

Drilling Company Spectrum Drilling Method HSA

Driller Greg Log By RLC Date Drilled 4/21/90

Sketch Map

Sep P1

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
28	ML			Sample IW2/25.5-26 taken at 1022 HRS. Sample 26-36.5 taken at 1022 HRS for physical tests. Very slow drilling.
30	SM		6 14 15 IW2 30.5-31	Silty SAND, lt. brn-buff, f-m. grained, quartzose, med. dense, sl. moist, no odors/stains. Rec. 16/18". PID = 0.3 ppm headspace at 31'. Samples IW2/30.5 and IW2/30.5-31 (physical) taken at 1045 HRS.
32				Slow drilling.
34				SAND w/ some gravel (granitic, weathered), angular to subrounded, granule-pebble, f-v.c. grained, brn-grey brn, med. dense, no odors/stains. Sand contains abundant angular plagioclase from weathered granitic gravel. Samples IW2/35.5-36 and IW2/36-36.5 (physical tests) taken at 1116 HRS.
36	SW		25 29 27 IW2 35.5-36	
38 (1200 HRS)	w/ gravel			PID = NR ppm headspace at 36'.
40			37 40 43 IW2 40.5-41	As above, poorly sorted, f-v.c. grained, abundant quartz, feldspar (granitic sand). Sample IW2/40.5-41 and IW2/41-41.5 (physical) taken at 1244 HRS. Rec. 16/18". PID = 1.6 ppm headspace at 41'.
42 (Down For Rig Repair 1245-1410 HRS)				
44 (1500 HRS)				
46	ML		34 71 14 IW2 45.5-46	As above to 46.2'. Sandy SILT, V.f-f. grained, brn-reddish brn, dry, med. dense, no odors/stains. 580A = 1.0 ppm headspace at 45.5'. Rec. 16/18". Samples IW2/45.5-46 and IW2/46-46.5 (physical tests) taken at 1525 HRS.
48	ML/CL		12 26 18 IW2 47.5-48	Grading to Sandy Clayey SILT at 47.0', stiff, dry, white mottles (altered feldspar), some rare gravel, no odors/stains. Samples IW2/47.5-48 and IW2/48-48.5 taken at 1511 HRS. Rec. 17/18" PID = 0.8 ppm headspace at 48'. Hole cleaned-out to 49'.
50				
52				

Environmental Resources Management

Drilling Log

Project: Hi. Textron Pacioma | Owner: HR Textron

Location: Pacoima | W.O. Number: 973.02

Well Number: IW-3 | Total Depth: | Diameter: 10"

Surface Elevation: | Water Level: Initial: | 24-hrs.:

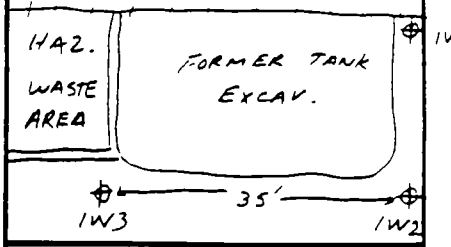
Screen: Dia. 4" | Length 40' | Slot Size:

Casing: Dia. | Length | Type:

Drilling Company: Spectrum Expl. | Drilling Method: HSA

Driller: Greg Lawler | Log By: RLL | Date Drilled: 4/28/90

Sketch Map



Notes: Set Bentonite Seal at bottom of borehole. Casing stick up 49' 11"

0815 HRS

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
0				~3in asphalt at surface. Upper 1-2 feet dk-grey, odorous
2	SW w/ gravel			Gravelly SAND, granule-pebble, f-v c. grained, sl. moist, brn-grey, no odors/stains.
4				
6			3 14 20 IW3 5.5-6	As above, loose, weak odor, ~15% lithics, mafics, 85% quartz, plagioclase, k-spar. Pebbles granitic, volcanic(?) Sample IW3/5.5-6 taken at 0830 HRS. Rec. 12/18". PID = 0 ppm headspace.
8				
10	SM/SC		4 9 12 IW3 10.1-10.6	Clayey, silty, SAND w/ trace granule gravel, brn-greenish brn, loose-med. dense, m-v.c. grained, sl moist, weak odor(?). Sample IW3/10.1-10.6 taken at 0840 HRS. Rec. 16/18". PID reading not taken Sample IW3/10.6-11.1. Abundant Chlorite.
12				
14				Dioritic and gneissic pebbles in cuttings
16			4 7 9 IW3 15.1-15.6	As above without gravel, sl moist, no odors/stains Samples IW3/15.6-16.1 and IW3/15.1-15.6 taken at 0855 Hrs. Rec. 11/18" (Physical Tests) PID = 0 ppm headspace.
18	CL			Increasing clay content in cuttings
20			5 13 23 IW3 20.5-21	Silty CLAY w/ trace v.f. sand and rare gravel, dry-sl. moist, med. stiff-stiff, brn., no odors/stains. Samples IW3/20.5-21 and IW3/21.0-21.5 (physial tests) taken at 920 HRS. Rec. 16/18". PID = 0 ppm headspace.
22				
24	SC / ML		5 15 IW3 25	Clayey Silty SAND, v.f-f. grained, dry-sl. moist, brn, med. stiff, no odors/stains. Samples IW3/25.1-25.6 and IW3/25.6-26.2 taken (physical)

Environmental Resources Management

Drilling Log

Project HR Textron - Pacoima Owner HR Textron

Location Pacoima W.O. Number 873.02

Well Number IW3 Total Depth _____ Diameter 10"

Surface Elevation _____ Water Level: Initial _____ 24-hrs. _____

Screen: Dia. _____ Length _____ Slot Size _____

Casing: Dia. _____ Length _____ Type _____

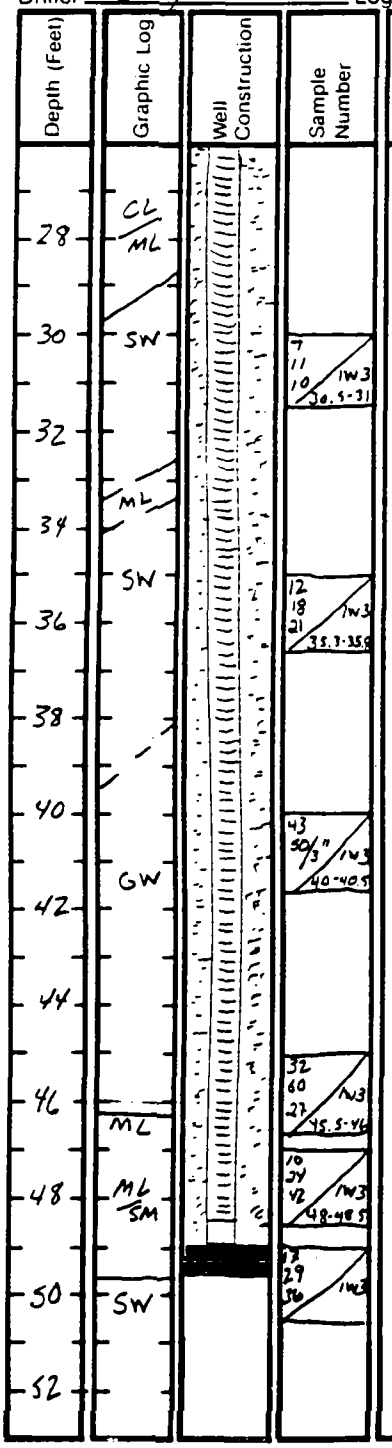
Drilling Company Spectrum Drilling Method HSA

Driller Greg Log By RLL Date Drilled 4/28/90

Sketch Map

See P.1

Notes



Description/Soil Classification
(Color, Texture, Structures)

Increasing clay content, mafic granule - pebbles (diorite?)

SAND w/ rare granule gravel, f-v.c grained, sl. moist, buff - lt. brn, loose - med. dense, no odors/stains. Samples IW3/30.5-31 and IW3/31-31.5 (physical tests) taken at 1005 HRS. Rec. 16/18". PID = 0 ppm headspace. Sand is quartzitic. Thin silty layer at ~33-34'.

As above, m-v.c. grained. Samples IW3/35.3-35.8 and IW3/35.8-36.4 taken at 1035 HRS. Rec. 15/18". PID = 0 ppm headspace.

Increasing gravel

Sandy Gravel, pebble-cobble, m.-v.c. grained, dry-sl. moist, buff, quartzitic, loose-med. dense, no odors. Gravel clast > 2in dia in sample tube. Rec. 9/9". Sample IW3/40.0-40.5 taken at 1105 HRS. PID = 0 ppm headspace. Gravel is pegmatite clast, 40% quartz, 60% feldspar.

GRAVEL, as above to 46.2'

SILT w/ some clay, dk. brn w/ some black organic mottling, dry, med. stiff, no odors. Rec. 16/18". Samples IW3/45.5-46 and IW3/46-46.5' (physical tests) taken at 1140 HRS. PID = 0 ppm headspace.

Becoming sandy at ~47', with abundant organic matter. Sample IW3/48-48.5 taken at 1250 HRS. Rec. 15/18" PID = 0 ppm headspace

Gravelly SAND at 49.7', m-v.c. grained, angular, quartzitic, no odors/stains. Rec. 16/18". PID = Not taken. Samples IW3/49.5-50 and IW3/50-50.5 taken at 1310 HRS. Sample IW3/50-50.5 ...

Environmental Resources Management

Drilling Log

Project HR Textron Owner

Location Pacoima W.O. Number 873.02

Well Number IW-4 Total Depth 42.75' Diameter 10"

Surface Elevation Water Level: Initial 24-hrs.

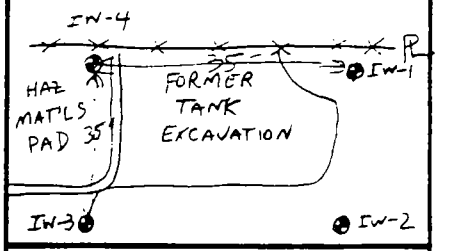
Screen: Dia. 4" Length 20' PVC Slot Size 0.03

Casing: Dia. 4" Length 9' Type PVC

Drilling Company Spectrum Explor Drilling Method HSA

Driller Greg Lawler Log By BGS Date Drilled 4/28-29/90

Sketch Map



Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
0				7-inches concrete at surface
2	SW			BROWN-GRAY GRAVELLY SAND, sl. moist, fine to very coarse sand, pebbles to boulders, mod. dense
4				Note: Cave-in to 3.5 feet during well construction
6			4 5 7 13/18	gray and no gravel below 5 feet PID = 0ppm
8	GW			GRAY SANDY GRAVEL, sl. moist, dense, pebble to boulder, tr. brick and glass, sand layer 8.5 to 9 feet
10	SW		11 22 18 15/18	GRAY GRAVELLY SAND, sl. moist, fine to v. coarse sand, pebble size gravel PID = 0ppm
12				gravel layer 12.5 to 13 feet
14	GW			GRAY SANDY GRAVEL, sl. moist, very dense, pebble to boulder, coarse sand PID = 0ppm
16			9 16 50/4 8/16	
18	SW			GRAY GRAVELLY SAND, sl. moist, fine to v. coarse sand, pebble size gravel, mild rig chatter 18 to 18.5 feet
20	ML		4 7 9 15/18	RED BROWN SANDY CLAYEY SILT, moist, mod dense, v. fine to tr. med sand PID = 0ppm
22				
24				

Environmental Resources Management

Drilling Log

Project HR Textron Owner

Location Pacoima W.O. Number 873.02

Well Number EW-4 Total Depth Diameter

Surface Elevation Water Level: Initial 24-hrs.

Screen: Dia. Length Slot Size

Casing: Dia. Length Type

Drilling Company Drilling Method

Driller Log By BGS Date Drilled 4/28-29/90

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
25	ML		8 10 15 18/18	with sand 25 to 26 feet PID = 0 ppm
27	CL			RED BROWN SILTY CLAY WITH SAND, moist, stiff, very fine to med sand
29	SM			LIGHT BROWN SILTY FINE SAND, sl. moist, mod. dense, tr. med sand, tr. clay 30 to 30.5 feet
31			5 10 8 12/18	PID = 0 ppm
33	SP			LIGHT GRAY FINE TO MEDIUM SAND, dry, dense, tr. very coarse sand
35			9 18 27 12/18	PID = 0 ppm
37				
39	SW			LIGHT BROWN V. FINE TO V. COARSE SAND WITH GRAVEL, sl. moist, very dense, rounded to subang pebbles, rig chatter, no sample for PID
41			48 50/4 6/10	boulder at 42.5 feet.
43				End of Boring 42.75 feet
45				

ENVIRONMENTAL RESOURCES MANAGEMENT
ERM-WEST

FIELD WELL COMPLETION FORM

Job Name: HR Textron Owner: 5-11-90
Location: Pacoima Job #: 873.02
Logged By: BGS Reviewed By: _____ Project Manager: BGS
Well Number: IW-4A Driller: Don Arrington Spectrum Exploration
Equipment
_____ Inch Hollow Stem Auger
8 Inch ~~Rotary Mud~~ Air Rotary Hours Drilled: _____
Gallons of Water Used During Drilling: _____ Gallons: _____
Method of Decontamination Prior to Drilling: _____

DEVELOPMENT

Method of Development: _____
Development Began Date: _____ Time: _____

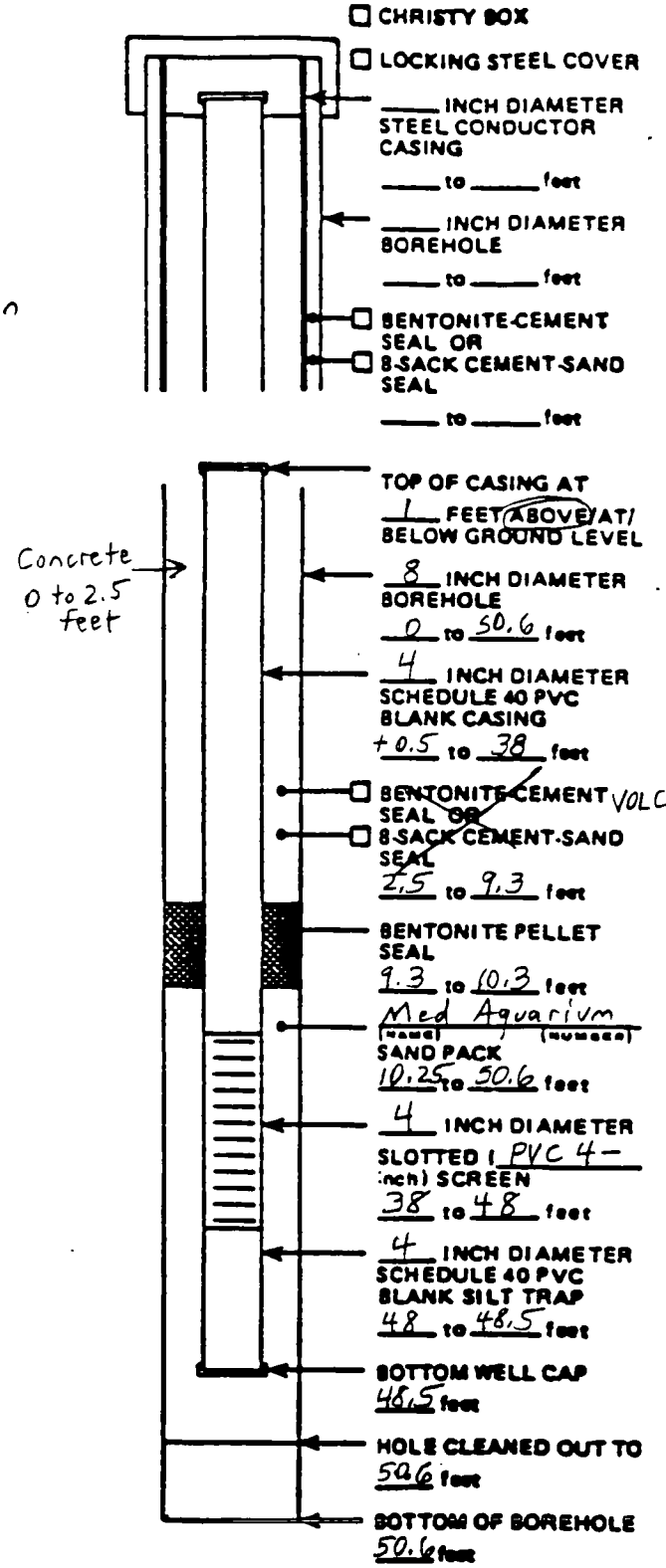
Yield: GPM	Time: From: To	Date:
Yield: GPM	Time: From: To	Date:
Yield: GPM	Time: From: To	Date:
Yield: GPM	Time: From: To	Date:

Total Water Removed During Development: _____ Gallons
Description of Turbidity at End of Development: ☐ Clear ☐ Slightly cloudy ☐ Mod. Turbid ☐ Very Muddy
Odor or Water: _____
Water Discharged To: ☐ Ground Surface ☐ Storm Sewers ☐ Drums ☐ Tank Truck ☐ Storage Tank ☐ Other
Depth to Water After Development: _____ Feet

MATERIALS USED

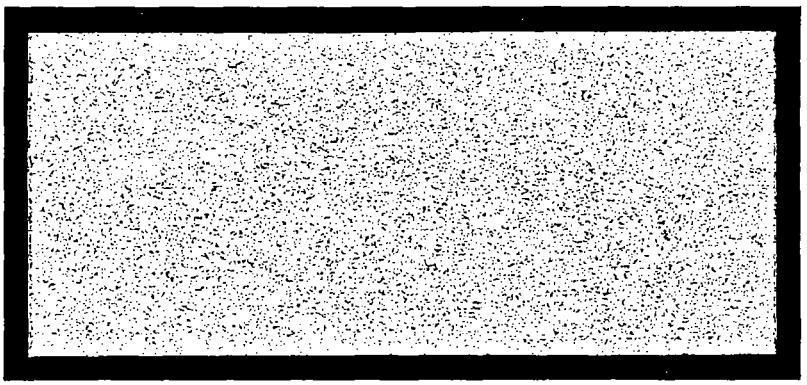
9 Sacks of Medium Aquarium Sand
2 Sacks of _____ Cement
_____ Gallons of Grout Used
_____ Sacks of Powdered Bentonite
50 Pounds of Bentonite Pellets
38.5 Feet of 4 Inch PVC Blank Casing
10 Feet of .03 Inch PVC Slotted Screen
_____ Feet of _____ Inch Steel Conductor Casing
_____ Yard^3 Cement-Sand (Redi-Mix) Ordered
_____ Yard^3 Cement-Sand (Redi-Mix) Used
Concrete Pumper Used? X No ____ Yes
Name _____

Well Cover Used: ____ Locking Steel Cover ✓ Christy Box ____ Other Seal Cap



NOT TO SCALE

ADDITIONAL INFORMATION: NOTE! Cuttings from bottom of boring were SILTY SANDY CLAY



ERM-West

350099

SITE CHARACTERIZATION WORKPLAN
HR TEXTRON
PACOIMA FACILITY

Prepared for

HR Textron

Prepared by

ERM-West, Inc.
1920 Main Street, Suite 600
Irvine, CA 92714

May 1990

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SECTION 1

INTRODUCTION

This document presents a proposed site characterization workplan for ground water investigation at HR Textron's Pacoima facility at 10445 Glenoaks Boulevard, Pacoima, California. This workplan has been prepared in response to Cleanup and Abatement Order (CAO) No. 89-104 issued by the Regional Water Quality Control Board (RWQCB). One well will be completed downgradient of the two former underground tanks. The well will be sampled for volatile organic compounds (VOCs) by EPA Method 624.

A leak from underground storage tanks occurred in the past at this site. The two underground storage tanks, 1,000 gallons capacity each, were used for waste oil storage. The tanks were removed in 1985, and the excavation (approximately 12 feet deep) was backfilled with imported soil. The investigations conducted subsequent to the removal of the tanks showed that the constituents in soil beneath the former tank pit consisted of oil hydrocarbons and VOCs to a maximum depth of 52.5 feet below the ground surface.

A clay layer, located at approximately 46 to 52.5 feet, retarded vertical migration of the soil contaminants. VOCs have not been detected below this layer, and TPH concentrations are generally in the range of 10 ppm or less in soils below the clay layer. This range of TPH values is considered to be representative of normal background organic concentrations in the sandy soils of the area. Lateral migration of constituents appears to be limited. Borings in the area of the former tank pit showed that VOCs were below laboratory detection limits east, north and northwest of the tank pit. Traces of VOCs were detected in soil samples collected above the clay layer in the cluster of borings LB-3, LB-103 and LB-103A southwest of the excavation.

A substantial amount of previous investigative work has been performed to characterize the lateral and vertical extent of the tank release. In particular, reports have been prepared by ERM-West, Inc. and Leighton and Associates (L&A), and a summary of the data in these reports is presented herein.

A review of the site geology and hydrogeology provides key supporting information for determining the lateral and vertical extent of the tank release. The lithologic and stratigraphic characteristics of the soil profile have a major influence on the movement of chemicals released from the tank, while the site hydrogeology determines the

depth to, as well as the direction and magnitude of ground water velocity.

For example, the clay layer at a depth of 46.5 to 52.5 feet (which is approximately 100 feet above ground water) in the soil profile has caused the chemical release to form a roughly cylindrical volume extending from the tank release to, but not through the clay layer.

General Soil Profile

Leighton and Associates in their Progress Report Number 3 presented a summary interpretation of the subsurface soil conditions at the site through interpretations of logs from borings drilled at the site. We find no reason to disagree with these interpretations of subsurface soil conditions. Presented below is L&A's description of the subsurface soil conditions.

"A total of 13 borings have been drilled at the site adjacent to and within the Tank 2 excavation. These borings range in depth from 38 to 120 feet.

The stratigraphic sequence underlying the subject site is a thick sequence of unsaturated stream deposits. These deposits consist mostly of loose and unconsolidated, poorly sorted, alternating layers of coarse sands, silty sands and clays... The source of this material is the surrounding hill sides and mountains which consist of Tertiary marine and non-marine sedimentary and older crystalline bedrock.

Three sand layers have been identified and were encountered at depths of 12 to 20 feet, 30 to 35 feet, and 40 to 45 feet below grade... The thickness of these sands range from 9 to 20 feet, 11 to 19 feet, and greater than 52.5 feet thick, respectively. These sands range from very fine- to coarse-grained with the finer silty sands being encountered in the upper portions of each sand layer. The deeper coarse sand layer (greater than 52.5 feet below grade) becomes progressively coarser with depth and appears to grade into the underlying cobble/boulder bed. The top of this continuous cobble/boulder bed begins at 110± feet below grade. Drilling rates and sample recovery dropped considerably in this very coarse zone.

Interbedded in these sands are two fine-grained clay layers, except for Boring LB-100 which encountered a clay localized layer of 2± feet in thickness at a depth of 10 to 15 feet below grade. The first continuous clay layer was encountered at a depth of 20 to 23 feet below grade and has a thickness of 3 to 9 feet. The second fine-grained layer consisting of a fine sandy, silty clay was found at depths of 46.5± to 52.5± feet below grade. Thickness of this fine-grained layer ranges

from 2 to 4 feet. These clays were observed to be reddish-brown, [with] scattered, thin, discontinuous lenses of coarse sands and granules.

No indication of refuse fill material was encountered in the borings drilled during this phase of our investigation. On the adjacent property to the southeast, indications of the presence of fill materials have been observed. This evidence included brick and asphalt debris present in the southeast wall of the tank excavation, brick and wire cable present from 5 to 8 feet below grade in Boring TH-1 located southeast of the excavation on the adjacent property in the lack of a complete stratigraphic sequence in Borings TH-1 and TH-2 as observed in the L&A boring."

Depth to Ground Water

The site is located within the Upper Los Angeles River Area (ULARA) on the northeast side of the San Fernando Valley. To the east and south of the site, the Los Angeles Flood Control District operates the Hansen Spreading Grounds, a flood control and ground water recharge facility. According to the May 1987 ULARA Watermaster report, the site is located north and east of the Verdugo Fault, a ground water barrier in the San Fernando Valley. Only a few water supply wells are present in the vicinity and most are located near the Verdugo Fault to take advantage of the relatively higher elevation of ground water north of the fault.

The close proximity of the Hansen flood control facility to the site complicates interpretation of the regional ground water information. The mean sea level elevation at HR Textron's Pacoima facility ranges from approximately 950 to 960 feet. An interpolation of the regional ground water table from the May 1987 ULARA Watermaster report shows that ground water elevation probably ranges between 750 and 800 feet. Mr. Melvin Blevins, the ULARA water master, confirms this interpretation. The regional ground water gradient is generally toward the south. The nearby spreading grounds likely induce strong fluctuations in the ground water table and local ground water gradients with periods of quickly rising water table following precipitation and snow melt events and periods of steady declines during dry seasons.

Based on the regional information combined with the probable influences of the spreading grounds, ground water beneath the site may be present as shallow as 150 to 200 feet below the ground surface. Short-term influences of drier seasons and droughts likely create conditions where the ground water table may decline to a depth of 200 feet or greater. The ground water gradient at the site probably varies toward the west from the regional southerly flow direction,

particularly following events which fill Hansen Lake and increase dramatically the percolation rates immediately upgradient from the Pacoima facility.

Analytical Results from Soils

The extent of chemicals released into the soil from the tank forms a roughly cylindrical volume with a estimated radius of approximately 25 feet and which extends from the base of the tank excavation to an underlying clay layer from approximately 46.5 to 52.5 feet below the ground surface. The lateral and vertical extent of the chemical release has been well-defined, and to such an extent that remediation will begin in the near future.

The investigative program for the chemical release was performed by L&A and consisted of the drilling and sampling and chemical analyses of soil samples from 13 boreholes.

The "fingerprint" of the chemical release from the tank exhibits two consistent distinguishing characteristics. The first characteristic is concentrations of TPH (from EPA Method 418.1) in the range of 1,000 to 20,000 mg/kg. The second characteristic is a certain suite of volatile organic constituents from EPA Methods 8240 or 8010) that are consistently an order of magnitude less, in the range of 10 to 200 mg/kg, than the TPH concentrations. The VOCs consist primarily of 1,1,1-trichloroethane (TCA), with the occasional presence of low concentrations (usually less than 5 mg/kg) of toluene, tetrachloroethylene (PERC), trichloroethylene (TCE), xylene, benzene and dichloroethane (DCA).

This fingerprint is clearly seen in the reported concentrations for soil samples in boreholes LB-102 and LB-1 that were drilled through the central portion of the chemical release. Laboratory analyses of soil samples taken above the 50-foot clay layer show this pattern of TPH and VOCs; however, the large majority of soil samples taken below the clay layer show only background levels (less than 10 mg/kg) of TPH. The few samples below the clay layer with TPH concentrations slightly above background levels of 10 mg/kg are caused by minor cross-contamination during drilling and sampling.

SECTION 2

DESCRIPTION OF WELL INSTALLATION

The ground water well will be located downgradient of the tank release area as shown on Figure 2-1. The direction of ground water flow is assumed to be southwest, based on regional historical ground water information from the Upper Los Angeles River Area Watermaster reports. Ground water migrates southwest because Hansen dam is located approximately 2000 feet northeast of the former location of the underground storage tanks.

The well will be installed using air and mud rotary drilling techniques. Figure 2-2 shows a schematic of well construction. To ensure that potential for cross contamination of ground water during drilling is limited, the well will be double cased.

To protect against the possible introduction of contaminants to the boring, the drill rig and rods will be steam cleaned prior to use. All sampling equipment will be steam cleaned in an Alconox solution and rinsed with distilled water between sampling intervals.

From the ground surface to the top of the clay layer at approximately 50 feet, the borehole will be installed using mud rotary drilling techniques. The borehole will be approximately 20 inches in diameter, and soil samples will be collected using a modified California split-spoon sampler driven ahead of the boring with a 140-pound hammer dropped from a height of 30 inches. Soil samples will be collected at 10-foot intervals to a depth of 40 feet for lithologic description. From 45 feet to a maximum depth of 50 feet, soil samples will be collected continuously to identify the precise depth and thickness of the clay layer. A sample of the drilling mud will be collected and analyzed for VOCs to determine proper disposal of the mud. In addition, a sample of the water used to make the drilling mud will be collected to assure that no VOC contamination is introduced.

Upon completion of the 20-inch borehole, a 16-inch steel casing will be installed and sealed in place by pumping cement grout inside the casing and pushing the grout out through the bottom of the casing to the ground surface using a rubber plug. In this manner, a cement seal from the bottom of the borehole to the ground surface will be assured. Approximately three feet of cement grout will remain inside the casing to assure a good seal at the bottom of the casing.

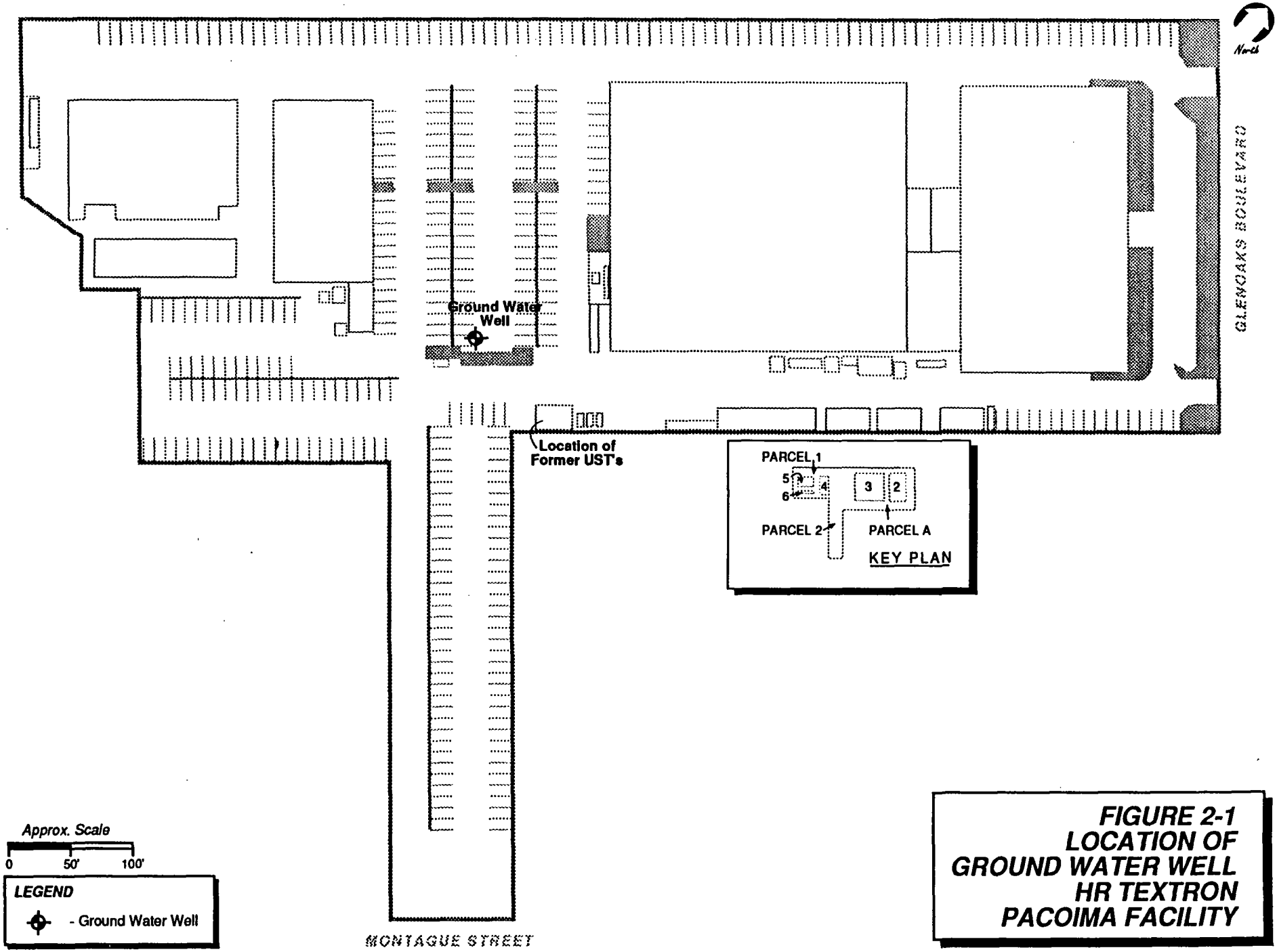

FIGURE 2-1
LOCATION OF GROUND WATER WELL
HR TEXTRON
PACOIMA FACILITY

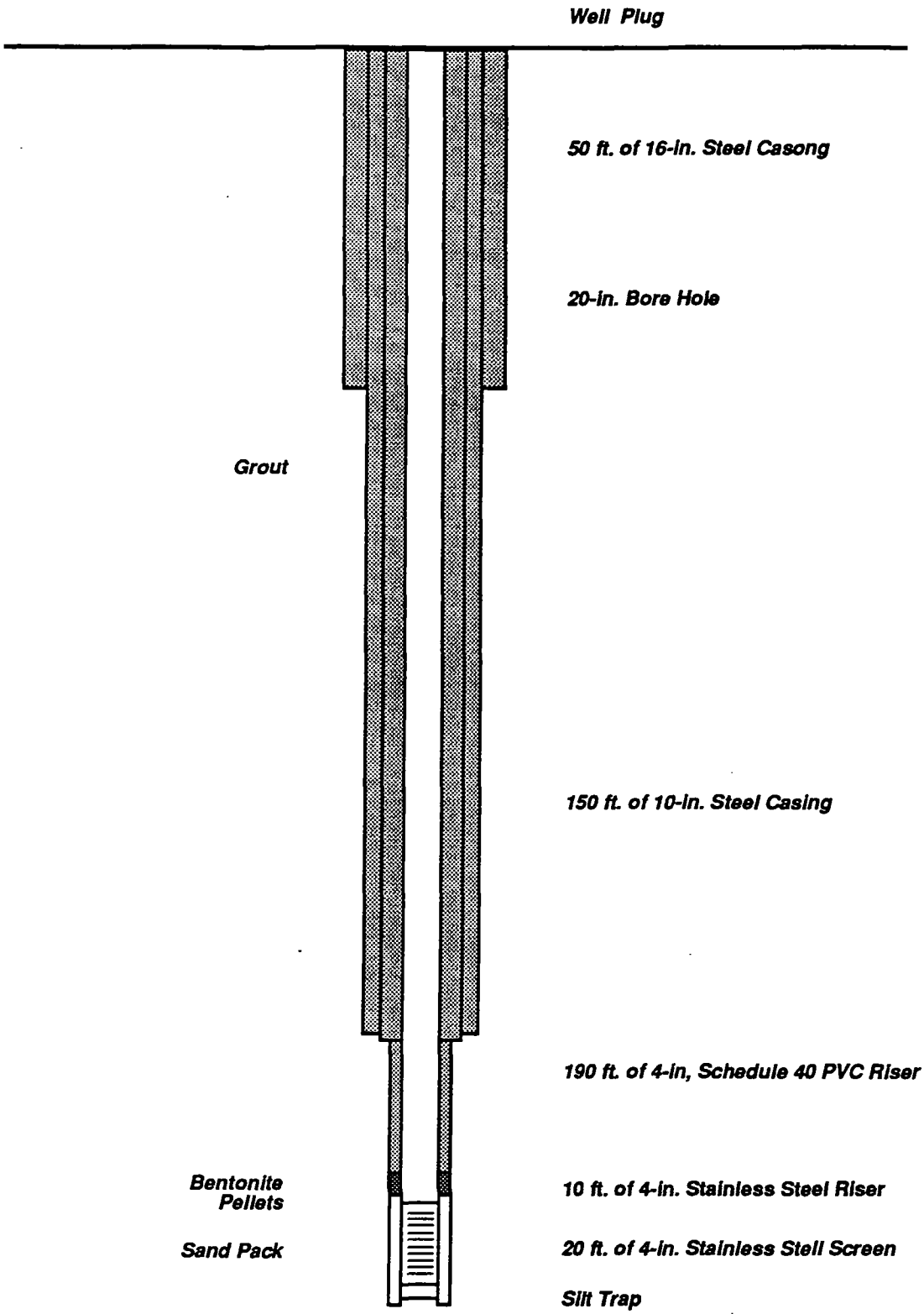

FIGURE 2-2
WELL COMPLETION DIAGRAM
HR TEXTRON
PACOIMA FACILITY

After a 24-hour curing period for the cement seal, the boring will be advanced to 150 feet (the shallowest probable depth to ground water) using mud rotary drilling techniques within the 16-inch steel casing. Soil samples will be collected using a modified California split-spoon sampler driven ahead of the boring with a 140-pound hammer dropped from a height of 30 inches. Soil samples will be collected at 10-foot intervals to a depth of 150 feet for lithologic description. A sample of the drilling mud will be collected and analyzed for VOCs to determine proper disposal of the mud. In addition, a sample of the water used to make the drilling mud will be collected to assure that no VOC contamination is introduced.

A 10-inch steel casing will be installed inside the 16-inch casing to a depth of 150 feet. The 10-inch casing will be grouted in place using the same technique described for the 16-inch casing.

In the event that ground water is encountered, the drilling mud will be thinned, and the 10-inch steel casing will be installed approximately 10 feet above the water table.

Below 150 feet, the borehole will be advanced using air rotary drilling techniques. A filter will be placed in the air supply line to insure against introduction of VOCs into the borehole. The boring will be advanced to a maximum depth of 220 feet or 20 feet into ground water. If no water is encountered, the boring will be sealed with bentonite-cement grout pumped through a tremmie pipe from the bottom of the borehole to the ground surface.

The well will consist of 20 feet of stainless steel well screen with a wire-wrapped .020-inch continuous slot (Figure 2-2). A 2.5-foot stainless steel silt trap will be placed on the bottom of the screen and a 10-foot section of blank stainless steel riser pipe will be installed above the well screen. From the stainless steel riser pipe to the ground surface, schedule 40 blank PVC casing will be installed. A sand filter pack compatible with the slot size of the screen will be installed to approximately 3 feet above the top of the well screen. A minimum of two feet of bentonite pellets will be placed above the sand pack and hydrated to produce a good seal, and the borehole will be grouted using Volclay or a bentonite cement grout from the pellet seal to the ground surface.

SECTION 3

WELL DEVELOPMENT AND SAMPLING

Well Development Procedures

The PVC and stainless steel pipe and well screens will be steam cleaned prior to arrival at the site and wrapped in plastic to reduce the risk of introducing contaminants into the boring. Well materials not cleaned prior to arrival will be steam cleaned on-site.

Prior to sampling the ground water, the well will be developed by pumping or bailing a minimum of five well volumes to remove residual drilling fluids and any fine particles from the artificial sand pack. Samples of the development water will be checked in the field for pH, temperature and conductivity. Development of the well will continue beyond five well volumes unless these parameters are stable. A minimum of 24 hours after development, a water level will be measured and the well will be sampled.

Ground Water Sampling Procedures

Prior to ground water sampling, the well will be purged by pumping or bailing a minimum of three well volumes or until temperature, conductivity and pH stabilize. The ground water sample will be collected immediately after purging is completed.

The water sample will be collected using a disposable polyethylene bailer with a bottom-emptying device designed for VOC sampling. The sample will be collected in 40 milliliter VOC vials. The vials will be labelled, placed in a Zip-lock bag and transferred to an iced cooler. Chain-of-Custody forms will be completed in the field and accompany the samples to Global Geochemistry Corporation (GGC) for analysis for VOCs using EPA Method 624.

SECTION 4

REPORTING

Upon completion of the well and receipt of the ground water analytical results from GGC, a data report describing the well installation and analytical results will be completed.

APPENDIX A

SCHEDULE

SCHEDULE

The following is the proposed schedule for the site characterization workplan. Scheduling the drilling subcontractor and obtaining the well permit may take up to three weeks from notification to proceed.

Weeks 1-3	Schedule Driller and Assemble Supplies
	Obtain Well Permit
Week 4	Install 16-inch and 10-inch Casings
Week 5	Install Ground Water Well
Week 6	Develop Well and Sample Ground Water
Week 8	Receive Lab Analysis from Global Geochemistry Corp
Week 10	Data Report

STATE OF CALIFORNIA GEORGE DEUKMEJIAN, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CALIFORNIA 91754-2156
(213) 266-7500

7/26/90
Telecopy: L. Allderdice
D. Dunbar

RECEIVED
JUL 25 1990
VP Legal and Contracts

July 24, 1990

cc: A. Spacone
D. T. Stewart
J. Wheeler
M. Bell
File

RECEIVED
JUL 27 1990
ENVIRONMENTAL

cc Bill Moser 7/27/90 JLW.
cc Paul Fahrenthold 8/8/90 (Copied by J Hedges) JLW 8-8

John Hedges
HR Textron, Inc.
25200 W. Rye Canyon Road
Valencia, CA 91355

SITE ASSESSMENT - HR TEXTRON, INC. FACILITY PACOIMA (CAO 89-104)

Board staff have reviewed the May 1990 technical report prepared by ERM - West, Inc., which was sent to us by Michael L. Hickock. Staff comments on the report are contained in the attachment.

While we appreciate receiving a courtesy copy of the technical report, please be advised that monthly progress reports on the site cleanup are required by Cleanup and Abatement Order No. 89-104. Our June 11, 1990, letter to you approved in concept your cleanup plan and specifically approved Steps I and II in order to provide you maximum opportunity to begin the site remediation process.

Based upon a review of the technical report and your revised workplan, staff is still concerned that there is not adequate technical justification for specific design or operation of an soil vapor extraction (SVE).

In order to establish a sound technical basis for the cleanup, please provide a supplementary workplan addressing the completion of the characterization (Steps I and II) as discussed in our letter of June 11, 1990 and herein. In summary this consists of:

1. Isopach and top-of-horizon contour maps to determine dip of postulated "clay layer".

2. Hollow-stem auger boring(s) at the down dip compliance point of this postulated horizon.

3. Re-evaluation of location of extraction/injection wells.

4. Performance of all previously required testing, e.g. gas permeability.

5. Determination of strippability of all contaminants.

6. Re-evaluation of design considering probable need for discrete screening of specific horizons.

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original in file

7. Multi-level soil gas survey to evaluate vapor distribution in vadose zone.

8. Selection of permanent array of soil gas monitors. Specific monitoring below clayey horizons is necessary.

As required in our June 11 letter, a workplan is due to us by July 31, 1990. If you have any questions, contact Mr. Hank Yacoub at (213) 266-7522.

Robert P. Ghirelli

ROBERT P. GHIRELLI, D.Env.
Executive Officer

RPG:HHY:RRS:PBC:tlr/mht

ATTACHMENT

REGIONAL BOARD STAFF COMMENTS ON TECHNICAL REPORT FOR FIRST PHASE OF REMEDIATION, HR TEXTRON,PACOIMA SITE, MAY 1990.

Location of Borings:

1. Combining injection well exploration boring locations with determination of lateral contamination extent is commendable savings. However, it would appear from the results that neither objective has been fully satisfied.

2. It would have been prudent to evaluate the slope of the various clayey horizons prior to selecting the injection/extraction locations and perhaps to perform several separate confirmation borings. Similarly the former sump and piping location should have been specifically evaluated. It appears from examination of the logs that the top of the lowest clayey horizon(s), if continuous, may dip eastward toward the fenceline. There is a 35 foot gap at the fenceline between borings IW-4 and IW-1, and further no analytical results were actually obtained or reported from IW-4. Thus, there is no verification for your working hypotheses of standard "cylindrical migration".

3. Prior to initiating any further design work, it is required that you develop suitable isopach and elevation maps for the so-called "clay horizon". Evaluate these and place additional boring(s) at down-dip location(s) if necessary.

4. Boring B-3 has not been satisfactorily explained nor has the area it represents been included in the remediation program. This boring has a significant indication of site contamination and must be further investigated and cannot continue to be ignored.

5. The IW-4 and IW-4A borings have partially defined the northwestern margin of site contamination. These borings were not completely sampled. Control along this side must be adequately established.

Depth of Borings

1. Given the demonstrated problems with sample recovery of undisturbed samples of the coarser grained materials underlying the last clayey horizon(s), it is unreasonable to assume that contaminants treatable by the proposed VES system have been completely delineated. Targeting only the zone(s) above the last clayey horizon(s) may leave vapor phase VOCs below unremediated. Appropriate resolution of the issue of contaminant transport requires several additional steps. A minimum of two borings must be carefully installed which penetrate below the lowest clayey horizon(s) at appropriate locations. These should be sampled carefully and permanent soil gas monitoring probes emplaced below the last clayey horizon and sealed off from the overlying horizon.

2. The extraction/injection system must target those major lithologic horizons having significant permeability contrast instead of screening continuously across all horizons. Permeability differences are obvious from prior reports. A prudent design should accommodate this situation. For example the zone with lowest postulated permeability had the highest reported VOC value in EX-1 at 60,000 ppb. As described, the extraction program would preferentially affect the more permeable overlying materials.

Logging

1. The boring logs were incomplete, lacking crucial information concerning sample recovery in the coarser grained horizon(s). Submit clear versions of the logs to this Regional Board.

2. According to Subchapter 16 the borings must be overseen and the logs signed by either a registered geologist or civil engineer or certified engineering geologist. No signature was apparent. Provide information as to whether field work was performed according to these provisions.

3. Provide elevations of the tops of the borings to enable determination of dip(s) of the various lithologic units.

Sampling

1. Although the protocols seem complete as described, staff must have the opportunity to be present to verify the sampling and obtain split samples if desired. No advance notice of the field work in this report was provided to staff. For example, sample recovery is a crucial issue at this site and is not

described in the report or in the logs.

2. In the future it is required that staff be informed seven (7) days in advance of field work, in order to observe sampling procedures and allow splitting samples for independent analysis.

Analytical Results

1. A summary of analytical results is not acceptable. Provide the laboratory data and all pertinent QA/QC.

2. Chain-of-custody forms must be supplied.

3. Given your retardation arguments, use of TPH as a proxy measurement for VOCs is not acceptable. Evaluation of whether proposed approach will appropriately remove VOC species must be made on the basis of measurements of VOCs in all phases.

4. You must provide analytical data with which to evaluate mobility or strippability of the TPH materials. It cannot be assumed that these materials will completely clean up with vapor extraction or that the residue will be negligible.

Well Design

1. Medium aquarium sand and .03 slotted PVC were utilized as a continuous screen and filter pack. The filter pack was chosen as "compatible" with the screen. No rationale was provided for selection of the screen.

2. Typically, filter packs are designed to match the formation. Air permeability mismatches should be avoided. The screen is then selected to keep the filter pack out of the bore hole. In this instance there are layers of contrasting permeability (silty sand, sand and gravel and clayey silt), which should have been considered in the design of the well.

3. The use of a forty foot uniform screen in this situation may not be appropriate, each horizon should be specifically targeted.

4. The use of an air rotary drilling rig to bore IW-4A was unwarranted. Some 11 borings were made previously with hollow-stem auger, including LB-101 within 10 feet of boring IW-4A (the replacement for IW-4). The air rotary techniques affect the existing vapor distribution and act to volatize dissolved or free phase VOCs in the soil. Vapor phase

contaminants are literally blown further away from the surface of the source area and may thereby bias analytical results of any driven sample.

5. Report the chemistry of the foam utilized in the air rotary drilling. Evaluate whether this will affect vapor extraction /injection.

Conclusions:

1. This report concludes that a clay horizon is continuous across the site, as examined, and is 6 feet thick. This not only contradicts previous work by other consultants at the site but is also self-contradictory. The ERM "Technical Evaluation of RWQCB Contentions 2, 4 and 7" (March 1990) describes thicknesses of as little as 1-1.5 feet. The report being reviewed concludes that a silty clay layer (also described as the "50-feet clay layer") is confirmed as continuous at 46.5 to 52.5 feet, even while the logs for IW-2 and IW-3 describe this same interval as consisting of silts and sandy clayey silts.

2. It is also concluded that the "cylindrical" confinement of contaminants is now proven. The data do not confirm this. Top-of-unit contours have not been mapped and the dip of the postulated horizon remains unknown. Our tentative evaluation based on these latest 5 borings, (with no surface elevations) shows the "clay layer" dipping easterly. At the eastern boundary there is a 35 foot lateral gap with no analytical information between IW-4 and IW-1. Further, data from the lowest horizon at IW-4 was not obtained. Instead a replacement boring was made some 10 feet away. It was bored by air rotary means AND, any VOC analytical data from it may be invalid.

3. Both TPH and VOCs were again reported within the "clay layer" (EX-1). In fact the VOCs above the clay horizon were less than within (40,000 versus 60,000 ug/kg). Discussion of upper and lower subsets of the "clay layer" do not adequately obviate this fact.

4. Since the VOCs are indeed volatile, your consultant's discussion concerning saturation is inaccurate and misleading. The samples provided to the laboratory could have contained either vapor, dissolved, adsorbed or maybe even free phase VOCs. In order to determine actual amount of VOCs within the clayey silt, in-situ vapor measurement is needed.

5. Probability of transport of VOCs across the clay horizon is not measured by the "saturation" as described by your consultant. This conclusion is wholly unsupported.

6. The emphatic conclusion that this work demonstrates that there is no probable threat to ground-water is unwarranted. No new support for your position has been derived. Contamination transport in all phases must be considered. Solid comprehensive data must be obtained to support any conclusions.

SUPPLEMENTAL WORK PLAN
HR TEXTRON
PACOIMA FACILITY

Prepared for

HR Textron
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Valencia, CA 91355

Prepared by

ERM-West, Inc.
1920 Main Street, Suite 600
Irvine, CA 92714

September 1990

350101

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SECTION 1

INTRODUCTION

This document presents a supplemental Work Plan for implementing remediation of volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPH) from soil at HR Textron's Pacoima facility, which is located at 10445 Glen Oaks Boulevard, Pacoima, California. Because VOCs are the most mobile constituents and represent a higher hazard for the subsurface, immediate implementation of a vapor extraction system is recommended for the remediation plan at this site.

A leak from underground storage tanks occurred in the past at this site. The two underground storage tanks, 1,000 gallons capacity each, were used for waste oil storage. The tanks were removed in 1985, and the excavation (approximately 12 feet deep) was backfilled with imported clean soil. The investigations conducted subsequent to the removal of the tanks showed that the constituents in soil beneath the former tank pit consisted of oil hydrocarbons and VOCs to a maximum depth of 52.5 feet below the ground surface.

Focus of Supplemental Work Plan

The supplemental Work Plan was developed in response to the requirement in the June 11, July 14 and August 14, 1990 letters to Mr. John Hedges at HR Textron from the Los Angeles Regional Water Quality Control Board. The following supplemental activities are recommended for the complete implementation of the Remedial Action Plan:

- Elevation surveying of the boring locations by a California licensed land surveyor and production of isopach maps and top-of-horizon contour maps;
- Assemble and provide laboratory data QA/QC and chain-of-custody forms for soil samples collected from EX-1, VB-1, VB-2, VB-3 and VB-4;
- Provide information on the chemistry of the foam used to install IW-4A;

- Continue work as described in the July Remedial Action Plan for design and installation of the soil vapor extraction and treatment system; and

- Continue bench tests to determine the feasibility of enhanced vapor recovery using heat and/or methanol.

HR Textron plans to address other items in the above letters to Mr. John Hedges that are not included in this supplemental Work Plan at the September 28, 1990 meeting with the Regional Board staff. These items include the following:

- Multi-level soil gas survey

- Installation of permanent soil gas monitors

- Testing additional parameters on soil samples for physical properties

- Additional information on chemical properties of contaminants

- Reevaluation of boring locations and construction parameters

- Strippability determinations

SECTION 2

WORK PLAN ACTIVITIES

Production of Isopach and Contour Maps

The attached site plan shows the locations of the borings that have been installed at the facility. Please note that the location of Borings B-3 and LB-4 are changed to reflect the proper position. These borings were imcorrectly located on drawings provided by Leighton and Associates in earlier reports.

HR Textron is currently contacting land surveyors to conduct a surface elevation survey of the borings completed at the site. The information from the survey will be used to produce contour maps of the top-of-horizon contacts with the clayey horizons within 52.5 feet of the ground surface.

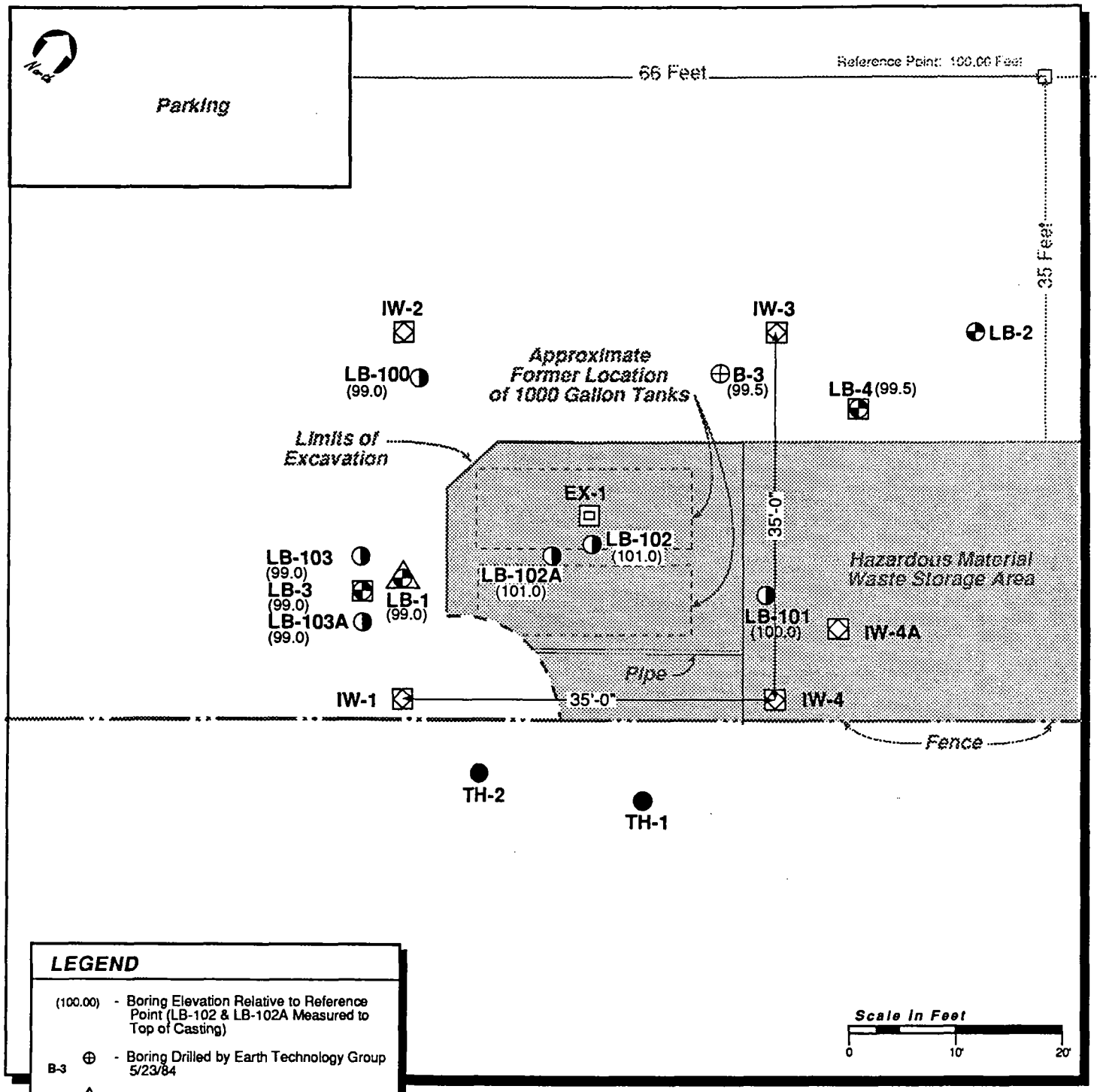
Information from all boring logs generated at the site will also be incorporated in isopach maps showing the thickness and extent of the clayey units in the subsurface. This work will be completed as shown on the schedule in Appendix A.

Information on Sampling and Laboratory Analyses

ERM-West will provide information on the laboratory analyses from soil samples collected from borings EX-1, VB-1, VB-2, VB-3 and VB-4. This informatioon will include QA/QC data provided by Global Geochemistry Corporation, the analytical laboratory used for all the chemical analyses, and the chain-of-custody forms that accompanied the soil samples from the site to the laboratory.

Information on Foam used in Air Rotary Drilling

When a boulder was encountered in drilling VB-4, the injection well had to be completed at a shallower depth than was desired. In order to ensure that a well could be installed to the proper depth, ERM-West subcontracted an air rotary drilling rig to install a parallel boring near VB-4. Drilling foam was used during drilling to assist in



LEGEND

(100.00)	- Boring Elevation Relative to Reference Point (LB-102 & LB-102A Measured to Top of Casting)
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-2	- Borings Drilled by Leighton & Associates, Inc. -1/88
LB-103	- Borings Drilled by Leighton & Associates, Inc. -9/88
⊠	- Approximate Location of Injection Wells
⊡	- Approximate Locaiton of Production Wells

WELL LOCATIONS FOR VAPOR EXTRACTION SYSTEM HR TEXTRON FACILITY PACOIMA, CALIFORNIA

ERM-West, Inc. 3/90
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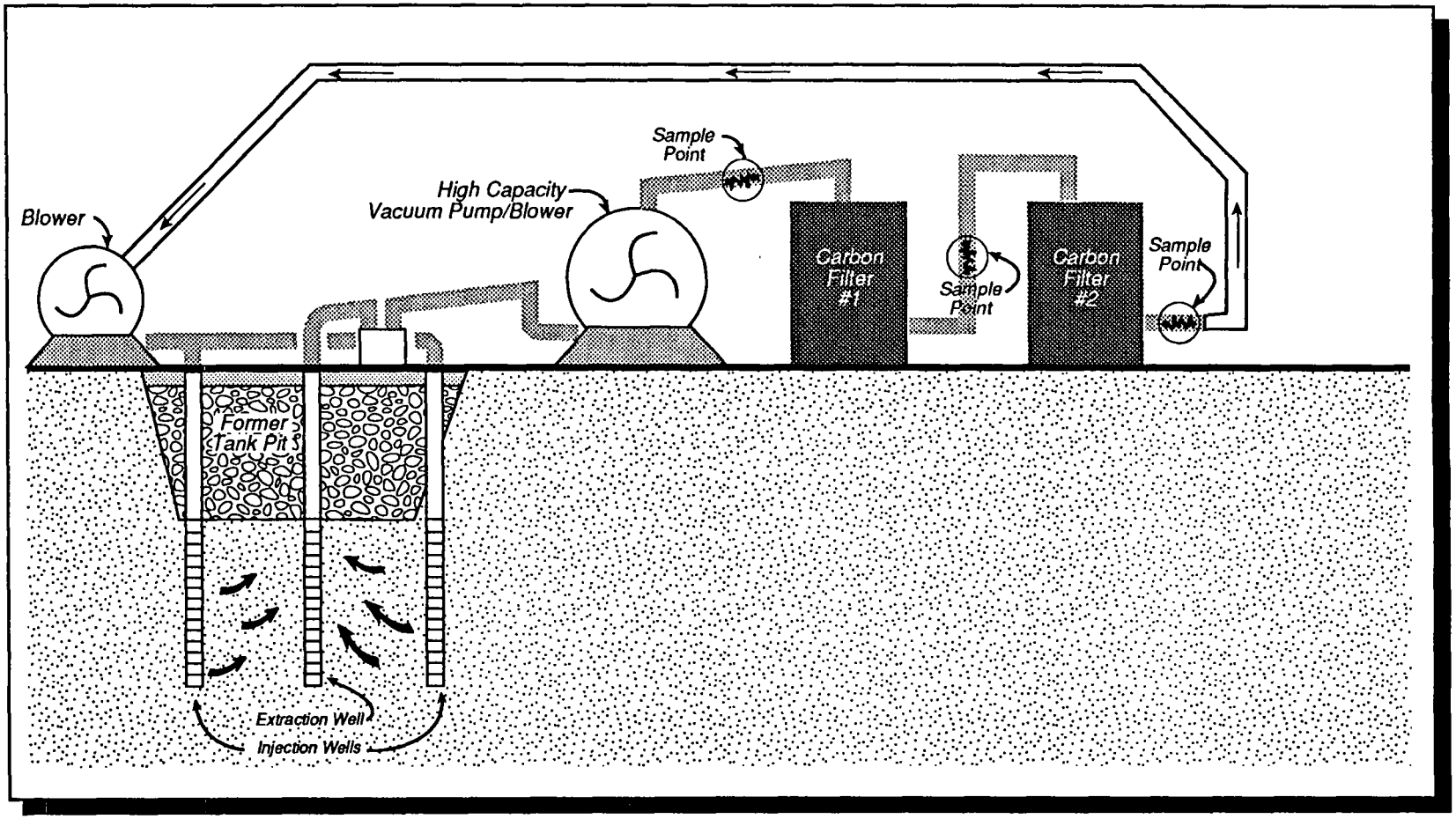

SCHEMATIC OF SOIL VAPOR
VACUUM EXTRACTION SYSTEM
HR TEXTRON FACILITY
PACOIMA, CALIFORNIA

bringing the soil cuttings to the surface. No soil samples were collected from this boring for chemical analysis.

Since the foam may have introduced some chemical constituents into the soils within the immediate vicinity of the borehole, chemical information from the foam manufacturer will be provided to the RWQCB.

Continue Design and Installation of a Soil Vapor Extraction and Treatment System

The activities in this step form a major part of the work required for completion of this project. There are four major tasks involved in this step:

- Design the vapor extraction and treatment system for soil remediation at the former tank pit;
- Identify and purchase remediation equipment;
- Obtain environmental and construction permits; and
- Install the soil remediation equipment.

Design of the Remediation System

The vapor extraction and treatment system will be designed based on the data collected during Steps 1 and 2 of the Remedial Action Plan. The attached schematic of the vapor extraction and treatment system shows the proposed general arrangement of the remediation system. Two activated carbon vapor treatment columns will be connected in series to the line from the extraction well. When breakthrough occurs in the first column, it will be replaced by the supplier or steam regenerated on site. The replaced or regenerated column will then be connected to the outflow from the backup column. In this manner, the outflow will pass through a fresh activated carbon column prior to injection into IW-2, IW-2, IW-3 and IW-4 (Figure 1-1).

Applicability of Vapor Extraction to the Pacoima Facility Site

The "fingerprint" of the chemical release from the tank exhibits two consistent distinguishing characteristics. The first characteristic is concentrations of TPH (from EPA Test Method 418.1) in the range of 1,000 to 20,000 mg/kg. The second characteristic is a certain suite of volatile organic constituents from EPA Test Methods 8240 or 8010) that are consistently two or more orders of magnitude less than the

TPH concentrations in the range of 10 to 200 mg/kg. The VOCs consist primarily of 1,1,1-trichloroethane (TCA), with the occasional presence of low concentrations (usually less than 50 mg/kg) of toluene, tetrachloroethylene (PERC), trichloroethylene (TCE), xylene, benzene, and dichloroethane (DCA).

The vapor pressures of these VOCs are high enough that a vapor extraction system will remove these compounds from soil. The primary factor affecting the remediation of VOCs by vapor extraction is the permeability of the soil matrix. Permeability of various soil types in both horizontal and vertical directions will be measured as part of the physical tests on soil samples described in Step 1.

Applicability of the vapor extraction system to the TPH constituents is complicated. The vapor pressures of most TPH constituents is low, and stripping of the soil with air alone is not anticipated to be greatly successful. For this reason, ERM-West, Inc. will be investigating enhanced vapor extraction techniques described in Step 4.

Identify and Purchase Remediation Equipment

ERM-West, Inc. will provide a list of equipment manufacturers and representatives who can provide the equipment and services to meet the design criteria. HR Textron will contract directly with the suppliers to obtain the equipment.

Prepare Construction and Installation Procedures

Specific procedures for construction and operation of the remedial system will be prepared prior to the final engineering design, to include:

- operation and maintenance;
- health and safety;
- sampling and analysis protocols for the remedial system; and
- quality assurance/quality control.

Until the final design is complete, these procedures cannot be completed. Operation and maintenance are specific to the size and manufacturer of equipment selected for the design. Specific health and safety procedures also depend on the design requirements. The location and amount of trenching required and the type of sampling ports designed in the system are two examples of design variables that affect the specific health and safety procedures.

Sampling of the vapor stream extracted from the soil is a key feature in determining the effectiveness of the remediation system. The procedures for monitoring the system also depend on the equipment designed and selected. The general schematic diagram of the remediation system shows three projected sampling points along the remediation system. Sampling is performed in order to:

- Calculate the amount of contaminants removed from the soil
- Evaluate the efficiency of the remediation system in recovering hydrocarbons relative to VOCs
- Monitor the design performance of the treatment system; and
- Ensure that SCAQMD permit requirements are met.

The specific sampling procedures will be determined during design. In general, the concentration of VOCs will be measured analytically by extracting a gas sample from the vapor stream prior to Carbon Filter #1. Another sample will be collected between the carbon filter units to determine when the first carbon unit is spent. A third sample will be collected prior to discharge to verify that discharge is within permit requirements.

Samples may be collected in Tedlar bags from sampling ports and placed in an ice chest for transport to the laboratory. For this type of sampling, new sample tubing for the Tedlar bags is used for each sample. The samples will probably be tested for VOC's and moderate volatility hydrocarbons using EPA Method TO-14.

Sampling frequency will be part of the SCAQMD permit. ERM-West anticipates that samples will be collected weekly for the first month to establish the effectiveness of the system, the ability of the system to meet the discharge requirements and the probable lifetime of the carbon units before breakthrough occurs. Sampling may be required by SCAQMD at biweekly or monthly intervals after the initial sampling period is complete.

Obtain Environmental Permit from SCAQMD

HR Textron will obtain an environmental permit from the South Coast Air Quality Management District (SCAQMD) to install and operate the soil remediation system. Aquisition of the permit is expected to require six to eight weeks. ERM-West, Inc. will provide technical assistance on any aspects of permitting, if requested.

Install the Soil Remediation Equipment

HR Textron will oversee installation of the soil remediation system that is designed. ERM-West, Inc. will provide technical assistance on any aspects of installation, if requested.

Reporting

During construction and startup of the remedial system, monthly progress reports will be prepared for the RWQCB and SCAQMD that summarize such items as recent and upcoming activities, deliverables submitted, and any problems encountered and steps taken to resolve such. At the end of construction and startup a final technical report will be issued to the RWQCB and SCAQMD that presents installation and startup activities, the final design of the system, and other related activities such as the results of installation and sampling of injection and extraction wells and bench testing. During full operation of the remedial system, quarterly progress reports will be prepared.

Continue Bench Tests for Enhanced Vapor Recovery

Bench tests are recommended for determining methods of enhancing extraction of the oils released from the tanks. The use of these innovative techniques is necessary because the material to be removed from the soil has very low volatility. In the center of the affected area, for example, the organic phase contains 1,1,1-TCA in the range of 100 to 180 ppm and TPH (oils) in the range of 15,000 to 20,000 ppm. The material in the soil to be remediated is represented by a "solution" of these constituents. The 1,1,1-TCA has a low boiling point (74° C) and a high vapor pressure; whereas, the boiling point of the hydrocarbons in the oil fraction would be in the range of 200 to 400° C or higher and the vapor pressure is very low. Therefore, the enhancement of the volatility of this material is necessary in order to accelerate the remediation process.

The following techniques will be considered for bench tests:

- vapor extraction with air at room temperature;
- vapor extraction with hot air at approximately 150° F;
- vapor extraction with solvent at room temperature; and
- vapor extraction with solvent and hot air.

The first two techniques are known from commercial applications. The last two techniques are proprietary and will be tested for this application.

The bench tests will be performed by ERM-West, Inc. and Global Geochemistry Corporation. It is expected that 10-12 Shelby tubes collected during drilling of the extraction well will be used for these tests. The duration of each test will vary from 24 to 72 hours. The equipment for bench testing is designed to operate with minimum supervision. The confidentiality of data recorded will be assured.

Data from the bench tests will be used to evaluate the effectiveness of potential modifications to the vapor extraction system. If the tests using heated air or vapors of an environmentally acceptable solvent indicate successful reduction of TPH constituents in the soil, HR Textron will apply for a permit to operate the vapor extraction system using these techniques. ERM-West, Inc. anticipates that use of the vapor solvent will be in a "closed loop" through a carbon filter. The solvent used will be one that is not readily adsorbed by activated carbon. In this case, no release of vapors to the air will occur. Air containing appropriate concentrations of solvent will be introduced into the formation, extracted through the central well, pumped through the carbon filters and then recycled. Modification of the system to include only heated air would require a minor modification of the environmental permits.

APPENDIX A

SCHEDULE

SCHEDULE

The following is the proposed schedule for the Supplemental Work Plan:

10/5/90	Provide information on sampling and laboratory analyses, foam composition used in air rotary drilling
10/15/90	As part of the monthly Progress Reports, provide updates on progress of design and installation of the soil vapor extraction and treatment system and progress on bench testing
10/25/90	Provide isopach and top-of-horizon contour maps

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October 16, 1990

Mr. Hank Yacoub
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, California 91754-2156

SUBJECT: Response to Comments on the July Supplemental Work Plan for (for Soil Vapor Extraction) - HR Textron Facility, Pacoima (CAO 89-104)

Dear Mr. Yacoub:

Thank you very much for the useful clarification of technical issues provided during the meeting that was held at the Regional Water Quality Control Board (RWQCB) office on September 28, 1990. We look forward to a continuing cooperative relationship to accomplish the remediation of our Pacoima site.

This letter, with attachments is provided in response to your letter of September 20, 1990. We appreciate the one week extension given verbally at our 9/28/90 meeting, of the original October 9, 1990 due date, until today, October 16, 1990, to allow a more complete response. We have reviewed the comments on the Remedial Action Plan (RAP) provided in your September 20, 1990 letter to Mr. John Hedges. The following addresses in order, the comments presented in your June 11, 1990 letter:

(1) We believe that the lateral and vertical extent of soil contamination in the vadose zone has been determined sufficiently for the purpose of starting remediation. With respect to the lateral extent, only rarely was the presence detected of total petroleum hydrocarbons (TPH) and volatile organic compounds (VOCs) in the borings installed outside the area where the underground storage tanks were excavated. On the adjacent property, although only TPH analyses were

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obtained from soil samples in TH-1 and TH-2, no indication of field observations of VOCs were presented in the boring logs. Since it is standard practice to report any such observations when they occur, it is reasonable to conclude that none occurred.

During the 9/28/90 meeting, David Dunbar and Bruce Stearns of ERM-West, Inc., provided observations of field evidence to indicate that the locations of B-3 and LB-4 were inadvertently switched on Leighton reports. Boring B-3, installed by Earth Technology Corporation in 1984, was an angle boring drilled beneath the underground storage tanks. The oval asphalt patch where this boring was installed is present adjacent to the former tank pit. Because Mr. Chandler said that the Earth Technology Report was not in the RWQLB files, a copy is enclosed with this letter. This clarifies that boring B-3 is inside the area of influence of the Soil Vapor Extraction System as it is being installed.

During the meeting, the RWQCB staff also stated that they did not have a copy of the Global Geochemistry Corporation report on hydrocarbons extracted from LB-104. A copy of this report is also enclosed with this letter.

Also during the meeting, the RWQCB asked for a blueprint of the layout of the hazardous material/waste storage area when the underground tanks were in use. HR Textron will provide a copy, if such a layout exists.

HR Textron believes that the vertical extent of contamination has been adequately defined for the purpose of starting remediation, during the previous investigations. The issue of disturbance of soil samples beneath the clay layer was addressed in the Appendix A to Exhibit 3 in the October 5, 1990, submittal to the California Regional Water Quality Control Board (attached).

(2) The results from the site-specific physical tests are attached to this letter. Paul Fahrenthold and Associates, our design consultant, is preparing a submittal indicating how the physical test data were incorporated and how the screening of the vapor extraction system (VES) wells affect performance. This submittal will be provided to the RWQCB by **November 9, 1990.**

Some additional chemical tests were conducted on soil samples from Boring EX-1 as part of the bench testing effort (see Item 4). Mr. Chandler said during the meeting that additional analyses for Total Organic Carbon (TOC) would be useful to him for conducting a strippability evaluation. No samples are currently available for conducting TOC analyses.

(3) HR Textron will investigate the available vadose zone models for use in determining cleanup levels. Progress in this effort will be included in the monthly Progress Reports.

(4) HR Textron is not relying on the bench testing to provide the only means of remediating the site. The confidential processes being developed in the laboratory are designed to enhance the proposed remediation. In order to address the concern that bench test data may not be available for evaluation by the RWQCB staff, HR Textron will submit separately a copy of the bench test results. However, the remediation approach is confidential, and HR Textron will require cooperation of the RWQCB to maintain confidentiality of the process. Please advise what means are available and will be used to maintain confidentiality of our process so that this confidential process information data can be submitted.

(5) The "four possible techniques" are related to bench testing for enhancement of the VES. Item 4 addresses this concern.

(6) As we discussed in the meeting, HR Textron will provide a copy of the South Coast Air Quality Management District (AQMD) application and permit, which detail the approved remediation system. Again, this contains proprietary trade secret information for which we request assurance that it will be maintained as confidential before we submit all the information.

(7) Operation is described in the AQMD permit and will be further addressed in the submittal from Paul Fahrenthold and Associates (see Item 2 discussion). **Maintenance** of the remediation system will also be described in a technical submittal by **November** 16, 1990.

(8) Vapor stream sampling locations are described in the AQMD permit, which will be provided to the RWQCB. Day-to-day monitoring will be accomplished using PID sensors to determine relative concentrations of organic compounds in the vapor stream. HR Textron is currently negotiating a contract with a mobile laboratory to collect and analyze vapor samples on-site as part of the monitoring program. Gas sampling and analysis protocols are included in the work proposal being negotiated.

A large portion of the maintenance and monitoring protocols for the remediation system will encompass the required array of soil gas monitoring locations. During the 9/28/90 meeting, discussion centered on the advantages of a performance

monitoring system, and HR Textron agrees that installation of a multilevel system is a good idea. However, installation of the monitoring probes into and below the clay layer at approximately 20 feet may require drilling due to the penetration resistance of this clay and the underlying sand layer to approximately 50 feet.

In order to ensure proper installation and sampling, our consultants are investigating methods to adapt or modify standard soil gas probe designs, particularly for the installations below 20 feet. HR Textron will provide the proposed performance soil gas monitoring array and the design details for the soil probes by November 9, 1990.

(9) HR Textron is currently revising the Health and Safety Plan for the site. This plan will be submitted by November 9, 1990.

(10) As described in Items 6 and 7, a copy of the AQMD permits will be submitted to the RWQCB. During the 9/28 meeting, Mr. Yacoub mentioned that he is working in cooperation with the Department of Health Services (DHS) and the Environmental Protection Agency (EPA) since the site may be subject to some Resource Conservation and Recovery Act (RCRA) closure requirements. HR Textron also recognizes that ultimate closure of the underground tank site will require involvement by the Department of Public Works, Waste Management Division (DPW), since they regulate closure of underground hazardous waste storage tanks.

(11) Documentation of field operations will be submitted by November 16, 1990.

(12) With the installation of the soil gas monitoring array as described in Item 8, the post-remedial verification will include soil vapor analyses as well as soil sampling. Modeling to determine cleanup criteria are addressed in Item 3.

HR Textron believes that initiating soil vapor extraction is more crucial for protecting the environment than determining the final cleanup criteria. HR Textron recognizes that ultimate approval of the RAP by the RWQCB, including the cleanup criteria, may not occur until after remediation begins.

(13) Analytical protocols and QA/QC procedures will be included in the operation and maintenance technical submittal described in Items 7 and 8. During the meeting, Mr. Chandler stated that the RWQCB requires the full documentation that state DHS certified laboratories must maintain on-file for the data from soil samples collected in May 1990. This

information will be made available but will require some additional time to compile. HR Textron plans to submit this information by November 16, 1990.

(14) HR Textron is committed to supplying progress reports to the RWQCB on a monthly basis. Technical reports will be submitted as requested upon completion of installation and startup and upon completion of remediation.

(15) During the meeting, the potential for some residual contaminants to remain in the soil following remediation was discussed. HR Textron agrees that the potential exists. The probable way in which closure would be structured in this case is a deed restriction on the property. This restriction would likely be of a form excluding use of that portion of the property for use other than industrial and might include provisions that the affected area remain capped to avoid excessive infiltration of water.

In the September 1990 Supplemental RAP (pg 1-2), the following six bullet items were listed that HR Textron expected to discuss with the RWQCB staff during the September 28 meeting The numbers in parentheses are the items above where the issues are addressed):

- Multi-level soil gas survey (8)
- Installation of permanent soil gas monitors (8)
- Testing additional parameters on soil samples for physical properties (2)
- Additional information on chemical properties of contaminants (see below)
- Reevaluation of boring locations and construction parameters (1), (2)
- Strippability determinations (2), (4)

The first two bullet items were discussed in detail during the meeting. Our understanding is that installation of a multi-level soil vapor monitoring system satisfies RWQCB concerns on both issues.

Testing for additional parameters (bullet item 3) is not possible because no soil samples are available for that purpose. If any additional soil samples become available, HR Textron will consider testing for TOC since it is an important factor for strippability determinations.

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A table of chemical properties (bullet item 4) was discussed at the meeting. ERM-West is currently assembling the table. HR Textron will submit the table by November 9, 1990.

The final two issues (bullet items 5 and 6) are interrelated and were discussed at length as part of Items 1 and 2 above. Since Boring B-3 is actually located within the area of influence of the VES, we understand that most of the concern about the boring locations for the VES has been satisfied. Many of the technical issues affecting strippability determination were discussed at the meeting. Since no soil samples are currently available for testing specific parameters, and since HR Textron plans to make the bench test data available to the RWQCB staff under a confidentiality agreement, most of the concern on this issue should be handled within a month.

Unless you require a new Supplemental RAP, the statements in this letter, along with the proposed technical submittals, will expand upon the September 1990 supplemental RAP. Upon startup of the in-situ VES, (after installation and sampling of the multi-level soil vapor monitoring system), HR Textron will supply the RWQCB with a technical report summarizing the RAP, the technical submittals and the startup of the remediation system.

If we inadvertently omitted information required to meet all the needs of the RWQCB, please contact us so can provide any information necessary for us to achieve our common goal of remediation.

Again, we sincerely thank you for the courtesy and clarification provided in our 9/28/90 meeting with the RWQCB staff. We look forward to our joint venture of developing and implementing an effective remediation process that meets the requirements of the RWQCB and accomplishes the remediation cost effectively in a minimum of time.

Very truly yours,

J.K. Wheeler for John Hedges

J.W. Hedges
Vice President
Contracts and Legal

JWH:ta

Attachments

bcc: W. Ameel
R. Millman
W. Moses
D. Stewart
J. Wheeler
P. Duff - Textron Corp.
D. Dunbar/B. Stearns - ERM West
P. Fahrenthold

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10 January 1991

Mr. Hank Yacoub
Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Subject: Soil Cleanup Levels at Pacoima Facility

Dear Hank:

This letter presents HR Textron's proposed clean-up goals for remediation of contaminated soil at our Pacoima facility.

Twelve VOCs have been detected in laboratory analyses of soil samples during the site investigation:

- 1,1,1-Trichloroethane
- 1,2-Dichloroethane
- Tetrachloroethene
- 1,1-Dichloroethene
- 1,1,2-Trichloroethane
- 1,1,2,2-Tetrachloroethane
- 1,1-Dichloroethane
- benzene
- ethylbenzene
- toluene
- xylenes

Petroleum hydrocarbons have been detected in the form of heavier oils rather than lighter fractions such as gasoline.

Previous technical submittals have described the physical situation at the site in great detail. These submittals have described the favorable conditions at the site, in particular, the great depth to ground water, the retardant effect of the 50-foot silty clay layer, and the lack of VOCs beneath this layer. For these reasons, we believe the cleanup levels presented in the Regional Water Board's July 31, 1990 Memo "Recommended Soil Cleanup Levels for the Protection of Ground Water, Los Angeles Region" are appropriate as a leading candidate for the mobile constituents in the sandy soils at the Pacoima site. These maximum acceptable levels are, in milligrams/liter:

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-	1,1,1-Trichloroethane	200
-	1,2-Dichloroethane	0.5
-	Tetrachloroethene	2
-	1,1-Dichloroethene	0.033
-	1,1,2-Trichloroethane	0.6
-	1,1,2,2-Tetrachloroethane	0.17
-	1,1-Dichloroethane	20
-	benzene	0.7
-	ethylbenzene	29
-	toluene	100
-	xylenes	620

Appropriate closure goals for TPH (oil) at all levels and VOCs in the clay levels are being finalized and will be submitted by March 5, 1991.

A copy of the referenced memorandum is attached. Please call us with any questions.

Sincerely,

M.L. Ameel
Project Manager
Environmental Engineering

MLW:ta

Attachment

STATE OF CALIFORNIA

Memorandum

To : All Unit and Section Chiefs
DB, RS, JR, JMW, RN, HHK, WDJ, ML, AS
~~KRH~~, DCG, ~~DD~~, HY

Date : July 31, 1990

File :

John Lewis

From : CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD — LOS ANGELES REGION
101 Centre Plaza Drive, Monterey Park, CA 91754-2156
Telephone: (213) 266-7500

Subject: RECOMMENDED SOIL CLEANUP LEVELS FOR THE PROTECTION OF GROUND WATER, LOS ANGELES REGION.

For sometime the Technical Support Unit has been working on a list of recommended soil cleanup levels for the protection of ground water on a Region wide and Board wide basis.

Board wide it has been policy that each unit has been giving out soil cleanup levels and in some cases we have not been consistent in the levels given out to dischargers and consultants.

The attached recommended soil cleanup levels is a first attempt to bring all Board Unit's together on Board wide recommended soil cleanup levels. These levels are not written in concrete and it will continue to be policy to look at cases on a site specific basis if the conditions in that case warrant deviation from these recommended levels.

By circulating this document to Unit Chiefs involved in giving out soil cleanup levels, I am asking for your comments and recommendations on constituent levels that conflict with commonly accepted levels you may have been using in the past (such as UGT's and WIP's). As I said our objective is to come up with common soil cleanup levels for all Unit's.

Please review these cleanup levels and compare them with soil cleanup levels you are presently using. After your review is complete, please return your comments and recommendations to me by August 13, 1990. After I compare your comments, if there is any disagreements we can schedule a meeting and resolve the differences.

Thank you for your cooperation in this project. If you have any questions about the above, please contact me.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

SOIL CLEANUP LEVELS FOR THE PROTECTION OF GROUND WATER
HYPOTHETICAL AVERAGE SITE

INORGANIC CONSTITUENT	MAXIMUM ACCEPTABLE LEVEL (MAL)		
Alkalinity	--		
Aluminum	10,000	mg/kg	(51)
Ammonia	--		
Antimony	1,460	mg/kg	(5)
Arsenic	0.022	mg/kg	
Asbestos	--		
Barium	10,000	mg/kg	(8)
Beryllium			
Boron	7,000	mg/kg	
Bromide	23,000	mg/kg	
Cadmium	50	mg/kg	
Chloramine	1,660	mg/kg	
Chlorate	70	mg/kg	(51)
Chloride	--		
Chlorine	--		
Chlorine dioxide	600	mg/kg	
Chlorite	70	mg/kg	
Chromium (III)	(5)		
Chromium (VI)	500	mg/kg	(12)
Cobalt	--		
Copper	20,000	mg/kg	(5,13)
Cyanide	15,400	mg/kg	
Fluoride	10,000	mg/kg	
Hardness	--		
Hydrogen sulfide	--		
Iodide	11,900	mg/kg	
Iron	3,000	mg/kg	
Lead	0.5	mg/kg	
Manganese	500	mg/kg	
Mercury	20	mg/kg	
Molybdenum	--		
Nickel	134	mg/kg	
Nitrate	100,000	mg/kg	(72)
Nitrite	0.01	mg/kg	(89)
Oxygen, dissolved	--		

Soil Cleanup Levels

INORGANIC CONSTITUENT	MAXIMUM ACCEPTABLE LEVEL (MAL)		
pH	6.0-9.0 pH units		
Phosporus	--		
Selenium	100	mg/kg	
Silver	500	mg/kg	
Specific conductivity (EC)	--		
Strontium	8,400	mg/kg	(51)
Sulfate	--		
Thallium	130	mg/kg	
Total Dissolved Solids (TDS)	--		
Uranium	200	pCi/kg	
Vanadium	--		
Zinc	200,000	mg/kg	(5,13)

ORGANIC CONSTITUENTS	MAXIMUM ACCEPTABLE LEVEL (MAL)		
Acenaphthene	20	mg/kg	
Acenaphthylene	0.0028	mg/kg	(41)
Acrolein	320	mg/kg	
Acrylamide	0.01	mg/kg	
Acrylonitrite	0.30	mg/kg	
Alachlor	0.00875	mg/kg	
Aldicarb	0.20	mg/kg	
Aldrin	7.4×10^{-5}	mg/kg	
Amiben	1,750	mg/kg	
Anthracene	0.0028	mg/kg	(41)
Atrazine	3	mg/kg	
Azinophos-methyl	87.5	mg/kg	
Baygon	3.0	mg/kg	
Benalin	700	mg/kg	
Bentazon	8.0	mg/kg	
Benz(a)anthracene	0.0028	mg/kg	(41)
Benzene	0.7	mg/kg	
Benzenes, chlorinated	--		
Benzenes, dichloro-	400	mg/kg	
Benzenes, trichloro			
Benzidine	0.0003	mg/kg	
Benzidines, dichloro-	0.01	mg/kg	
Benzo(b)fluoranthene	0.0028	mg/kg	(41)
Benzo(k)fluoranthene	0.0028	mg/kg	(41)
Benzo(g,h,i)perylene	0.0028	mg/kg	(41)

Soil Cleanup Levels

ORGANIC CONSTITUENTS	MAXIMUM ACCEPTABLE LEVEL (MAL)		
Benzo(a)pyrene	0.0028	mg/kg	(41)
alpha-BHC	0.0092	mg/kg	
beta-BHC	0.0163	mg/kg	
gamma-BHC	0.0186	mg/kg	
delta-BHC	50	mg/kg	(43,51)
technical-BHC	0.04	mg/kg	
Bis(2-chloroethyl) ether	0.03	mg/kg	
Bis(2-chlorolsopropyl) ether	34.7	mg/kg	
Bis(chloromethyl) ether	3.8x10-6	mg/kg	
Bromacil	80	mg/kg	
Bromodichlormethane	0.19	mg/kg	
Bromoform	0.19	mg/kg	
Bromomethane	0.19	mg/kg	
4-Bromophenyl phenyl ether	--		
Butachlor	70	mg/kg	
n-Butyl benzyl phthalate	--		
Captan	350	mg/kg	
Carbaryl	60	mg/kg	
Carbofuran	36	mg/kg	
Carbon disulfide	--		
Carbon tetrachloride	0.5	mg/kg	
Catechol	22	mg/kg	(59)
Chlordane	0.00046	mg/kg	
Chlorobenzene	3	mg/kg	
4-Chloro-o-cresol	1,800	mg/kg	
4-Chloro-m-cresol	3,000	mg/kg	
6-Chloro-m-cresol	20	mg/kg	
Chloroform	0.19	mg/kg	
Chloromethane	0.19	mg/kg	
2-Chloronapthalene	--		
2-Chlorophenol	0.100	mg/kg	
3-Chlorophenol	0.100	mg/kg	
4-Chlorophenol	0.100	mg/kg	
Chloropicrin	12	mg/kg	
Chlorpropham	350	mg/kg	
Chloropyrifos	--		
Chrysene	0.0028	mg/kg	(41)
2,4-D	70	mg/kg	
Dacthal	0.008	mg/kg	
Dalapon	200	mg/kg	

Soil Cleanup Levels

ORGANIC CONSTITUENTS	MAXIMUM ACCEPTABLE LEVEL (MCL)		
DBCP	0.1	mg/kg	
DDD	--		
DDE	--		
DDT	0.00024	mg/kg	(13)
Demeton	--		
Diazinon	0.63	mg/kg	
Dibenz(a,h)anthracene	0.0028	mg/kg	(41)
Dibromochloromethane	0.6	mg/kg	
Dibutyl phthalate	770	mg/kg	
Dicamba	9.0	mg/kg	
1,2-Dichlorobenzene	10	mg/kg	
1,3-Dichlorobenzene	20	mg/kg	
1,4-Dichlorobenzene	0.30	mg/kg	
3,3-Dichlorobenzidine	0.01	mg/kg	(52)
Dichlorodifluoromethane	0.19	mg/kg	
1,1-Dichloroethane	20	mg/kg	
1,2-Dichloroethane	0.5	mg/kg	
1,1-Dichloroethylene	0.033	mg/kg	
cis-1,2-Dichloroethylene	16	mg/kg	(104)
trans-1,2-Dichloroethylene	16	mg/kg	(104)
Dichlorofluoromethane	1,600	mg/kg	
Dichloromethane	5	mg/kg	
2,3-Dichlorophenol	0.040	mg/kg	
2,4-Dichlorophenol	0.300	mg/kg	
2,5-Dichlorophenol	0.500	mg/kg	
2,6-Dichlorophenol	0.200	mg/kg	
3,4-Dichlorophenol	0.300	mg/kg	
1,2-Dichloropropane	0.560	mg/kg	
1,3-Dichloropropene	0.200	mg/kg	(29)
Dieldrin	0.00071	mg/kg	
Diesel Oil	10	mg/kg	(51)
Di-2-ethylexyl phthalate	2,400	mg/kg	
Diethyl phthalate	350,000	mg/kg	
Dimethoate	140	mg/kg	
2,4-Dimethylphenol	400	mg/kg	
Dimethyl phthalate	313,000	mg/kg	
2,4-Dinitro-o-crosol	13.4	mg/kg	
Dinitrophenol	70	mg/kg	
2,4-Dinitrotoluene	0.110	mg/kg	
2,6-Dinitrotoluene	--		

Soil Cleanup Levels

ORGANIC CONSTITUENTS	MAXIMUM ACCEPTABLE LEVEL (MAL)		
Dinoseb	3.5	mg/kg	
Di-n-octyl phthalate	--		
1,4-Dioxane	7	mg/kg	(51)
Diphenamid	40	mg/kg	
Diphenylhydrazine	0.042	mg/kg	
Diquat	100	mg/kg	
Disyston	0.3	mg/kg	
Endosulfan	74	mg/kg	
Endosulfan sulfate	74	mg/kg	
Endothall	140	mg/kg	
Endrin	0.200	mg/kg	
Epichlorohydrin	7	mg/kg	
Ethers,chloroalkyl-	--		
Ethers, halo-	--		
Ethlon	35	mg/kg	
Ethylbenzene	29	mg/kg	
Ethylene dibromide	0.0005	mg/kg	
Ethylene glycol	7,000	mg/kg	(51)
Ethylenes, dichloro-	--		
ETU	0.23	mg/kg	
Forbam	87.5	mg/kg	
Fluoranthene	42	mg/kg	
Fluorene	0.0028	mg/kg	(41)
Folpot	1,120	mg/kg	
Formaldehyde	3	mg/kg	(51)
Glyphosate	500	mg/kg	
Heptachlor	0.02	mg/kg	
Heptachlor epoxide	0.038	mg/kg	(107)
Hexachlorobenzene	0.00072	mg/kg	
Hexachlorobutadiene	0.450	mg/kg	
Hexachlorocyclopentadiene	1	mg/kg	
Hexachloroethane	1.9	mg/kg	
Hexachlorophene	0.35	mg/kg	
n-Hexane	400	mg/kg	(51)
Indeno(1,2,3-c,d)pyrene	0.0028	mg/kg	(41)
Isophorone	5,200	mg/kg	
Isopropanol	10	mg/kg	(59)
Kepone	0.011	mg/kg	
Kerosene	10	mg/kg	(51)
Malathion	160	mg/kg	

Soil Cleanup Levels

ORGANIC CONSTITUENTS	MAXIMUM ACCEPTABLE LEVEL (MAL)		
Maneb	35	mg/kg	
MCPA	3.6	mg/kg	
Methanes, halo-	--		
Methomyl	175	mg/kg	
Methoxychlor	100	mg/kg	
Methyl ethyl ketone	170	mg/kg	
Methyl methacrylate	35	mg/kg	
Methyl Parathion	2	mg/kg	
Metolachlor	10	mg/kg	
Metribuzin	175	mg/kg	
Mirex	0.0049	mg/kg	
Molinate	20	mg/kg	
Nabam	--		
Napthalene	--		
Napthalenes, chlorinated	--		
Nitralin	700	mg/kg	
Nitrobenzene	0.500	mg/kg	(51)
Nitrofen	8.9×10^{-5}	mg/kg	
2-Nitrophenol	29	mg/kg	(37, 51)
4-Nitrophenol	29	mg/kg	(37, 51)
Nitrophenol	29	mg/kg	(51)
Nitrosamines	--		
N-Nitrosodibutylamine	0.0001	mg/kg	
N-Nitrosodiethyalmine	2×10^{-6}	mg/kg	
N-Nitrodimethylamine	0.003	mg/kg	
N-Nitrodiphenylamine	4.9	mg/kg	
N-Nitrodipropylamine	--		
N-Nitrosopyrrolidine	0.016	mg/kg	
trans-Nonachlor	--		
Oxamyl	175	mg/kg	
Oxychlordane	--		
PAH	0.0028	mg/kg	
Paraquat	3	mg/kg	
Parathion	30	mg/kg	
PCB's	7.9×10^{-5}	mg/kg	
Pentachlorobenzene	74	mg/kg	
Pentachloroethane	--		
Pentachlorophenol	30	mg/kg	(5)
Phenanthrene	0.0028	mg/kg	(41)
Phenol	300	mg/kg	(40)

oil Cleanup Levels

ORGANIC CONSTITUENTS	MAXIMUM ACCEPTABLE LEVEL (MAL)		
Phenols, chlorinated	--		
Phenols, nitro-	--		
Phenols, non-chlorinated	--		
Phorate	0.7	mg/kg	
Phthalate esters	--		
Picloram	490	mg/kg	
Promefon	100	mg/kg	
Pronamide	52	mg/kg	
Propachlor	446	mg/kg	
Propanes, dichloro-	--		
Propanil	140	mg/kg	
Propazine	14	mg/kg	
Propenes, dichloro-	87	mg/kg	
Pyrene	0.0028	mg/kg	(41)
Resorcinol	50	mg/kg	(51)
Rotenone	5	mg/kg	
Simazine	10	mg/kg	
Styrene	0.014	mg/kg	
Sulfallate	0.31	mg/kg	
2,4,5-T	21	mg/kg	
TCDD	5×10^{-7}	mg/kg	
Tebuthiuron	350	mg/kg	
Terbacil	90	mg/kg	
Terbufos	0.18	mg/kg	
Terraclor	0.9	mg/kg	
1,2,4,5-Tetrachlorobenzene	38	mg/kg	
1,1,2,2-Tetrachloroethane	0.170	mg/kg	
Tetrachloroethylene	2	mg/kg	
2,3,4,6-Tetrachlorophenol	1.0	mg/kg	
2,3,5,6-Tetrachlorophenol	--		
Thiobencarb	1	mg/kg	
Thiram	35	mg/kg	
Toluene	100	mg/kg	
TPH (Gasoline)	90	mg/kg	
TPH (Oil)	900	mg/kg	
Toxaphene	0.00071	mg/kg	
2,4,5-TP	10	mg/kg	
Tributyltin	--		
Trichloroacetic acid	50	mg/kg	
Trichlorton	26	mg/kg	

Soil Cleanup Levels

ORGANIC CONSTITUENTS	MAXIMUM ACCEPTABLE LEVEL (MAL)	
1,2,4-Trichlorobenzene	--	
1,1,1-Trichloroethane	200	mg/kg
1,1,2-Trichloroethane	0.6	mg/kg
Trichloroethylene	5	mg/kg
Trichlorofluoromethane	0.190	mg/kg
2,4,5-Trichlorophenol	1	mg/kg
2,4,6-Trichlorophenol	1.2	mg/kg
Trichlorotrifluorethane	18,000	mg/kg
Trifluralin	1.7	mg/kg
Trinitrophenol	20	mg/kg
Trithion	7	mg/kg
Vinyl chloride	0.015	mg/kg
Vydate	160	mg/kg
Xylenes(s)	620	mg/kg
Zineb	35	mg/kg
Ziram	87.5	mg/kg

PACOIMA REMEDIATION 1991

RESPONSE TO QUESTION 7 PAGE 9

STATE OF CALIFORNIA PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
'OS ANGELES REGION
J1 CENTRE PLAZA DRIVE
MONTEREY PARK, CA 91754-2156
(213) 266-7500

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ENVIRONMENTAL

March 5, 1991

Mr. M. L. Ameel, Project Manager
HR Textron Inc.
252 W. Rye Canyon Road
Valencia, CA 91355

FACILITY AUDIT - H.R. TEXTRON FACILITY, PACOIMA (CAO 89-104)

H.R. Textron, Inc. (HRT) provided a facility audit to this Regional Board on May 23, 1990, in response to Cleanup and Abatement Order 89-104. However, this audit is relatively incomplete, consisting of general statements and little actual detail. Based upon a review of this submittal as well as earlier materials, the following comments at a minimum must be addressed by HRT in a revised site audit:

(1) Submit details on chemical constituents for the various trade name materials. HRT is directed to prepare a more descriptive chemical summary together with associated Material Safety Data Sheets (MSDS) for the chemical inventory list. In order to evaluate significance of the listed chemicals, a summary of usage records or supportable estimate of annual quantities must also be provided. Note that HRT has previously stated that it can not be responsible for the presence of methylene chloride reported in analytical results from its waste discharge - but later indicated in its facility audit that it "...does not monitor records identifying all chemicals which have been used at the Pacoima facility...". The "may have used" chemical inventory list provided in the audit must be addressed further and the actual storage, use and disposal of the chemicals be evaluated.

(2) Provide to this Regional Board a summary of the manifests for off-site disposal of the waste formerly held in the underground waste storage facility. Be as specific as possible concerning dates and quantities removed.

(3) Provide details on the construction and operation of the former waste tank complex. Design details of the concrete cap, filler, appurtenant piping and cleanout access(es) must be provided, preferably in an as-built drawing. Describe any overflow protection which might have existed. Describe the operational procedures involved in generating, transferring and disposing of the waste stored in the tanks.

350104

(4) Provide a specific paving history of those areas around all underground tanks, including the clarifier. A chronologic history of chemical and waste storage with associated site paving must be developed if possible.

(5) Prepare historical information concerning problems associated with waste handling and in particular with respect to any overflow events at the underground storage tanks. Provide a list of your responsible employees who are cognizant of the waste area. Have your consultants interview them concerning waste handling and storage practice and provide this information to the Regional Board. Although HRT indicated that the only accidental spill of chemicals into soil at the subject site occurred from the two removed underground tanks, staff observed waste handling and storage practices, which indicate that this is probably not accurate.

(6) Provide all physical and historical data, include as-built drawings for the industrial waste clarifier, the sump and appurtenant piping which lead from the stoddard solvent area to the "spill containment tank". The industrial waste clarifier and the sump and piping leading to the spill containment tank, which were not addressed in the original leak detection investigation, may require additional investigation.

(7) Provide copies of all inspection reports and chemical analyses, performed by or for L.A. County Sanitation Districts with respect to clarifier permit No. 306129.

(8) Provide historical details covering installation, use and spill containment for the above-ground tanks at the subject facility. Note all locations within the facility that these or predecessor tanks are or were located. Please show these facts on a plot plan on large scale map.

(9) Describe surface discharge and any historic improvements to prevent surface water runoff from becoming contaminated in the vicinity of chemical and waste storage areas.

(10) Provide a copy of the plot of the legal location of the landfill(s) upon which the HRT facility appears to be constructed as indicated in the 1988 Leighton and Associates report also indicates that a detailed review of aerial photographs had been made. Provide a graphical, chronologic review of these photographs on appropriately scaled map. This map should be a composite of site information and include (1) all present and past chemical and waste storage areas, either

permanent or temporary, (2) all process areas where solvents have been used, (3) all traps, drains or sumps connected to the industrial waste clarifier.

If you have any questions call me at (213) 266-7522.

HANK H. YACOUB
Supervising Water Resource
Control Engineer

HHY:wl

cc: Jorge Leon, State Water Resource Control Board, Office of Chief Counsel
Ms. Alisa Green, Environmental Protection Agency, Region 9, Toxics and Waste Management Division
Mr. Dennis Dickerson, Department of Health Services - Region 3, Toxic Substances Control Division
Mr. Bill Jones, Los Angeles County, Department of Health Services, Hazardous Materials Program
Mr. Mel Blevin, San Fernando Basin Watermaster
Michael L. Hickok, 355 S. Grand Ave., 33rd Floor Los Angeles, California 90071
William Tolson, 999 Green St., #1001, San Francisco, CA 94133
Jean W. Blomberg, 2386 Saddleback Drive, Danville, CA 94506
Gary L. O'Brien, c/o Pacific Bank, 351 California Street San Francisco, CA 94104
Joan O'Brien, Evans and O'Brien, 1031 N. Fairoaks, Sunnyvale, CA 94089
Bruce Stearns, ERM-WEST, Inc. 1920 Main Street, Ste. 600 Irvine, CA 92714-7210

STATE OF CALIFORNIA

PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
LOS ANGELES REGION
01 CENTRE PLAZA DRIVE
MONTEREY PARK, CA 91754-2156
(213) 266-7500

March 6, 1991

RECEIVED
MAR 07 1991
ERM-WEST, INC.
IRVINE, CA

John Hedges
H.R. Textron Inc.
252 W. Rye Canyon Road
Valencia, CA 91355

REMEDIAL ACTION PLAN FOR SOIL CLEANUP - H.R. TEXTRON FACILITY PACOIMA (CAO 89-104)

Your remedial action plan (RAP), first received on April 3, 1990, has been reviewed in conjunction with subsequent revisions and letter addenda. The RAP and its addenda are being approved subject to conditions enumerated in this document and discussed with you on December 11, 1990. This conditional approval does not apply to ground water and is based upon data and information developed by HRT to date. If contrary information arises in the future from continuing investigations, monitoring or other sources, this Regional Board staff retains the option of requiring additional actions as deemed appropriate.

Jurisdictional requirements of other agencies, such as the U.S. Environmental Protection Agency (EPA) or the California Department of Health Services are in no way affected by this determination, and such agencies may choose to evaluate the situation and make their own determinations as warranted.

Before any operational mode of remediation and before testing affects on existing contaminant distribution at the site, verification, consisting of resolving specific details of horizons known or inferred to contain waste materials, must be performed. This includes assuring complete identification of all waste materials and generally meeting any unfulfilled requirements from previous reviews. The following specific element needs to be considered in the verification:

(1) Extent of contamination

The following represent continuing deficiencies of the "RAP" which must be incorporated into a single document describing the proposed cleanup prior to implementation:

350105

(1) Permitting
(2) Design Justification
(3) Monitoring, Sampling and Analytical Protocols
(4) Cleanup Levels

Some of the problems with the RAP will ultimately reflect on the response by RWQCB for any subsequent closure request:

(1) Cleanup Confirmation
(2) Cover System
(3) Closure
(4) Reporting

The following items are acceptable as meeting the intent of our original request for a revised RAP:

(1) Health and Safety Plan
(2) Bench Testing
(3) Remediation System
(4) Operation and Maintenance

Provided that the elements listed above and described in detail in Attachment A are incorporated into your RAP, we have no objections to your implementing it. Notification must be provided that the items listed above will be incorporated into your final RAP. A complete RAP incorporating all the previous submittals must be submitted by April 8, 1991. Meanwhile, you may proceed with the baseline development and extraction design portion of the plan as discussed with staff of this Regional Board.

If you have any questions, please contact me at (213) 266-7522 or Philip Chandler at (213) 266-7537.

Hank H Yacoub

HANK H. YACOUB
Supervising Water Resource
Control Engineer

Attachment

cc: Jorge Leon, State Water Resource Control Board, Office of Chief Counsel
Alicia Green, Environmental Protection Agency, Region 9, Toxics and Waste Management Division
Mr. Dennis Dickerson, Department of Health Services - Region 3, Toxic Substances Control Division
Mr. Bill Jones, Los Angeles County, Department of Health Services, Hazardous Materials Program
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Bruce Stearns, ERM-WEST, Inc. 1920 Main Street, Ste. 600 Irvine, CA 92714-7210

ATTACHMENT A

EXTENT OF CONTAMINATION

1. Determination of lateral extent of contamination in the vadose zone is not sufficiently complete to justify the design and placement of injection and extraction well(s). There is a 35 foot lateral gap along the fenceline between borings IW-4 and IW-1. Further, no analytical results appear to be reported from IW-4. The IW-4 and IW-4A borings were not completely sampled and only partially define the northeastern margin of site contamination.

2. An assessment of the possible orientation effect of the fine-grained horizon(s) and any relationship to the data gap along the east side of the former tanks was to have been made. Specifically required were:

   a. Isopach and top-of-horizon contour maps to determine dip of the last fine-grained horizon.

   b. Hollow-stem auger boring(s) to eliminate the data gap, preferably at the down dip compliance point.

3. Assessment of vertical extent of contamination remains insufficient to evaluate the contrary assertions by staff and HRT regarding the occurrence of contamination extending from the last fine-grained horizon to 120 feet below ground surface (bgs). Given the demonstrated sample recovery problems in the coarse-grained materials underlying that last fine-grained horizon(s), it is unreasonable to assume that contaminants have been completely delineated. HRT has indicated that only 12 of 57 samples from underlying coarse-grained materials were inadequate, however staff believes more were unacceptable disturbed. Measures to verify the data situation must be proposed prior to VEC startup, since this may affect the distribution of contaminants above, within and below the last fine-grained horizon. A minimum of one boring must be carefully installed to penetrate below the lowest clayey horizon(s) at an appropriate location. It should be sampled carefully and permanent soil gas monitoring probe(s) emplaced below the last fine grained horizon and properly sealed off.

DESIGN JUSTIFICATION

1. The design of the proposed remediation has not been adequately justified. Re-evaluation and justification of the proposed design was requested with respect to: (a) probable need for discrete screening of specific lithologic horizons to be remediated based upon strippability response predicted for the specific lithologic units involved at the site, and (b)

remaining concerns that verification of extent of contamination is incomplete and that the proposed location of extraction/injection wells may not be optimal.

2. The ability of any proposed vapor extraction system to meet the cleanup goals is predicated upon evaluation of strippability and residual threat to groundwater. The report provided to support the "...remediation process and design engineering..." did not utilize a strippability analysis and was not sufficient to allow evaluation of the success of the proposed remediation. HRT was required to evaluate the strippability of the various major lithologic units to support the design. This was to have been based on various tests previously required, such as determination of total organic carbon content.

3. The phenomenon of "rebound" must be discussed. The responses of the various stratigraphic horizons to proposed extraction are important with respect to assuring that differences between advection and diffusion dominated transfer do not skew the decision to shut down the cleanup.

4. Specific extraction well design questions included: a) A rationale must be provided for selection of the screen. Medium aquarium sand and .03 inch slotted PVC were utilized as a continuous screen and filter pack. (b) Explain why the filter pack was chosen as "compatible" with the screen. Typically, filter packs are designed to match the formation rather than a screen. The screen is then selected to keep the filter pack out of the bore hole. Indicate effects of air permeability mismatches. There are layers of contrasting permeability (silty sand, sand and gravel and clayey silt) which should have been considered in the design of the well. (c) Provide justification for the use of a forty-foot screen across all horizon in this situation. It is believed that this may not be appropriate and that each horizon should be specifically targeted. Screening continuously across all horizons is at odds with permeability differences obvious from prior reports. For example the zone with lowest postulated permeability had the highest reported VOC value in EX-1 at 60,000 ppb. It is suspected that the extraction program may preferentially affect the more permeable overlying materials.

REMEDIATION SYSTEM

1. The outline of the proposed extraction and treatment systems and subsequently provided details are acceptable.

BENCH TESTING

1. It has been represented by HRT and its consultant that key elements of remediation do not rely upon bench testing.

Therefore the request for appropriate details on the "specialized research laboratory", is waived. If any results of this work are proposed for integration into on-going remediation, adequate explanation will be required in a modified RAP.

OPERATION AND MAINTENANCE

1. Operation and maintenance are keys to achieving the described cleanup. An outline of the specifics has been provided.

PERMITTING

1. HRT must discuss with California Department of Health Services (DHS) and U.S. Environmental Protection Agency (EPA) the necessity of filing for appropriate site closure permit(s) under RCRA. Before this Regional Board will consider a closure completion request from HRT, such evidence must be provided. If HRT fails to meet RCRA closure requirements, the remediation may not be considered complete.

2. HRT must seek from DHS either a permit, variance or a waiver. DHS closure requirements must be met.

3. Condensate which will likely be generated by VEC operation and surface run-off water from the former tank area and adjacent chemical storage must be considered. Disposal of this water may require permit(s) from one or another agency. Explain the proposed method of disposal and provide copies of appropriate permits.

4. Copies of relevant SCAQMD permits need to be provided before initiating operation of the VEC program.

HEALTH AND SAFETY PLAN

1. An updated plot plan must be provided which clearly identifies (a) areal extent of contaminated zone, and (b) such support areas as necessary for the cleanup operations.

2. The health effects/regulatory standards and worker exposure section should include methylene chloride which appears to be among the site chemicals used and has been reported from soil samples underlying the former waste tanks.

3. Instrumentation to be used for air quality monitoring is only identified. Adequate description needs to be provided.

POST-VAPOR EXTRACTION CONFIRMATION

1. The proposed post-extraction confirmation is still inadequate. For example there are no details of soil gas monitoring and

no "rebound" phenomenon evaluation. Descriptions and an evaluation methodology must be provided.

2. Monitoring during the system operation is necessary for subsequent cleanup confirmation. Details of such synchronous monitoring have not been provided.

3. A post-extraction soil sampling and testing program must be developed to verify the extent of cleanup in each significant horizon. See discussion of soil sampling protocols.

CLEANUP LEVELS

1. The crucial issue of cleanup levels is still not adequately addressed in the RAP. At first it was suggested that these would be determined in conjunction with staff of this Regional Board, then on January 11, 1991, HRT proposed specific cleanup levels. These were not acceptable, in part because the levels were considerably higher than those set at other locations. In general, VOC cleanup levels should be based on a site specific risk and fate analysis, utilizing laboratory-derived partition coefficients for site materials. Factoring of action levels (AL) or maximum contaminant levels (MCL) in water is not reasonable unless exceedingly conservative. Cleanup levels for detected contaminants and appropriate means for their determination will be set conservatively.

2. Vapor extraction must continue until volatile organic compounds (VOC) and petroleum hydrocarbon vapors are nominally zero, as measured at the array of soil gas probes and system sampling ports. Acceptance of cleanup completion will be based upon both pattern of vapor measurements and driven confirmatory samples. At a minimum, driven samples must be obtained within the various lithologic horizons including the last fine-grained horizon and the underlying coarse-grained unit. Tetrachloroethylene (PCE) at 100 ug/kg is an example of an operable cleanup goal(s) for a single VOC constituent. The cumulative VOC concentrations may exceed this single constituent level.

3. A petroleum hydrocarbon (TPH and TRPH) cleanup goal of 100 mg/kg is appropriate.

4. It is unlikely that this proposed remediation program will remove all contaminants from the soil, especially the heavier petroleum hydrocarbon fractions. If such soil contaminants remain in excess of the cleanup levels, additional closure provisions may be asserted by the Regional Board.

5. Petroleum hydrocarbons and VOCs have been demonstrated to have

been a probable threat to water and will remain in place at unknown concentration below the zone being remediated. Near-field ground water monitoring has previously been required because of such threat determination. Although this issue is currently under appeal, HRT should be aware that site cleanup may not be considered to be complete by this Regional Board staff without appropriate ground water monitoring.

MONITORING, SAMPLING AND LABORATORY QUALITY CONTROL PROTOCOLS

Soil Sampling

1. Sampling protocols for confirmation/verification need to be explicitly described in the final RAP.

2. Given the difficulties with available analytical chemistry, you must obtain undisturbed driven samples for verification and for previously requested testing. The level of stratigraphic control allows reasonable sampling at lithologic or contaminant changes. Merely sampling at regular five-foot intervals is not acceptable for either confirmation or verification.

3. Continuous sampling and logging must be performed in at least one location for post-extraction confirmation. All future logging must include percent recovery for each sampling interval. You should note that vapor extraction process may be expected to provide redistribution of VOCs throughout the various lithologic horizons.

Soil Gas Monitoring

1. This form of monitoring is required because the proposed remediation technique is vapor extraction and because of site specific characteristics. As previously indicated, the monitoring must have permanent and adequate lateral and vertical coverage during vapor extraction to provide a vapor distribution baseline to assess changes resulting from the cleanup activities and to evaluate whether cleanup goals have been met.

2. The necessary details for the gas monitoring protocols have not yet been satisfactorily described. The number, locations and depths of the probes provided by HRT on November 5, 1990 are not adequate to fully achieve baseline evaluation, to monitor the cleanup process or to ultimately demonstrate cleanup effectiveness. Vapor "rebound" considerations must be discussed.

3. The number of indicated probes is insufficient to monitor the area potentially affected by remediation. For example, the

proposed air injection may redistribute soil contaminants both laterally and vertically. An adequate baseline requires that probes must be arrayed such that areas adjacent to the former tanks are covered. At least ten (10) specific probe locations should be included. All of these do not need be deep. The first step should be a shallow (e.g. 3 foot and 15 foot) survey. Relate to the various lithologic units in the existing borings and select installation points for permanent multi-level monitoring.

4. Depths for individual monitoring probes must be established on the basis of significance of the horizons to cleanup. For example, contaminant levels within the last fine-grained horizon were reportedly higher than those in the coarse-grained unit overlying it (60,000 ug/kg versus 40,000 ug/kg). One horizon may be dominated by advection and the other by diffusion. Monitoring of both units is crucial.

   Further, the coarse-grained horizon underlying the last fine-grained horizon must be monitored to verify that no changes occur as a result of the proposed extraction process. The probability of transport of VOCs across the last fine-grained horizon is not really measured by "saturation" as described by HRT.

5. Evaluation of any "rebound phenomenon" must be made with respect to both diffusion and advection dominated horizons. A specific procedure must be implemented to evaluate this phenomenon as it pertains to final closure. This procedure must be included in the completed RAP. Until a stripability assessment is made, careful monitoring at tight sampling intervals is necessary.

LABORATORY ANALYTICAL AND QUALITY CONTROL

1. Analytical protocols have not been provided. Utilize appropriate Environmental Protection Agency (EPA), Department of Health Services and ASTM documentation to develop protocols and procedures for confirmation of analytical work. For example, total recoverable (TRPH) and total petroleum hydrocarbon (TPH) analyses must be proposed in order to evaluate cleanup. The methodology must be adequately described and you must acknowledge that raw chromatograms will be provided for EPA Method 8015 (modified).

2. Any further sampling and analysis of waste discharge at the former tanks must attend to all site chemicals. The screening processes, originally performed, appear to have been flawed (difficulties with Chain of Custody, detection limits, etc.).

3. You must acknowledge that complete QA/QC documentation will

be provided for all analytical results associated with the RAP. Although this is a typical requirement, it has assumed even greater importance at HRT due to previous crucial laboratory disputes. QA/QC must include the following for VOCs, at a minimum:

(a) Calibration or column check
(b) Check samples
(c) Laboratory control samples
(d) Blanks (field, trip, sample, equipment and reagent)
(e) Surrogate spikes
(f) Duplicates
(g) Matrix spike and spike duplicates

In addition:

(a) Total recoverable compounds must be reported, blank adjustments are not acceptable.

(b) Report and explain all QC reruns or other corrective actions. Take appropriate corrective action if recoveries are outside appropriate limits.

(c) Report all tentatively identifiable compounds even if non-quantifiable or non-target.

(d) describe "sub-sampling" methodology.

(e) Report limits of detection, not merely method detection limits.

(f) Explain matrix limitations and detection limit calculation.

(g) Explain and justify extraction method.

(h) Provide collection, sample receipt, preparation or extraction, analysis and reporting dates on laboratory sheets.

ADDITIONAL PHYSICAL/CHEMICAL CHARACTERISTICS

1. In order that proper evaluation be made of the cleanup, at some future point the additional parameters must be measured for a representative number of samples for each of the major lithologies present.

2. These parameters include:

(a) bulk density
(b) percent organic carbon content
(c) total porosity

(d) field air and hydraulic permeabilities
(e) laboratory solvent permeability
(f) site-specific partitioning coefficients

COVER SYSTEM

1. Such a system is the final component of a management system and must isolate any residual waste from environment.

2. Design to minimize long term infiltration of surface water and thereby minimize liquid migration and leachate formation.

3. Detailed plans and an engineering report on cover design are typical components of closure plan. They must demonstrate through calculation and specification that the cover will function as required. The technical analyses, necessary to assure applicability of a design, must be performed by a qualified engineer in order to guarantee performance standards for the cover system elements in the specific site environment.

4. The design must take into account the site characterization, topography, precipitation, soil properties, settlement/ subsidence, run-on/run-off, erosion, water migration across, into, through, and out of the remediated area.

5. The cover system must include any backfill e.g. the former tank excavation, a low-permeability soil layer, a geomembrane, drainage, filter and a cap which is part of an integrated run-on/run-off control.

6. Specifics of the cover system must be adequately described and detailed. These include construction (material placement, compaction, etc.), material specifications (soil tests etc.), boundary details and description of maintenance activities for run-on/run-off control.

7. Surface water management is necessary and the final system components, design criteria, material and construction techniques which will be emplaced to control run-off/run-on must be described. Since hazardous waste continues to be stored adjacent the former tank area, potentially contaminated run-on from this area must be limited.

REPORTING

1. Although your schedule now provides for progress reports and a final technical report, the RAP must contain a description of essential elements to be contained in the final technical report.

2. The RAP itself has been submitted in various pieces, not all of which are descriptive or complete. Assurances must included in the RAP that the final technical report will contain sufficient detail to allow satisfactory evaluation.

CLOSURE

1. A closure plan and schedule is needed as part of the RAP. This may be tentative with respect to specific data, but must include sufficient detail to assure that any residual contaminants either be treated by a secondary cleanup method if needed, that stricter surface closure methods will be implemented and that post-closure care and maintenance be assured.

2. The necessity for longterm post-closure care and maintenance is highly likely given the cleanup approach selected. Details must be provided for capping, surface drainage control and long-term monitoring etc.. There will be an obligation to restrict disturbance of the remediated area.

3. A fundamental component of closure must be the accurate determination of location and dimensions of the remediated area by a licensed professional surveyor or civil engineer.

4. Details of the cover construction and drainage control etc. must be developed to match RCRA style standards. Specifically HRT must include a RCRA style cap and permanent land use restriction with respect to water infiltration.

HR TEXTRON

HR Textron Inc.
a Subsidiary of Textron Inc.

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Valencia, Calif. 91355-1265
805/259-4030
TWX 910/336/1438 TELEX 65/1492

April 4, 1991

Mr. H. H. Yacoub
California Regional Water
Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Subject: FACILITY AUDIT - HR TEXTRON FACILITY, PACOIMA (CAO 89-104)

RESPONSE TO CRWQCB LETTER DATED MARCH 6, 1991

Dear Mr. Yacoub:

Your letter dated March 5, 1991 to Mr. M.L. Ameel, HR Textron, requested that HR Textron must address the comments listed in a revised audit. You did not state a due date in this letter.

As discussed in our meeting on March 14, 1991, HR Textron will address the listed comments in your letter by providing information if it is available and to the extent that it pertains to the underground storage tank site that is in question. As also agreed to, information concerning the clarifier is no longer required.

Given the scope of this task and others concerning Pacoima remediation, we will provide the information agreed upon by August 31, 1991.

We will assume the acceptance of this request unless otherwise notified. Please contact me at (805) 253-5322 if you have any questions or comments concerning this matter.

Sincerely,

M. L. Ameel
Project Manager, Environmental Engineering

ML:

350106

HR TEXTRON

HR Textron Inc.
a Subsidiary of Textron Inc.

25200 West Rye Canyon Road
Valencia, Calif. 91355-1265
805/259-4030
TWX 910/336/1438 TELEX 65/1492

April 4, 1991

Mr. H. H. Yacoub
California Regional Water
Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Subject: FACILITY AUDIT - HR TEXTRON FACILITY, PACOIMA (CAO 89-104)

RESPONSE TO CRWQCB LETTER DATED MARCH 6, 1991

Dear Mr. Yacoub:

Your letter dated March 5, 1991 to Mr. M.L. Ameel, HR Textron, requested that HR Textron must address the comments listed in a revised audit. You did not state a due date in this letter.

As discussed in our meeting on March 14, 1991, HR Textron will address the listed comments in your letter by providing information if it is available and to the extent that it pertains to the underground storage tank site that is in question. As also agreed to, information concerning the clarifier is no longer required.

Given the scope of this task and others concerning Pacoima remediation, we will provide the information agreed upon by August 31, 1991.

We will assume the acceptance of this request unless otherwise notified. Please contact me at (805) 253-5322 if you have any questions or comments concerning this matter.

Sincerely,

M. L. Ameel
Project Manager, Environmental Engineering

ML:

bcc: J. Hedges
J. Ito
W. Moses
R. Pascoe
B. Stearns
J. Wheeler

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April 4, 1991

Mr. H. H. Yacoub
California Regional Water
Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Subject: REMEDIAL ACTION PLAN FOR SOIL CLEANUP - HR TEXTRON FACILITY, PACOIMA (CAO 89-104)

RESPONSE TO CRWQCB LETTER DATED MARCH 6, 1991

Dear Mr. Yacoub:

Your letter dated March 6, 1991 to Mr. John Hedges, HR Textron, requested that HR Textron provide notification that the items listed and described in detail will be incorporated into our final RAP and that a complete RAP incorporating all the previous submittals be submitted by April 8, 1991.

HR Textron does intend to address all of the items you listed and intends to incorporate all previous submittals in a complete RAP. As agreed upon in our meeting on March 14, 1991 the submittal date of April 8, 1991 is not a realistic one. After looking at the scope of work to produce a quality product and considering the other tasks associated with the Pacoima remediation, we are asking for an extension of the RAP submittal from April 8, 1991 to July 31, 1991.

We will assume the acceptance of this request unless otherwise notified. Please contact me at (805) 253-5322 if you have any questions or comments concerning this matter.

Sincerely,

M. L. Ameel
Project Manager, Environmental Engineering

350107

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April 4, 1991

Mr. H. H. Yacoub
California Regional Water
Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Subject: REMEDIAL ACTION PLAN FOR SOIL CLEANUP - HR TEXTRON FACILITY, PACOIMA (CAO 89-104)

RESPONSE TO CRWQCB LETTER DATED MARCH 6, 1991

Dear Mr. Yacoub:

Your letter dated March 6, 1991 to Mr. John Hedges, HR Textron, requested that HR Textron provide notification that the items listed and described in detail will be incorporated into our final RAP and that a complete RAP incorporating all the previous submittals be submitted by April 8, 1991.

HR Textron does intend to address all of the items you listed and intends to incorporate all previous submittals in a complete RAP. As agreed upon in our meeting on March 14, 1991 the submittal date of April 8, 1991 is not a realistic one. After looking at the scope of work to produce a quality product and considering the other tasks associated with the Pacoima remediation, we are asking for an extension of the RAP submittal from April 8, 1991 to July 31, 1991.

We will assume the acceptance of this request unless otherwise notified. Please contact me at (805) 253-5322 if you have any questions or comments concerning this matter.

Sincerely,

M. L. Ameel
Project Manager, Environmental Engineering

bcc: J. Hedges
J. Ito
W. Moses
R. Pascoe
B. Stearns
J. Wheeler

HR TEXTRON

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April 8, 1991

Mr. Philip Chandler
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Dear Mr. Chandler:

Thank you for your technical suggestions on optimizing results from our Vapor Extraction System (VES) at our Pacoima facility.

Although I have disagreed with you on several occasions as to the value or cost effectiveness of approaches you have recommended, I appreciate the experience you can bring to the planning and implementation of our remediation process. I believe more communication between regulatory agency personnel and the regulated industries will improve the overall effectiveness of environmental investments made by the industries, and enhance the efforts of regulatory personnel in protecting groundwater and other valuable resources.

In that light, I would like to review some of the experiences you have mentioned of soil gas monitoring at other remediation sites. By this letter, I request an appointment to review public information in the RWQCB files. I also request your assistance in locating the files of which you are aware, where soil gas monitoring has been used to monitor progress of remediation, and especially any sites where soil gas concentrations have been used as part of closure criteria.

I will be available during the week of April 15th-19th, and request that you provide, if possible by April 15th, a list of files that contain the above requested information. Please contact me at 805/253-5272, or Woody Ameel at 805/253-5322 to advise when these materials will be available.

I look forward to your continued help toward our common goal of cost-effective remediation and protection of groundwater.

Thank You,

Jeffrey L. Wheeler
Principal Environmental Engineer

JLW:sj

bcc: W. Ameel
D. Dunbar
J. Hedges
W. Moses
B. Stearns

350108

CLOSURE CONFIRMATION WORK PLAN
HR TEXTRON PACOIMA FACILITY

Prepared for

HR Textron

250109

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350109

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SECTION 1

INTRODUCTION

This document presents a sampling plan for volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPH) at HR Textron's Pacoima facility, which is located at 10445 Glenoaks Boulevard, Pacoima, California (Figure 1-1). Information from the soil sampling described in this plan will be used for two purposes: (1) to provide technical information regarding soil sampling for closure of the former underground tank site and (2) to provide further confirmation of technical conclusions regarding previous soil sampling investigations and analytical results. Sampling procedures are described and analytical criteria are specified to determine whether ground water sampling is necessary to obtain closure approval.

Analytical results from soil sampling above and into the clay layer at approximately 50 feet below grade will be used to determine whether remediation was effective according to the closure criteria to be included in the July 1991 Remedial Action Plan (RAP). The investigation described in this work plan is designed to confirm the following technical conclusions which were based on previous investigation results below the 50-foot clay layer:

- The clay layer at approximately 50 feet below grade is continuous beneath the area of the tank release and has retarded the vertical migration of total petroleum hydrocarbons (TPH) and volatile organic compounds (VOCs);

- Analytical results above detection limits for TPH occurring below the clay layer at 50 feet generally represent naturally occurring background concentrations;

- There is no discernable spatial trend, either vertically or laterally, to the reported values of TPH or VOCs in soil samples beneath the clay layer (at a depth greater that 53 feet). This is in direct contradiction to the clear vertical and lateral trends in reported TPH and VOC concentrations in soil samples above the clay layer;

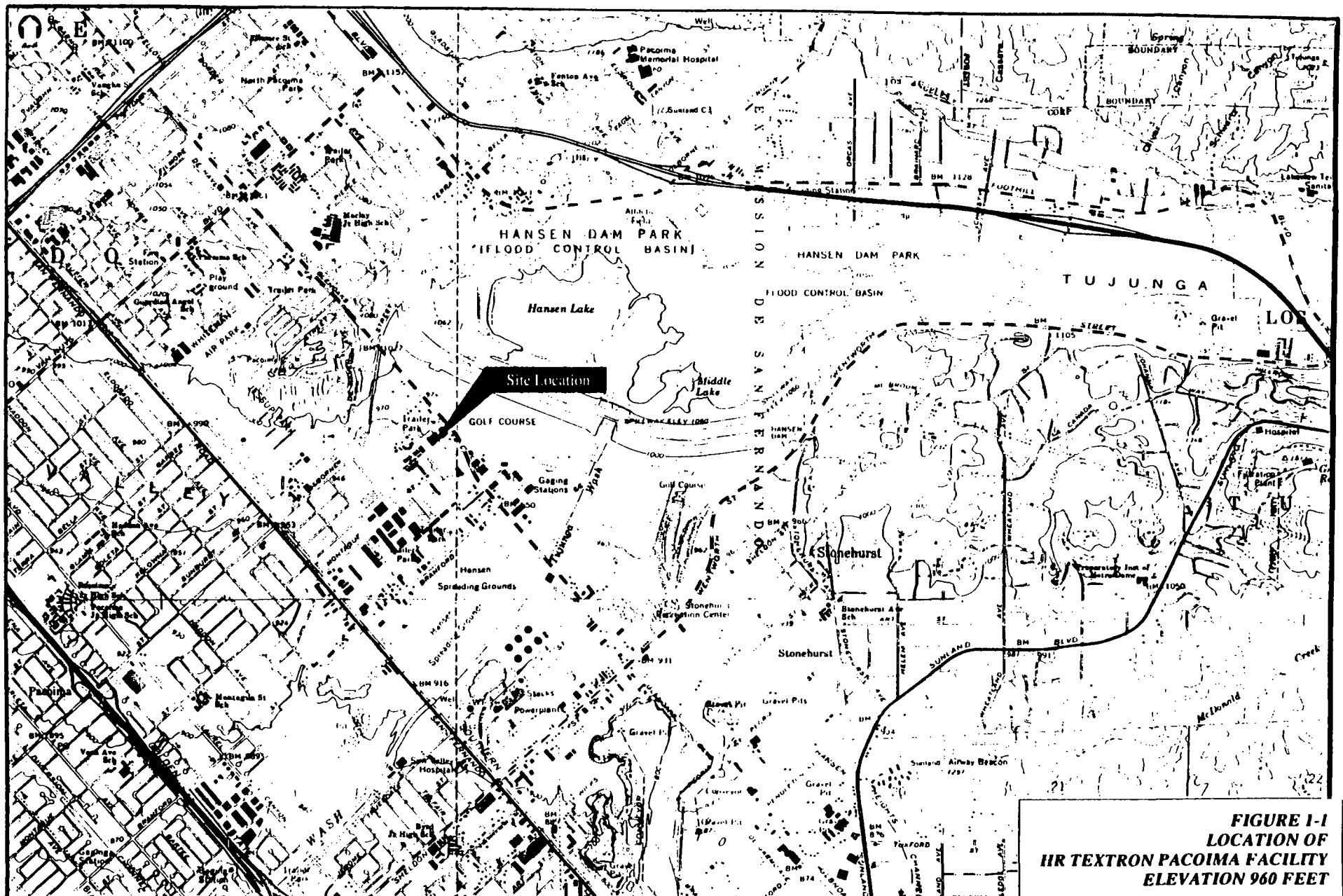


FIGURE 1-1
LOCATION OF
HR TEXTRON PACOIMA FACILITY
ELEVATION 960 FEET

350110

- Analytical results above detection limits below 50 feet for VOCs represent laboratory anomaly or cross-contamination during sampling; and

- Constituents released from the former underground storage tank have not completely penetrated the clay layer at 50 feet, and ground water has not been contaminated by the tank release.

Previous Investigations

A leak from underground storage tanks occurred in the past at this site. The two underground storage tanks, 1,000 gallons capacity each, were used for waste oil storage. The tanks were removed in 1985, and the excavation (approximately 12 feet deep) was backfilled with imported clean soil. The investigations conducted subsequent to the removal of the tanks showed that the constituents in soil beneath the former tank pit consisted of heavy hydrocarbons and VOCs to a maximum depth of 52.5 feet below the ground surface.

A continuous clay layer, located at approximately 46 to 52.5 feet, retarded vertical migration of the soil contaminants. VOCs have not been detected below this layer (except for some incidental cross-contamination which probably occurred during drilling and sampling), and TPH concentrations are generally in the range of 10 ppm or less in soils below the clay layer. Lateral and vertical migration of constituents appears to be limited. Borings in the area of the former tank pit showed that VOCs were below laboratory detection limits east, north and northwest of the tank pit. Traces of VOCs were detected in soil samples collected above the clay layer in the cluster of borings LB-3, LB-103 and LB-103A southwest of the excavation and in borings IW-1 and IW-2.

A substantial amount of previous investigative work has been performed to characterize the lateral and vertical extent of the tank release. As shown on Figure 1-2, borings have been installed at the former location of the underground tanks from 1984 through 1990 by The Earth Technology Corporation, Leighton and Associates (L&A), Enviropro and ERM-West, Inc. Reports have been prepared by ERM-West, Inc. and L&A concerning site investigations and remediation efforts.

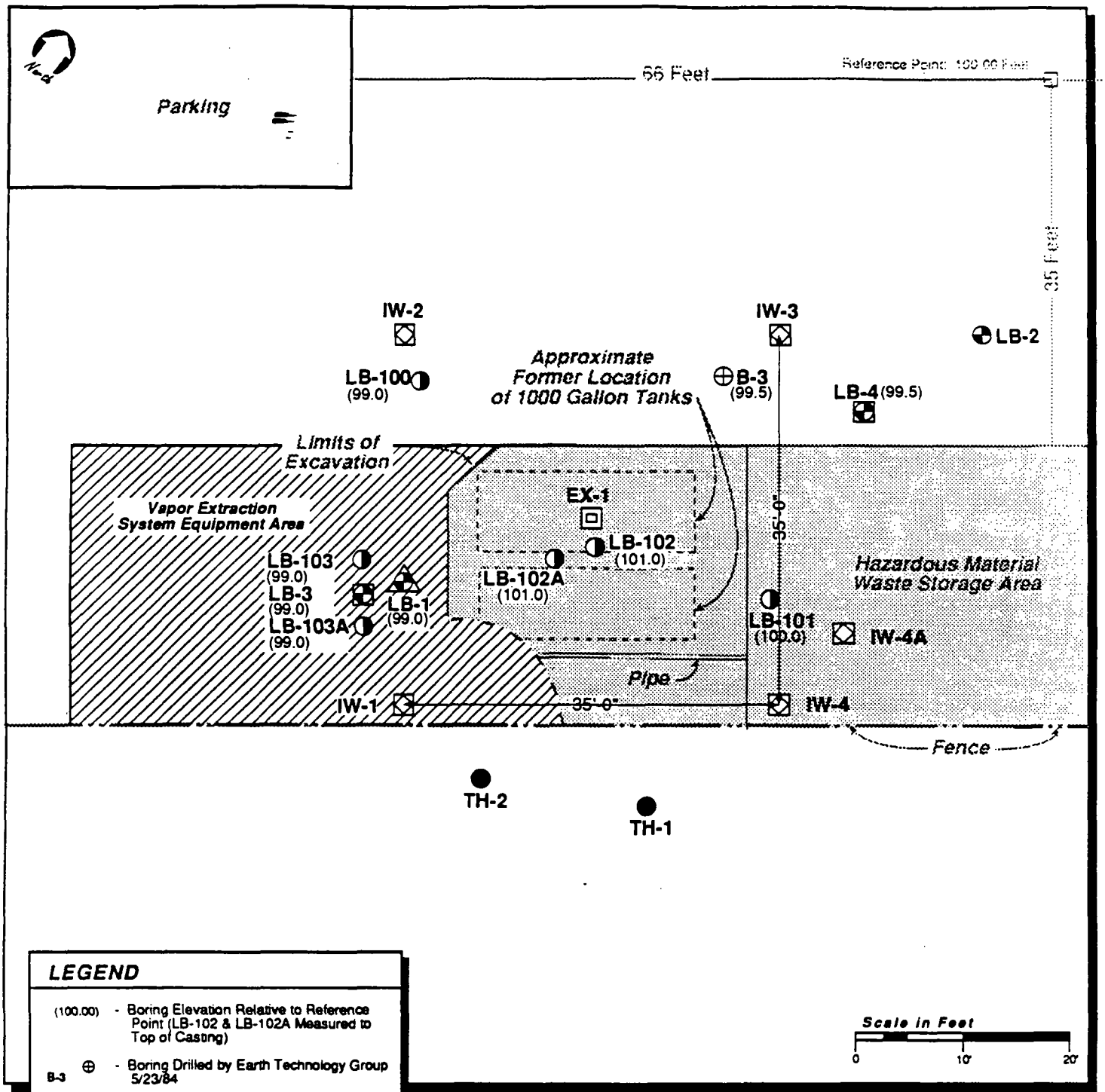


FIGURE 1-2
VAPOR EXTRACTION SYSTEM PLAN
HR TEXTRON PACOIMA FACILITY

ERM-West, Inc. 11/90
873.11/DMPV-11.8.90

A review of the site geology and hydrogeology from previous investigations is provided below. The lithologic and stratigraphic characteristics of the soil profile influenced the migration and current distribution of chemicals released from the tank. The site hydrogeologic summary provided information concerning the depth to ground water and the direction and magnitude of ground water flow beneath the site.

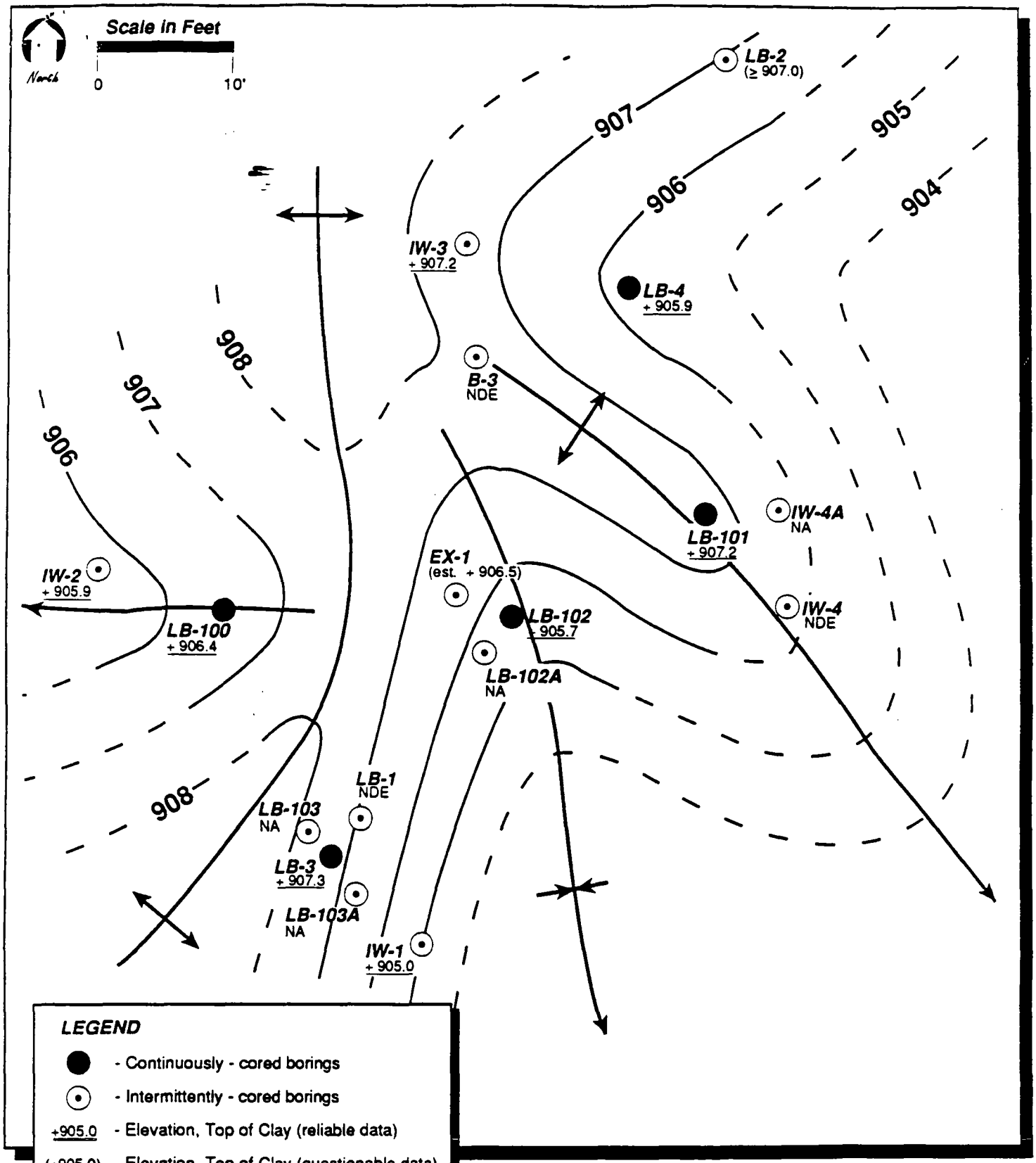
General Soil Profile

A total of 19 borings have been drilled at the site adjacent to and within the former tank pit (Figure 1-2). These borings range in depth from 38 to 120 feet.

The soil profile described in the boring logs consists primarily of a thick sequence of unsaturated stream deposits. The lower portion of the described sequence of soils may grade into alluvial fan deposits built out toward the valley from the adjacent mountains. The soil profile consists mainly of unconsolidated, well graded sands and silty sands with occasional poorly graded sands, sandy gravel, silt layers and clay.

From the ground surface to a depth of 120 feet, five lithologic units have been identified. The key lithologic unit at the site is a silty clay layer approximately 50 feet below grade. This unit, consisting of clay to silty clay to silty sandy clay, was present in every boring at the site that was sampled at this depth. Only in IW-3 was this unit comprised of sandy clayey silt. Figure 1-3 shows the elevations along the top of the 50-foot clay layer, and Figure 1-4 shows the thickness distribution of this clay unit. In the central portion of the former tank pit, the top of the 50-foot clay slopes gently toward the south. This unit increases in thickness from west to east across the area of the former tank pit from 3 feet in LB-101 to 4.5 feet in LB-100.

The uppermost unit of these five lithologic units is a silty sand, extending from approximately 16 to 23 feet below grade, that is generally coarser toward the ground surface. Below this silty sand is a clay and clayey silt unit that contains in some borings silty sand and sand. This upper clay unit varies in thickness from approximately 4 to 11 feet and extends consistently 28 to 31 feet below grade across the site as indicated in the boring logs. A primarily well graded sand unit ranging in thickness from 16 to 20 feet occurs



LEGEND

- ● - Continuously - cored borings
- ⊙ - Intermittently - cored borings
- +905.0 - Elevation, Top of Clay (reliable data)
- (+905.0) - Elevation, Top of Clay (questionable data)
- NA - Data Not Available
- NDE - Boring Not Deep Enough
- —905— - Reliable Elevation Contour
- --905-- - Inferred Elevation Contour
- ↔ - Axis of high clay elevation
- ↕ - Axis of low clay elevation

FIGURE 1-3
STRUCTURE MAP
TOP OF LOWER CLAY
HR TEXTRON FACILITY
PACOIMA, CALIFORNIA

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ERM-West, Inc. 2/91

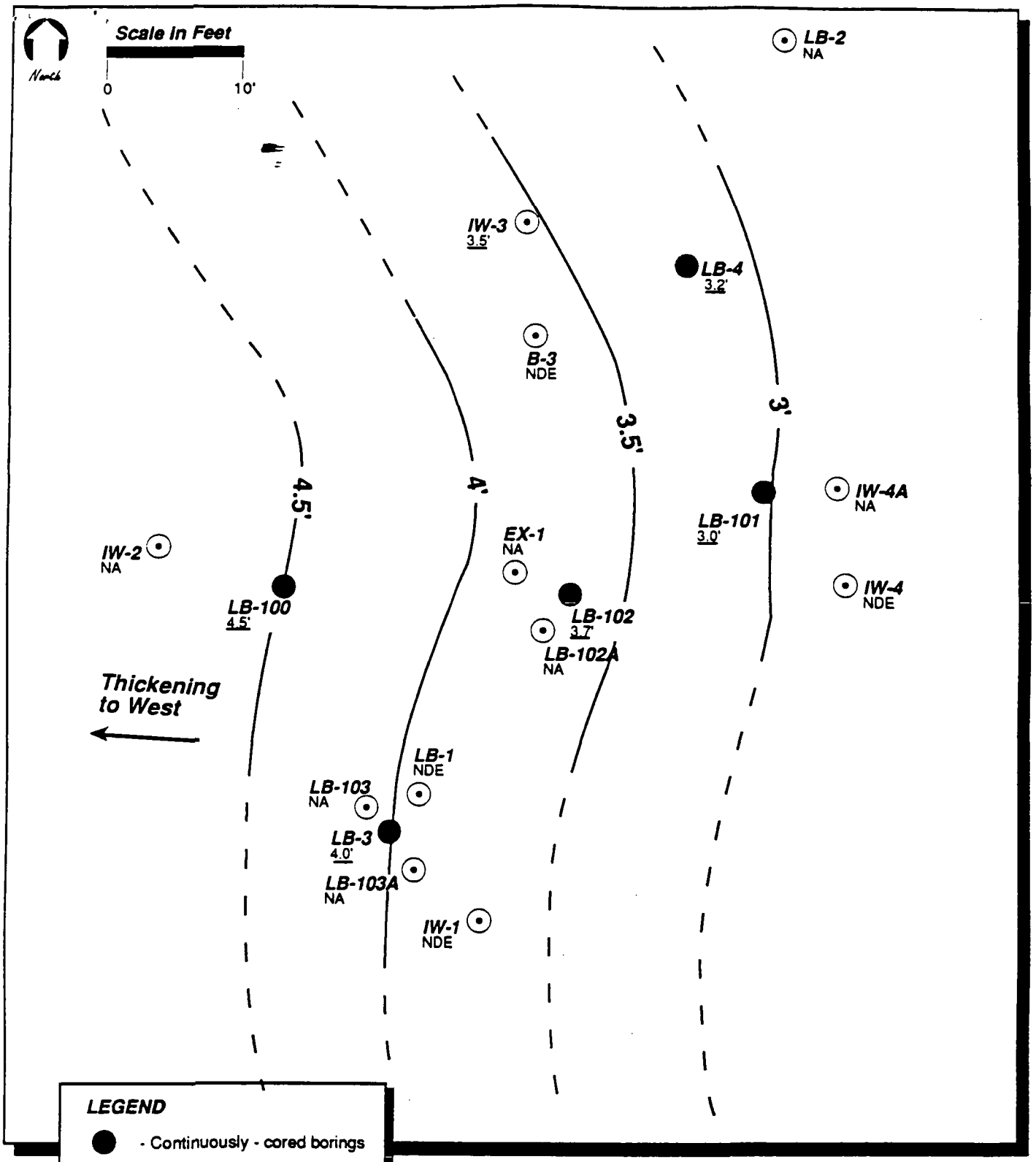

FIGURE 1-4
ISOPACH MAP
LOWER CLAY
HR TEXTRON FACILITY
PACOIMA, CALIFORNIA

ERM-West, Inc. 2/91
673.16/DMPV-2.14.91

below the upper clay unit. In most of the borings, the upper few feet of this sand unit is finer grained and not well graded, and the lower portion of this unit contained sandy gravel in LB-100, LB-101, EX-1 and IW-3. Refusal on a cobble was encountered in this unit at 42.5 feet in IW-4.

Below the 50-foot clay layer, the deepest lithologic unit is a well graded sand which becomes progressively coarser with depth and appears to grade into an underlying cobble/boulder bed at approximately 110 feet below grade. The thickness of this sand unit to the cobble/boulder bed is approximately 55 feet. A few thin layers of sandy silt were described in LB-3 ranging from less than one foot to 3 feet in thickness in this thick sand unit. A few sandy gravel layers were also described in this lithologic unit from the Enviropro and L&A boring logs.

Analytical Results from Soils

The extent of chemicals released into the soil from the former underground storage tanks forms a roughly cylindrical volume with a diameter of approximately 25 feet and which extends from the base of the tank excavation to an underlying clay layer from approximately 46.5 to 52.5 feet below the ground surface. The lateral and vertical extent of the chemical release has been well-defined through the numerous investigations at the site.

The investigative program for the chemical release was described and primarily performed by L&A and consisted of the drilling, sampling and chemical analysis of soil samples from 13 boreholes installed during six periods of investigation from May 1984 through September 1988. Most of the September 1988 borings were installed and sampled to confirm the site lithology and distribution of contaminants from the tank release defined by the previous investigations. ERM-West installed an additional six borings in April and May 1990 for the purpose of remediation and to confirm the site lithology and distribution of contaminants from the tank release.

The "fingerprint" of the chemical release from the tank exhibits two consistent distinguishing characteristics. The first characteristic is concentrations of TPH (from EPA Test Method 418.1) in the range of 1,000 to 20,000 mg/kg. The second characteristic is a certain suite of volatile organic constituents from EPA Test Methods 8240 or 8010)

that are consistently two or more orders of magnitude less, in the range of 10 to 200 mg/kg, than the TPH concentrations. The VOCs consist primarily of 1,1,1-trichloroethane (TCA), with the occasional presence of low concentrations (usually less than 5 mg/kg) of toluene, tetrachloroethylene (PERC), trichloroethylene (TCE), xylene, benzene and dichloroethane (DCA).

This fingerprint is clearly seen in the reported concentrations for soil samples in boreholes LB-102 and LB-1 that were drilled through the central portion of the chemical release. Laboratory analyses of soil samples taken above the 50-foot clay layer show this pattern of TPH and VOCs; however, soil samples taken below the 50-foot clay layer show only background levels (less than 10 mg/kg) of TPH. VOCs below the 50-foot clay layer were all attributable to cross-contamination or laboratory anomaly.

During the 13 borehole investigative program, soil samples were obtained and analyzed primarily for VOCs, TPH, and less frequently oil and grease. The specific distribution of these analyses is:

- VOCs (EPA Methods 8240 or 8010) - 146 samples;
- TPH (EPA Method 418.1) - 145 samples; and
- Oil and Grease (EPA Method 413.2) - 75 samples.

The samples are distributed equally above and below the key 50-foot clay layer that forms the bottom of the chemical release. As described previously, the samples above the clay layer show a roughly cylindrical volume, while samples below the clay layer show TPH concentrations at background levels.

In April and May 1990, ERM-West completed drilling and installing the vapor extraction/injection wells at the locations shown on Figure 1-2. During this field work, ERM-West collected soil samples at five-foot intervals for chemical analysis to confirm the findings from the previous investigations. To confirm that the 50-foot clay layer had not yet been penetrated by the constituents from the tank release, ERM-West collected nearly continuous samples through the 50-foot clay layer. The results of the confirmation sampling are presented below.

Total Petroleum Hydrocarbons

In borehole EX-1 (which was installed through the cylindrical plume) the concentrations of total petroleum hydrocarbons (TPH) in soil samples taken in the interval from land surface to the top of the 50-foot clay layer ranged from approximately 1,000 to 20,000 parts per million (ppm) with most concentrations above 8,000 ppm.

Immediately above the 50-foot clay layer these elevated soil concentrations dropped to 900 ppm. Within the clay layer itself, concentrations of TPH were reported at 400 ppm in the upper portion and at non-detectable levels in the lower portion of the clay.

In the four boreholes installed and sampled outside the cylindrical plume (IW-1 through IW-4) TPH concentrations were at the non-detectable level. The only exception to this was trace levels of TPH (less than 20 ppm) at 15 and 20 feet depth in one borehole. All soil samples below these two depths were reported as non-detectable for TPH. The process of extracting the soil sample and completing the borehole as a well effectively removed the trace findings from the soil.

Volatile Organic Compounds

In borehole EX-1 the concentrations of volatile organic compounds (VOCs) in soil samples taken in the interval from land surface to the top of the 50-foot clay layer ranged from approximately 2,000 to 40,000 parts per billion (ppb).

Immediately above the 50-foot clay layer these elevated soil concentrations dropped to 1000 ppb. Within the clay layer itself, concentrations of VOCs were reported at 600 ppm in the upper portion and at trace levels (40 ppb) in the lower portion of the clay.

In the four boreholes installed and sampled outside the cylindrical plume (IW-1 through IW-4) VOC concentrations were at the non-detectable level except for trace levels (less than 10 ppb) in the uppermost portion of the clay layer itself. The only exception to this was trace levels of VOC (less than 10 ppb) at depths less than 30 feet in one borehole.

Benzene, Toluene, Ethylbenzene and Xylene

In borehole EX-1 the concentrations of benzene, toluene, ethylbenzene and xylene (BTEX) in soil samples taken in the interval from land surface to the top of the 50-foot clay layer ranged from approximately 50 to 21,000 ppb.

Immediately above the 50-foot clay layer and within the clay layer itself these elevated soil concentrations dropped to non-detectable levels.

Depth to Ground Water

The site is located within the Upper Los Angeles River Area (ULARA) on the northeast side of the San Fernando Valley. To the east and south of the site, the Los Angeles Flood Control District operates the Hansen Spreading Grounds, a flood control and ground water recharge facility. According to the May 1987 ULARA Watermaster report, the site is located north and east of the Verdugo Fault, a ground water barrier in the San Fernando Valley. Only a few water supply wells are present in the vicinity and most are located near the Verdugo Fault to take advantage of the relatively higher elevation of ground water north of the fault.

The close proximity of the Hansen flood control facility to the site complicates interpretation of the regional ground water information. The mean sea level elevation at HR Textron's Pacoima facility ranges from approximately 950 to 960 feet. An interpolation of the regional ground water table from the May 1987 ULARA Watermaster report shows that ground water elevation probably ranges between 750 and 800 feet. Mr. Melvin Blevins, the ULARA water master, confirms this interpretation. The regional ground water gradient is generally toward the south. The nearby spreading grounds likely induce strong fluctuations in the ground water table and local ground water gradients with periods of quickly rising water table following precipitation and snow melt events and periods of steady declines during dry seasons.

Borings beneath the site have demonstrated that ground water is deeper than 120 feet. The shallowest estimate of recent ground water depth beneath the site was 150 feet, based on the regional information combined with the probable influences of the spreading grounds.

Short-term influences of drier seasons and droughts likely create conditions where the ground water table may decline to a depth of 200 feet or greater. Locally, ground water gradients probably vary from the regional southerly flow direction, particularly following events which fill Hansen Lake and increase dramatically the percolation rates.

SECTION 2

WORK PLAN ACTIVITIES

The Work Plan activities are divided into three tasks:

- Task 1 - Borehole Installation and Soil Sampling;
- Task 2 - Laboratory Analysis and Data Review; and
- Task 3 - Reporting

The soil borings will be installed in three phases during Task 1. Phase 1 drilling and sampling will be used to determine whether remediation has achieved closure goals. If remediation is determined to be incomplete in Phase 1, remediation will resume, and Phase 1 drilling and sampling will be conducted again at a later time. This section also briefly describes how the soil cuttings will be handled.

Phases 2 and 3 describe the installation procedures for drilling and sampling below the 50-foot clay layer to a depth of 120 feet or until drilling refusal is encountered, whichever occurs first. Phase 4 describes installation and sampling of soil vapor probes below the 50-foot clay layer in the Phase 3 boreholes. These probes are planned to be installed at depths of approximately 70 and 90 feet if only one deep boring is installed. If a second Phase 3 boring is installed, a third probe will be installed to 80 feet below grade.

The analytical laboratory procedures to be used and the criteria to evaluate the results of soil sampling for ground water monitoring are described in Task 2. Reporting activities are presented in Task 3.

A schedule for completing the tasks described in this work plan is presented in Appendix A. Estimated costs for each of these tasks, including the originally discussed installation of three deep borings below the 50-foot clay layer, are presented in Appendix B. The total estimated cost for the project with three deep borings was $84,675. Due to the excessive cost, this work plan proposes initial installation of one deep boring with criteria for installing an additional deep

boring, if necessary to confirm analytical results. The cost of the work plan with only one deep boring is $38,750. The qualifications and experience of the recommended analytical laboratory are presented in Appendix C.

Task 1: Borehole Installation and Soil Sampling

Phase 1 - Borehole Installation and Sampling Into the 50-Foot Clay Layer

The first phase will determine whether remediation is complete and involves drilling with 6-inch hollow stem augers into the clay layer at approximately 50 feet. The proposed locations for the three boreholes is shown on Figure 2-1. The first closure boring (CB-1 on Figure 2-1) is located in the vicinity of an indicated shallow swale in the 50-foot clay layer (Figure 1-3). CB-2 is located toward IW-4 and IW-4A from the center of the tank excavation to confirm remediation in the area serviced by two injection wells and provide additional confirmation concerning the 50-foot clay layer in this area. CB-3 is located near EX-1 to confirm remediation in the vicinity of the center of the tank excavation.

Samples will be collected using a California modified split-spoon sampler from a depth of 5 feet to the top of the 50-foot clay layer. The samples will be collected in three 2-inch diameter by 6-inch long brass tubes inside the split spoon sampler. HR Textron will notify the Regional Water Quality Control Board Staff five days prior to starting site work on Phase 1. If requested, split samples will be provided to a representative of the Staff in the field as long as the integrity of the samples is not compromised by the procedure.

To confirm remediation (under criteria to be established in the July 1991 RAP) of the key unit retarding vertical migration of the constituents released from the former tanks, samples will be collected continuously through the 50-foot clay unit until this clay layer is penetrated. Upon completion, the bottom of the borehole will be sealed with bentonite, and the borehole will be sealed through the augers to the surface with Volclay grout or a bentonite-cement grout.

To protect against the possible introduction of contaminants to the boring, the drill rig and augers will be steam cleaned prior to arrival.

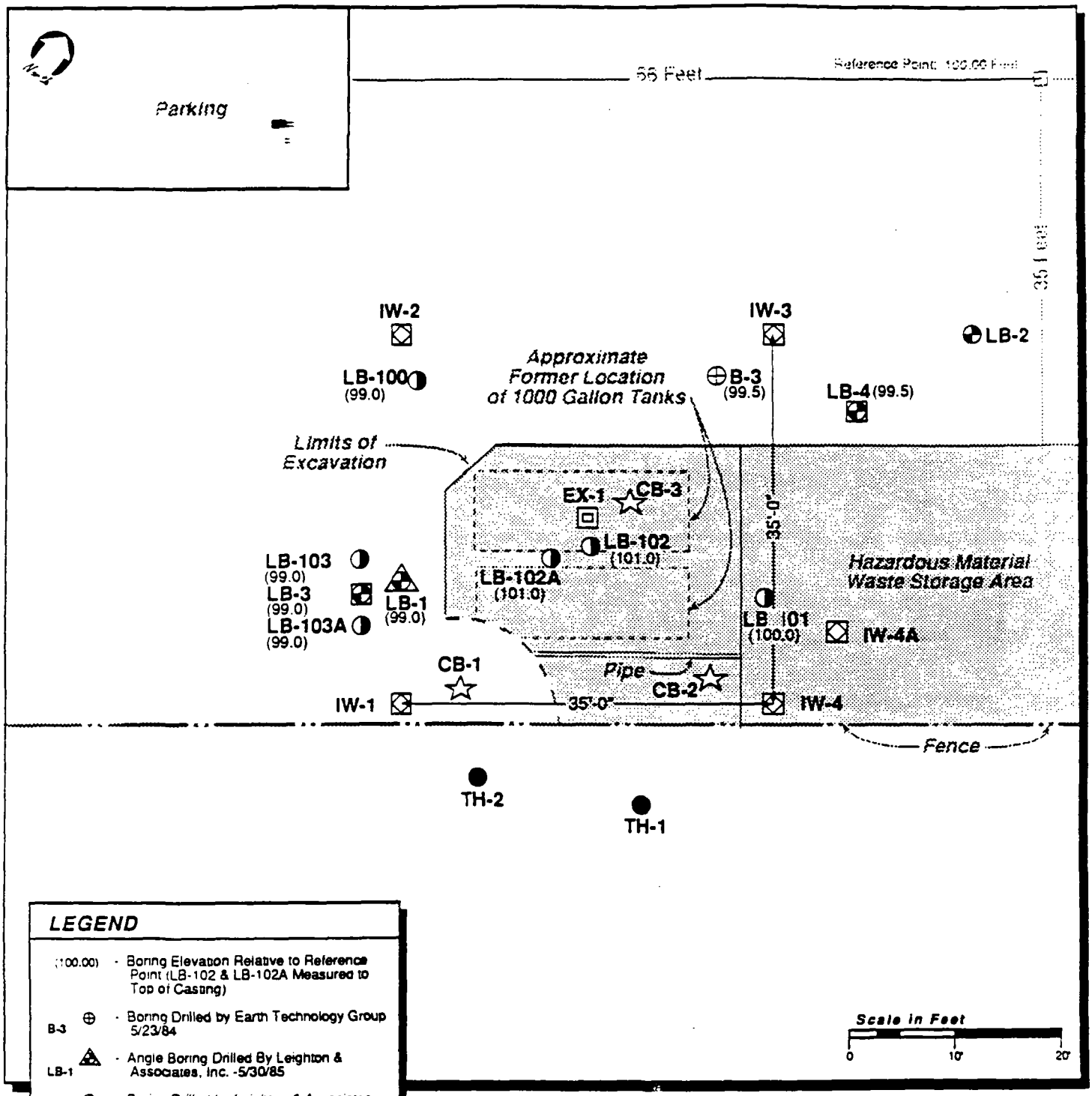

FIGURE 2-1
WELL LOCATIONS FOR CLOSURE BORINGS/SOIL VAPOR PROBES
HR TEXTRON FACILITY
PACOIMA, CALIFORNIA

ERM-West, Inc. 4/91
873.18/DMPV-4.7.91

All sampling equipment will be cleaned in an Alconox solution and rinsed with distilled water between sampling intervals in the same hole. Liquids generated on-site during steam cleaning will be collected and stored in drums. This water will be sampled for VOCs using EPA Methods 601 and 602.

Physical characteristics of sampled soils (including the amount of soil recovered) will be logged by a qualified ERM-West geologist. Soil lithology will be described using the Unified Soil Classification System. Soil samples will be screened for petroleum hydrocarbons with an HNu PID 101 meter or its equivalent. Samples will be sealed with Teflon tape under plastic end caps, and each brass tube will be labeled as to hole, depth and time; placed in a chilled cooler and recorded on chain of custody forms.

Soil samples will be analyzed by EPA Method 8240 for volatile organic compounds and 418.1 for total recoverable petroleum hydrocarbons. Each cooler will contain one trip blank to be tested for EPA Method 8240.

Drill cuttings and samples not designated for analyses from all boring activities will be stored on site until laboratory analyses of selected samples is completed. If these analyses indicate contaminants are present at concentrations that are below-regulatory action levels, the soils will be treated as non-hazardous materials. If analyses indicate contaminant concentration at or above regulatory action levels, it may be necessary to dispose of the soils at an approved land fill or to remediate the soils on site prior to disposal.

Phase 2 - Installation of Conductor Casings

After remediation has been determined to be complete based on the Phase 1 soil sampling results and criteria set forth in the Remedial Action Plan, conductor casing(s) will be installed as shown on Figure 2-2. The soil boring for the deep boring conductor casing will be installed at CB-3, the same location as the Phase 1 boring on Figure 2-1, with a 15-inch outside diameter hollow stem auger (10.25-inch inside diameter). The boring will be advanced to 2.5 feet beyond the depth of the bottom of the 50-foot clay layer as determined in Phase 1.

A 9-inch blank carbon steel casing will be inserted inside the augers and lowered to the bottom of the boring. The steel casing will be

welded in sections as it is lowered into the borehole. The casing will be suspended six inches above the bottom of the boring and an approximate volume of neat cement equal to 10 vertical feet of open 15-inch borehole will be poured into the 9-inch casing inside the augers. The casing will then be lowered to the bottom of the borehole, and the augers will be pulled up 10 feet. More neat cement will be added to the casing and the surrounding borehole as the augers are pulled out of the borehole.

In order to assure a proper seal, a rubber plug will be pushed down the inside of the casing to within two feet of the bottom of the casing. Cement will flow from the bottom of the casing to the ground surface and seal the annulus of the borehole.

To protect against the possible introduction of contaminants to the borings, steam cleaned augers will be used on each boring. Augers will also be steam cleaned prior to leaving the site. Liquids generated during steam cleaning will be collected and stored in drums. This water will be sampled for VOCs using EPA Methods 601 and 602 following completion of Phase 3.

In the event that a second confirmation boring is required under the criteria described in Task 2, the conductor casing for the second boring will be installed using the same technique as described above. The second boring will be installed at the location of either CB-1 or CB-2 for exact control on depth to the bottom of the 50-foot clay layer.

Phase 3 - Installation and Sampling of Deep Boreholes

The deep soil boring(s) will be installed with 6-inch hollow stem augers. The augers will be lowered to the rubber plug in the casing, and drilling will proceed through the plug to approximately two feet beyond the cement before collecting the first soil sample. From a depth of approximately 55 feet to 120 feet or refusal (whichever occurs first), samples will be collected at five foot intervals and at major changes in lithology using a California modified split-spoon sampler. The samples will be collected in three 2-inch diameter by 6-inch long brass tubes inside the California modified split spoon sampler. HR Textron will notify the Regional Water Quality Control Board Staff five days prior to starting site work on Phase 3. If requested, split samples will be provided to a representative of the Staff in the field as long as the integrity of the soil samples is not compromised by the split procedure.

To protect against the possible introduction of contaminants to the boring, the drill rig and augers will be steam cleaned prior to arrival. All sampling equipment will be cleaned in an Alconox solution and rinsed with distilled water between sampling intervals in the same hole. Liquids generated during steam cleaning will be collected and stored in drums. This water will be sampled for VOCs using EPA Methods 601 and 602.

Physical characteristics of sampled soils (including the amount of soil recovered) will be logged by a qualified ERM-West geologist. Soil lithology will be described using the Unified Soil Classification System. Soil samples will be screened for petroleum hydrocarbons with an HNu PID 101 meter or its equivalent. Samples will be sealed with Teflon tape under plastic end caps, and each brass tube will be labeled as to hole, depth and time, placed in a chilled cooler and recorded on chain of custody forms.

One soil sample from each 5-foot interval will be analyzed by EPA Method 8240 for volatile organic compounds and 418.1 for total recoverable petroleum hydrocarbons. Each cooler will contain one trip blank to be tested for EPA Method 8240.

Phase 4 - Installation and Sampling of Soil Vapor Probes

The initial borehole installed during Phase 3 will be completed by installing two soil vapor probes (SVPs) through the hollow stem augers. As long as refusal is not encountered at shallow depths below the 50-foot clay layer, the SVPs will be completed to depths of 90 and 70 feet at CB-3 as shown in Figure 2-2. If a second deep boring is installed, one SVP will be installed at a depth of 80 feet as shown on Figure 2-3. The actual completion depth for the SVPs may vary depending on the drilling conditions encountered.

After sampling is completed in the Phase 3 boring, the augers will be withdrawn to the desired depth for placement of the bottom of the SVP. The borehole will be allowed to cave naturally below the desired depth as shown on Figures 2-2 and 2-3. Each SVP will consist of one foot of slotted 0.75-inch galvanized steel screen with a sufficient length of blank 1-inch galvanized steel to reach approximately two feet above the ground surface. Sections of the blank galvanized steel will be joined by threaded coupling sealed with Teflon or nylon tape. If the formation sand is coarser than the slot size of the screened portion of the SVP, the formation will be allowed to cave around the

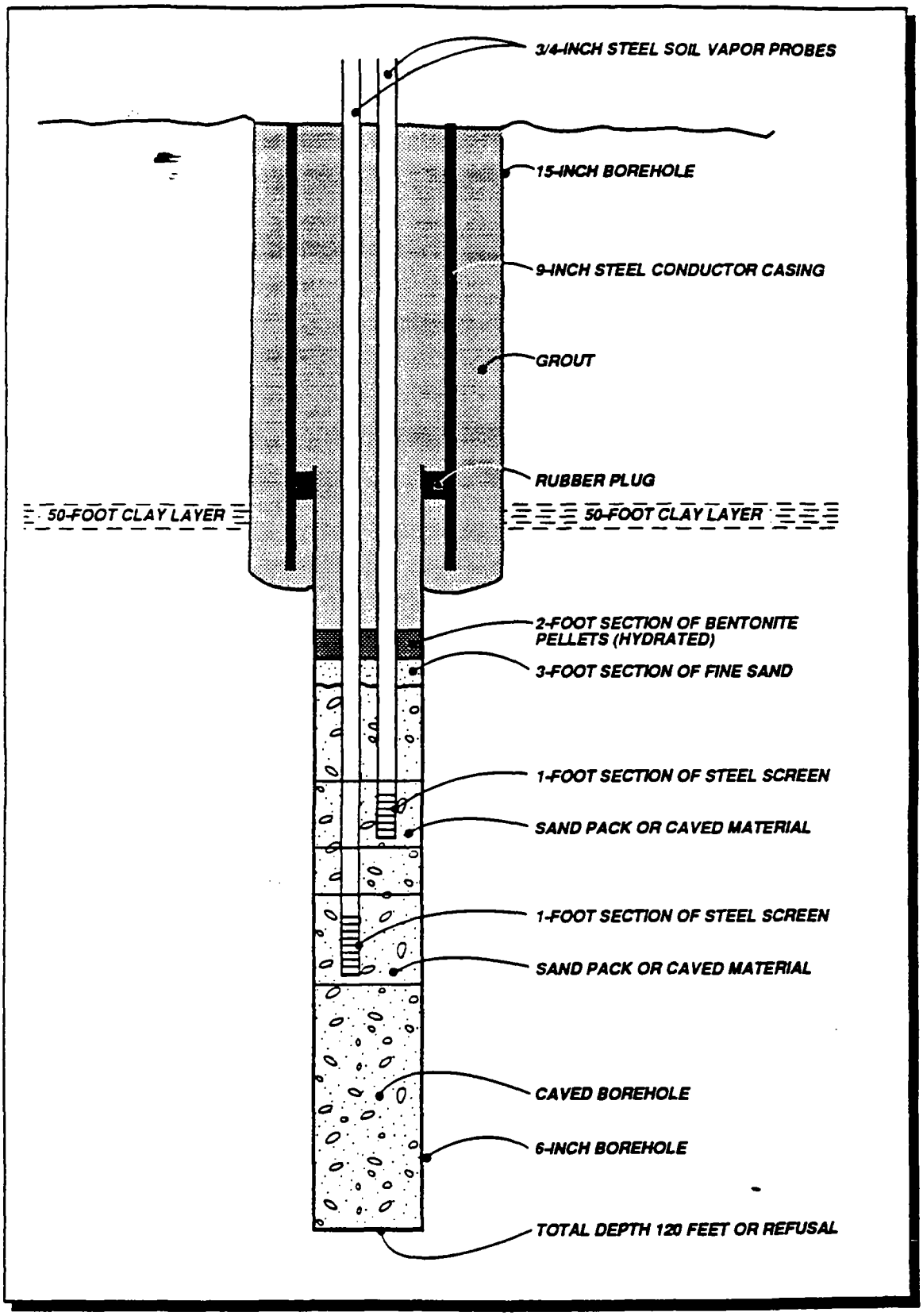

FIGURE 2-2
DEEP BORING CONSTRUCTION DIAGRAM
HR TEXTRON FACILITY
PACOIMA, CALIFORNIA

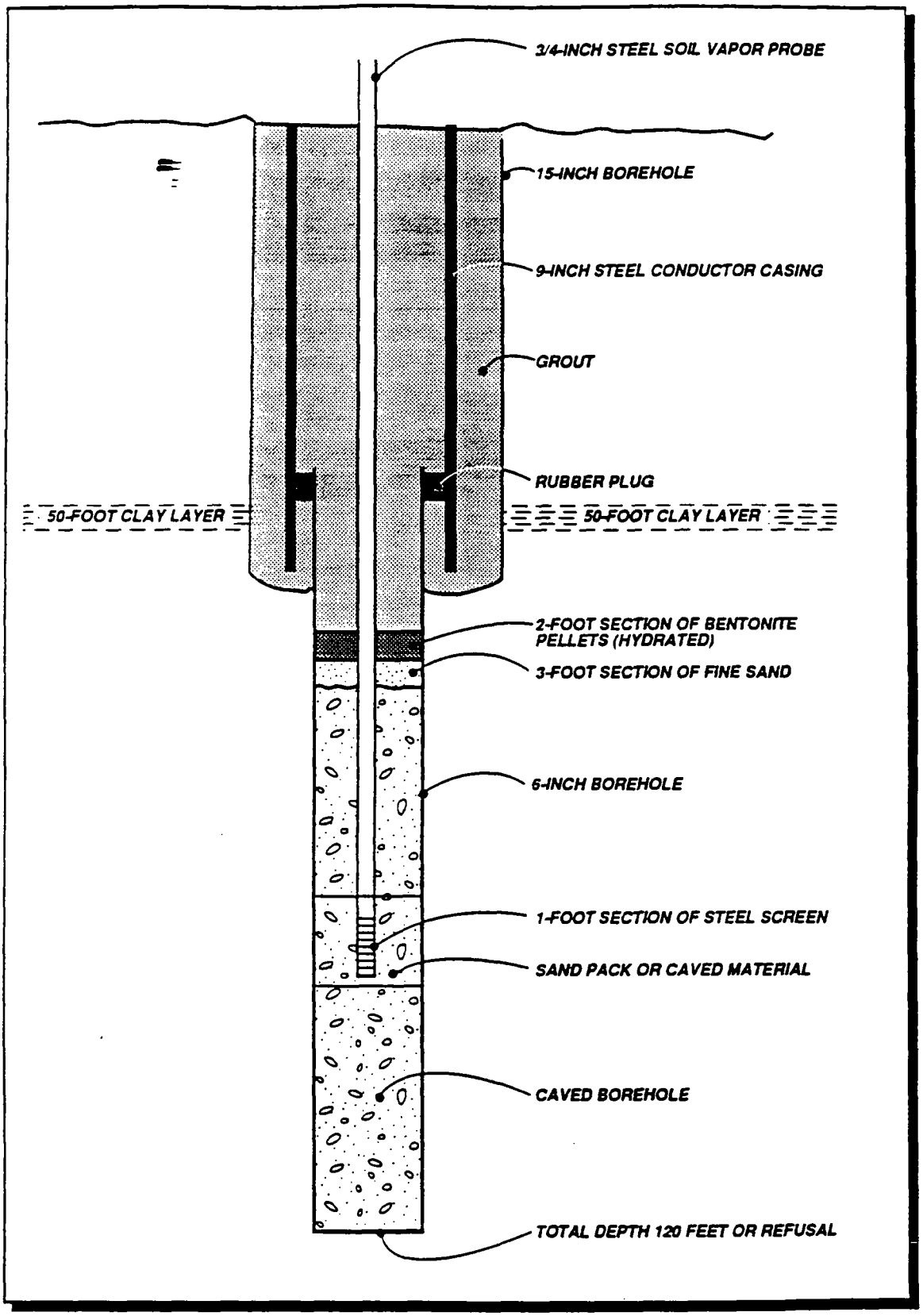

FIGURE 2-3
SECOND DEEP BORING CONSTRUCTION DIAGRAM
HR TEXTRON FACILITY
PACOIMA, CALIFORNIA

screen. If silting of the screened section is a concern, coarse sand will be carefully placed around the SVP as the augers are withdrawn.

The borehole will be allowed to cave naturally (or coarse sand will be added) to 65 feet below grade. To assure a good vertical seal for placement of the grout seal, the following procedure will be used. Approximately three feet of fine sand will be placed in the borehole through the augers above 65 feet. Approximately two feet of bentonite pellets will be poured through the augers above the fine sand and hydrated with tap water. A Volclay or bentonite-cement grout to the surface within the 9-inch conductor casing will complete the SVP seal. The SVPs will be capped at the surface.

Sampling of the SVPs will be conducted using a mobile analytical laboratory equipped with a gas chromatograph. The SVPs will be purged at low pressure and analyzed by injecting a known volume into the gas chromatograph. By immediately analyzing the air sample on-site, the risk of loss of VOCs during transportation is avoided. Samples will be collected and analyzed three times over a two month period.

HR Textron will notify the Regional Water Quality Control Board Staff five days prior to collecting site vapor samples. If requested, split samples will be provided to a representative of the Staff in the field as long as the integrity of the samples is not compromised by the procedure.

Task 2: Laboratory Analysis and Data Review

Laboratory Analysis of Soil Samples

Soil samples will be analyzed for volatile organic compounds using EPA Method 8240 and for total recoverable hydrocarbons using EPA Method 418.1. The samples will be analyzed for those compounds identified and quantified by the 8240 procedure. The extraction procedures used will be those described in EPA Technical Reference Manual SW-846. The analytical laboratory will provide a letter describing the "sub-sampling" methodology.

The standard laboratory data report will contain all relevant information on blanks (field, trip, sample, equipment and reagent), surrogate spikes, duplicates and matrix spike and spike duplicates. If disputes arise concerning the validity of a sample, then additional documentation, to include calibration or column checks, check samples and laboratory control samples, will be supplied for specific samples. Method detection limits will be utilized, except where matrix conditions require different detection limits (usually dilution for high concentrations of compounds). The report will also describe any QA/QC reruns or other corrective actions taken by the laboratory, especially those requested by ERM-West.

Appropriate chain-of-custody documentation will be provided, consisting of collection, sample receipt, preparation or extraction, and analysis and reporting dates on laboratory sheets.

Evaluation of Soils Analytical Data

This section presents the criteria for confirming that the analytical results from soil samples below the 50-foot clay support the findings from the previous investigations. The soil sampling will begin at a depth of approximately 55 feet and continue at five-foot intervals (but including those taken at changes in lithology) to a maximum depth of 120 feet, for an approximate total of 14 samples per boring.

Due to the excessive cost for installation of three deep soil borings, HR Textron will install a maximum of two deep soil borings. Analytical results from the initial soil boring will be evaluated using the criteria for VOCs and TPH presented in Table 2-1. If the analyses from soil samples in the initial boring are all below the criteria concentrations, HR Textron's Pacoima facility will be deemed not to require ground water monitoring prior to closure approval. If one (or more) VOC or TPH analysis from a soil sample in the initial boring exceeds the criteria concentrations presented in Table 2-1, the second confirmation boring will be installed.

The concentration criteria presented on Table 2-1 were based on technical sources and are designed to be protective of the ground water resource beneath the HR Textron site. The VOC concentrations are based on drinking water action levels recommended by the California Department of Health Services in July 1990. The TPH criterion is based on the DHS Leaking Underground Fuel Tank TPH concentrations for diesel-based

TABLE 2-1

CRITERIA CONCENTRATIONS FOR SOIL SAMPLES

COMPOUND	CONCENTRATION (mg/kg)	
	Above 100 feet	Below 100 feet
Benzene	0.005	0.005
1,1-Dichloroethane	0.025	0.015
1,2-Dichloroethane	0.005	0.005
cis-1,2-Dichloroethylene	0.030	0.018
1,1-Dichloroethylene	0.030	0.018
Ethylbenzene	3.400	2.040
1,1,2,2-Tetrachloroethane	0.005	0.005
Tetrachloroethylene	0.025	0.015
1,1,1-Trichloroethane	1.000	0.600
1,1,2-Trichloroethane	0.160	0.096
Trichloroethylene	0.025	0.015
Xylenes	8.750	5.250
Total Petroleum Hydrocarbons	1,000	100

Note: VOC concentrations are adapted from State of California, Department of Health Services: Drinking Water Action Levels Recommended by the Department of Health Services, July 1990. Above 100 feet below grade, the concentration criteria are based on five times the recommended action level. Below 100 feet, the concentration criteria are based on three times the recommended action level.

Concentration given for Benzene, 1,1,2,2-Tetrachloroethane and 1,2-Dichloroethane are EPA 8240 Method detection limit rather than three times the recommended action level.

materials between 51 and 100 feet above the water table for the higher value and between 25 and 50 feet above the water table for the lower value. Diesel is a reasonable fuel analog for stoddard solvent, the most volatile oil-based material disposed in the former waste tanks.

If the second confirmation deep boring is required, the results of the soil analyses for VOCs and TPH will be deemed not to require ground water monitoring prior to closure approval unless any three samples from both borings have concentrations of the same constituent that exceed the criteria in Table 2-1.

Evaluation of Soil Vapor Sample Analytical Data

This section presents the criteria for determining whether the analytical results from soil vapor samples below the 50-foot clay indicate that a ground water monitoring well is warranted. This evaluation will be conducted only after the evaluation of soil analytical results is completed. Soil vapor sampling will be conducted three times over a two month period. The samples will be analyzed for the constituents listed in Table 2-2.

Ground water sampling will not be required to obtain closure approval unless concentrations in 33% of the total number of samples exceed the criteria concentrations for any constituent in Table 2-2. If the soil sample analytical results confirm closure, but the soil vapor analysis indicates no confirmation, HR Textron will agree to install one ground water monitoring well and collect a sample to determine whether the tank release has impacted ground water.

Task 3: Reporting

A summary report will be prepared that presents the field activities as performed, the results of laboratory analyses of soil and soil gas samples, and the evaluation of the need for ground water monitoring wells based on data evaluation performed in Task 2. The report will describe the procedures used in collecting and analyzing the soil and soil vapor samples. The data presented will include borehole logs, analytical data in tabular and figure format, appropriate analytical laboratory documentation (to include chain-of-custody forms, and original lab and QA/QC reports), and a site map showing borehole locations.

TABLE 2-2

VOC CRITERIA CONCENTRATIONS FOR SOIL VAPOR SAMPLES

COMPOUND	CONCENTRATION (ug/l)
Benzene	25
1,1-Dichloroethane	75
1,2-Dichloroethane	25
1,1-Dichloroethylene	100
1,1,2,2-Tetrachloroethane	25
Tetrachloroethylene	75
1,1,1-Trichloroethane	250
1,1,2-Trichloroethane	480
Trichloroethylene	75

The report will conclude with an assessment of the confirmation results indicating that the site should be closed. If the analytical results from soil samples indicate the need for monitoring wells, the report will provide technical information on designing and installing the appropriate monitoring wells.

APPENDIX A

SCHEDULE

The following is the proposed schedule for the project. Task 1 begins after shut down of the remediation system.

Task 1: Borehole Installation and Soil Sampling

Phase 1 - Borehole Installation and Sampling Through the 50-Foot Clay Layer

Weeks 1-2	Mobilization
Week 3	Drilling and Sampling
Weeks 4-5	Laboratory Analysis of Samples

Phase 2 - Installation of Conductor Casing

Weeks 6-7	Mobilization
Week 8	Drilling

Phases 3 - Installation and Sampling of Deep Boreholes, and

Phase 4 - Installation of Soil Vapor Probes

Week 9	Mobilization
Week 10	Drilling and Installation of Soil Vapor Probes
Weeks 11-19	Sampling of Soil Vapor Probes

Task 2: Laboratory Analysis and Data Review

Weeks 10-12	Laboratory Analysis of Soil Samples
Weeks 11-19	Mobile Laboratory Analysis of Soil Vapor Samples
Weeks 12-19	Data Review

Task 3: Reporting

Weeks 14-22	Report Preparation

APPENDIX B

ESTIMATED COSTS

COST ESTIMATE FOR WORK PLAN ACTIVITIES

TASK 1: BOREHOLE INSTALLATION AND SOIL SAMPLING

Phase 1: Borehole Installation and Sampling Into the 50-foot Clay

Drilling Contractor	
2 days with Mob/Demob	$4,300
Supplies	$ 325
Analytical Laboratory (number of samples to be determined in the RAP) EPA Method 8240 & 418.1	
ERM-West	
Labor	$4,000
Other Direct Costs	$ 650

Phase 2: Installation of Conductor Casings

Drilling Contractor	
5 days with Mob/Demob	$8,700
9" Steel Casing	$1,950
3 Rubber Plugs	$ 900
Cement	$2,625
ERM-West	
Labor	$5,575
Other Direct Costs	$1,125

Phase 3/4: Sampling in Deep Borings and Installation and Sampling of Soil Vapor Probes

Drilling Contractor	
4 days with Mob/Demob	$7,450
1" Galvanized Steel Probes	$ 350
Sand, Bentonite and Volclay	$ 975
Analytical Laboratory	
48 soil samples: EPA Method 8240 & 418.1	$16,125
Mobile Analytical Laboratory (3 trips)	$5,050

ERM-West	
Labor	$5,900
Other Direct Costs	$1,050
SUBTOTAL - TASK 1	$67,050

TASK 2: LABORATORY ANALYSIS AND DATA REVIEW

ERM-West	
Labor	$7,250
Other Direct Costs	$ 750
SUBTOTAL - TASK 2	$8,000

TASK 3: REPORTING

ERM-West	
Labor	$8,575
Other Direct Costs	$1,050
SUBTOTAL - TASK 3	$9,625
TOTAL COST ESTIMATE	$84,675

COST ESTIMATE FOR WORK PLAN WITH ONE DEEP BORING:	$38,750

Note: These costs include an approximate contingency of 15% on all Tasks.

APPENDIX C

LABORATORY CONTRACTOR QUALIFICATIONS AND EXPERIENCE

Enseco

ENSECO INCORPORATED QUALITY ASSURANCE PROGRAM PLAN FOR ENVIRONMENTAL CHEMICAL MONITORING

Prepared by:

Enseco Incorporated
2200 Cottontail Lane
Somerset, NJ 08873

Revision 3.3
May, 1989

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1. INTRODUCTION

Enseco Incorporated (Enseco) is the largest and most experienced environmental testing laboratory in the United States. The environmental component of Enseco consists of the combined resources of:

- Enseco-Erco Laboratory in Cambridge, Massachusetts,
- Enseco-Marblehead in Marblehead, Massachusetts,
- Enseco-East in Somerset, New Jersey,
- Enseco-Rocky Mountain Analytical Laboratory in Denver, Colorado,
- Enseco-Houston in Houston, Texas,
- Enseco-California Analytical Laboratory in Sacramento, California,
- Enseco-CRL in Garden Grove, California,
- Enseco-El Monte in El Monte, California,
- Enseco-Santa Maria in Santa Maria, California,
- Enseco-Ventura in Ventura, California, and
- Enseco-Mobile Laboratories headquartered in Garden Grove, California.

Addresses and telephone numbers for these Enseco laboratories are listed in Table 1-1.

This document describes the Enseco Quality Assurance policies and procedures related to chemical monitoring for environmental pollutants.

TABLE 1-1

ENSECO LABORATORY LOCATIONS

Enseco-California Analytical Laboratory
2544 Industrial Boulevard
West Sacramento, CA 95691
(916) 372-1393
Facsimile (916) 372-1059

Enseco-CRL
7440 Lincoln Way
Garden Grove, CA 92641
(714) 898-6370
Facsimile (714) 891-5917

Enseco-East
2200 Cottontail Lane
Somerset, NJ 08873
(201) 469-5800
Facsimile (201) 469-7516

Enseco-El Monte
9537 Telstar Avenue #118
El Monte, CA 91731
(818) 442-8400
Facsimile (818) 442-3758

Enseco-Erco Laboratory
205 Alewife Brook Parkway
Cambridge, MA 02138
(617) 661-3111
Facsimile (617) 354-5258

Enseco-Houston
1420 East North Belt Suite 120
Houston, TX 77032
(713) 987-9767
Facsimile (713) 987-9769

Enseco-Marblehead
Doaks Lane at Little Harbor
Marblehead, Massachusetts 01945
(617) 639-2695
Facsimile (617) 639-2637

Enseco-Mobile Laboratories
7440 Lincoln Way
Garden Grove, CA 92641
(714) 898-6370
Facsimile (714) 891-5917

Enseco-Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
(303) 421-6611
Facsimile (303) 431-7171

Enseco-Santa Maria
2325 Skyway Drive, Suite K
Santa Maria, CA 93455
(805) 922-2776
Facsimile (805) 922-5897

Enseco-Ventura
2810 Bunsen Avenue, Unit A
Ventura, CA 93003
(805) 650-0546
Facsimile (805) 650-0756

Enseco, Inc. (Corporate Office)
2200 Cottontail Lane
Somerset, NJ 08873
(201) 469-5800
Facsimile (201) 469-7516

2. QUALITY ASSURANCE POLICY

Enseco is committed to providing quality environmental analytical services to both the public and private sectors. To ensure the production of scientifically sound, legally defensible data of known and documentable quality, an extensive Quality Assurance (QA) program has been implemented within Enseco. This program relies on clearly defined objectives, well-documented procedures, a comprehensive audit system, and management support, both Corporate and Divisional, for its effectiveness.

3. PURPOSE AND SCOPE OF DOCUMENT

Purpose

This QA Program Plan presents an overview of the essential elements of the Enseco QA program. Enseco has modeled this plan along EPA guidelines as outlined in "Interim Guidelines and Specifications for Preparing Quality Assurance Program Plans," QAMS-004/80, December 29, 1980 and "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans," QAMS-005/80, February, 1983. Both of these documents have been issued by the Office of Monitoring Systems and Quality Assurance, Office of Research and Development, U.S. Environmental Protection Agency (U.S. EPA). Elements above and beyond those specified in these two documents have been included in this QA Program Plan in order to completely describe the Enseco QA/QC system.

Scope

The Enseco QA program is designed to control and monitor the quality of data generated in Enseco laboratories. The program has four key elements.

- Demonstrating laboratory capability by providing information which documents the overall qualifications of the laboratory to perform environmental analyses;
- Controlling laboratory operations by establishing procedures which measure the laboratory's performance on a daily basis;
- Measuring matrix effects to determine the effect of a specific matrix on method performance, and
- Reporting appropriate QC information with the analytical results to enable the end-user to assess the quality of the data.

The specific procedures involved in implementing each aspect of the Enseco program are described in this document. An overview of these QC procedures, along with the section number in which each is discussed, is given in Table 3-1.

The QA/QC policies and procedures described herein are designed to eliminate systematic errors and minimize the occurrence of other errors. However, no QA program, regardless of how elaborate, can eliminate all errors which may occur during an analysis. The QA program forms the framework for minimizing errors and identifying and correcting those errors which do occasionally occur. These QA/QC policies and procedures must be coupled with the professional judgement of the technical staff in interpreting the events surrounding the generation of the final result to ensure that quality data is consistently produced.

Table 3-1

ELEMENTS OF QA PROGRAM PLAN

Evaluation Criteria	Operational Elements	Section of QA Plan
LABORATORY QUALIFICATIONS	Facilities/equipment/staff.....	*
	Written SOPs for all laboratory procedures, including:.....	15
	Sample custody.....	5
	Calibration procedures.....	6
	Analytical procedures.....	7
	Data validation.....	8
	Documented QA program.....	1-15
	Laboratory certifications.....	10
LABORATORY PERFORMANCE	Check samples.....	9
	Method blanks.....	9
	Calibration data.....	6
	Method detection limits (determined on method blank).....	12
MATRIX EFFECTS	Matrix spike/matrix duplicate/ matrix spike duplicate analyses.....	9
	Sample surrogate recoveries.....	9
	Standard additions.....	9
	Field blanks.....	9
	Method detection limits (determined with specific sample matrix).....	12
DATA REPORTING	Data reduction and validation.....	10
	Data reporting.....	10
	Reporting Limits.....	12

* Described in a separate document available from Enseco.

4. DEFINITION OF TERMS

Quality Assurance (QA): the total integrated program for assuring the reliability of data generated in the laboratory.

Quality Control (QC): the routine application of specific, well-documented procedures to ensure the generation of data of known and accepted quality, thus fulfilling the objectives of the QA program.

Quality Assurance Program Plan (QAPP): an assemblage of management policies, objectives, principles, and general procedures outlining the techniques by which the laboratory produces data of known and accepted quality.

Standard Operating Procedure (SOP): a detailed, written description of a procedure designed to systematize and standardize the performance of the procedure.

Quality Assurance Project Plan (QAPjP): an assemblage of detailed procedures describing how the laboratory will generate data that meet the Data Quality Objective (DQOs) of a specific project.

Holding Time: the period of time during which a sample can be stored after collection and preservation without significantly affecting the accuracy of the analysis.

Sample Delivery Acceptance: the point in time at which Enseco determines that it can proceed with the analytical work. Sample delivery acceptance follows receipt and inspection of the samples and complete definition of analyses required.

Initiate Preparation: the point in time at which the separation of organic extractable compounds or metals from the sample matrix by solvent extraction or acid digestion is begun.

Initiate Analysis: the point in time at which the sample, extract or digestate is introduced into an instrument or process which complies with the SOP for analysis of the parameter of interest.

5. RESPONSIBILITIES AND AUTHORITIES

Executing an effective QA program in a large and complex multi-laboratory system demands the commitment and attention of both management and staff. The QA effort at Enseco is directed by the Vice President of Quality Assurance who manages the Corporate Quality Assurance Office. The VP of QA reports directly to the Chief Executive Officer (CEO) and has the responsibility for overseeing and regulating all laboratory functions (see Figure 5-1). The QA Office operates independently of all areas generating analytical data to ensure complete objectivity in the evaluation of laboratory operations.

The implementation of the QA program within each individual Enseco laboratory is the responsibility of the Division QA Director. The QA Director reports to both the VP of QA and to the Division Director, who manages the laboratory. In addition, all scientists within the organization play a vital role in assuring the quality of their work. We believe that the success of Enseco is dependent upon the continued commitment of all within the organization to a strong and viable QA Program. The responsibilities and levels of authority within the organization are described below.

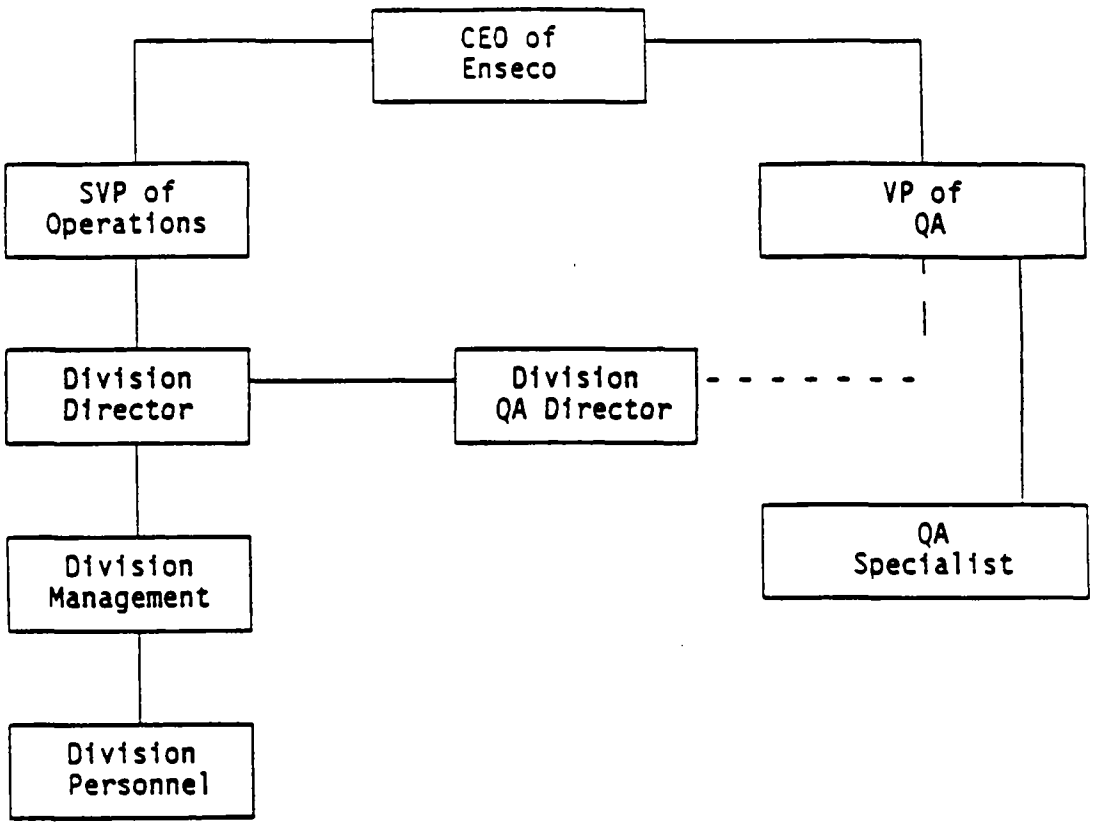
Corporate Quality Assurance Office

Members

The QA effort within Enseco is directed by the VP of QA who reports directly to the CEO of Enseco. The Corporate QA Office also includes a QA specialist who assists the VP in carrying out the responsibilities of the department.

Figure 5-1

ENSECO QA ORGANIZATIONAL CHART



Responsibilities

The VP of QA is responsible for:

- Developing and implementing a Corporate QA program that ensures that all data generated in Enseco laboratories are scientifically sound, legally defensible, and of known precision and accuracy;
- Monitoring the QA Plan to ensure compliance with QA objectives in all Enseco laboratories;
- Developing and implementing new QA procedures within the corporation to improve data quality;
- Conducting audits and inspections of all Enseco laboratories on a regular basis, reporting the results of those audits to management, and applying corrective actions as needed to ensure compliance with the Enseco QA Plan;
- Coordinating the distribution of Performance Evaluation (PE) samples to all Enseco laboratories on a routine basis, evaluating the results of those samples, reporting to management, and applying corrective actions as needed to ensure that all Enseco laboratories are able to generate data that meet the data quality objectives defined in the QA Plan;
- Establishing databases that accurately reflect the performance of each of the Enseco laboratories;
- Directing Division QA Directors in the implementation of the Enseco QA Plan within individual facilities;
- Chairing the Enseco QA Committee, a working committee which includes all of the Division QA Directors and QA Specialists and deals with QA issues on an ongoing basis;
- Coordinating certification programs within Enseco;
- Conducting seminars on QA issues for both clients and laboratory staff; and
- Promoting sound QA practices within the environmental regulatory and analytical communities.

Authority

The VP of QA is the final authority on all issues dealing with data quality and has the authority to require that procedures be amended or discontinued, or analyses suspended or repeated. Also, the VP of QA has the authority to suspend or terminate employees on the grounds of dishonesty, incompetence, or repeated non-compliance with QA procedures. In addition, the VP of QA has the authority to overrule decisions and actions of the Division QA Directors and must approve the termination or transfer of any Division QA Director. The authority of the VP of QA comes directly from the CEO of Enseco.

Divisional Quality Assurance Departments

Members

Each Divisional QA Department is managed by a QA Director. The QA Director reports directly to the Division Director and indirectly to the Corporate VP of QA. The QA Director is supported by a QA staff within the laboratory.

Responsibilities

The Division QA Director is responsible for:

- Implementing Enseco QA policies;
- Monitoring the implementation of the QA Plan within the laboratory to ensure complete compliance with QA objectives;
- Conducting in-house audits to identify potential problems and ensure compliance with written SOPs;
- Performing statistical analyses of QC data and establishing databases that accurately reflect the performance of the laboratory;

- Prescribing and monitoring corrective actions;
- Serving as the in-house client representative on all project inquiries involving data quality issues;
- Monitoring the preparation and verification of analytical standards;
- Assisting chemists in the writing of SOPs;
- Reporting the status of the laboratory QA program to the Corporate VP of QA with formal and informal communications;
- Maintaining records and archives of all QC data, PE results, audit comments, and customer inquiries concerning data quality;
- Assuring that the laboratory staff has access to current SOPs;
- Monitoring laboratory performance in the areas of holding times, turn-around times, and meeting contractual obligations;
- Conducting seminars on QA issues for clients and laboratory staff;
- Preparing QA Project Plans when needed;
- Assisting the Corporate QA office in the writing of QA policies and procedures;
- Serving as a member of the Enseco QA Committee; and
- Auditing subcontractors.

Authority

The Division QA Director is the final authority within each laboratory on all issues dealing with data quality. He/she has the authority to require that procedures be amended or discontinued or analyses suspended or repeated. He/she can make recommendations to the Division Director and the Corporate VP of QA regarding suspension or termination of employees for

incompetence or non-compliance with QA procedures. The authority of the Division QA Director comes directly from the Corporate VP of QA.

Divisional Management

Members

The managers and supervisors who direct the analytical work at each laboratory are directly responsible for ensuring that all employees reporting to them are complying with the Enseco QA Plan.

Responsibilities

Laboratory management is responsible for:

- Actively supporting the implementation of the Enseco QA Plan within the laboratory;
- Maintaining accurate SOPs and enforcing their use in the laboratory;
- Maintaining a work environment that emphasizes the importance of data quality; and
- Providing management support to the Corporate and Divisional QA departments.

Authority

The managers and supervisors of the laboratory have the authority to accept or reject databased on compliance with well-defined QC criteria. In addition, managers and supervisors, with the approval of the QA department, can accept or reject data that fall outside of established QC guidelines if, in their judgment, there are technical reasons which warrant the acceptance or rejection of the data. These circumstances must be well documented and any need for corrective action identified by the incident must be defined and

initiated. The authority of the laboratory management comes directly from the Corporate VP of Operations and the Division Director.

Divisional Personnel

Members

All laboratory personnel involved in the generation and reporting of data have a responsibility to understand and follow the Enseco QA Plan.

Responsibilities

Laboratory personnel are responsible for:

- Having a working knowledge of the Enseco QA Plan;
- Ensuring that all work is generated in compliance with the Enseco QA Plan;
- Performing all work according to written SOPs;
- Ensuring that all documentation related to their work is complete and accurate; and
- Providing management with immediate notification of quality problems.

Authority

Laboratory personnel have the authority to accept or reject databased on compliance with well-defined QC criteria. The acceptance or rejection of data that fall outside of established QC guidelines must be approved by laboratory management and the QA department. The authority of the laboratory personnel flows from the Division Director.

6. SAMPLING PROCEDURES

The generation of quality data begins with the collection of the sample, and therefore the integrity of the sample collection process is of concern to the laboratory. Samples must be collected in such a way that no foreign material is introduced into the sample and no material of interest escapes from the sample prior to analysis. To ensure sample integrity, the following must be considered:

- Samples must be collected in appropriate containers. In general, glass containers are used for organic parameters and polyethylene containers for inorganic/metal parameters (see Appendix I);
- The sample containers must be properly cleaned to ensure that the sample is not contaminated during the collection process;
- Samples must be preserved appropriately to minimize the loss of materials of interest due to adsorption, chemical or biological degradation, or volatilization (see Appendix I);
- Appropriate volumes of sample must be collected to ensure that the required detection limits can be met and quality control samples can be analyzed (see Appendix I); and
- Samples must be properly shipped to the laboratory, in the appropriate time frame, to ensure that holding times for the analyses can be met (see Appendix I).

Sample Containers and Preservatives

Enseco can assist in the sample collection process by providing consultation and assistance to clients designing sampling programs. Also Enseco can make available to the client the Enseco "Sample Safe™," a set of sample containers that are properly cleaned and preserved for use in sample collection. Appropriate containers and preservatives, and minimum sample volumes required for analyzing routine organic, metal, and conventional parameters are listed in Appendix I.

Holding Times

EPA has established holding time requirements for some analyses. These holding time requirements are listed in Appendix I, along with container and preservative requirements. As indicated in Appendix I, holding time requirements differ depending on the regulatory program. Enseco follows the holding times given in SW-846, Update I unless otherwise instructed by the client. CLP holding times are followed when CLP protocols are requested by the client. Other holding times can be honored if special arrangements are made with the laboratory.

Enseco is obligated to initiate preparation and/or analysis of the sample within holding times if sample delivery acceptance occurs within 72 hours of sampling or before one-half of the holding time period has expired, whichever is less. (See Section 4 for definition of above terms.)

On occasion, a sample must be reanalyzed to comply with this QA Program Plan. If this reanalysis is conducted outside of the holding time, the laboratory will be considered to have fulfilled its obligation to meet holding times if the first preparation and/or analysis was initiated within the prescribed holding time.

7. SAMPLE CUSTODY

Upon receipt by Enseco, samples proceed through an orderly processing sequence specifically designed to ensure continuous integrity of both the sample and its documentation.

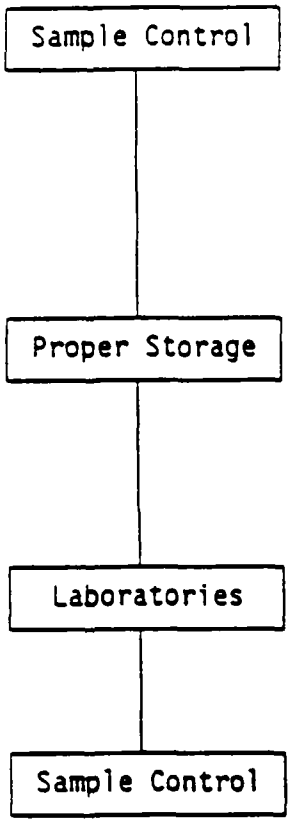
All samples are received by Enseco's Sample Control Group and are carefully checked for label identification, and completed, accurate chain-of-custody records. Photographs document the condition of samples and each sample is then assigned a unique laboratory identification number through a computerized Laboratory Information Management System (LIMS) that stores all identifications and essential information. The LIMS system tracks the sample from storage through the laboratory system until the analytical process is completed and the sample is returned to the custody of the Sample Control Group for disposal. This process is summarized in Figure 7-1. Access to all Enseco laboratories is restricted to prevent any unauthorized contact with samples, extracts, or documentation.

An example of the Enseco Chain-Of-Custody Record used to transmit samples from the client to the laboratory is given in Figure 7-2. The Chain-Of-Custody Record (Interlaboratory Analysis Form) used to transmit samples between laboratories within Enseco is given in Figure 7-3.

Sample bottles provided to the client by Enseco are transmitted under custody using the Enseco "Sample Safe™".

Figure 7-1

ENSECO SAMPLE PROCESSING FLOW CHART



* Check and document physical condition of sample
* Verify documentation and parameter assignment
* Log [illegible] LIMS
* Send acknowledgement letter to client

* Store sample according to preservation guidelines
* Transfer sample to lab with proper documentation

* Document analytical work
* Return unused samples to Sample Control

* Return sample to client or arrange for sample disposal

Enseco

CHAIN OF CUSTODY

No. 5068

Attn: _____

Enseco Client _____

Project _____

Sampling Co _____

Sampling Site _____

Team Leader _____

SAMPLE SAFE™ CONDITIONS

1. Packed by _____ Seal #
2. Seal Intact Upon Receipt by Sampling Co Yes No
3. Condition of Contents _____
4. Sealed for Shipping by _____
5. Initial Contents Temp _____ °C Seal # _____
6. Sampling Status Done Continuing Until _____
7. Seal Intact Upon Receipt by Laboratory Yes No
8. Contents Temperature Upon Receipt by Lab _____ °C
9. Condition of Contents _____

SAMPLE

Date	Time	Sample ID/Description	Sample Type	No. Containers	Analysis Parameters	Remarks

CUSTODY TRANSFERS PRIOR TO SHIPPING

	Relinquished by (signed)	Received by (signed)	Date	Time
1				
2				

SHIPPING DETAILS

Delivered to Shipper by _____

Method of Shipment _____ Airbill # _____

Received for Lab _____ Signed _____ Date/Time _____

Page _____ of _____
File Index _____

Enseco

INTERLABORATORY ANALYSIS

SHIP TO: *(circle one)*

CAL ERCO CLE GAS MAR HOU

Attention:

SEND RESULTS TO:
Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
(303) 421-6611 FAC: (303) 431-7171
Attention:

CLIENT NAME | PROJECT NO.

Relinquished by: *(Signature)* Received by: *(Signature)* Date Time

Relinquished by: *(Signature)* Received by: *(Signature)* Date Time

Import Lab ID	Enseco ID	Client ID	Matrix (a, s, w)	Date Sampled	Date Rec'd	Date Auth.	Analysis Requested/ P.L. Item #	Sample Condition Upon Receipt

SAMPLE

a. Written results required by (date): _____ Verbal results required by (date): _____

b. QC: ☐ Standard Enseco ☐ CLP Protocol ☐ Project-Specific _____

c. Sample Disposal: ☐ Enseco ☐ Return to Client ☐ Phone RMAL

d. Raw Data Copies Needed: ☐ Yes ☐ No

e. Detection Limits: ☐ Standard Product ☐ Other*

f. Holding Times: ☐ Enseco ☐ EPA-CLP ☐ Other*

g. *Special Instructions: _____

h. Intercompany Rebate: *(circle one)* 0% 5% 10% i. P.O. Number _____

8. CALIBRATION PROCEDURES AND FREQUENCY

Standard/Reagent Preparation

A critical element in the generation of quality data is the purity/quality and traceability of the standard solutions and reagents used in the analytical operations. Enseco continually monitors the quality of reagents and standard solutions through a series of well-documented procedures.

To ensure the highest purity possible, all primary reference standards and standard solutions used by Enseco are obtained from the National Institue of Standards and Technology, the EPA Repository or other reliable commercial sources. All standards and standard solutions are logged into a database that identifies the supplier, lot number, purity/concentration, receipt/preparation date, preparer's name, method of preparation, expiration date, and all other pertinent information.

Standard solutions are validated prior to use. Validation procedures can range from a check for chromatographic purity to verification of the concentration of the standard using a standard prepared at a different time or obtained from a different source. Stock and working standards are checked regularly for signs of deterioration, such as discoloration, formation of precipitates, or change in concentration. Care is exercised in the proper storage and handling of standard solutions, and all containers are labeled as to compound, concentration, solvent, expiration date, and preparation data (initials of preparer/date of preparation).

Reagents are examined for purity by subjecting an aliquot or subsample to the analytical method in which it will be used; for example, every lot of dichloromethane (for organic extractables) is analyzed for undesirable contaminants prior to use in the laboratory.

A database is used to store essential information on specific standards or reagents. The system is designed to serve various functions (e.g., the system issues warnings on expiration dates and allows chemists to obtain a list of all working standard solutions prepared from the same stock solution). The program also facilitates the management and auditing of reagents and standards.

Instrument Calibration and Tuning

Calibration of instrumentation is required to ensure that the analytical system is operating correctly and functioning at the proper sensitivity to meet established reporting limits. Each instrument is calibrated with standard solutions appropriate to the type of instrument and the linear range established for the analytical method. The frequency of calibration and the concentration of calibration standards is determined by the manufacturer's guidelines, the analytical method, or the requirements of special contracts.

Gas Chromatography/Mass Spectrometry (GC/MS)

Each day prior to analysis of samples, the instrument is tuned with bromofluorobenzene (BFB) for volatile compounds and decafluorotriphenylphosphine (DFTPP) for semivolatile compounds (according to the tuning criteria specified in the U.S. EPA Contract Laboratory Program (CLP)). No samples are analyzed until the instrument has met tuning criteria.

The instrument is then calibrated for all target compounds. An initial calibration curve is produced and certain key compounds referred to as System Performance Calibration Compounds (SPCC) and Continuing Calibration Compounds (CCC) are evaluated on a daily basis

to ensure that the system is within calibration. If the daily standard does not meet the established criteria, the system is recalibrated.

Chromatography

The field of chromatography involves a variety of instrumentation and detection systems. While calibration standards and acceptance criteria vary depending on the type of system and analytical methodology required for a specific analysis, the general principles of calibration apply uniformly. Each chromatographic system is calibrated prior to performance of analyses. Initial calibration consists of determining the linear range, establishing limits of detection, and establishing retention time windows. The calibration is checked on a daily basis to ensure that the system remains within specifications. If the daily calibration check does not meet established criteria, the system is recalibrated and samples analyzed since the last acceptable calibration check are reanalyzed.

Metals

Metals analysis basically involves two types of analytical instrumentation: inductively coupled argon plasma emission spectroscopy (ICP), and atomic absorption spectroscopy (AA).

Each ICP is calibrated prior to any analyses being performed using criteria prescribed in the CLP protocol. The calibration is then verified using standards from an independent source. The linear range of the instrument is established once every quarter using a linear range verification check standard. No values are reported above this upper concentration value without dilution.

A calibration curve is established daily by analyzing a minimum of two standards, one of which is a calibration blank. The calibration is monitored throughout the day by analyzing a Continuing Calibration Blank (CCB) and a Continuing Calibration Verification standard (CCV). The standard must meet established criteria or the system is recalibrated and all samples analyzed since the last acceptable calibration check are reanalyzed.

An interelement check standard is analyzed at the beginning and end of each analytical run, and on a continuing basis, to verify that interelement and background correction factors have remained constant. Results outside of the established criteria trigger reanalysis of samples.

Each AA unit is calibrated prior to any analyses being conducted. A calibration curve is prepared with a minimum of a calibration blank and three standards and then verified with a standard that has been prepared from an independent source at a concentration near the middle of the calibration range. The calibration is then verified on an ongoing basis with a midpoint calibration standard. If the ongoing calibration standard does not meet established acceptance criteria, the system is recalibrated and all samples analyzed since the last acceptable calibration check are reanalyzed. All samples are spiked to verify the absence of matrix effects or interferences. The method of standard additions is used when matrix interferences are present.

Conventional Analyses

The field of conventional, non-metals analysis involves a variety of instrumental and wet chemical techniques. While calibration and standardization procedures vary depending on the type of system and analytical methodology required for a specific analysis, the general principles of calibration apply universally. Each system is

calibrated prior to analyses being conducted. Calibration consists of defining the linear range by use of a series of standard solutions, establishing limits of detection, and identifying potential interferences. The calibration is checked on an ongoing basis to ensure that the system remains within specifications. If the ongoing calibration check does not meet established criteria, the system is recalibrated and all samples analyzed since the last acceptable calibration check are reanalyzed.

9. ANALYTICAL PROCEDURES

Most analyses performed by Enseco are driven by regulatory concerns. Therefore, methods used at Enseco predominantly originate from regulatory agencies. Generally the methods used are those specified by the U.S. EPA and other federal agencies, state agencies, and professional organizations, as provided in the following references:

- Current EPA (CLP) protocols for the analysis of organic and inorganic hazardous substances including chlorinated dioxins and furans.
- "Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act," 40 CFR, Part 136.
- "Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79-020 (revised March, 1983).
- "Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater," EPA-600/4-82-057 (July, 1982).
- "Test Methods for Evaluating Solid Waste" (SW-846), 2nd Edition (revised), Update I (1984), Update II (1985), 3rd Edition (1986), Update I (1989), Office of Solid Waste and Emergency Response, U.S. EPA.
- "Standard Methods for the Examination of Water and Wastewater," 16th Edition, American Public Health Association, American Water Works Association, Water Pollution Control Federation, Washington, DC (1985).
- "Official Methods of Analysis," 14th Edition, Association of Official Analytical Chemists, Arlington, VA (1984).
- "Methods for the Determination of Organic Compounds in Finished Drinking Water and Raw Source Water," U.S. EPA, Environmental Monitoring and Support Laboratory - Cincinnati (September, 1986).
- "Annual Book of ASTM Standards," Volumes 11.01 and 11.02, American Society for Testing and Materials (ASTM), Philadelphia, PA (1987).
- "Techniques of Water Resources Investigations of the United States Geological Survey (USGS), Book 5, Laboratory Analysis," USGS, Washington, DC (1979).

The choice of method is dependent on the objectives of the study in terms of qualitative certainty, quantitative sensitivity, precision and accuracy, and the type of matrix to be analyzed. Each method used routinely is documented in the form of an SOP. The SOP contains detailed instructions concerning both the use and the expected performance of the method. Any deviations from published methodology are documented and explained in the SOP. A complete description of the contents of laboratory SOPs is given in Section 17.

Before any methods are routinely used to generate analytical data, the method is validated. Validation criteria consist of:

- Method selection by a senior staff member;
- Documentation of the method in an SOP. This includes a summary of the method, detailed description of the analytical procedure, calculations, reporting formats, safety concerns, and special remarks;
- Testing of the method to verify detection limits and linear range, establish reporting limits and precision and accuracy criteria; and
- Establishment of data acceptance criteria that must be approved by a senior staff member and the Divisional QA Director.

10. DATA REDUCTION, VALIDATION, AND REPORTING

Data Reduction and Validation

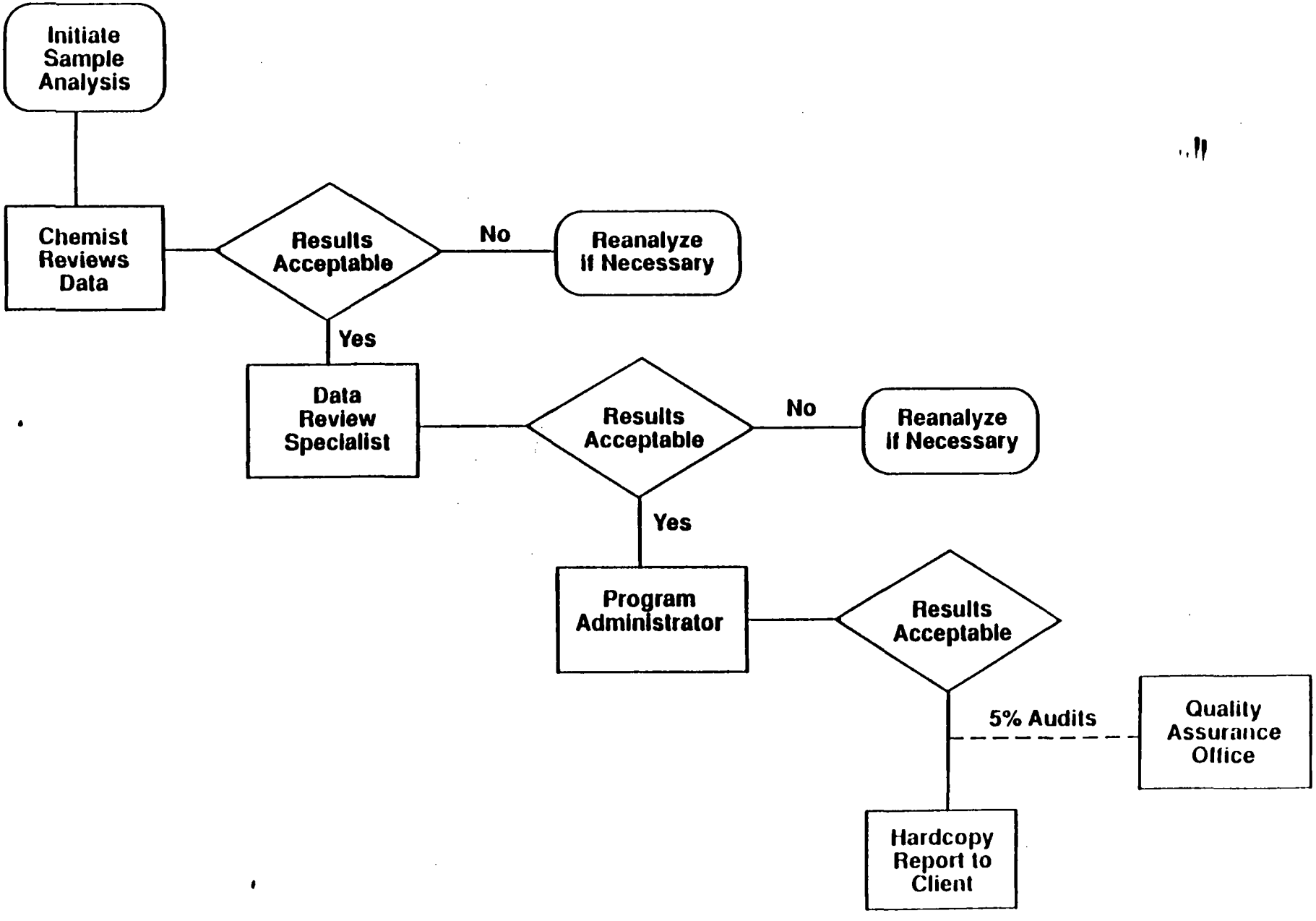
All analytical data generated within Enseco laboratories are extensively checked for accuracy and completeness. The data validation process consists of data generation, reduction, and three levels of review, as described below (also see Figure 10-1).

The analyst who generates the analytical data has the prime responsibility for the correctness and completeness of the data. All data are generated and reduced following protocols specified in laboratory SOPs. Each analyst reviews the quality of his or her work based on an established set of guidelines. The analyst reviews the data package to ensure that:

- Sample preparation information is correct and complete;
- Analysis information is correct and complete;
- The appropriate SOPs have been followed;
- Analytical results are correct and complete;
- QC samples are within established control limits;
- Blanks are within appropriate QC limits;
- Special sample preparation and analytical requirements have been met; and
- Documentation is complete (e.g., all anomalies in the preparation and analysis have been documented, Out-of-Control forms [if required] are complete; holding times are documented, etc.).

Figure 10-1

Data Validation Scheme



The data reduction and validation steps are documented, signed and dated by the analyst. This initial review step, performed by the analyst, is designated Level 1 review. The analyst then passes the data package to an independent reviewer, who performs a Level 2 review.

Level 2 review is performed by a supervisor or data review specialist whose function is to provide an independent review of the data package. This review is also conducted according to an established set of guidelines and is structured to ensure that:

- Calibration data are scientifically sound, appropriate to the method, and completely documented;
- QC samples are within established guidelines;
- Qualitative identification of sample components is correct;
- Quantitative results are correct;
- Documentation is complete and correct (e.g., anomalies in the preparation and analysis have been documented; Out-of-Control forms [if required] are complete; holding times are documented, etc.);
- The data are ready for incorporation into the final report; and
- The data package is complete and ready for data archive.

Level 2 review is structured so that all calibration data and QC sample results are reviewed and all of the analytical results from 10% of the samples are checked back to the bench sheet. If no problems are found with the data package, the review is complete. If any problems are found with the data package, an additional 10% of the samples are checked to the bench sheet. The process continues until no errors are found or until the data package has been reviewed in its entirety.

An important element of Level 2 review is the documentation of any errors that have been identified and corrected during the review process. Enseco believes that the data package submitted by the analyst for Level 2 review should be free of errors. Errors that are found are documented and transmitted to the appropriate supervisor. The cause of the errors is then addressed with additional training or clarification of procedures to ensure that quality data will be generated at the bench.

Level 2 data review is also documented and the signature of the reviewer and the date of review recorded. The reviewed data are then approved for release and a final report is prepared.

Before the report is released to the client, the Program Administrator who is responsible for interfacing directly with the client reviews the report to ensure that the data meet the overall objectives of the client, as understood by the Program Administrator. This review is labeled Level 3 review.

Each step of this review process involves evaluation of data quality based on both the results of the QC data and the professional judgement of those conducting the review. This application of technical knowledge and experience to the evaluation of the data is essential in ensuring that data of high quality are generated consistently.

In addition to the three levels of review discussed above, the Divisional QA department randomly audits 5% of all projects reported. The QA audit includes verifying that holding times have been met, calibration checks are adequate, qualitative and quantitative results are correct, documentation is complete, and QC results are complete and accurate. During the review, the QA department checks the data from 20% of the samples back to the bench sheet. If no problems are found with the data package, the review is complete. If any problems

are found with the data package, an additional 10% of the samples are checked to the bench sheet. The process continues until no errors are found or until the data package has been reviewed in its entirety.

Data Reporting

A variety of reporting formats, from computerized data tables, to complex reports discussing regulatory issues, to a CLP-deliverables package, are available. In general, Enseco reports contain:

General Discussion: Description of samples types, tests performed, any problems encountered and general comments are given.

Analytical Data: Data are reported by sample or by test. Pertinent information including dates sampled, received, prepared, and extracted are included on each results page. The Enseco reporting limit for each analyte is also given.

QC Information: The results (Percent Recovery and Relative Percent Difference) of the Laboratory Control Samples analyzed with the project are listed, together with the control limits. Also, the analytical results for method blanks generated during analysis of organic and metals parameters are given.

Results of any matrix spikes, duplicates, matrix spike duplicates or other project-specific QC are also reported.

Methodology: Reference for analytical methodology used is cited.

Custom Services: Special services including data interpretation, special consultation, and raw data packages (when requested) are included.

11. INTERNAL QC CHECKS

The Enseco QA/QC program monitors data quality with internal QC checks. Internal QC checks are used to answer two questions:

1) Are laboratory operations "in control," (i.e., operating within acceptable QC guidelines), during data generation?

2) What effect does the sample matrix have on the data being generated?

The first question is answered by Laboratory Performance QC. Laboratory performance QC is based on the use of a standard, control matrix to generate precision and accuracy data that are compared, on a daily basis, to control limits. This information, in conjunction with method blank data, is used to assess daily laboratory performance.

The second question is addressed with Matrix-Specific QC. Matrix-Specific QC is based on the use of an actual environmental sample for precision and accuracy determinations and commonly relies on the analysis of matrix spikes, matrix duplicates, and matrix spike duplicates. This information, supplemented with field blank results, is used to assess the effect of the matrix and field conditions on analytical data.

Laboratory Performance QC is provided as a standard part of every routine Enseco analysis. Matrix-Specific QC is available as an option to the client and should be specified based on the types of matrices to be analyzed and the Data Quality Objectives (DQOs) and regulatory requirements of the project.

A complete discussion of the Enseco Internal QC Check program follows.

Laboratory Performance QC Program

Laboratory Performance QC is provided as a standard part of every routine Enseco analysis. The main elements of Laboratory Performance QC are:

- The analysis of Laboratory Control Samples, which include Duplicate Control Samples (DCS), Single Control Samples (SCS), and method blanks, and
- The generation of daily calibration data.

The Laboratory Control Sample program is discussed below. Please refer to Section 8 of this manual for a discussion of calibration procedures.

Laboratory Control Samples (LCS)

Laboratory Control Samples (LCS) are well-characterized, laboratory generated samples used to monitor the laboratory's day-to-day performance of routine analytical methods. Certain LCS are used to monitor the precision and accuracy of the analytical process, independent of matrix effects. Other LCS are used to identify any background interference or contamination of the analytical system which may lead to the reporting of elevated concentration levels or false positive data.

The results of the LCS are compared to well-defined laboratory acceptance criteria to determine whether the laboratory system is "in control." Controlling lab operations with LCS (as opposed to matrix spike/matrix spike duplicate samples), offers the advantage of being able to differentiate low recoveries due to procedural errors from those due to matrix effects. As a result, procedural errors can be identified and corrected by the analyst at the bench, without waiting for extensive senior level review or costly and time-consuming reanalysis of the sample.

Three types of LCS are routinely analyzed: Duplicate Control Samples (DCS), Single Control Samples (SCS), and Method Blanks. Each of these LCS are described below.

Duplicate Control Samples (DCS)

Duplicate Control Samples (DCS) are used to monitor the precision and accuracy of the analytical system on an on-going basis. Each DCS consists of a standard, control matrix that is spiked with a group of target compounds representative of the method analytes. A DCS pair is analyzed for every 20 samples processed by the method. DCS are analyzed with environmental samples to provide evidence that the laboratory is performing the method within accepted QC guidelines for accuracy and precision.

Accuracy (average recovery of each analyte in the DCS pair) and precision (Relative Percent Difference [RPD] between each analyte in the DCS pair) data are compared to control limits that have been established for each of the analytes contained in the DCS. Initially, control limits for analytes spiked into the DCS are taken directly from the CLP program. If CLP limits are not available, Enseco historical data are used to set the control limits. As sufficient laboratory data become available, the control limits are redefined based upon the most recent nine months of DCS data. Control limits for accuracy for each analyte are based on the historical average recovery (mean of the average recoveries of the DCS pairs) plus or minus three standard deviation units. Control limits for precision for each analyte are based on the historical RPD and range from zero (no difference between DCS results) to the average RPD plus three standard deviation units. Calculated control limits tend to be tighter than CLP limits because of the use of a control matrix. However, if the calculated limits are broader than the CLP limits, the CLP limits are used to control the laboratory.

Analytical data that are generated with a DCS pair which falls within the established control limits are judged to be in control. Data generated with a DCS pair which falls outside of the control limits are considered suspect and are repeated or reported with qualifiers. The procedure used to evaluate data from control samples is given in Figure 11-1. The protocols include examination of instrument performance and preparation and analysis information, consultation with the supervisor, and finally a decision path for determining whether reanalysis is warranted.

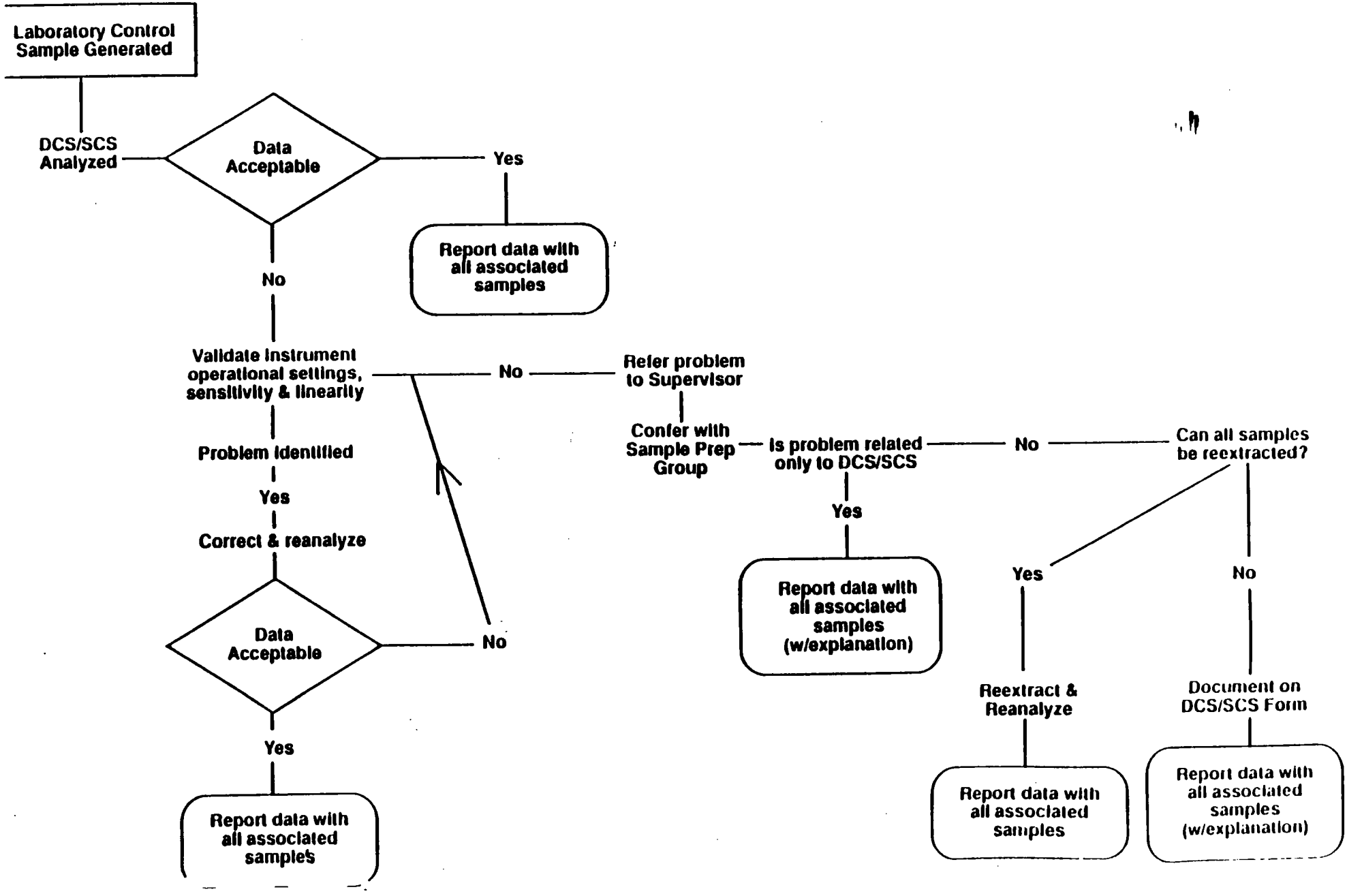
DCS have been established for each routine analytical method. Reagent water is used as the control matrix for the analysis of aqueous samples. The DCS compounds are spiked into reagent water and carried through the appropriate steps of the analysis. The control matrix for solids samples is standard Ottawa sand, an ASTM approved material for use in highway construction, due to its fine degree of homogeneity. The DCS compounds are spiked into the Ottawa sand and carried through the appropriate steps of the analysis.

As stated previously, DCS are analyzed at a frequency of no less than one DCS pair per 20 samples. The DCS program is supplemented with the SCS program to ensure that Laboratory Performance QC is available with each batch of samples processed (see following subsection).

DCS precision and accuracy data are archived in the LIMS. In addition, the associated DCS data are reported with each set of sample results to enable the client to make a quality assessment of the data.

Figure 11-1

Laboratory Performance QC Control Sample Evaluation



Single Control Samples (SCS)

As stated above, a DCS pair is analyzed with every 20 samples to measure the precision and accuracy of an analysis on an ongoing basis. However, samples are often analyzed in lots of less than 20, due to holding time or turn-around time requirements. Since it is necessary to have a measure of laboratory performance with each batch of samples processed, Enseco has instituted the SCS program.

An SCS consists of a control matrix that is spiked with surrogate compounds appropriate to the method being used. In cases where no surrogate is available, (e.g., metals or conventional analyses) a single DCS serves as the control sample. An SCS is prepared for each sample lot for which the DCS pair are not analyzed. Recovery data generated from the SCS are compared to control limits that have been established for each of the compounds being monitored. Initially, CLP control limits or Enseco historical data are used to set the control limits. When sufficient SCS data are available, control limits are redefined based on the most recent nine months of data. Control limits for SCS components are based on the historical average recovery in the SCS plus or minus three standard deviation units.

Analytical data that are generated with an SCS which falls within the control limits are judged to be in control. Data that are generated with an SCS which falls outside of acceptance criteria are considered suspect and are reanalyzed or reported with qualifiers. The protocols for evaluating SCS are identical to those established for DCS (see Figure 11-1).

SCS recovery (accuracy) data are archived in the LIMS. In addition, the associated SCS data are reported with each set of sample results to enable the client to make a quality assessment of the data.

Method Blank

Method blanks, also known as reagent, analytical, or preparation blanks, are analyzed to assess the level of background interference or contamination which exists in the analytical system and which might lead to the reporting of elevated concentration levels or false positive data.

As part of the standard Enseco QC program, a method blank is analyzed with every batch of samples processed. A method blank consists of reagents specific to the method which are carried through every aspect of the procedure, including preparation, clean-up, and analysis. The results of the method blank analysis are evaluated, in conjunction with other QC information, to determine the acceptability of the data generated for that batch of samples.

Ideally, the concentration of target analytes in the blank should be below the Reporting Limit for that analyte. In practice, however, some common laboratory solvents and metals are difficult to eliminate to the parts-per-billion levels commonly reported in environmental analyses. Therefore, criteria for determining blank acceptability must be based on consideration of the analytical techniques used, analytes reported, and Reporting Limits required.

For organic analyses, the concentration of target analytes in the blank must be below the Reporting Limit for that analyte in order for the blank to be considered acceptable. An exception is made for common laboratory contaminants [methylene chloride, acetone, 2-butanone, toluene, and bis(2-ethylhexyl)phthalate] which may be present in the blank at up to 5 times the Reporting Limit and still be considered acceptable. This policy is consistent with the CLP policy and has been established in recognition of the fact that these compounds are frequently found at low levels in method blanks due to the materials used in the collection, preparation, and analysis of samples for organic parameters.

For metals analysis, where the Reporting Limits are typically near the Instrument Detection Limit (IDL) and background levels for certain metals are difficult to completely eliminate, the policy is that the concentration of the target analytes in the blank must be below two times the Reporting Limit. If the blank value for a target analyte lies below the Reporting Limit, the Reporting Limit for that analyte in the associated samples is unaffected. If the blank value lies between the Reporting Limit and two times the Reporting Limit, the Reporting Limit for that analyte in the associated samples is raised to the level found in the blank. A blank containing an analyte(s) above two times the Reporting Limit is considered unacceptable unless the lowest concentration of the analyte in the associated samples is at least ten times the blank concentration (as per CLP protocol).

For conventional inorganic tests, the method SOP directs how the blank is treated. Generally, a reagent blank is used both to zero the equipment and as one of the calibration standards. If a preparation step is required for the analysis, then a prep blank is also analyzed to determine the extent of contamination or background interference. In most cases, the concentration found in the prep blank is subtracted from the concentration found in any associated sample prior to calculating the final result. Blanks have no application or significance for some conventional inorganic parameters (e.g. pH).

If the blank does not meet acceptance criteria, the source of contamination must be investigated and appropriate corrective action must be taken and documented. Investigation includes an evaluation of the data to determine the extent and effect of the contamination on the sample results. Corrective actions may include reanalysis of the blank, and/or repreparation and reanalysis of the blank and all associated samples.

For organic and metals analyses, and selected conventional inorganic tests, method blank results are reported with each set of sample results.

Sample results are not corrected for blank contamination. Occasionally, due to limited sample volume or other constraints, the laboratory reports data associated with an unacceptable blank. In these cases, the Reporting Limit for the each analyte contained in the blank is raised to the level found in the blank.

Matrix-Specific QC

Matrix-Specific QC is used to assess the effects of a sample matrix or field conditions on the analytical data. The main elements of Matrix-Specific QC are:

- The analysis of matrix spikes, matrix duplicates, and matrix spike duplicates;
- Monitoring the recovery of surrogate compounds from environmental samples;
- Monitoring the results of standard additions in environmental samples;
- The analysis of field blanks; and
- The determination of method detection limits in a specific matrix.

Different regulatory programs have different requirements in terms of Matrix-Specific QC. In order to ensure that the data generated meet all Data Quality Objectives, Enseco encourages its clients to include Matrix-Specific QC that fulfills the Data Quality Objectives and regulatory requirements of the project. A discussion of the different elements of Matrix-Specific QC follows.

Matrix Spikes, Matrix Duplicates, and Matrix Spike Duplicates

A Matrix Spike (MS) is an environmental sample to which known concentrations of analytes have been added. The MS is taken through the entire analytical procedure and the recovery of the analytes is

calculated. Results are expressed as percent recovery. The MS is used to evaluate the effect of the sample matrix on the accuracy of the analysis.

A Matrix Duplicate (MD) is an environmental sample that is divided into two separate aliquots. The aliquots are processed separately and the results compared to determine the effects of the matrix on the precision of the analysis. Results are expressed as RPD.

A Matrix Spike Duplicate (MSD) is an environmental sample that is divided into two separate aliquots, each of which is spiked with known concentrations of analytes. The two spiked aliquots are processed separately and the results compared to determine the effects of the matrix on the precision and accuracy of the analysis. Results are expressed as RPD and percent recovery.

Surrogate Recoveries and Standard Additions

Surrogates are organic compounds which are similar to the analytes of interest in chemical behavior, but which are not normally found in environmental samples. Surrogates are added to samples to monitor the effect of the matrix on the accuracy of the analysis. Results are reported in terms of percent recovery.

Enseco routinely adds surrogates to samples requiring GC/MS analysis and reports these surrogate recoveries to the client. The laboratory does not control its operations based on surrogate recoveries in environmental samples. As discussed earlier in this section, Enseco controls its operations based on the results of Laboratory Control Samples. The surrogate recoveries are primarily used by the laboratory to assess matrix effects. However, obvious problems with sample preparation and analysis (e.g. evaporation to dryness, leaking septum, etc.) which can lead to poor surrogate spike recoveries must be ruled out prior to attributing low surrogate recoveries to matrix effects.

Standard Additions (SA) is the practice of adding a series of known amounts of an analyte to an environmental sample. The fortified samples are then analyzed and the recovery of the analytes calculated. The practice of SA's is generally used with metal and conventional analyses to determine the effect of the sample matrix on the accuracy of the analyses.

Field Blanks

Field blanks are check samples that monitor contamination originating from the collection, transport or storage of environmental samples. One example of a field blank is an equipment blank. An equipment blank is blank water that is poured through the sample collection device to check the adequacy of the cleaning procedures for the sampling equipment. Another type of field blank is a trip blank. A trip blank is a laboratory control matrix (typically water) which is sent to the field in an appropriate sample container, remains unopened in the field, and then is sent back to the laboratory. The purpose of the trip blank is to assess the impact of field and shipping conditions on the samples. The results from field blanks are reported to the client as samples in the same concentration units as the samples. No correction of the analytical data is done in the laboratory based on the analysis of field blanks.

Matrix-Specific Detection Limits

Method Detection Limits (MDL's) determined on a specific sample matrix are called Matrix-Specific Detection Limits. See Section 14 for a discussion of detection and reporting limits.

12. PERFORMANCE AND SYSTEM AUDITS

Enseco laboratories participate in a variety of federal and state certification programs, (including the U.S. EPA CLP), that subject each of the laboratories to stringent system and performance audits on a regular basis. A system audit is a review of laboratory operations conducted to verify that the laboratory has the necessary facilities, equipment, staff and procedures in place to generate acceptable data. A performance audit verifies the ability of the laboratory to correctly identify and quantitate compounds in blind check samples submitted by the auditing agency. The purpose of these audits is to identify those laboratories that are capable of generating scientifically sound data. Enseco is certified to perform environmental analyses under programs administered by the U.S. EPA, U.S. Army, U.S. Navy, and over 15 states. The most current list of Enseco certifications is available upon request.

In addition to external audits conducted by certifying agencies or clients, Enseco regularly conducts the following internal audits:

- Quarterly systems audits conducted by the Divisional QA Director.
- Periodic (at least yearly) audits conducted by the Corporate QA Office.
- Special audits by the Divisional QA Director or Corporate QA Office when a problem is suspected.

Enseco laboratories also routinely analyze check samples as described below:

- Laboratory Control Samples (DCS, SCS, and method blanks) are analyzed at a frequency equal to at least 10% of the total number of samples analyzed (see Section 11).
- All Enseco laboratories participate in the analyses of EPA check samples provided under the Water Supply (WS) and Water Pollution (WP) Performance Evaluation Studies. The results of these PE samples are tabulated by the Corporate QA Office to identify performance trends within the Enseco laboratories.

- The majority of the Enseco laboratories are CLP labs and thus analyze organic and/or inorganic CLP PE samples on a quarterly basis. The results of these analyses are also tabulated and evaluated by the Corporate QA Office.

- The laboratories participate in multiple state certification programs (including New York, New Jersey and California) which require that PE samples be analyzed periodically.

- Blind check samples from an independent commercial firm are sent to the laboratories periodically by the Corporate QA Office. The frequency and type of samples sent is based on problem areas identified by evaluation of tabulated PE results.

The results of these check samples are used to identify areas where additional training is needed or clarification of procedures is required.

13. PREVENTIVE MAINTENANCE

To minimize downtime and interruption of analytical work, preventive maintenance is routinely performed on each analytical instrument. Designated laboratory personnel are trained in routine maintenance procedures for all major instrumentation. When repairs are necessary, they are performed by either trained staff or trained service engineers employed by the instrument manufacturer.

Each laboratory has detailed SOPs on file that describe preventive maintenance procedures and schedules. The laboratories also maintain detailed logbooks documenting the preventive maintenance and repairs performed on each analytical instrument.

14. SPECIFIC ROUTINE PROCEDURES USED TO ASSESS DATA QUALITY AND DETERMINE REPORTING LIMITS

Data Quality Assessment

The effectiveness of a QA program is measured by the quality of data generated by the laboratory. Data quality is judged in terms of its precision, accuracy, representativeness, completeness and comparability. These terms are described as follows:

Precision is the degree to which the measurement is reproducible. Precision can be assessed by replicate measurements of DCS, reference materials, or environmental samples. Enseco routinely monitors precision by comparing the RPD between DCS measurements with control limits established at plus three standard deviations from the mean RPD of historical DCS data.

Precision is frequently determined by comparison of replicates. The standard deviation of "n" measurements of "x" is commonly used to estimate precision.

Standard deviation (S) is calculated as follows:

$$S = \sqrt{\frac{1}{n-1} \sum_{i=1}^{n} (X_1 - \bar{X})^2}$$

where a quantity "x" (e.g., a concentration) is measured "n" times.

The relative standard deviation (or sample coefficient of variation, CV), which expresses standard deviation as a percentage of the mean, is generally useful in the comparison of three or more replicates (although it may be applied in the case of n = 2).

$$RSD = 100\ (s/\bar{X})$$

or

$$CV = 100\ (s/\bar{X})$$

where: RSD = relative standard deviation

CV = coefficient of variation

s = standard deviation

$\bar{X}$ = mean

In the case of duplicates, the RPD between the two samples may be used to estimate precision.

$$RPD = \frac{|D_1 - D_2|}{(D_1 + D_2)/2} \times 100$$

where: RPD = relative percent difference

D_1 = first sample value

D_2 = second sample value (duplicate)

Accuracy is a determination of how close the measurement is to the true value. Accuracy can be assessed using LCS, standard reference materials, or spiked environmental samples. Unless specified otherwise in special contracts, Enseco monitors accuracy by comparing LCS results with control limits established at plus or minus three standard deviation units from the mean of historical LCS results.

The determination of the accuracy of a measurement requires a knowledge of the true or accepted value for the signal being measured. Accuracy may be calculated in terms of percent recovery as follows:

$$\text{Percent Recovery} = \frac{X}{T} \times 100$$

where: X = the observed value of measurement

T = "true" value

Representativeness is the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Analytical data should represent the sample analyzed regardless of the heterogeneity of the original sample matrix. Enseco strives to accommodate all sample matrices. Some samples may require analysis of multiple phases to obtain representative results.

Completeness is a measure of the amount of valid data obtained from a measurement system compared with the amount that was expected to be obtained under normal conditions.

To be considered complete, the data set must contain all QC check analyses verifying precision and accuracy for the analytical protocol. In addition, all data are reviewed in terms of stated goals in order to determine if the database is sufficient.

When possible, the percent completeness for each set of samples is calculated as follows:

$$\text{Completeness} = \frac{\text{valid data obtained}}{\text{total data planned}} \times 100\%$$

Comparability expresses the confidence with which one data set can be compared to another data set measuring the same property. Comparability is ensured through the use of established and approved analytical methods, consistency in the basis of analysis (wet weight, volume, etc.), consistency in reporting units (ppm, ppb, etc.), and analysis of standard reference materials.

Reporting Limits

Assuring the validity of quantitative measurements at low concentrations is an extremely difficult technical problem. With regulatory action

levels being pushed lower and lower, the validity of any given measurement becomes even more important. The consequences of false positive or false negative data can be significant.

A number of terms have been used, by the EPA and other technical groups. to express the lowest concentration of an analyte which can be measured. Some of these terms, their definitions, and sources are listed in Table 14-1. A graphical representation of these terms is given in Figure 14-1.

Enseco takes very seriously its responsibility to report technically defensible data. Therefore, we have established a Reporting Limit (RL) for each analyte in each method. The RL represents the value above which we believe reliable data can be routinely obtained.

These Reporting Limits were established by collecting Method Detection Limit (MDL) data for organic analyses and Instrument Detection Limit (IDL) data for metals analyses from each Enseco laboratory. The MDL data were collected using the procedures described in 40CFR136 Appendix B. IDL data were calculated using the procedures outlined in the EPA Contract Laboratory Program (CLP) Statement of Work dated 12/87. The MDL/IDL data were then compared to various limits published in EPA methods and in the regulations. For example for Volatile Organics, the MDL data generated in Enseco laboratories were compared to the Practical Quantitation Limits (PQLs) published in SW-846 method 8240; the PQLs contained in the July 9, 1987, Federal Register Final Rulemaking on Appendix IX; the Contract Required Detection Limits (CRDLs) in the CLP Method for Volatile Organics; and the MDLs in Method 624. Then a Reporting Limit for each analyte was established which considered all of this information. The RL was set at a level above which we were confident that our laboratories could detect and quantify the analyte consistently. Using this procedure, the Reporting Limits established are generally between 2 to 5 times the laboratory MDL/IDL. This range is consistent with the American Chemical Society definition for the Limit of Quantitation (LOQ). (See Table 14-1)

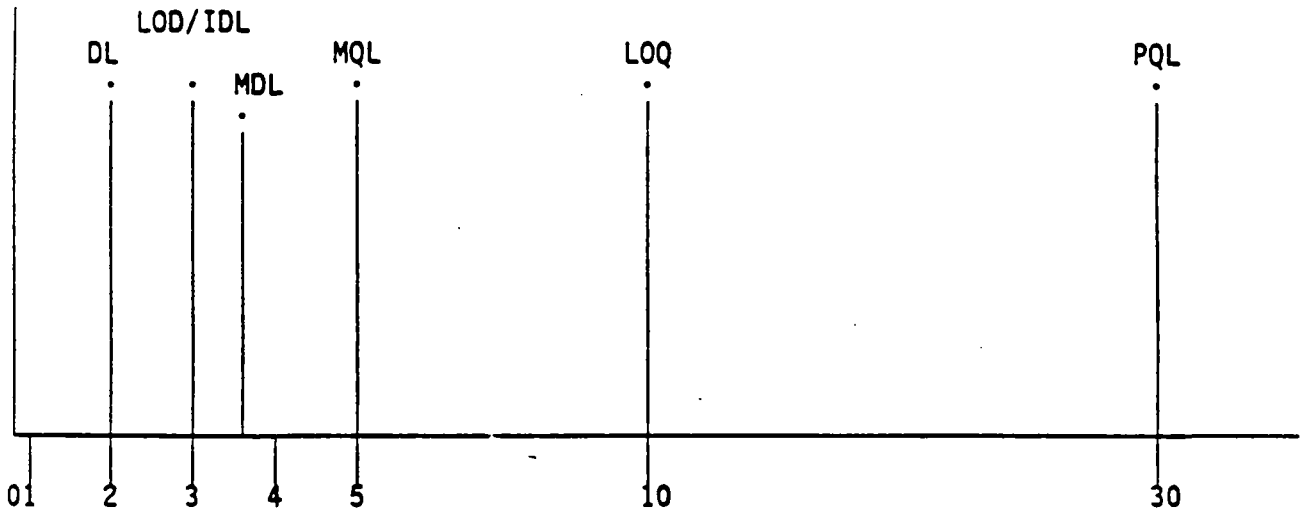
TABLE 14-1

DEFINITION OF DETECTION LIMIT TERMS

	DEFINITION	DETERMINATION	CALCULATION	SOURCE
Detection Limit (DL)	The concentration which is distinctly detectable above, but close to a blank.	Analysis of replicate standards	Two times the standard deviation	Methods for Chemical Analysis of Water and Wastes
Limit of Detection (LOD)	The lowest concentration that can be determined to be statistically different from a blank	Analysis of replicate samples	Three times the standard deviation	ACS Definition
Method Detection Limit (MDL)	The minimum concentration of a substance that can be identified, measured and reported with 99% confidence that the analyte concentration is greater than zero.	Analysis of a minimum of seven replicates spiked at 1 to 5 times the expected detection limit.	The standard deviation times the Student t-value at the desired confidence level. (For seven replicates, the value is 3.14)	40 CFR 136 Definition for EPA Water Programs
Instrument Detection Limit (IDL)	The smallest signal above background noise that an instrument can detect reliably.	Analysis of three replicate standards at concentrations of 3-5 times the detection limit.	Three times the standard deviation	Contract Laboratory Program
Method Quantitation Limit (MQL)	The minimum concentration of a substance that can be measured and reported	Analysis of replicate samples	Five times the standard deviation	SW-846
Limit of Quantitation (LOQ)	The level above which quantitative results may be obtained with a specified degree of confidence	Analysis of replicate samples	Ten times the standard deviation	ACS Definition
Practical Quantitation Limit (PQL)	The lowest level that can be reliably determined within specified limits of precision and accuracy during routine laboratory operating conditions	Interlaboratory analysis of check samples	1) Ten times the MDL 2) Value where 80% of laboratories are within 20% of the true value	RCRA SDWA Programs
Contract Required Detection Limit (CRDL)	Reporting limit specified for laboratories under contract to the EPA for Superfund activities	Unknown	Unknown	Contract Laboratory Program

FIGURE 14-1

Graphical Representation of Detection Limit Terms
(See Table 14-1 for Definitions)



MULTIPLIER OF STANDARD DEVIATION OF REPLICATES

NOTE: The values along the horizontal "Standard Deviation (SD)" axis are approximate values and are meant to show the relative, not absolute, relationship between the terms.

15. CORRECTIVE ACTION

When errors, deficiencies, or out-of-control situations exist, the QA program provides systematic procedures, called "corrective actions," to resolve problems and restore proper functioning to the analytical system.

Laboratory personnel are alerted that corrective actions may be necessary if:

- QC data are outside the acceptable windows for precision and accuracy;
- Blanks, DCS or SCS contain contaminants above acceptable levels;
- Undesirable trends are detected in spike recoveries or RPD between duplicates;
- There are unusual changes in detection limits;
- Deficiencies are detected by the QA department during internal or external audits or from the results of performance evaluation samples; or
- Inquiries concerning data quality are received from clients.

Corrective action procedures are often handled at the bench level by the analyst, who reviews the preparation or extraction procedure for possible errors, checks the instrument calibration, spike and calibration mixes, instrument sensitivity, and so on. If the problem persists or cannot be identified, the matter is referred to the laboratory supervisor, manager and/or QA department for further investigation. Once resolved, full documentation of the corrective action procedure is filed with the QA department. Corrective action documentation is routinely reviewed by the VP of QA.

16. QA REPORTS TO MANAGEMENT

The reporting system is a valuable tool for measuring the overall effectiveness of the QA program. It serves as an instrument for evaluating the program design, identifying problems and trends, and planning for future needs. Divisional QA Directors submit extensive monthly reports to the VP of QA and the Divisional Director. These reports include:

- The results of internal systems audits including any corrective actions taken;
- Performance evaluation scores and commentaries;
- Results of site visits and audits by regulatory agencies and clients;
- Performance on major contracts, (including CLP);
- Problems encountered and corrective actions taken;
- Holding time violations;
- Comments and recommendations; and
- A summary of the 5% QA data audits conducted.

The VP of QA submits weekly reports to the CEO and regularly reports on the status of the QA Program to the Enseco Management Committee and each Divisional Director. These reports summarize the information gathered through the laboratory reporting system and contain a thorough review and evaluation of laboratory operations throughout Enseco.

17. LABORATORY DOCUMENTATION

Complete and accurate documentation of analytical and procedural information is an important part of the QA program. The following describes different types of documentation used in the Enseco laboratories.

SOPs

Details of analytical and QC protocols are contained in SOPs. SOPs are documents that contain detailed information on the requirements for the correct performance of a laboratory procedure. Enseco has four categories of laboratory SOPs:

- SOPs for Performance of an Analytical Method;
- SOPs for Preparation of Standards and Reagents;
- SOPs for Equipment Operation, Calibration, and Maintenance; and
- SOPs for General Laboratory Procedures.

The formats for these SOP'S are given in Appendix II.

All SOP'S are approved by the QA Department before being implemented. The distribution of current SOP'S and archiving of outdated ones is controlled through the QA Department.

LIMS

Enseco laboratories rely on a customized Laboratory Information Management System (LIMS) as the primary database. Client information, sample results, and QC results are all stored in the LIMS. Reports are generated directly from the database to eliminate transcription errors. A tiered security system is in place to control the ability of lab personnel to change results, and the system is designed with an audit

trail that identifies when information has been changed and who changed it. The most recent two to three months of analytical data are kept on-line. All other data are archived on magnetic tape or optical disk.

Laboratory Bench Sheets

Laboratory bench sheets are used to document information from routine laboratory operations, including sample preparation and analysis. Bench sheets are used to ensure that the information is recorded in a complete and organized manner and that the analysis can be reconstructed, if necessary. Portions of information from the bench sheet are also stored in the LIMS.

Laboratory Notebooks

Laboratory notebooks are used to document information that cannot easily be recorded in the LIMS. Information typically recorded in laboratory notebooks includes unusual observations or occurrences in the analysis of samples, or methods development information. Each page in a laboratory notebook is initialed and dated as information is entered.

Control Charts

Enseco laboratories use control charts, generated directly from the LIMS, to visually track the LCS precision and accuracy data. These control charts are used to identify trends in the analyses which may indicate a problem with the analytical procedure. When an adverse trend is detected, as specified in the SOP for generating and interpreting control charts, analysis is stopped and corrective action undertaken.

Anomaly Forms

Any situation which is outside of the normal scope of operations, as described in the laboratory SOPs, is documented on an Anomaly Form.

Examples of anomalous situation include: formation of a precipitate in an extract; formation of an emulsion during an extraction step; or missed holding times. These situations are thoroughly documented to enable a thorough review of the data to occur.

Out-of-Control situations are also documented on Anomaly Forms. An Out-of-Control situation occurs when QC data fall outside of established control limits. The documentation associated with and Out-of-Control situation is reviewed by the supervisor and the QA Department. Out-of-Control situations trigger Corrective Action. Corrective Actions taken are also documented on the Anomaly Form.

Project Files

A project file is created for each project handled within the laboratory. The project file contains all documents associated with the project. This includes correspondence from the client, chain-of-custody records, raw data, copies of laboratory notebook entries pertaining to the project, and a copy of the final report. When a project is complete, all records are passed to the Document Custodian who inventories the file, checks for completeness, and puts the file into document archive.

APPENDIX I

MAXIMUM HOLDING TIMES AND SAMPLE COLLECTION/PRESERVATION INFORMATION

Sources: Tables A-E:
Federal Register, October 26, 1984
SW-846, 3rd Edition, Update I
State of California Leaking Underground Fuel Tank Field Manual, May 1988

Table F:
Contract Laboratory Program Statement of Work for Organic Analysis dated 10/86
Contract Laboratory Program Statement of Work for Inorganic Analysis dated 12/87

A. VOLATILE ORGANICS

Matrix	Container	Minimum Sample Size	Preservative	Holding Time (From Date Sampled)
Water Samples				
No Residual Chlorine Present	3 40 mL vials with Teflon lined septum caps	40 mL	4 drops conc. HCl, 4°C	14 days
Residual Chlorine Present	3 40 mL vials with Teflon lined septum caps	40 mL	4 drops of 10% sodium thiosulfate, 4 drops conc. HCl, 4°C	14 days
Acrolein and Acrylonitrile	3 40 mL vials with Teflon lined septum caps	40 mL	Adjust to pH 4-5, 4°C	14 days
Soil/Sediments and Sludges	Glass jar with Teflon liner or core tube	10 g	4°C	14 days
Concentrated Waste Samples	Glass jar with Teflon liner or core tube	10 g	None	14 days

The above information applies to the following parameters and methods:

Parameter	Method
Volatile Halocarbons	601/8010 (GC)
Volatile Aromatics	602/8020 (GC)
Volatile Organics	624/8240/8260 (GC/MS)
Acrolein/Acrylonitrile	603/8030 (GC)

B. SEMIVOLATILE ORGANICS

Matrix	Container	Minimum Sample Size	Preservative	Holding Time (From Date Sampled)
Water Samples				
No Residual Chlorine Present	1 liter glass with Teflon liner	1 liter	4°C	Samples must be extracted within 7 days and analyzed within 40 days of extraction.
Residual Chlorine Present	1 liter glass with Teflon liner	1 liter	Add 3 mL 10% sodium thiosulfate per gallon, 4°C	Samples must be extracted within 7 days and analyzed within 40 days of extraction.
Soil/Sediments and Sludges	Glass jar with Teflon liner or core tube	50 g	4°C	Samples must be extracted within 14 days and analyzed within 40 days of extraction.
Concentrated Waste Samples	Glass jar with Teflon liner or core tube	50 g	None	Samples must be extracted within 14 days and analyzed within 40 days of extraction.

The above information applies to the following parameters and methods:

Parameter	Method
Phenols	604/8040 (GC)
Phthalate Esters	606/8060 (GC)
Organochlorine Pesticides/PCBs	608/8080 (GC)
Polyaromaltic Hydrocarbons	610/8310 (HPLC)
Organophosphate Pesticides	614/8140 (GC)
Phenoxy acid Herbicides	615/8150 (GC)
Semivolatile Organics	625/8270 (GC/MS)
Carbamate & Urea Pesticides	632 (HPLC)

C. OTHER ORGANICS

Parameter	Method No.	Matrix	Holding Time[a] (from Date Sampled)	Container	Preservative	Min. Sample Size
Dioxins/Furans	8280	Water	30 days extn. 45 days anal.[b]	One liter glass	4°C	1000 ml
		Soil/Waste	30 days extn. 45 days anal.[b]	core tube or glass jar	4°C	50 g
Petroleum Hydrocarbons as Gasoline	TPH-Gasoline Purge & Trap (LUFT manual)	Water	14 days	3 40 mL vials with Teflon liners	4°C, HCl to pH < 2	40 mL
		Soil/Waste	14 days	Core tube or glass jar	4°C	50 g
Petroleum Hydrocarbons as Gasoline	TPH-Gasoline Extractable (LUFT manual)	Water	14 days extn. 40 days anal.	One liter glass	4°C, HCl to pH < 2	500 mL
		Soil/Waste	14 days extn. 40 days anal.	Core tube or glass jar	4°C	50 g
Petroleum Hydrocarbons as Diesel	TPH-Diesel Extractable (LUFT manual)	Water	14 days extn. 40 days anal.	One liter glass	4°C	500 mL
		Soil/Waste	14 days extn. 40 days anal.	Core tube or glass jar	4°C	50 g
Petroleum Hydrocarbons (TPH)	TPH-IR (418.1)	Water	28 days	One liter glass	4°C, H_2SO_4 to pH < 2	1000 mL

(a) extn: extraction anal: analysis
(b) from date of collection

D. METALS

Parameter	Method No.	Matrix	Holding Time (from Date Sampled)	Container	Preservative[a]	Min. Sample Size
Metals (ICP)	200.7/6010	Water	6 months	Poly	HNO_3 to pH < 2.0	100 ml
		Soil/Waste	6 months	core tube/glass jar	4°C	10 g
Arsenic (GF-AA)	206.2/7060	Water	6 months	Poly	HNO_3 to pH < 2.0	100 ml
		Soil/Waste	6 months	core tube/glass jar	4°C	10 g
Mercury (CV-AA)	245.1/7470	Water	28 days	Poly	HNO_3 to pH < 2.0	100 ml
		Soil/Waste	28 days	core tube/glass jar	4°C	10 g
Selenium (GF-AA)	270.2/7740	Water	6 months	Poly	HNO_3 to pH < 2.0	100 ml
		Soil/Waste	6 months	core tube/glass jar	4°C	10 g
Thallium (GF-AA)	279.2/7841	Water	6 months	Poly	HNO_3 to pH < 2.0	100 ml
		Soil/Waste	6 months	core tube/glass jar	4°C	10 g
Lead (GF-AA)	239.2/7421	Water	6 months	Poly	HNO_3 to pH < 2.0	100 ml
		Soil/Waste	6 months	core tube/glass jar	4°C	10 g
Chromium (III/VI)	220.7/218.4/ 312B/7197	Water	24 hours	Poly	4°C	100 ml
		Soil/Waste	24 hours extn. [b]	core tube/glass jar	4°C	10 g
Silica	200.7/6010	Water	28 days	Poly	4°C	100 ml
		Soil/Waste	28 days	core tube/glass jar	4°C	10 g

(a) Listed preservative is for total metals. Dissolved or suspended metals require filtration prior to pH adjustment.
(b) extn: extraction

E. CONVENTIONALS

Parameter	Method No.	Matrix	Holding Time[a] (from Date Sampled)	Container	Preservative	Min. Sample Size
Color	110.2	Water	48 hours	Poly	4°C	100 ml
Oil and Grease	413.1/ 413.2	Water	28 days	Glass	4°C, H_2SO_4 to pH < 2	1000 ml
Specific Conductance	120.1	Water	28 days	Poly	4°C	50 ml
Acidity	305.1	Water	14 days	Poly	4°C	50 ml
pH	150.1	Water	ASAP	Poly	4°C	50 ml
Alkalinity	310.1	Water	14 days	Poly	4°C	50 ml
Hardness	200.7/ 314A/314B	Water	6 months	Poly	HNO_3 to pH < 2	50 ml
Biochemical Oxygen Demand	405.1	Water	48 hours	Poly	4°C	200 ml
Chemical Oxygen Demand	410.4	Water	28 days	Glass	4°C, H_2SO_4 to pH < 2	100 ml
Organic Carbon (TOC)	415.1	Water	28 days	Glass	4°C, H_2SO_4 to pH < 2	100 ml

C. CONVENTIONALS (Cont.)

Parameter	Method No.	Matrix	Holding Time[a] (from Date Sampled)	Container	Preservative	Min. Sample Size
Orthophosphate	365.3	Water	48 hours	Poly	4°C	100 ml
Total Phosphorus	365.3	Water	28 days	Glass	H_2SO_4 to pH < 2	100 ml
Total Kjeldahl Nitrogen	351.2	Water	28 days	Glass	4°C, H_2SO_4 to pH < 2	100 ml
Ammonia	350.1	Water	28 days	Glass	4°C, H_2SO_4 to pH < 2	50 ml
Nitrite	354.1	Water	48 hours	Poly	4°C	50 ml
Nitrate	353.2/300.0	Water	48 hours	Poly	4°C	50 ml
Nitrite plus Nitrate	353.2	Water	28 days	Glass	4°C, H_2SO_4 to pH < 2	50 ml
Total Solids	160.3	Water	7 days	Poly	4°C	100 ml
Total Suspended Solids	160.2	Water	7 days	Poly	4°C	100 ml
Total Dissolved Solids	160.1	Water	7 days	Poly	4°C	100 ml

C. CONVENTIONALS (Cont.)

Parameter	Method No.	Matrix	Holding Time[a] (from Date Sampled)	Container	Preservative	Min. Sample Size
Total Volatile Solids	160.4	Water	7 days	Poly	4°C	100 ml
Turbidity	180.1	Water	48 hours	Poly	4°C	50 ml
Sulfate	300.0	Water	28 days	Poly	4°C	50 ml
Sulfite	377.1	Water	ASAP	Poly	4°C	100 ml
Sulfide	376.2	Water	7 days	Poly	4°C, NaOH to pH > 9 $Zn(C_2H_3O_3)2$	100 ml
Cyanide	335.1/ 335.2/335.3	Water	14 days	Poly	4°C, NaOH to pH > 12	250 ml
Coliform, Total & Fecal	909A/ 909C	Water	6 hours	Sterile poly	4°C, $Na_2S_2O_3$	100 ml
Bromide	Dionex	Water	28 days	Poly	4°C	50 ml
Chloride	300.0	Water	28 days	Poly	4°C	50 ml
Chlorine, residual	330.1	Water	ASAP	Poly	4°C	100 ml

C. CONVENTIONALS (Cont.)

Parameter	Method No.	Matrix	Holding Time[a] (from Date Sampled)	Container	Preservative	Min. Sample Size
Fluoride	340.2	Water	28 days	Poly	4°C	50 ml
Iodide	Dionex	Water	28 days	Poly	4°C	50 ml
Organic Halogen (TOX)	9020	Water	28 days	Glass	4°C, H_2SO_4 to pH < 2	200 ml
Phenolics	420.1/ 420.2	Water	28 days	Glass	4°C, H_2SO_4 to ph < 2	100 ml
Surfactants (MBAS)	425.1	Water	48 hours	Poly	4°C	100 ml
Gross Alpha, Beta and Radium	9310/ 9315	Water	6 months	Poly	HNO_3 to ph < 2	2000 ml
Odor	140.1	Water	ASAP	Glass	4°C	1000 mL

a) Parameters with holding times of 24 hours or less are analyzed on the day of receipt in the laboratory. Parameters with holding times between 24 and 48 hours are analyzed within one day of receipt in the laboratory.

F. CLP HOLDING TIMES

Parameter	Matrix	Holding Time[a] (from Date Received)	Container	Preservative	Min. Sample Size
Volatile Organics	Water	10 days	2 40 mL vials with Teflon lined caps	4°C	40 mL
	Soil	10 days	Glass jar with Teflon liner or core tube	4°C	10 g
Extractable Organics	Water	5 days extn. 40 days anal.	1 liter glass with Teflon liner	4°C	1000 mL
	Soil	10 days extn. 40 days anal.	Glass jar with Teflon liner or core tube	4°C	50 g
Metals (other than Mercury)	Water	180 days	P,G [b]	HNO_3 to pH < 2	100 mL
	Soil	180 days	P,G	4°C	10 g
Mercury	Water	26 days	P,G	HNO_3 to pH < 2	100 mL
	Soil	26 days	P,G	4°C	10 g
Cyanide	Water	14 days	P,G	0.6 g ascorbic acid,[c] NaOH to pH >12, 4°C	100 mL
	Soil	14 days	P,G	4°C	10 g

(a) Holding times calculated from date of receipt in laboratory
(b) Polyethylene (P) or glass (G)
(c) Only used in the presence of residual chlorine

APPENDIX II

FORMATS FOR STANDARD OPERATING PROCEDURES (SOP)

FORMAT FOR SOP - LABORATORY, ANALYTICAL METHOD

Title (includes method number)

1. Scope and Application
   - 1.1 Analytes
   - 1.2 Detection limit (instrument and method)
   - 1.3 Applicable matrices
   - 1.4 Dynamic range
   - 1.5 Approximate analytical time (i.e., 5 minutes, 2 days)

2. Summary of Method
   - 2.1 Generic description of method and chemistry behind it (i.e., extract with solvent, convert to methyl ester, analyze by electron-capture gas chromatography)

3. Comments
   - 3.1 Interferences
   - 3.2 Helpful hints

4. Safety Issues (specific to the method)

5. Sample Collection, Preservation, Containers, and Holding Times

6. Apparatus

7. Reagents and Standards

8. Procedure (detailed step-by-step)
   - 8.1 Sample preparation
   - 8.2 Calibration
   - 8.3 Analysis

FORMAT FOR SOP - LABORATORY, ANALYTICAL METHOD (cont.)

9. QA/QC Requirements

   9.1 QC samples

   9.2 Acceptance criteria (precision and accuracy, % of multi-component QC analytes which must be within windows)

   9.3 Corrective action required (reference current QC manual)

10. Calculations

11. Reporting

   11.1 Reporting units

   11.2 Reporting limits

   11.3 Significant figures and reporting values below detection limit

   11.4 LIMS data entry

12. References

   12.1 Method source

   12.2 Deviations from source method and rationale

FORMAT FOR SOP - LABORATORY, STANDARDS AND REAGENTS

Title

1. Reagent/Standard Name

2. Type (reagent, calibration standard, DCS, SCS, stock solution, etc.)

3. Constituents/concentration

4. Solvent

5. Safety Issues (specific to the reagent or standard)

6. Shelf Life

7. Procedure

   7.1 Preparation
   7.2 Documentation (purchase date, open date, labeling, etc.)
   7.3 Verification

FORMAT FOR SOP - LABORATORY, EQUIPMENT OPERATION, CALIBRATION, AND MAINTENANCE

Title

1. Purpose

2. Safety Issues (applicable to the specific equipment)

3. Procedure

   3.1 Initial start-up
   3.2 Calibration and performance documentation
   3.3 Example output
   3.4 Shut-down
   3.5 Maintenance and maintenance records

4. Responsibilities

5. Comments

6. Definitions

FORMAT FOR SOP - LABORATORY, PROCEDURAL

Title

1. Purpose

2. Policies

3. Safety Issues

4. Procedure

5. Responsibilities

6. Comments

7. Definitions

2166-04744

SECTION 2

FACILITY BACKGROUND INFORMATION

DIVISIONAL INFORMATION

Name of Division: HR TEXTRON, INC.

Divisional Environmental Coordinator: JEFF WHEELER

FACILITY INFORMATION

Name: HR TEXTRON INC Date: MAY, 1990

Location: PACOIMA, CA. Bldg: 2, 3, 4, 5, 6

Telephone: (818) 896-2411 Telecopier:

Primary Plant Environmental Coordinator:

CHUCK YOUNGJOHN Title: MAINT. PLANNER

Backup Plant Environmental Coordinator:

TOM SWIGER Title: MAINT. MGR

Products: AEROSPACE FLIGHT CONTROLS

3728, 3769, 3494, 3622

SIC Codes:

Employees:

No. of Hourly: 193 No. of Salaried: 138

Building Data:

Building No.:	2	Square feet 33,325
Building No.:	3	Square feet 51,345
Building No.:	4	Square feet 12,000
	5	12,240
	6	3,775

Property Area: 4.27 Acres

2 & 3 45 % Covered by building 4, 5, & 6

54 % Paved

3.31 ACRES
19% cov. By Bldg.
80% PAVED

350111

C/O MELLON BANK
351 CALIFORNIA STREET
SAN FRANCISCO, CA. 94104

EVANS AND SUTHERLAND
1031 N. FAIROAKS
SUNNYVALE, CA. 94089

Owner: WILLIAM TOLSON, 999 GREEN STREET #1001, SAN FRANCISCO, CA. 94133 (2 & 3) / JEAN W. BLOMBERG, 2386 SADDLEBACK DRIVE, DANVILLE, CA. 94506 (Bldg. 4, 5 & 6 SUNSTRAND)

If leased, specify term: 9/30/2006 (2 & 3) / 9/30/2006 (4, 5, & 6)

Other tenants, if applicable:

Description of land use in vicinity of facility: COMMERCIAL, INDUSTRIAL, RESIDENTIAL, RECREATIONAL

Provide a map, layout or plot plan (preferably, 8-1/2 x 11" or 11 x 14") that shows facility boundaries, surrounding land use, and major transportation routes. On the map provided above or another plan, show the configuration of the facility. Label all buildings and process areas. Identify areas where chemicals are used or stored. Include significant topographical features, e.g., rivers, lakes, etc.

Provide a USGS map with the plant boundaries sketched in (Note: USGS maps are required for RCRA and NPDES Permits, 1" = 1,000' scale). If not depicted on the map, provide distances to major population centers, other industrial facilities (label and identify type of operation), and significant public buildings, e.g., schools and hospitals.

Number of years Textron has operated the facility: 24

Number of years facility has operated in current configuration: 24

Description and date of major reconstruction projects: N/A

Prior uses of facility property (try to reconstruct usage back to when property was virgin land): BLDG. 2 BUILT AROUND 1953, IN 1940S PART OF PROPERTY POSSIBLY WAS A SANITARY LANDFILL. PRIOR TO DEVELOPMENT IT WAS PART OF A ALUVIAL PLAIN

Identify prior owners and operators and dates of ownership/operation.

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Are there any environmentally sensitive areas (e.g., parks, subdivisions, agricultural areas) near the plant? HANSEN DAM RECREATIONAL PARK, GOLF COURSE, APARTMENT BUILDINGS, MOBILE HOME PARK

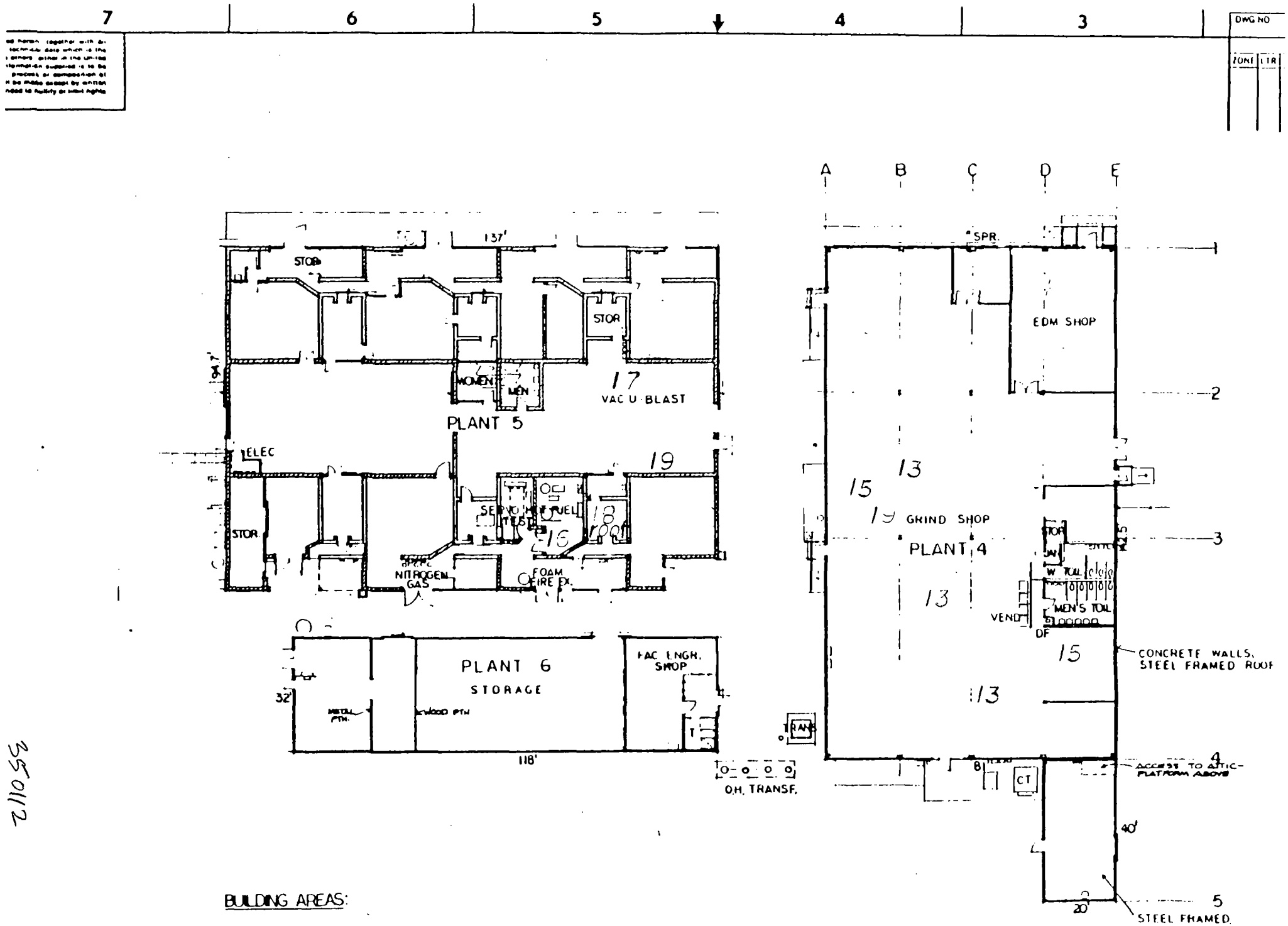
Please make an effort to obtain aerial photographs. These can be obtained from the library, public works, airport, weather service, or city hall.

Describe, in general terms, current manufacturing and other operations conducted at the facility. Locate these processes on the facility plan. Use chemical family descriptions to describe broad categories of chemicals (i.e., acids, bases, oxidizers, solvents, etc.)

	Location Bldg No./Production Area		Process	Production Rate	Raw Materials
	1	Plastics	Injection Molding	2,000 lbs/day	PVC/Solvents
	10	Plating	Wastewater Treatment	10,000 gph	Lime/Wastewater
①	2	FUEL & PNEUMATICS	HYDRAULIC TESTING		HYDRAULIC OIL 5606
②	2	FUEL & PNEUMATIC'S	HIGH FLOW FUEL TESTING		STODDARD SOLVENT
③	2	SPRAY BOOTH	PARTS MARKING		INK
④	2	FUEL & PNEUMATIC'S A&T	PARTS CLEANING		FREON
⑤	3	MACHINE SHOP	MACHINING PARTS		STEEL CUTTING OIL ALUMINUM CUTTING OIL SOLUBLE CUTTING OIL
⑥	3	DEBURR	VAPOR DEGREASING		111 TRICHLOROETHANE
⑦	3	PASSIVATE/DEBURR	PASSIVATION	(SODIUM HYDROXIDE)	NITRIC ACID SODIUM DICHROMATE OAKITE 126
⑧	3	THROUGHOUT MACHINE SHOP	RUST PREVENTIVE		MOBILARMA 245 PREVENTIVE OIL
⑨	3	NDT, PARTS CLEANING	VAPOR DEGREASING		111 TRICHLOROETHANE
⑩	3	NDT, PARTS CHECKING	PARTS CHECKING		LIQUID PENETRANT OIL
⑪	3	NDT,	PARTS CLEANING		TYPE 102 DEOXIDIZER NITRIC ACID
⑫	2	BLUEPRINT Rm.	BLUEPRINTING		AMMONIA AMMONIUM

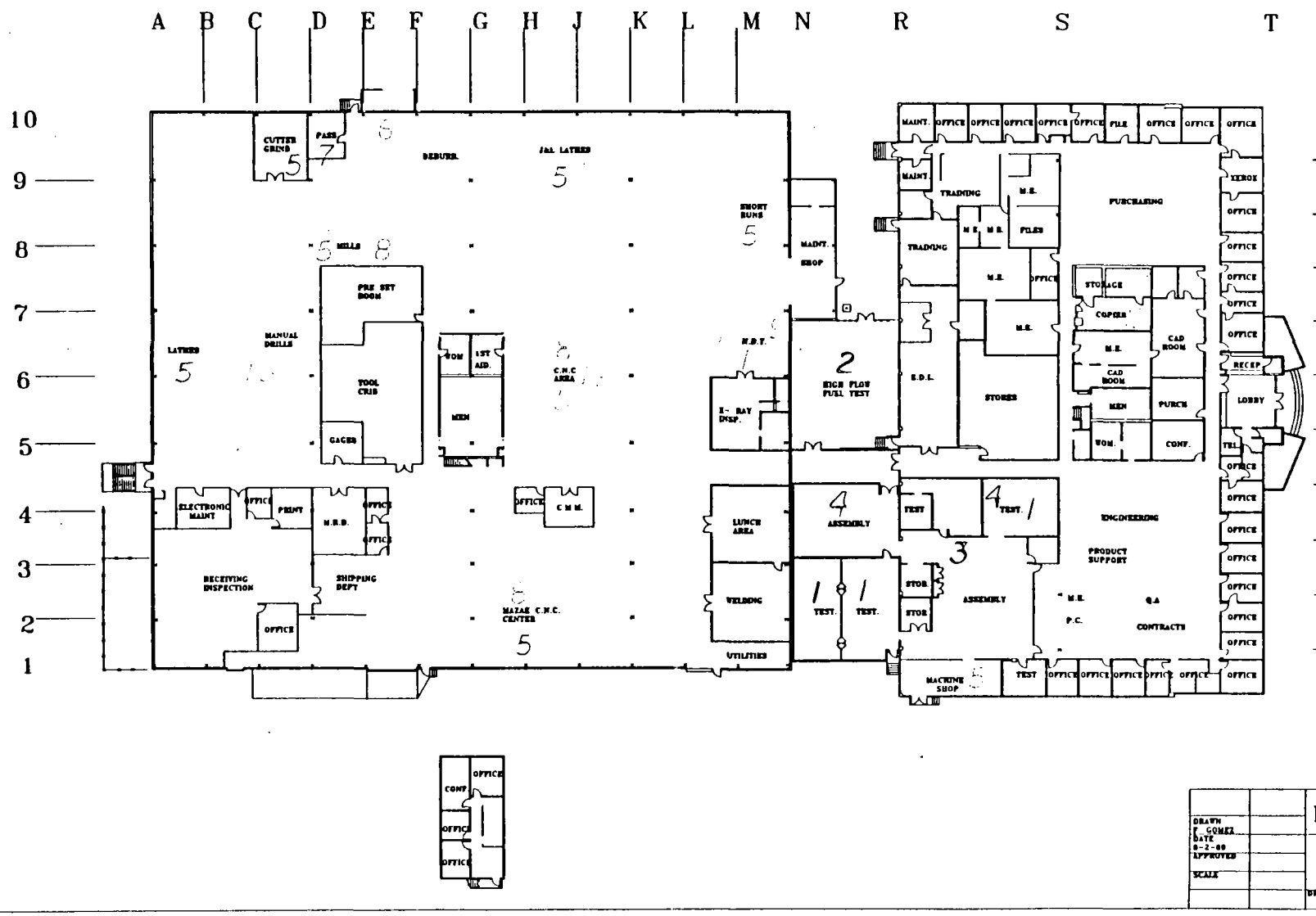
Describe, in general terms, current manufacturing and other operations conducted at the facility. Locate these processes on the facility plan. Use chemical family descriptions to describe broad categories of chemicals (i.e., acids, bases, oxidizers, solvents, etc.)

	Location Bldg No./Production Area		Process	Production Rate	Raw Materials
	1	Plastics	Injection Molding	2,000 lbs/day	PVC/Solvents
	10	Plating	Wastewater Treatment	10,000 gph	Lime/Wastewater
(13)	4	GRIND	PERCISION GRINDING		GRIND OIL
(14)	4	EDM	ELECTRIC DISCHARGE MACHINING		DIELECTRIC OIL
(15)	4	HONE	HONING OF PARTS		HONE OIL
(16)	5	HOT FUEL TEST	HOT FUEL FLOW TEST OF PARTS		JP-5
(17)	5	DEBURR	SAND BLASTING TO DEBURR PARTS		
(18)	5	HOT FUEL TEST	COOLING TOWER FOR HOT FUEL		WATER SANACOR 2569
(19)	3,4,5	THROUGHOUT SHOP	PARTS CLEANING		STODDARD SOLVENT



BUILDING AREAS:

350112



DRAWN	F. GOMEZ
DATE	6-2-88
APPROVED	
SCALE	
DRAWING NO	PE-P-2/3-014

HR TEXTRON

PACOIMA FACILITIES
PLANTS 2&3

350113

PACOIMA

SECTION 3

CORPORATE POLICY AND PROCEDURES

Introduction

Overview: Textron has developed several corporate policies and procedures relating to environmental protection, compliance and responsibilities. In addition to policy statements included in Textron's Management Guide and its Business Conduct Guidelines, specifically Guideline E-6, Textron has policies relating to the following:

- Notifying Corporate Legal Department of Claims;
- Responding to Government Requests for Information;
- Reporting Spills and Discharges;
- Assessing environmental exposure of potential acquisitions and leases;
- Minimizing Waste; and
- Completing Textron's Environmental Self-Survey (TESS).

Extracts of the relevant portions of Textron's Management Guide and Business Conduct Guideline E-6 and other policies and procedures may be found in Textron's "Guide for the Environmental Coordinator." If you do not have a copy of this guide, you should contact your Division Environmental Coordinator.

For your convenience, enclosed in this section is a copy of Corporate policy regarding completion of Textron's Environmental Self-Survey.

SECTION 3

CORPORATE POLICY AND PROCEDURES

Guidance

1. Copies of all policies may be obtained by contacting your Division Environmental Coordinator.

SECTION 3

CORPORATE POLICY AND PROCEDURES

Survey Questions

		Yes	No	Unk	N/A
1.	Does the Plant Environmental Coordinator maintain copies of all corporate environmental policies and procedures?	___	___	___	
2.	Is the Plant Environmental Coordinator familiar with the content of each policy?	___	___	___	
3.	Has each policy been effectively distributed and/or communicated throughout the facility?	___	___	___	
4.	Is the facility in compliance with all corporate environmental policies and procedures?	___	___	___	
	If not, identify the policy or policies that have not been complied with and provide details.				
5.	Does the facility conduct routine inspections or audits of its operations to ensure continued compliance with corporate environmental policies and procedures?	___	___	___	

TEXTRON

ENVIRONMENTAL COORDINATOR'S GUIDE	POLICIES/PROCEDURES

ENVIRONMENTAL SELF-ASSESSMENT

POLICY: Each Textron manufacturing facility is to annually conduct a comprehensive self assessment using Textron's Environmental Self Survey (TESS) to determine its status of compliance with applicable laws and regulations and company policies.

SCOPE: United States manufacturing operations

OBJECTIVES: The principle objective of the self-assessment is to assist Textron Divisions in identifying and correcting areas of non-compliance, potential noncompliance and other issues of concern. An important secondary objective is to assist in training of Division personnel working in the environmental area.

DISCUSSION: Compliance with applicable laws and regulations is the principle objective of Textron's Environmental Management Program and is primarily a Division/Plant responsibility. Because of the number, complexity and strictness of federal, state and local laws and regulations, the significant penalties for non-compliance and potentially significant cost related to poor environmental practices, the Company has decided to adopt a formal, structured Compliance Assurance Program.

The philosophy underlying this Program is that it is cost effective to know of and deal with compliance issues. A well planned and well executed TESS conducted by Division/Plant personnel may (1) keep personnel current with changing laws and regulations thereby facilitating compliance; (2) reduce the company's potential exposure to the civil and criminal liabilities associated with regulatory non-compliance; (3) help ascertain the accuracy of data reported to regulatory agencies and answer inquiries from third parties such as the media; and (4) identify waste minimization opportunities.

The requirement to update TESS annually is to help ensure that Textron Divisions not only maintain compliance with current laws and regulations, but achieve compliance with any future laws and/or regulations.

To bring a quality control mechanism to TESS and to provide a degree of independence to the compliance assurance program, the Corporate Environmental Affairs Department will conduct compliance audits of selected Divisions/Plants.

A. PRE-SURVEY PROCEDURES

1. By March 1 Textron's Corporate Environmental Affairs Department will revise TESS based upon new laws and/or regulations, changes in Corporate policy and suggestions received from Divisions.

2. After March 1 of each year, the Corporate Environmental Affairs Department will meet with/or contact each Division Environmental Coordinator to develop the Division's yearly plan for completing the survey. The plan will define each "facility" in the Division (i.e. how many surveys will be completed for the Division), identify individuals responsible for completing the survey, indicate start and completion dates and include adaptations necessary for any facility.

3. Division Environmental Coordinators are responsible for distributing TESS to each manufacturing location, explaining survey changes from the prior year and developing a detailed schedule for completing the survey.

B. COMPLETING THE SURVEY AND CORRECTIVE ACTION PLAN (CAP)

1. For instructions on how to complete TESS and prepare the CAP, refer to Section 1 (INSTRUCTIONS) of the TESS manual.

C. POST SURVEY (FOLLOW-UP) PROCEDURES

1. Division Environmental Coordinators are responsible for the following:

   a. Reviewing the surveys, CAPS and transmittal letters for each facility and forwarding the Division and Facility letters and CAPs to the Corporate Office; and

   b. Conducting follow-ups to ensure corrective actions are implemented according to the timetable established in the CAP.

2. Division Contacts at the Corporate Environmental Affairs Department will follow-up with Division Environmental Coordinators to determine if corrective action is completed.

SECTION 4

FACILITY CHEMICAL USE

Introduction

Subsequent sections of this survey reference different types of chemicals including:

Toxic Chemicals;
Hazardous Chemicals;
Hazardous Substances; and
Extremely Hazardous Substances.

Toxic chemicals are regulated under Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA). Hazardous Chemicals are regulated under Sections 311 and 312 of EPCRA. Not all hazardous chemicals are toxic chemicals, but there is some overlap. Likewise, not all hazardous chemicals are hazardous substances. While this sounds confusing, one must be able to distinguish between the toxic and hazardous chemicals at his or her facility and know where there is an overlap in order to comply with the laws and regulations discussed in later sections of this survey.

Hence, one of the first steps in determining compliance is to identify all chemicals at the facility including the chemical constituents found in trade name products and raw materials. The best source for this information is your Material Safety Data Sheet (MSDS) which manufacturers and suppliers of chemicals are required to produce according to the federal OSHA Hazard Communication Standard. MSDSs should be updated as needed and often contain percentages of ingredients and Chemical Abstract Service (CAS) Registry names.

Computerizing the information included in an MSDS and keeping this database current will drastically reduce the amount of time required to comply with the reporting responsibilities of your facility.

SECTION 4

FACILITY CHEMICAL USE

Guidance

1. Before a facility can establish a chemical management and compliance program, it is important that the facility has identified all the chemicals (including the chemical constituents in raw materials and trade name products) it produces, uses or stores. Completing Attachment 4-1 will enable the facility to conduct a thorough review of its chemicals. This information will be needed to complete other sections of the self-survey which divide chemicals into regulatory classes (see specifically Section 14 - Emergency Planning and Community Right-To-Know).

SECTION 4

FACILITY CHEMICAL USE

Survey Questions

All facilities should complete this section.

	Yes	No	Unk	N/A
1. Has the facility inventoried all chemicals and chemical constituents at the site? If yes, please confirm that a copy of this inventory exists in your files. If no, complete Attachment 4-1.	X			

- Volatile organic liquid storage vessels (40,000-gallon)
- Secondary lead smelters
- Secondary brass and bronze production plants
- Basic oxygen process furnaces
- Sewage treatment plants
- Primary copper smelters
- Primary zinc smelters
- Primary lead smelters
- Primary aluminum reduction plants
- Wet-process phosphoric acid plants
- Superphosphoric acid plants
- Diammonium phosphate plants
- Triple superphosphate plants
- Granular triple superphosphate storage facilities
- Coal preparation plants
- Ferroalloy production facilities
- Electric arc furnaces
- Kraft pulp mills
- Glass manufacturing plants
- Grain elevators
- Surface coating of metal furniture
- Stationary gas turbines
- Lime manufacturing plants
- Lead-acid battery manufacturing plants
- Metallic mineral processing plants
- Automobile and light-duty truck surface coating operations
- Phosphate rock plants
- Ammonium sulfate manufacturers
- Publication rotogravure printing
- Pressure sensitive tape and label surface coating operations
- Industrial surface coating - Large appliances
- Metal coil surface coating
- Asphalt processing and roofing manufacturers
- Volatile Organic Compound equipment leaks in the synthetic organic chemicals manufacturing industry
- Beverage can surface coating industry
- Bulk gasoline terminals
- Rubber tire manufacturing industry
- Flexible vinyl and urethane coating and printing
- Equipment leaks of VOC in petroleum refineries
- Synthetic fiber production facilities
- Petroleum dry cleaners
- Onshore natural gas processing plants
- Nonmetallic mineral processing plants
- Wool fiberglass insulation manufacturing plants

National Emission Standards for Hazardous Air Pollutants (NESHAP): EPA has also regulated several pollutants which they have determined to be "hazardous" air pollutants. These pollutants are regulated under NESHAP. The NESHAPs which have been established to date apply to both new and existing sources and are somewhat source-specific.

The following pollutants are currently covered under the NESHAP regulations:

- Asbestos
- Benzene
- Beryllium
- Radon
- Mercury
- Radionuclides
- Vinyl Chloride

Because of problems associated with the development of implementing regulations for this provision of the Clean Air Act, it is unlikely that additional pollutants will be regulated. The proposed CAA Amendments contain specific air toxic requirements. Some states have their own air toxics policies and/or regulations.

The NESHAP regulations cover not only emission standards, but also cover source emission testing and reporting requirements. In addition, a standard which specifically applies to equipment leaks (fugitive emission sources) has also been established to check equipment utilized to control volatile hazardous air pollutants such as benzene (40 CFR 61.240-247). The following pieces of equipment are covered by this standard:

- Pumps
- Open-ended valves or lines
- Compressors
- Flanges and other connectors
- Pressure relief devices
- Product accumulator vessels

Monitoring: Monitoring of sources may be required under a number of different regulations including state-specific requirements, NSPS, and NESHAP. Source monitoring typically involves testing stack emissions to ensure that they comply with either opacity or concentration standards. Source monitoring may also be required for facilities under permit conditions or enforcement actions. Ambient air monitoring is sometimes required for new facilities, for facilities that are required to undertake ambient air monitoring as part of the permitting of a large source, or for sources emitting hazardous air pollutants.

In some cases, Continuous Emission Monitors (CEMs) may be required to provide a continuous record of compliance. CEMs are required primarily on new sources, but

may be required at older sources as a resolution to an enforcement action. Their use will increase.

Record Keeping: Record keeping may be required under state or federal regulations or permits and used to:

- Monitor emissions
- Monitor ambient air
- Demonstrate performance of pollution control equipment
- Verify CEM calibration testing

State Role: The Clean Air Act, more so than any other environmental law, was designed to be implemented by each state. Each state is responsible for setting the source standards for existing sources which will allow the state to comply with the NAAQS. The state's establish their methods for attaining the NAAQS by enacting regulations in the State Implementation Plan (SIP). These plans must be approved by EPA.

Once a state's SIP has been approved by EPA, it becomes a part of federal law. At the same time, the SIP is an independent part of the state's air pollution control regulations. These regulations vary from state to state and are the primary factors governing air emissions. Like federal regulations, SIPs can be amended from time to time and it is important to be aware of any changes which may occur. Changes to SIPs are published in the Federal Register.

State regulations specify the types of sources which must be permitted, emission standards, reporting requirements, and air pollution control which must be achieved. While the federal regulations cover some sources, the majority of all air emission sources are regulated by state regulations only.

For regulated air emissions from a source, states require that an air permit be obtained. Permits are typically required based upon amount or type of pollutant or air pollution control equipment and may be issued for an entire facility or for an individual source. Frequently, permits are required not only to operate a source (Permit to Operate or PTO) but also before construction (Permit to Construct or PTC) or installation (Permit to Install or PTI). If a PTI is required, it must be replaced with a PTO before operations begin. It is important to check state regulations to determine if a source needs an air permit(s) and what type of permit(s) are necessary.

States may also choose to regulate a greater number of pollutants as hazardous or toxic air pollutants. State regulations list those pollutants which are considered hazardous or toxic as well as emission limits and other requirements.

Enforcement: Requirements can, and will, be enforced by both the state and local and federal governments. Construction without a permit (new source, major modification) and non-compliance with regulations (control system maintenance) are the principal reasons for enforcement orders.

Specific examples:

- Be sure of the difference in the state and federal definitions for commencing construction. Ex., the construction of a storage building whose sole purpose is to support Prevention of Significant Deterioration (PSD) regulated emitting source prior to obtaining a Prevention of Significant Deterioration/New Source Review (PSD/NSR) permit could be a violation.

- Federal Notices of Violation (NOV) tend to lead to more immediate penalties and more stringent compliance schedules.

SECTION 5

AIR EMISSIONS

Guidance

Regulatory Authority:	The Clean Air Act; Corresponding State Statutes
Regulatory Citation:	40 CFR 50-87
Administering Agency:	U.S. Environmental Protection Agency; Corresponding State and Local Agencies

1.-2. Questions are self-explanatory.

SECTION 5

AIR EMISSIONS

Survey Questions

All facilities must complete this section.

			Yes	No	Unk	N/A
A.	**Background**					
1.	a.	If the facility has been subject to an inspection regarding air emissions issues during the last three years or since completion of the last survey, were any concerns or potential concerns uncovered?	X			
		If so, describe concerns and include copies of inspection reports or correspondence. INSPECTOR UNITED HR TO APP [illegible] STORAGE TANKS (SEE ATTACHED [illegible]				
	b.	Do any of the concerns or potential concerns uncovered in the inspection remain unresolved?				
2.	a.	Has the facility entered into any Consent Order, Settlement Agreement, Delayed Compliance Order, etc., with respect to air emissions? If so, describe and confirm that the facility has copies of all documents: _____ _____ _____				
	b.	If yes, has the facility complied with the terms of the Order?				

3. Point sources are specific emissions points such as stacks and discharges from air pollution control systems, while non-point sources are "fugitive" emission sources such as an unpaved road or valves or pump seals from which volatile organic compounds may be emitted. A listing of all air emission sources (including those which are not permitted) should be maintained by the site in order to provide a reference point for permitting requirements. A map or drawing indicating all of the emission points is also a good management practice.

4. See introduction.

5. See Introduction.

7. Sources which do not require operating permits because they were in place or "grandfathered" prior to the adoption of permit regulations may need to be registered with the state. Check with your state to verify if sources which are not permitted need to be registered.

NOTICE TO COMPLY

DATE OF INSPECTION: 4/19/89

NAME: HR Textron Inc.

ADDRESS: 10445 Glenoaks Blvd CITY: Pacoima

LOCATION-ADDRESS OF INSPECTION: 10445 Glenoaks Blvd I.D. #: 035135

CITY: Pacoima SECTOR: WD TELEPHONE #: (818)890-9349

YOU ARE DIRECTED TO COMPLY WITH

☒ CALIFORNIA HEALTH AND SAFETY CODE SECTION(S) 42303

☒ SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULES AND REGULATIONS, RULE(S) 407(1) 203(x)

FAILURE TO COMPLY WITH

☒ Section 42303 may result in the suspension of permits pursuant to Health and Safety Code Section 42304.

☒ Other sections of the Health and Safety Code or District Rules is punishable by the imposition of criminal or civil penalties provided by law.

TO COMPLY YOU ARE REQUIRED TO

- To apply for P/O on 3-500 gal oil storage tanks
- To initiate daily usage log on records for total coatings and solvents used per day - kept for 2 years

DUE DATE: 5/1/89

WHEN COMPLIANCE HAS BEEN ACHIEVED, PLEASE CALL THE UNDERSIGNED INSPECTOR AT THE TELEPHONE NUMBER LISTED BELOW.

SERVED TO: Tom Singer Date 4/19/89

TITLE: Maint Mgr BY: J Brown

TELEPHONE (714) (213) (818) 793-5969

No. C 14254

ENFORCEMENT DIVISION

SOURCE COPY

HR TEXTRON

INTEROFFICE COMMUNICATION

DATE: APRIL 25, 1989
TO: W.C. MOSES
FROM: T. SWIGER
SUBJECT: PUBLIC AGENCY (SCAQMD)

Jeff Brown from the South Coast Air Quality Management District, (SCAQMD) visited the Pacoima facility on April 19, 1989, to check our permits on the degreasing tanks and the paint booth in the A&T area. He also wanted to check the permits on the outside storage tanks that hold the trichloroethane and the freon.

While checking the two outside tanks, he noticed our (3) other storage tanks that hold the steel cutting oil, aluminum cutting oil, and solvent. He advised me that there was a new regulation that required a permit for any storage tank over 250 gallons. He mentioned there needed to be a daily usage log initiated for the paint booth in the A&T area, to record the daily usage of coatings and solvents used. These log records must be retained for 2 years.

I told him we would apply for any permits needed. We were issued "**A NOTICE TO COMPLY**" from SCAQMD to be answered by May 1, 1989.

mt

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 26, 1989

South Coast AQMD
9150 Flair Drive
El Monte, CA 91731

Dear Mr. Brown:

On your recent inspection of our Pacoima facility (4/18/89) HR Textron was issued a Notice to Comply, C14254, for a one 1000-gallon solvent tank and for two 1000-gallon cutting oil tanks for submission of applications for permits based on the revised SCAQMD Rule 219-M9: "Equipment used exclusively for organic liquid storage or transfer to and from such storage of less than 950 liters (251 gallon) capacity."

After further study we feel these tanks would come under Rule 219-M4: "Equipment used exclusively for the storage of unheated organic materials with an initial boiling point of 150°C (302°F) or greater, or with an organic vapor pressure of 5mm HG (9.1 psi) absolute or less at 21.1°C (70°F)." Rule 219-M4 does not require a permit.

Attached is information on the oil and solvent stored in the tanks. You will find that all have a greater boiling point and less vapor pressure. We feel these three tanks should be waived from the Notice to Comply.

Please advise.

Sincerely,

K.C. Yu
Facilities Engineer

KCY/cjm

Attachments MSDS for solvent and cutting oils

HR TEXTRON

INTEROFFICE COMMUNICATION

DATE: May 8, 1989

TO: W.C. Moses

FROM: K.C. Yu

COPY: R. Faxon
T. Swiger
C. Youngjohn

SUBJECT: PERMIT FOR PACOIMA - SCAQMD
(WASTE OIL TANKS)

This morning, Inspector, Jeff Brown from SCAQMD called me regarding Pacoima Waste Oil Tank permit. He explained to me that "As Long as the waste oil tanks do not contain fuel, a permit is not required." I had informed him that there is no fuel in the tanks at any time. He will waive this requirement from the Notice to Comply.

/cjm

COATING USAGE CHART

COMPANY NAME: _____ PERMIT NO. _____

ADDRESS PREMISES: _____

TELEPHONE NO.: ( ) _____

FROM _____ THRU _____, 19

DATE	COATING (a)			SOLVENT ADDED			CLEAN-UP SOLVENT (b)			SURFACE MATERIAL COATED
	NAME #, COLOR	VOC (g/l or lb/gal)	AMT. USED (gal)	NAME	VOC (g/l or lb/gal)	AMT. USED (gal)	NAME	VOC (g/l or lb/bal)	AMT. USED (gal)	

(a) If a catalyst is added, enter name, VOC, and amount used under "Coating".

(b) For solvent used for "Surface Preparation", enter name, VOC, and amount used under "Clean-Up Solvent".

NOTE: Enter amount used separately.

PREPARED BY: NAME _____

TITLE _____

	Yes	No	Unk	N/A
3. Does the facility have point sources of air emissions? If so, complete Attachment 5-1. List separately regulated and unregulated emission points.	X			

4. a. Identify the attainment status of the area in which the facility is located with respect to the National Ambient Air Quality Standards under the Clean Air Act.

	Attainment (Y/N)	Non-Attainment (Y/N)
Carbon Monoxide	N	N
Lead	N	N
Total Suspended Particulates	N	N
Sulfur Dioxide	N	N
Ozone	N	N
Nitrous Oxides	N	N

b. Are there other non-attainment areas within 50 miles of the facility?		X		
5. Do any New Source Performance Standards under 40 CFR Section 60 apply to the facility? If so, list. _____ _____		X		
6. If the facility has boilers on-site, complete Attachment 5-2.				

B. Air Permits and Registrations

7. If state and/or local regulations require registration of emission sources (point and non-point) which operated prior to a specific date, have all such sources been registered? Confirm that facility has a copy.	X			

8. Operating permits may be required for emission sources (new, modified, and existing) if they emit pollutants in excess of set quantities. Check with state and local agencies to determine if an operating permit is required. In addition, sources which are regulated under NSPS must notify EPA or a delegated state agency thirty days prior to starting operations (40 CFR 60).

9. A stationary source is any building, structure, facility, or installation which emits or may emit any air pollutant. Facilities that plan to construct or make a major modification to any existing stationary source must often apply for a construction permit (Permit to Install or "PTI") from the state and/or EPA **prior to starting construction or making any changes which will affect the emission rate.** After construction is complete, a temporary operating permit (Permit to Operate or "PTO") must be obtained prior to receiving an operating permit (Permit to Operate or "PTO"). In addition, sources which are covered under NSPS (40 CFR 60) must notify EPA or the state agency (if the program has been delegated to the state) within thirty days after the commencement of construction.

ATTACHMENT 5-1

DESCRIPTION OF AIR EMISSION POINTS

QUESTIONS	STACK NUMBER 2A	STACK NUMBER 2B	STACK NUMBER 3A
DESCRIBE SYSTEM GENERATING EMISSION	BOILER	SPRAY BOOTH	VAPOR [illegible]
AIR FLOW (CFM)			
CHEMICAL EMISSIONS WITHOUT CONTROL: CHEMICAL (POUNDS PER YEAR)	USES NATURAL GAS FOR FUEL	ORGANIC [illegible] COATINGS [illegible] ORGANIC [illegible] CHEM[illegible] 128.7 Lbs.	111 TRICHLORETHANE 4,440 Lb
CHEMICAL EMISSION WITH CONTROL: CHEMICAL (POUNDS PER YEAR)	N/A	N/A	N/A
DESCRIPTION OF CONTROL DEVICE (IF ANY)	NONE	NONE	NONE
EFFICIENCY OF CONTROLS: CHEMICAL (% REDUCTION)	N/A	N/A	N/A
WASTE GENERATED BY CONTROL DEVICE: DESCRIPTION	NONE	NONE	NONE
POUNDS PER YEAR OF WASTE GENERATED	N/A	N/A	N/A
REGULATORY AUTHORITY FOR AIR SOURCE	CITY OF L.A. BUILDING & SAFETY	SCAQMD	SCAQMD
IS REGISTRATION REQUIRED? (YES/NO) DATE ISSUED:	YES	YES 3/25/88	YES
PERMIT TO CONSTRUCT/INSTALL GRANDFATHERED (YES/NO) DATE ISSUED:	NO	NO	NO
PERMIT RESTRICTION OR CONDITIONS? (YES/NO) PERMIT NUMBER	NO Z1574	IN OPERATION STATIC [illegible] FILTER [illegible] COATING [illegible] 0.125 GALLON A DAY [illegible]	YES M03677 NOT TO EXCEED 1.6 GAL A DAY [illegible] AIR
PERMIT TO OPERATE: (YES/NO) DATE ISSUED:	YES	YES 3/25/88	YES

Revision Date: 05/03/90

ATTACHMENT 5-1 (continued)

DESCRIPTION OF AIR EMISSION POINTS

QUESTIONS	STACK NUMBER 2A	STACK NUMBER 2B	STACK NUMBER 3A
PERMIT RESTRICTIONS OR CONDITIONS: (YES/NO)	NO	YES	YES
DATE OPERATING PERMIT EXPIRES:	11/1 ANNUALLY	8/1 ANNUALLY	8/1 ANNUALLY
OPERATING PERMIT NUMBER	21574	M61282	M03677
COMPLIANCE MONITORING AND/OR REPORTING REQUIRED (YES/NO)	NO	YES	YES

ATTACHMENT 5-1

DESCRIPTION OF AIR EMISSION POINTS

QUESTIONS	STACK NUMBER 3B	STACK NUMBER 3C	STACK NUMBER ___
DESCRIBE SYSTEM GENERATING EMISSION	VAPOR DEGREASER	PASSIVATE EXHAUST	
AIR FLOW (CFM)		2000 CFM	
CHEMICAL EMISSIONS WITHOUT CONTROL: CHEMICAL (POUNDS PER YEAR)	111 TRICHLOROETHANE 4,440 Lbs	VAPORS FROM NITRIC & SODIUM DICHROMATE SOLUTION	
CHEMICAL EMISSION WITH CONTROL: CHEMICAL (POUNDS PER YEAR)	N/A	N/A	
DESCRIPTION OF CONTROL DEVICE (IF ANY)	NONE	NONE	
EFFICIENCY OF CONTROLS: CHEMICAL (% REDUCTION)	N/A	N/A	
WASTE GENERATED BY CONTROL DEVICE: DESCRIPTION	NONE	NONE	
POUNDS PER YEAR OF WASTE GENERATED	N/A	N/A	
REGULATORY AUTHORITY FOR AIR SOURCE	SCAQMD	SCAQMD	
IS REGISTRATION REQUIRED? (YES/NO) DATE ISSUED:	YES	YES	
PERMIT TO CONSTRUCT/INSTALL GRANDFATHERED (YES/NO) DATE ISSUED:	NO		
PERMIT RESTRICTION OR CONDITIONS? (YES/NO) PERMIT NUMBER	YES M 47059 NOT TO EXCEED 1.6 GALS A DAY RELEASE TO AIR		
PERMIT TO OPERATE: (YES/NO) DATE ISSUED:	YES		

ATTACHMENT 5-1 (continued)

DESCRIPTION OF AIR EMISSION POINTS

QUESTIONS	STACK NUMBER 3B	STACK NUMBER 3C	STACK NUMBER ___
PERMIT RESTRICTIONS OR CONDITIONS: (YES/NO)	Yes	APPLIED FOR 4/27/89	
DATE OPERATING PERMIT EXPIRES:	8/1 ANNUALLY	APPLIED FOR 4/27/89	
OPERATING PERMIT NUMBER	m 47059	" "	
COMPLIANCE MONITORING AND/OR REPORTING REQUIRED (YES/NO)	Yes		

ATTACHMENT 5-2

DESCRIPTION OF FACILITY BOILERS

STACK NUMBER	STACK HEIGHT ABOVE GROUND	PURPOSE (e.g., heating, process steam, electricity)	BOILER LOCATION	BOILER MFG.	BOILER TYPE & MAKE	BTU RATING (IN MBTU)	FUEL TYPE	% SULFUR	STORAGE OF FUEL (GALS)	PERMIT TO OPERATE? Y/N	PERMIT CONDITIONS (Y/N-N/A)
1A	68½" ABOVE ROOFLINE	HEATING	Bldg. 2 mezz.	AJAX	MOD WC1050D SN 80-33011	IN 1050000 OUT 840,000	NATURAL GAS	N/A	N/A	Y	N/A

	Yes	No	Unk	N/A
8. If an existing point or fugitive source requires state or local operating permits, has the facility obtained them? Confirm that facility has a copy.	X			
9. a. If the facility constructed and/or modified any stationary source of air emissions, were construction and operating permits obtained from the state air pollution control authority and/or EPA? Confirm that facility has a copy.				X
b. If the facility has relocated any stationary source of air emissions, was a permit obtained from the state air pollution control authority.				X
10. Have facility operations during the last three years been in accordance with conditions of applicable air pollution control permits? If not, please explain. _____ _____	X			
11. Does the facility intend to increase production, add any new process, or undertake any expansion which would increase or add air emissions?		X		
a. If yes, does the facility need a new permit or modification to the existing permit?				
b. If yes, can the facility obtain such a permit or modification by the appropriate date?				
c. If yes, has the facility analyzed the cost associated with the new permit or modification?				

12. A copy of a permit or registration must be maintained on-site for all pieces of equipment requiring them. The amount of time which a permit or registration must be maintained after the equipment has been shut down is dependent upon the specific state regulations or plant policy.

13. Air pollution plans (e.g., air emission reduction plans and episode action plans) are required by some states and are dependent upon different factors including number of employees and types of sources. The plan includes the measures which will be taken by the facility to reduce or stop emissions should the air quality deteriorate to a point where it is detrimental to human health. The plan should be updated when changes involving air emissions are made to the facility. Several states require that the plans be submitted for approval while others only require that they be available on-site.

15. Facilities may be required to monitor emissions under permits, NSPS (40 CFR 60), NESHAP, and state regulatory requirements. Monitoring requirements differ significantly under each of these sets of requirements. They must be checked specifically to see if monitoring is required.

	Yes	No	Unk	N/A
12. Are the following records maintained at the site for the period of time required by applicable state or local regulations:				
a. Registration documents?	X			
b. Permits issued and pending?	X			
c. Exemptions and waivers of compliance?	X			
d. Agency inspection reports?	X			
e. Annual emission inventories?	X			
Confirm that facility has a copy.				

C. Monitoring and Record Keeping for Air Emission and Pollution Control Systems

13. a. Does the state require the facility to have an Air Emission Reduction Plan, Episode Action Plan, or similar plan? Confirm that facility has a copy.	X	—		
b. If yes, has the facility prepared such a plan? Confirm that facility has a copy of the plan.	X			
c. If required, has the facility submitted the plan to the state for approval?	X			—
d. If yes, is the plan up to date?	X			—
14. If required, does the facility maintain emission inventory records?	X			—
15. If required, has the facility installed continuous emission monitoring devices?	—			X
16. If required, does the facility conduct emission sampling/testing or ambient monitoring? If so, please describe the nature and frequency.	—			X

17. Results of monitoring must be compared with the standards established under permits, NSPS, NESHAP, or state regulations. Exceedances of the standards must be reported to the appropriate agency.

18. All facilities subject to NSPS regulations requiring monitoring must submit a written report of emissions to EPA or the approved state every calendar quarter (40 CFR 60.7).

19. Continuous Emission Monitors (CEMs) and ambient air monitors must be checked to assure that they are working properly and must be calibrated periodically to assure that the information collected is accurate. The NSPS regulations contain specific regulations requiring routine calibration checks for CEMs (40 CFR 60.13). Calibration of ambient air monitors must be performed in accordance with any specification included under the permitting or the NESHAP regulations.

20. Facilities may be required to conduct performance tests (such as stack testing or opacity checks) to assure that air pollution control equipment is operating properly. Performance testing must be conducted within sixty days after achieving the maximum production rate at facilities governed by NSPS regulations (40 CFR 60.8). Periodic performance testing may be specified in the source permit or under any enforcement actions brought against the source. Procedures for testing sources are found in 40 CFR 60 Appendix A and/or state regulations.

21. Records may need to be maintained for air pollution sources and control equipment. Records required under NSPS include information on all required testing and monitoring. They must be maintained for a minimum of two years (40 CFR 60.7). Certain monitoring data obtained in connection with a construction permit must be maintained for a specific period of time and should be maintained for at least the life of the plant. Permits and specific state regulations should be checked to determine if records are required for other sources.

22. All complaints received should be investigated and corrective actions should be taken as soon as possible. A record of the problem and corrective actions should be maintained to document the response. Consistent with corporate policy and procedure concerning reporting discharges of this type, the Corporate Legal Department should be notified immediately. The Corporate Office will assist you in determining if notification to a government agency is required.

	Yes	No	Unk	N/A
17. a. Does the site comply with all specific limitations established for those parameters being monitored?				X
b. If not, has this been reported to the regulatory agency?				X
18. If required, are routine monitoring reports submitted to the control agency on a timely basis?				X
19. If required, are calibration checks made of all monitoring equipment?				X
20. If required, has the site conducted any performance tests of air pollution control systems?				X
21. Are the following records maintained on-site for the required period of time:				
a. Emission Monitoring?				X
b. Ambient air monitoring?				X
c. Pollution control equipment performance tests?				X
d. Calibration and maintenance records?				X
e. Operating records?				X
f. Continuous emission monitoring?				X
Confirm that facility has a copy.				
D. Public Air Quality Concerns				
22. Does the facility have any emissions, odorous or otherwise, which have resulted in complaints from the general public? If so, complete Attachment 5-3.		X		
a. Is an air emission control log kept on the nature, source, and resolution of the complaints?				
b. Are complaints routinely investigated?				

23. Facilities which emit hazardous air pollutants (see introduction for a listing) must register their sources with the EPA (40 CFR 61.10 and Appendix A) or the state agency if the state has been delegated the NESHAP program. The state may require permits or source registration for additional substances which it has designated as hazardous air pollutants. Changes in any of the information supplied when the source was registered must be provided to the administering agency within thirty days after the change (40 CFR 61.10 and Appendix A). Check state regulations to determine if a different timetable is required by the state.

24. The emissions of hazardous air pollutants from a particular source should be compared to those set forth in 40 CFR 61 and applicable state regulations to determine whether the source is in compliance.

26.a. Emission testing must be conducted on every source which emits a hazardous air pollutant in accordance with the NESHAP or state standards, unless waived (40 CFR 61.13). NESHAP standards generally require stack testing within ninety days of the source start-up or ninety days after the effective date of the applicable standard. Stack testing under NESHAP must be conducted in accordance with 40 CFR 61.14 and the testing methods set forth in 40 CFR 61 Appendix B.

26b. Sources of hazardous air pollutants are required to install sampling ports, access platforms, and utilities adequate for any required sampling (40 CFR 61.12). Locations for sampling must be approved in accordance with 40 CFR 61.34.

26c. Time limits have been established for the analysis of samples collected during stack sampling for hazardous air pollutants. These limitations under NESHAP are set forth in 40 CFR 61 and are specific to the particular hazardous pollutant. The time limit for receiving the analysis for most samples is thirty days.

26d. Results of NESHAP testing must be retained at the facility for a minimum of two years (40 CFR 61). Check state regulations to determine if records must be kept for longer than two years and for the length of time results of testing for state-specified hazardous pollutants must be retained.

	Yes	No	Unk	N/A

E. NESHAP Emissions

23. Does the facility emit any hazardous air pollutants? If so, please specify the amount(s) and whether a permit has been obtained.

Pollutant	Amount	Permit Y	Permit N

If the facility emits any hazardous air pollutants, continue with the following questions; if not, move to the next section.

24. Are all hazardous air pollutant emissions within the regulated limits?

25. If required, have all hazardous air pollutant emission sources been registered and/or permitted? Confirm that facility has a copy.

26. a. If required, has emission testing been conducted within the required time limitations?

b. Have the locations of air sampling stations been approved by the applicable agencies, and are the air samplers operated in accordance with applicable regulations? If not, please explain.

c. Have samples been analyzed and hazardous pollutant emissions determined within applicable time limitations?

d. Are the results of emission tests and other associated data used to determine emission data retained on-site? Confirm that facility has a copy.

27. Several of the NESHAPs require reporting to the EPA or designated state agency (40 CFR 61).

28. Operating requirements aimed at detecting and preventing releases of volatile hazardous air pollutants are found in 40 CFR 61.242.

29. Periodic inspections must be performed on equipment which services volatile hazardous air pollutants in accordance with 40 CFR 61.242. Any problems noted during such an inspection must be corrected as soon as practicable, but not later than fifteen calendar days after it is detected. A first attempt to repair the problem must be made no later than five calendar days after a leak is detected.

30. Testing of equipment may be required as specified in 40 CFR 61.242. Methods for performing the testing are specified under 40 CFR 61.245. Record keeping requirements associated with these measures are specified under 40 CFR 61.246. Semi-annual reporting is required to notify the agency of any leaks which were detected, any process unit shutdowns, and any revisions made during the reporting period (40 CFR 61.247).

31. Notification for new sources of hazardous air pollutants must be submitted with the application for a construction permit. Notice of initial start-up must be made at least thirty days before start-up (40 CFR 61.07).

32. Substances collected from the control of the pollutants covered under NESHAP regulations (e.g., contaminated filters) must be disposed of in accordance with the requirements for hazardous wastes enacted under RCRA (40 CFR 261-265). Wastes generated from the control of hazardous air emissions may be hazardous.

34. If response to this question is yes, the Corporate Legal Department should be notified immediately.

	Yes	No	Unk	N/A
27. Are air monitoring results reported to the appropriate agencies as required?				
28. a. Does the facility monitor pumps, compressors, pressure relief devices in gas/vapor service, open-end valves or lines, sampling connecting systems, flanges and other connectors, product accumulators, vessels or control devices which contain volatile hazardous air pollutants?				
b. Are each of these pieces of equipment operated to prevent the release of volatile hazardous air pollutants?				
29. Are inspections and maintenance service conducted on equipment which services volatile hazardous air pollutants on a routine basis?				
30. Is the equipment that contains volatile hazardous air pollutants tested and are reports filed as requested? Confirm that facility has a copy.				
31. Does the facility notify a regulatory agency prior to start-up or emissions testing of hazardous air pollutants? Confirm that facility has a copy of notification.				
32. Are procedures in place to ensure substances collected from the control of hazardous pollutants are properly disposed of in accordance with the RCRA requirements?				

F. Miscellaneous

33. Are there any other comments that you consider relevant and/or significant to this section of the survey?				
34. Does the toxic chemical release information in SARA Section 313 reports exceed any limits specified in any air emission permit(s) on file with the EPA or State Air Quality Control Office?				

PAcoima

SECTION 6

WATER AND WASTEWATER

Introduction

Overview: The first act that regulated water pollution was the Refuse Act of 1899, which prohibited all discharges into navigable waters or tributaries unless a permit was obtained from the Army Corps of Engineers. Although hundreds of cases were prosecuted under this Act, it was not drafted as a comprehensive pollution control program and was insufficient in many ways.

Therefore, prior to 1970, the states generally set their own pollutant parameters for various water bodies based on the desired use of the water body. Although this water quality approach was effective in a few states, in most cases it worked poorly and did not effectively apply water quality standards to intrastate waters.

The Federal Water Pollution Control Act, passed by Congress in 1972, shifted the emphasis from a water quality approach to a technology-based approach. Commonly known as the Clean Water Act, this law established a comprehensive framework for water pollution control based on a nationwide permit program and technology-based effluent limitations. Other elements of the framework include water quality standards, special provisions for spills of oil or toxic substances, and a construction grant program for Publicly-Owned Treatment Works (POTWs).

The Clean Water Act was significantly modified in 1977 to deal more effectively with toxic water pollutants. It was revised again in 1978 to deal with spills of hazardous substances and in 1980 and 1981 to change certain aspects of the construction grant program for POTWs. The act allows states to take over administration of the permit program when state control programs meet rigorous federal standards.

Underground aquifers are one class of water bodies not covered under the Clean Water Act. In 1974, the Safe Drinking Water Act authorized a program to protect underground drinking water supplies by regulating the use of injection wells to dispose of liquid wastes.

Under the Clean Water Act and the Safe Drinking Water Act, the major regulatory programs designed to protect the quality of the nation's waters are the following:

- National Pollutant Discharge Elimination System (NPDES) Program
- National Pretreatment Standards
- Spill Prevention Control and Countermeasure (SPCC) Plan requirements
- The Underground Injection Control (UIC) Program

This section describes the various regulatory requirements applicable to facilities which discharge wastewater to a public or private treatment works, to surface water, or to ground water. Your facility may have a number of types of discharges (for example, to sewers and to surface waters), so it is likely that more than one part of this Section will apply.

The NPDES Program (40 CFR Part 122): The National Pollutant Discharge Elimination System (NPDES) permit program regulates the discharge of pollutants from any point source into the waters of the United States. Waters of the United States are defined to include navigable waters and their tributaries; interstate waters; and intrastate waters used by interstate travelers for travel or recreation, or used as a source of fish or shellfish sold in interstate commerce, or used by industries engaged in interstate commerce. Point sources are defined as any discernible, confined, and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, vessel, or other floating craft from which pollutants may be discharged. Pollutants are very broadly defined but include process wastewater, sanitary wastewater, and storm water discharges from industrial and commercial activities.

NPDES permits contain three major parts: effluent limitations, compliance schedules, and monitoring and reporting requirements. For industrial dischargers, effluent limits for specific pollutants are derived from technology-based standards for specific industrial categories or from more stringent water quality-based limits.

Permit applications for new discharges to surface water must be filed at least 180 days before the discharge is to commence. Facilities which have existing permits must submit a new application at least 180 days before the expiration date of the existing permit, unless an extension has been granted. Permits may be valid for up to five years. The EPA is the issuing authority for all NPDES permits until such time as the state elects to administer the program and obtains EPA approval to do so. About three-fourths of all the states have the authority to administer this program within the state.

The National Pretreatment Standards (40 CFR Parts 403-471): These standards were developed to prevent the introduction of pollutants into POTWs which would pass through or interfere with their operations. The general pretreatment standards prohibit discharges which, because of their viscosity, heat, concentration, or other properties, could pass through or cause interference with the operation of the POTW. The categorical pretreatment standards specify national discharge limits on priority pollutants for specific industrial categories. These standards are based on treatment technologies and are often incorporated into local pretreatment programs. Specific industrial categories for which there are categorical pretreatment standards are the following:

Adhesives and Sealants
Aluminum Forming
Asbestos Manufacturing
Auto and Other Laundries
Battery Manufacturing
Builder's Paper
Carbon Black
Cement Manufacturing
Coal Mining
Coil Coating
Copper Forming
Dairy Products Processing
Electrical and Electronic Components
Electroplating
Explosives Manufacturing
Feedlots
Ferroalloy Manufacturing
Fertilizer Manufacturing
Fruits and Vegetables Processing
Glass Manufacturing
Grain Mills
Gum and Wood Chemicals
Hospitals
Ink Formulating
Inorganic Chemicals
Iron and Steel Manufacturing
Leather Tanning and Finishing
Meat Processing
Mechanical Products
Metal Finishing
Metal Molding and Casting
Mineral Mining
Nonferrous Metals Forming
Nonferrous Metals Manufacturing
Oil and Gas Extrusion and Mining
Organic Chemicals, Plastics, and Synthetic Fibers
Paint Formulating
Paving and Roofing
Pesticides
Petroleum Refining
Pharmaceuticals
Phosphate Manufacturing
Photographic Equipment
Plastics Molding and Forming
Printing and Publishing
Porcelain Enameling
Pulp and Paper
Rubber Processing
Seafood Processing
Soaps and Detergents Manufacturing
Steam Electric Power Plants
Sugar Processing
Textile Mills
Timber Products Manufacturing

Spill Prevention Control and Countermeasure Plans (40 CFR Part 112): This requirement was established under the Clean Water Act to protect the navigable waters of the United States against discharges of oil. The owners or operators of onshore and offshore facilities that have discharged oil or could reasonably be expected to discharge oil in harmful quantities into or onto navigable waters of the United States must prepare an SPCC Plan to be maintained at the facility. Guidelines for preparation and implementation of the SPCC Plan are provided in 40 CFR Part 112.7.

The term "navigable waters" is broadly defined in the regulations to include all navigable waters and their tributaries; interstate waters; and intrastate waters used by interstate travelers for recreation or other purposes, or used as a source of fish or shellfish sold in interstate commerce, or used by industries engaged in interstate commerce. The term "harmful quantities" pertains to discharges of oil which violate applicable water quality standards or which cause a film or sheen upon the water surface or adjoining shorelines, or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

The Underground Injection Control Program (40 CFR Parts 144-147): This program was established under the federal Safe Drinking Water Act to protect ground water sources of drinking water. It regulates underground infection, defined as the underground disposal of liquid wastes by discharge into wells that are deeper than they are wide. EPA regulations establish five classes of injection wells, based on type of discharge and degree of threat to an Underground Source of Drinking Water (USDW). In general, the five classes cover any wells into which wastes or wastewater is injected or disposed of into, beneath, or above underground sources of drinking water.

Each class of injection well is subject to requirements for construction, operation, monitoring and reporting, plugging and abandonment, financial responsibility, and mechanical integrity. All injection wells must be authorized by permit or regulation. If a state does not have an approved Underground Injection Control (UIC) program, the EPA will carry out the program for the state. The permit applicant bears the burden of showing that the discharge will not endanger an USDW.

Monitoring, Reporting, and Record Keeping: The NPDES, pretreatment, and UIC programs all impose requirements for monitoring, reporting, and record keeping. Monitoring of wastewater streams is used to determine whether a facility is in compliance with applicable discharge limitations. The results of required monitoring must be reported to the permitting agency, and records of the results must be kept at the facility.

Facilities which are subject to these regulatory programs usually must monitor the following factors to assure compliance with discharge limitations:

- the volume of the effluent discharged from each point source;
- the type and quantity of pollutants discharged in the effluent; and
- the proper installation, maintenance, and use of monitoring equipment and methods.

Techniques for sample preservation and for the analysis of samples are detailed in 40 CFR 136. The following records are usually required to be maintained for all monitoring activities:

- the date, exact location, and time of sampling and measurement;
- the person who performed the sampling and measurement;
- the date of the analysis;
- specific techniques and methods used for preservation and analysis of samples; and
- the results of sample analysis.

All records and results of monitoring activities must be retained for three years. They must also be retained during the course of any litigation concerning the facility's compliance with effluent discharge limitations.

All facilities which hold NPDES permits are required to report the results of discharge monitoring using a Discharge Monitoring Report (DMR). Reporting requirements and frequency may differ from one permit to the next and generally depend on the nature and impact of the discharge. Reports are always required at least once per year, but certain types of discharges may require more frequent reporting: variable discharges, discharges which contribute significant amounts of pollutants to navigable waters, discharges which contain toxic or hazardous pollutants, and discharges which apply new treatment or control methods. Similar reporting requirements are imposed under local sewer permits, categorical pretreatment standards, and UIC permits.

SECTION 6

WATER AND WASTEWATER

Guidance

Regulatory Authority:	The Clean Water Act; Safe Drinking Water Act; Water Quality Act of 1987; Corresponding State and Local Statutes and Ordinances
Regulatory Citation:	40 CFR Parts 403-471; 40 CFR Parts 122; 40 CFR Parts 144-147
Administering Agency:	U.S. Environmental Protection Agency; Corresponding State and Local Agencies

1-2. Questions are self-explanatory.

3. The first step in developing a sound water management program is understanding where the water is coming from, how it is used by the facility, and where it goes. This is best achieved by completing a flow diagram and water balance for the facility. The flow diagram is a line drawing of the water flow through the facility, showing the approximate average flows at the intake and discharge points and between units of the facility, including process units and any treatment units.

The flow diagram should depict all incoming sources of water (e.g., potable, process, rainfall), each type of process or production area which contributes wastewater to the effluent (e.g., process wastewater, cooling water, domestic wastewater, storm water runoff), and the discharge points for all effluent flows. Taking into account evaporative losses and consumptive use within the facility, the incoming and outgoing water/wastewater flows should balance within ten percent.

SECTION 6

WATER AND WASTEWATER

Survey Questions

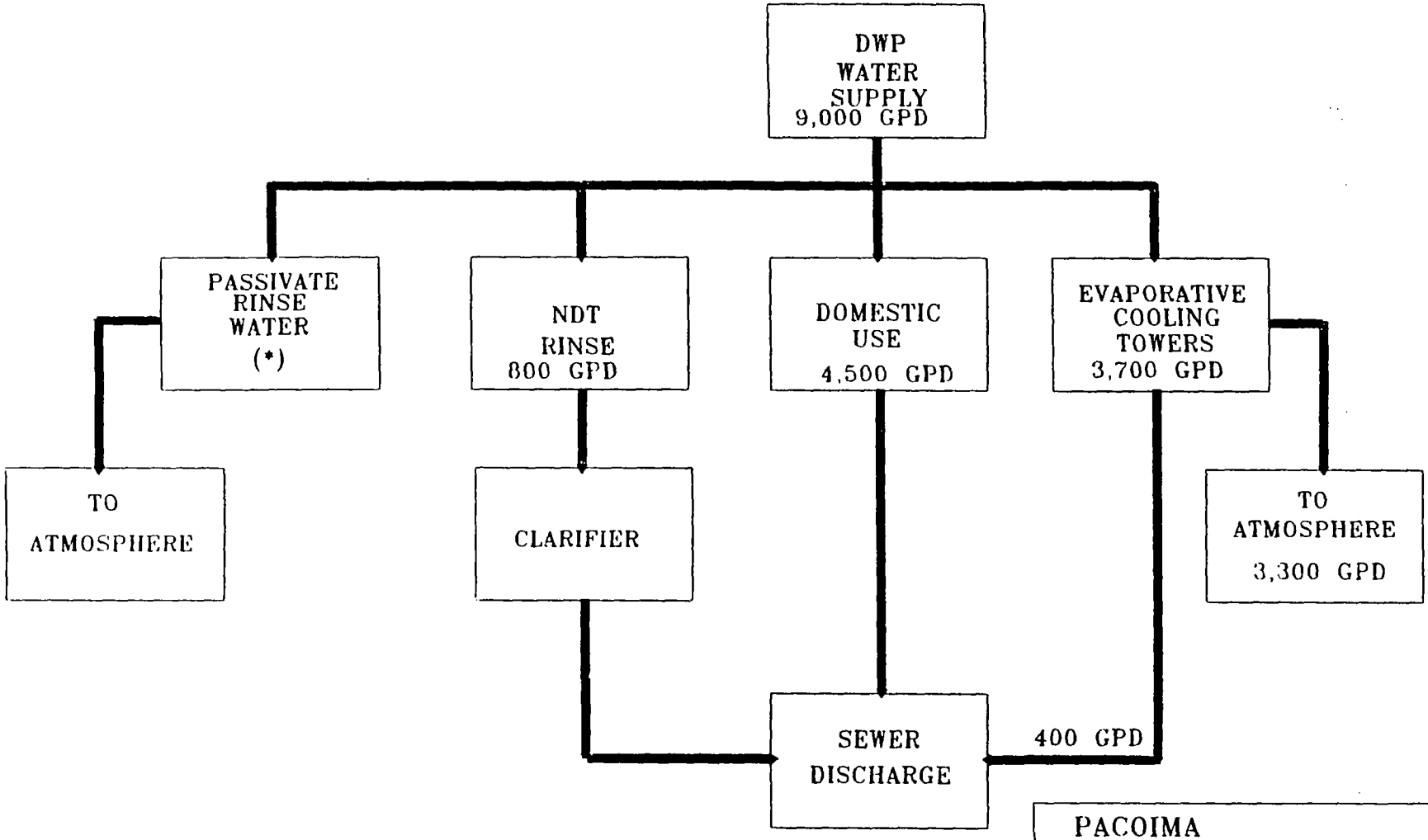
All facilities should complete this section.

		Yes	No	Unk	N/A
A.	**Background**				
1.	a. If the facility has been subject to an inspection regarding water or wastewater issues during the last three years or since completion of the last survey, were any concerns or potential concerns uncovered? _____ _____ _____ If so, describe concerns and include copies of inspection reports or correspondence.		X		
	b. Do any of the concerns or potential concerns uncovered in the inspection remain unresolved?		X		
2.	a. Has the facility entered into any Consent Order, Settlement Agreement, Delayed Compliance Order, etc., with respect to water or wastewater? If so, describe and provide copies of all documents. _____ _____ _____		X		
	b. If yes, has the facility complied with the terms of the Order?				X
3.	Provide a water balance flow diagram as Attachment 6-1 (an example diagram is provided) showing flow rates for incoming water, operations, treatment units and wastewater discharges throughout facility. If such a diagram is not available, provide this information to the best of the facility's knowledge.				

4. The water balance flow diagram is not complete unless a similar balance is completed for pollutants. This should be documented, to the extent possible, with monitoring results and operating information.

6. Sewer use ordinances are designed to ensure the POTW's compliance with its NPDES permit by minimizing operating and maintenance problems at the POTW. They regulate the use of public and private sewers and drains, the installation and connection of building sewers and the discharge of water and wastes into the public sewer system. If the ordinance authorizes the POTW to enforce the federal pretreatment requirements and is sufficient to ensure that the terms of the POTW's own NPDES permit will be met, then the POTW may be delegated primary enforcement authority for discharges into the sewer system.

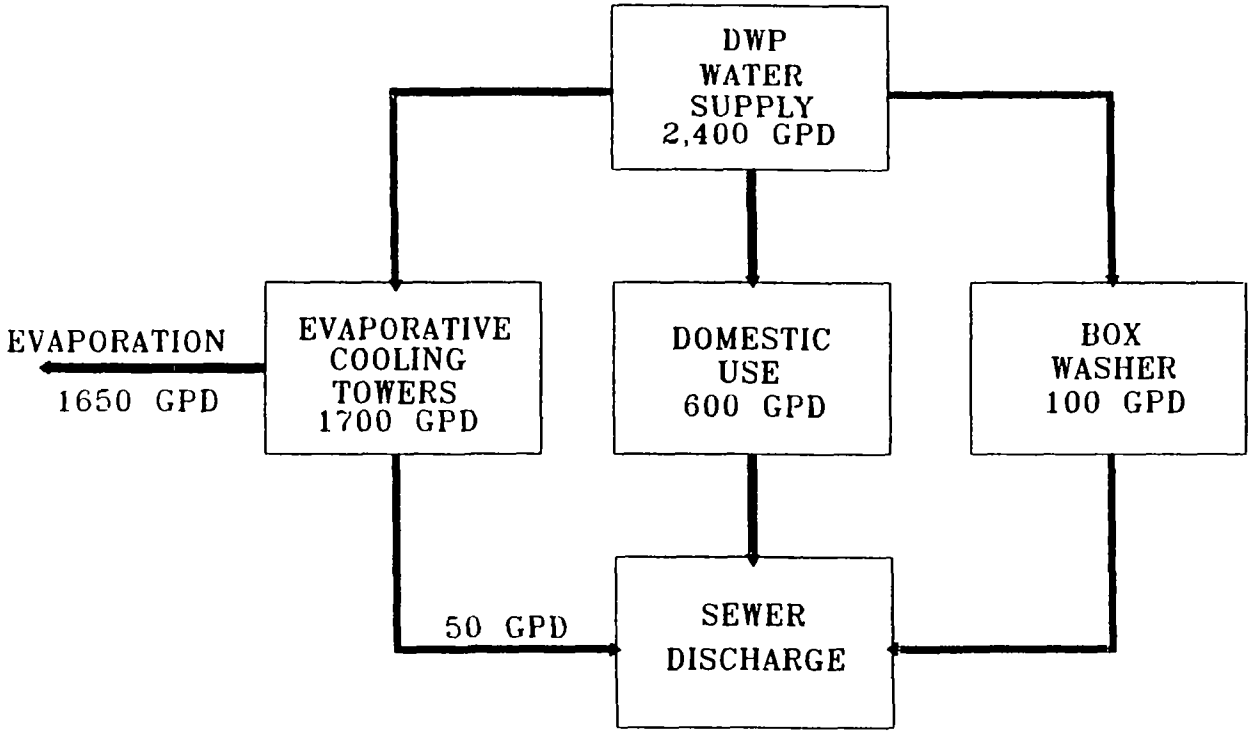
WATER USAGE BLDG 2 & 3



(*) CLOSED LOOP SYSTEM
ION EXCHANGE

PACOIMA
HR TEXTRON
10445 GLENOAKS BLVD

WATER USAGE BLDG 4,5,6



PACOIMA
HR TEXTRON
10445 GLENOAKS BLVD

7. YES PER MIKE RODGERS, CITY INSPECTOR, INDUSTRIAL WASTE DIVISION, CITY OF L.A. ENFORCEMENT DIV. DEPT. PUBLIC WORKS, BUREAU OF SANITATION

	Yes	No	Unk	N/A
4. Has the facility identified the sources of water pollutants and the average characteristics of each source?	X			
If it is available, add information regarding sources and quantities of pollutants to the flow diagram provided as Attachment 6-1.				
5. Does the facility have a water conservation/ minimization program?	X			

B. Discharges to Publicly-Owned Treatment Works

Complete this subsection if the facility discharges any wastewater to a publicly-owned treatment works (POTW). If not, go to Section C.

6. a. Does the facility discharge wastewater, other than sanitary waste, to a POTW?	X	—		
b. Does the facility have a permit to discharge to a POTW? If so, provide a copy.	X			
Term and expiration date of permit: 8-1-94 — WILL CHANGE TO OWNERSHIP				
Name of the control authority: DEPARTMENT OF [illegible]				
7. Has the facility determined that the POTW has a sewer use ordinance or discharge permit approved by the EPA or the state regulatory agency?	X			—
8. Does the facility have a current copy of the POTWs sewer ordinance, discharge permit, surcharge requirements or approved pretreatment program available on-site?	—			X

10. The general pretreatment standards specifically prohibit the discharge into a POTW of pollutants which would cause operational interference or damage to the POTW system. These prohibitions are listed in 40 CFR 403.5 and include pollutants which will create a fire or explosion hazard at the POTW; pollutants that may cause corrosive or structural damage to the POTW (but in no case discharges with a pH lower than 5.0 unless the POTW is specifically designed to accommodate this); solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW resulting in interference; any pollutant, including oxygen-demanding pollutants (BOD, etc.) released in a discharge at a flow rate and/or pollution concentration which will cause interference with the POTW; heat in amounts which will inhibit biological activity at the POTW resulting in interference (but in no case heat in such quantities that the temperature at the POTW treatment Plant exceeds 40°C unless the Approval Authority, with the POTW, approves alternate temperature limits).

11. In lieu of monitoring for Total Toxic Organics (TTO), the control authority may allow industrial dischargers to certify that no dumping of toxic organics to the waste stream has occurred (40 CFR 413.03(c)). This requires submission of a toxic organic management plan that specifies the toxic organic compounds used, the disposal method, and procedures for assuring that toxic organics do not routinely spill or leak into wastewater discharged to the POTW. The term Total Toxic Organic means the total toxic organics, which is the summation of all quantifiable values greater than 0.01 milligrams per liter for the toxic organics listed in 40 CFR 413.02.

12. "Slug" discharges (usually defined as five times the permitted concentration of the pollutant) to a POTW are typically prohibited. Non-contact cooling water is also usually prohibited because of hydraulic loading. Any accidental slug loading or discharge of any pollutants which may interfere with the operations of the POTW must be immediately reported to the POTW (40 CFR Part 403.12(f)).

ERMIT NO. W-439928
NDUSTRIAL CLASS: 077

CITY OF LOS ANGELES

INDUSTRIAL WASTE PERMIT

DEPARTMENT OF PUBLIC WORKS
BUREAU OF SANITATION

ISSUED TO:

NAME: HR TEXTRON INC
MAILING ADDRESS: 10445 PACOIMA GLENOAKS CA 91331 BL

LOCATION ADDRESS: 10445 PACOIMA GLENOAKS BL

APPLICATION DATE: 04/09/84 EFFECTIVE DATE: 08/01/84

This permit signifies that the person named on the face hereof has fulfilled the requirements of Section 64.30 L.A.M.C., in making application to the Board of Public Works to discharge industrial wastes into an approved disposal system; and that said application has been approved to discharge specific industrial wastes into the system in the manner described therein and in accordance with the Board of Public Works regulations governing industrial waste discharges.

This permit does not in any way authorize the permittee to violate any term or provision of the Municipal Code governing industrial waste disposal or any regulation of the Board of Public Works made pursuant thereto.

Issuance of this Industrial Waste Permit is categorically exempt from preparation of an Environmental Impact Report in accordance with Article 8, Section 8 of City Guidelines for Implementation of California Environmental Quality Act of 1970.

THIS PERMIT BECOMES VOID UPON ANY CHANGE OF OWNERSHIP OR LOCATION WHATSOEVER. Notify the Bureau of Sanitation of any changes of ownership or address at the following location:
2335 Dorris Place, Los Angeles, California 90031 – Phone: 485-5886

TECHNICAL DATA

NSPECTION FREQUENCY: 12
EST. WASTEWATER STRENGTH: .00 MILLIGRAMS/LITER (SUSPENDED SOLIDS) .00 MILLIGRAMS/LITER (BIOCHEMICAL OXYGEN DEMAND)

EST. WASTEWATER VOLUME: 1712 GALLONS PER DAY

NOTE: APPROPRIATE INSPECTION FEE AND QUALITY SURCHARGE FEE WILL BE DETERMINED FROM ESTIMATED SEWAGE STRENGTH AND VOLUME SHOWN HEREIN, IN ACCORDANCE WITH SECTION 64.30 OF THE L.A.M.C. AND THE BOARD OF PUBLIC WORKS RULES AND REGULATIONS ATTACHED HERETO. APPROPRIATE ADJUSTMENT MAY BE MADE FOR ANY SUBSEQUENT CHANGE IN VOLUME AND/OR STRENGTH. IF YOUR PERMIT IS SUBJECT TO THE SURCHARGE FEE, YOU WILL BE BILLED FOR 1/4 OF THE ANNUAL FEE AND 1/4 OF THE SURCHARGE FEE ON THE 1st OF THE FOLLOWING MONTHS: JANUARY, APRIL, JULY, AND OCTOBER OF EACH YEAR.

DELWIN A. BIAGI

DIRECTOR, BUREAU OF SANITATION

BY _____

CHIEF INDUSTRIAL WASTE INSPECTOR

FOR OFFICE USE ONLY

DISTRICT: 02 SUBDISTRICT: 023 INTERCEPTOR CODE: FLOW CODE: 9
NUMBER OF GARBAGE GRINDERS: WASTE PROCESS: 64 72 BILLING CODE: A
TREATMENT REQUIRED: 02 03 TREATMENT FACILITIES: 14 FINAL DISPOSAL: 1
OTHER PERMITS:

	Yes	No	Unk	N/A
9. Is there a system in place to identify all known discharge points to the POTW?	X			

Total number of known discharge points: 2

Description of known source discharges to the POTW:

CLARIFER

DOMESTIC SEWAGE

10. Does the facility have a system in place to prevent discharge of prohibited pollutants into the POTW? (BERMED STORAGE AREAS) (DRAIN IN PASS)	X			
11. If the facility uses Total Toxic Organics, does the facility have a written management plan for Total Toxic Organics (TTO) or perform a regular TTO analysis?	X			___
12. Does the sewer ordinance require and, if so, does the facility have a procedure to notify the POTW in case of an unusual discharge–spill or slug–to the POTW.	X			___

13-14. Categorical pretreatment standards specify the amounts of pollutants which may be discharged into a POTW by specific, existing or new industrial dischargers (40 CFR Parts 405-471). These standards are in addition to the general pretreatment standards (above) and are usually supplemented by local ordinances. Categories for which there are categorical pretreatment standards include:

Adhesives and Sealants
Aluminum Forming
Asbestos Manufacturing
Auto and Other Laundries
Battery Manufacturing
Builder's Paper
Carbon Black
Cement Manufacturing
Coal Mining
Coil Coating
Copper Forming
Dairy Products Processing
Electrical and Electronic Components
Electroplating
Explosives Manufacturing
Feedlots
Ferroalloy Manufacturing
Fertilizer Manufacturing
Fruits and Vegetables Processing
Glass Manufacturing
Grain Mills
Gum and Wood Chemicals
Hospitals
Ink Formulating
Inorganic Chemicals
Iron and Steel Manufacturing
Leather Tanning and Finishing
Meat Processing
Mechanical Products
Metal Finishing
Metal Molding and Casting
Mineral Mining
Nonferrous Metals Forming
Nonferrous Metals Manufacturing
Oil and Gas Extrusion and Mining
Organic Chemicals, Plastics, and Synthetic Fibers
Paint Formulating
Paving and Roofing
Pesticides
Petroleum Refining
Pharmaceuticals
Phosphate Manufacturing
Photographic Equipment
Plastics Molding and Forming
Printing and Publishing
Porcelain Enameling
Pulp and Paper
Rubber Processing
Seafood Processing
Soaps and Detergents Manufacturing
Steam Electric Power Plants
Sugar Processing
Textile Mills
Timber Products Manufacturing

For direct discharges not covered by categorical standards, the Clean Water Act establishes technology-based treatment requirements to be used in permits and sets time limits for implementation. Effluent limitations for conventional pollutant concentrations must be based on best conventional pollutant control technology (BCT). For toxic pollutants specified in the Act, effluent limitations must be based on best available technology economically achievable (BAT). BAT is also required for those pollutants which are neither conventional nor toxic.

15. In accordance with 40 CFR 403.12(b)(1-7), industrial dischargers must submit a pretreatment Baseline Monitoring Report (BMR) describing operations, permits held, measurements of flow and of pollutants, and other required information to the POTW and the EPA Regional Administrator or state agency.

16. Combined Waste Stream Formula - 40 CFR 403.6 - Where process effluent is mixed prior to treatment with wastewaters other than those generated by the regulated process, alternative discharge limits may be developed by the Regulatory Authority. These limits are applied to the mixed effluent. The limits are developed using the combined waste stream formula. This formula is covered in detail in 40 CFR 403.6.

	Yes	No	Unk	N/A
13. Have the pretreatment category and categories which apply to the facility been determined?	X			
List category and subcategories: METAL FINISHING (PRESUMPTIVE)				
14. Has the facility made an assessment of compliance with U.S. EPA categorical pretreatment standards?	—			X
15. If the facility is subject to categorical treatment standards, has a Baseline Monitoring Report (BMR) been submitted to the control authority?	X			—
16. a. Is the facility in compliance with applicable categorical standards?	X			—
b. If using the combined waste stream formula, is the facility in compliance with established standards?	X			—
c. If the facility is not in compliance with applicable standards, is a compliance plan in place and on schedule?	—			X

17. A POTW may provide an industrial user of its system with a removal credit, in the form of adjusted categorical pretreatment standards, for removal of pollutants by the POTW (40 CFR 403.7). Industries with such a credit may discharge greater quantities of regulated pollutants than otherwise permitted by applicable categorical standards.

19. For the protection of the user of a private treatment works, the contract should specify responsibilities for monitoring, conditions for discharge, and provisions for contract modification.

20. Essentially all point source discharges of pollutants to surface waters or their associated wetlands are required to have an NPDES permit. This includes cooling water and any service water discharges. Some sources of storm water may also require permit applications. If the state rather than EPA is the approved permitting authority, the state will issue SPDES (State Pollution Discharge Elimination System) permits to dischargers under the state permit program. The long Form 2-C, submitted to the state or EPA as part of the permit application becomes incorporated into the permit.

	Yes	No	Unk	N/A
17. Has the facility ever utilized removal credits to achieve compliance with categorical standards?	___	X	___	

If so, describe:

_____
_____
_____
_____

C. Discharges to Private Treatment Works

Complete this section if the facility discharges wastewater to a private treatment works. N/A

18. Does the private treatment works have a current discharge permit? Confirm that the facility has a copy of the permit.	___	___	___	
a. If yes, is the private treatment works in compliance with their permit?	___	___	___	
19. If the facility has a contract with a private works, does the contract specify conditions for discharge, responsibility for monitoring, and provisions for contract modification?	___	___	___	___
a. If yes, is the private treatment works complying with the conditions in the contract?	___	___	___	___

D. Discharges to Navigable (Surface) Water

Complete this section if the facility discharges pollutants or wastewater to surface water.

20. Does the facility have an NPDES permit? If so, provide a copy.	___	___	___	

Term and expiration date of permit: _____

21. Total number of discharge points: _____
Identify discharge points and receiving water bodies:

_____
_____
_____

22. "Most permits are issued for five (5) years and have set expiration dates on the permit. NPDES regulations require that you reapply 180 days before the expiration date. You will be given a draft permit for review. These draft permits must be reviewed carefully for appropriate limits, basis of limits, and ability to achieve limits. Do not miss your opportunity to comment or even appeal a permit limit." (40 CFR 122.21)

23. Categorical Effluent Limitation Guidelines for specified industries can be found in 40 CFR 405-471. Industrial categories are listed in the guidance for Questions 13 and 14.

24. An NPDES or SPDES permit may specify a schedule of compliance when necessary to allow a reasonable opportunity to attain compliance with the Clean Water Act and regulatory requirements (40 CFR 122.47). If the final date for compliance is more than one year after issuance of the permit, the schedule must specify interim requirements and dates for their achievement. If the discharger fails to meet a final deadline established in the permit, the EPA or authorized state may issue a compliance order which specifies a reasonable time for compliance.

25. Certain discharges to navigable waters are also regulated by the U.S. Coast Guard (spills of oil – 33 CFR 153), the U.S. Army Corps of Engineers (dredging and filling - 33 CFR 323-324), and state regulatory agencies under state laws. Additional requirements may be imposed by water body commissions.

26. These activities are regulated by the Corps of Engineers under 33 CFR 323-324.

	Yes	No	Unk	N/A
22. Does the facility have a procedure in place to ensure a new NPDES application is submitted 180 days before the expiration date of the existing permit?	N/A			
23. Are the facility's discharges subject to EPA effluent limitation guidelines (ELG) for a specific industrial category? If so, name the industrial category and subcategories which apply to the facility: _____ _____ _____		X		
24. Is the facility consistently in compliance with the NPDES or SPDES permit?	N/A			
a. If not, is the facility under a compliance schedule to satisfy conditions of its permit? If so, identify any problems in meeting this schedule. _____ _____ _____ _____				X
b. Has the facility experienced any problems in meeting this schedule?				X
25. Has the facility reviewed Coast Guard, Corps of Engineers, and state and federal requirements to determine applicability to facility discharges?	N/A			
26. If the facility has located structures or conducted work in or affecting navigable waters of the United States; or discharged dredged or fill material into United States waters; or transported dredged material for the purpose of dumping it in ocean waters, was a permit for these activities obtained from the U.S. Army Corps of Engineer?				X

27. A wastewater treatment system is any device or system used in the treatment (including recycling and reclamation) of liquid wastes. This includes any treatment plant using physical, chemical, and/or biological processes to treat wastes, any surface impoundments used in the treatment of wastes, and any land application system used for waste treatment.

30. Operating records of treatment processes should be maintained in order to monitor performance and schedule preventive maintenance. In addition, operating logs establish a record of performance and compliance with NPDES permit requirements.

	Yes	No	Unk	N/A
E. Wastewater Treatment				
Complete this section if the facility operates any waste water treatment system, including a land application system or surface impoundment(s).				
27. In Attachment 6-2, describe the wastewater treatment system, providing a process flow diagram, description of process chemistry if applicable, and design capacity of the system.				
a. Has the facility ever exceeded the maximum flow rate design capacity?		X		
b. If yes, have actions been taken to prevent future exceedances? If so, please describe.				
28. If the facility uses surface impoundments for wastewater discharges:				
a. Are they lined with clay, synthetic material or concrete?				
b. Are they or were they ever used to dispose of hazardous wastes? (If yes, see Section 10, Hazardous Waste.)		X		
29. Were surface impoundments ever used in the past?		X		
Describe use: _____				
30. a. Is this facility required by a control authority to maintain operating records for wastewater treatment units?		X		
b. If yes, does the facility maintain operating records?				
c. If no, does the facility maintain operating records as a good management practice?	X			
31. Does the facility have all operating and maintenance manuals?	X			

32. A bypass is the intentional diversion of waste streams from or around any unit of a treatment facility. A bypass would also include a wastewater treatment system which pumps when the system is turned off. A permitted facility may allow a bypass to occur if it is for essential maintenance to ensure efficient operation and if it does not exceed effluent limitations. Prior notice (at least ten days) must be given to the EPA or the state if the need for a bypass is known in advance.

33. Treatment plant sludge is a solid waste under the Resource Conservation and Recovery Act (RCRA) and most state solid waste laws. It may also be regulated as a hazardous waste under RCRA if it meets certain criteria, e.g., metal hydroxide from a metal sludge from electroplating is a listed hazardous waste. A determination of the nature of the facility's treatment plant sludges is required by law.

36. Certain states require that treatment plant operators be certified as qualified to operate the treatment facility. Certifications should be kept on file at the facility.

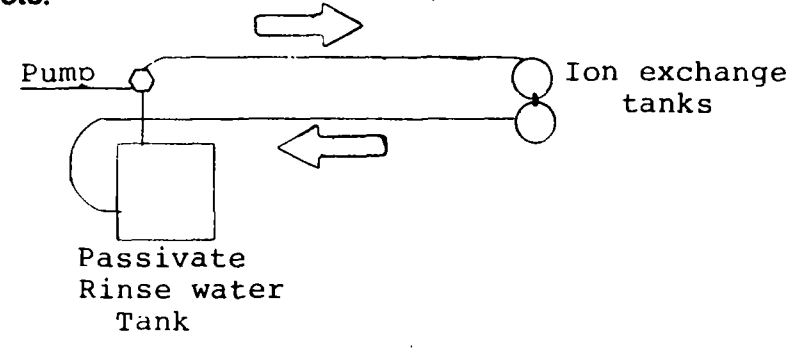
37. Except for owners or operators authorized by rule, all underground injection wells are prohibited unless authorized by permit. Persons currently authorized by rule must still apply for a permit under this section unless authorization was for the life of the well. The permit is obtained from the EPA or an authorized state agency. Any facility that has an underground injection well should notify Textron's Corporate Office immediately (40 CFR 144.31(a)).

38-39. Owners and operators of hazardous waste injection wells are required to demonstrate that they have the resources to close, plug, and abandon the underground injection operation in a manner prescribed by the Director (40 CFR 144 Subpart F). Such a demonstration can include the use of a trust fund, surety bond, letter of credit, insurance, or corporate guarantee.

ATTACHMENT 6-2

WASTEWATER TREATMENT SYSTEM

- **Designed System Flow Rate (gpm):** 33 GPM @ 10' head
- **Current Maximum Flow Rate (gpm):** 30 GPM @ 10' head
- **Describe Conditions for Maximum Flow Rate:** Clean Ion exchange resin beads in tanks.
- **Provide a diagram that shows the basic steps in treatment process, e.g., neutralization, cyanide oxidation, filter press, etc.**



gpm = gallons per minute

N/A

	Yes	No	Unk	N/A
32. Has the facility experienced any organic or hydraulic overloads of its treatment unit(s) which resulted in non-permitted discharges or bypassing within the last twelve months? If yes:	—	X		
a. Was the regulatory agency notified?	—			
b. Were corrective actions implemented promptly and documented?	—			
33. Has the facility characterized its wastewater treatment sludges and solids with respect to solid and hazardous waste requirements? How are wastewater sludges disposed?	X			
34. If your sludges are disposed of on the plant site, do you have a permit?	—			X
35. Have you determined that all facilities where you dispose sludge off-site have approvals for receiving and disposing your type sludges?	X			—
36. a. Does the facility employ licensed or certified operators if licensing or certification is required by the state?	X			
b. If so, are the certifications or licenses kept on file at the facility?	—			X
c. If required, are there backup operators?	—			X

US Ecology, BEATTY NEVADA

F. Point Source Discharges to Ground Water

N/A

Complete this section if the facility discharges wastewater (treated or otherwise) by underground injection.

37. Does the facility have operating permits for all on-site injection wells?	—			
38. Do you have on file the financial assurances for the closure, plugging, and abandonment of the underground injection system?	—			

42-43. In the December 7, 1988 Federal Register, the EPA issued proposed new regulations regarding storm water discharges. A facility with a storm water discharge "associated with industrial activity" would not be required to obtain a permit if the discharge goes to a municipal separate storm sewer serving a population of 100,000 or more. Permits for discharges to municipal sewers serving less than 100,000 will not be required prior to completion of studies mandated under the Clean Water Act amendments; EPA is required to issue regulations by October 1, 1992 specifying whether such discharges will require a permit.

In its December 7 notice, EPA proposes that facilities which discharge storm water associated with industrial activity to non-municipal storm sewers be required to obtain an individual permit or to be covered by a permit issued to the operator of the portion of the storm water system which discharges directly to waters of the United States. Permit applications would have to be filed within one year of the date of the final regulations.

The EPA has eliminated the terms "Group I and Group II" in identifying industrial storm water discharges. Instead, the term "associated with industrial activity" is defined to mean "directly related to manufacturing, processing, or raw materials storage at an industrial plant," and including plant yards, immediate access roads and rail lines, drainage ponds, material handling sites, sites used for application and disposal of process waters, sites used for storage and maintenance of material handling equipment, and sites used currently or in the past for residual treatment, storage, or disposal. The definition does not include discharges from parking lots and administrative buildings.

N/A

	Yes	No	Unk	N/A
39. Are cost estimates for financial assurance up-to-date?	—			
40. If required, has documentation of financial assurance been submitted to the permitting agency?	—			
41. a. If any portions of the underground injection system have been abandoned, were closure and abandonment procedures carried out in accordance with the permit?	—			
b. Are construction records and documentation available?	—			

G. Storm Water Discharges

42. Does the facility discharge to:				
a. a municipal separate storm water sewer system?	X	—		
b. a municipal combined process, wastewater and storm sewer?	—	X		
c. to the ground?	—	X		

Provide a narrative description of all storm water discharge points below (e.g., northwest corner of plant to unnamed brook) and identify them on the facility map.

RAIN WATER DRAINS FROM SOUTHERN END OF PROPERTY TO L.A. COUNTY FLOOD CONTROL SYSTEM

43. If required, does the facility have a permit for its storm water discharges? Confirm that the facility has a copy.	—			X

44. In its December 7 notice, the EPA proposed to reduce its requirements for quantitative data for permit applications for industrial storm water discharges. The proposed regulations would require quantitative data for any pollutant limited in an effluent guideline for an industrial subcategory, any pollutants in a facility's NPDES permit for process wastewater, and conventional pollutants such as oil and grease, TOC, TSS, COD, pH, BOD, total phosphorous, and total nitrogen.

45. The definition of storm water discharges "associated with industrial activity" does not include non-point source discharges, and permits for such discharges are not required at this time. The impact of non-point source discharges is still under study by the EPA.

46. All facilities which hold an NPDES permit are required to report the results of discharge monitoring using a Discharge Monitoring Report (DMR). Reporting requirements and frequencies differ from permit to permit and depend on the nature and impact of the discharge. The frequency of reporting is always at least once per year.

	Yes	No	Unk	N/A
44. If required, has the facility's storm water been analyzed? If so, what constituents are present? _____ _____ _____ _____				X
45. Use Attachment 6-3 to describe non-point source discharges and any measures the facility has in place to control these discharges.				
H. Monitoring, Reporting, and Record Keeping				
All facilities should complete this subsection.				
46. Have all Discharge Monitoring Reports (DMR) required under the NPDES permit program or by the POTW been completed and sent to the appropriate authority according to reporting procedures outlined in the permit?	X			
If not, describe circumstances of late or absent reports during the last two years. _____ _____ _____				
47. Are all Discharge Monitoring reports available on-site? Provide a copy.	X			
48. Has the facility been in compliance with all permitted effluent limitations during the past twelve months?				
If not, list what parameters were exceeded and the number of occasions on Form 6-4.	X			
a. Were the notification requirements outlined in the permit followed? If yes, answer b through d below.				N/A
b. Were the necessary corrective actions taken and documented? (continued)				N/A

51. It is a good management practice to obtain a portion of a sample taken by a regulatory agency and have it analyzed independently to check the accuracy of the agency's analysis.

52. A chain-of-custody form documents the movement of samples from receipt of sample bottles through acceptance at the laboratory for analysis. This documentation helps to ensure the acceptability of the facility's analytical results in compliance disputes. In addition, if samples are classified as hazardous, documentation is required.

54. Outside laboratories used for wastewater analysis are often required under state law to be certified to perform such analyses. At a minimum, the outside laboratory should demonstrate that it has procedures in place to ensure the accuracy of the test results.

55. Sampling methods and analytical procedures are specified in the permit and should be in accordance with 40 CFR 136. Use of these procedures helps to ensure the reliability of test results.

Samples of the facility's waste stream or streams should be collected from the center of the flow channel, where turbulence is at a maximum, at a site specified in the facility's permit which is adequate for collection of a representative sample. In general, two types of sampling are required: grab samples must be used for pH, temperature, cyanide, total phenols, residual chlorine, oil and grease, and fecal coliform; and 24-hour composite samples must be used for all other pollutants. A grab sample is an individual sample of at least 100 milliliters collected at a randomly selected time over a period not longer than 15 minutes.

A 24-hour composite sample is a combination of at least 8 sample aliquots of at least 100 milliliters collected at periodic intervals during the operating hours of the facility over a 24-hour period. The composite must be flow-proportional: either the time interval between each aliquot or the volume of each aliquot must be proportional to either the stream flow at the time of sampling or the total stream flow since the collection of the previous aliquot. The aliquots may be collected manually or automatically. Sample preservation techniques and analysis methods for each pollutant vary and are specified in 40 CFR 136.

Biological monitoring is increasingly becoming a requirement of industrial discharge permits. In biological monitoring, also called bioassay, organisms representative of the local aquatic ecosystem are subjected to a particular effluent to quantify the concentration of the effluent necessary to kill 50 percent of the organisms within a 96-hour period. Water quality standards are then set at a percentage of this lethal concentration, and effluent limitations are set for specific dischargers restricting the quantity, rate, and concentration of the permitted discharge.

56. Sampling and analysis of intake water samples are often required as a means of determining the "net" plant discharge.

		Yes	No	Unk	N/A
48.	(continued)				
	c. Did the facility notify Textron Corporate Environmental Affairs Department?	—			
	d. Did the facility notify Textron Legal Department?	—			
49.	Prepare a list of parameters and limitations for which the facility must report, including the name of the control agency for each requirement and the frequency of reporting. Use Attachment 6-4.				
50.	Is sampling performed by the facility?	—	X		
51.	If sampling is performed by the regulatory agency or control authority, does the facility split the samples with the agency and conduct comparative analyses?	X			
52.	Does the facility maintain chain-of-custody documentation on samples?	X			
53.	Does the facility analyze its own effluent?	—	X		
54.	If an outside laboratory analyzes effluent:				
	a. If required, is the laboratory certified?	X			—
	b. If not certified, does the outside laboratory have a written quality assurance/quality control program? Provide a copy.	—			X
	c. Does the facility inform labs of special preservation and/or analytical requirements, if applicable?	X			—
55.	Are sampling and analysis performed in accordance with procedures specified in 40 CFR 136?	X			
56.	If required, are samples of intake water (water coming into the facility) taken and analyzed on a regular basis?	X			

58. Reporting and record keeping under the NPDES Program must be performed in accordance with 40 CFR 122.48; under the Pretreatment Program in accordance with 40 CFR 403.12; and under the Underground Injection Control Program in accordance with 40 CFR 144.54.

59. If non-compliance under an NPDES permit involves a pollutant which threatens human health or the environment, oral notification must be given to the permitting agency within 24 hours, followed by written confirmation within five days.

62-64. Any new or modified discharges by an NPDES-permitted facility must be reported to the permitting authority so that a determination can be made as to whether an amendment to the permit is required.

64. Section 208 of the Clean Water Act established a procedure whereby states or designated regional authorities were required to formulate and implement strategies to control both point and non-point source pollution. Regional water quality management plans developed by designated authorities or the states were required to provide for the maintenance of effluent-limited stretches and set wasteload allocations on water-quality limited stretches. Section 208 requires that no discharge permits be issued that conflict with regional water quality management plans.

ATTACHMENT 6-4

WASTEWATER DISCHARGE MONITORING PARAMETERS

Outfall Number	Control Authority	Parameter	Limitation Pounds Per Day and/or PPM				Analysis Frequency	Sample Type		Sample Preservation Required	Number of Excursions in the Past Calendar Year
			Daily Average	Daily Maximum	Monthly Average	Monthly Maximum		Composite	Grab		
001 30129	SAN [illegible]	ARSENIC 0.10	0.031	UK		UK	SEMI-ANNUAL	X			NONE
"	"	CADMIUM 0.69	<0.02	UK		"	"	X			
		[illegible] 1.8	0.08	UK		"	"	X			
"		CYANIDE 1.2 TOTAL	<0.1	UK		"	"	X			
"	"	CYANIDE [illegible] 0.86	<0.1	UK		"	"	X			
	"	DIS. SULFIDE 0.1	<0.10	UK		"	"	X			
"		LEAD 0.69	<0.1	UK		"	"	X			
		NICKEL 3.98	<0.1	UK		"	"	X			
"		PH 5.5 - 11	7.7	7-8	7-8	7-8	"	X			
		SILVER 0.43	<0.03	UK		UK	"	X			
"		CHROMIUM 2.77	<0.05	UK		UK	"	X			
"		ZINC 2.61	0.19	UK		UK	"	X			
		TTO 2.13	*	UK		UK	"	X			
"	"	GREASE & OIL 100.0	<10.0	UK		UK	"	X			

Revision Date: 4/25/90

	Yes	No	Unk	N/A
57. If required, has the facility sampled its effluent for the priority pollutants?	X			
If so, provide a copy of the analysis. (SEE NEXT PG.)				
58. Is there a system in place to ensure that all reports are filed in accordance with applicable regulations and contract requirements?	X			
59. Is there a system in place to ensure that all situations resulting in non-compliance with permit conditions are reported to the regulatory agency as required:				
a. Orally, within 24 hours?	X			—
b. Written report within five days? or	X			—
c. According to control authority regulations?	—			
60. Have any of the facility's existing permits been revoked, suspended, or modified by the issuing agency at any time? Explain. _____ _____ _____		X		
61. When required, have all permit applications been signed by an authorized company official (such as a vice president)?	X			
62. Have any and all physical alterations, additions, or process changes at the facility (i.e., changes which would affect quantity or quality of wastewater discharges) been noted in correspondence with the permitting agency?	—			X
63. Have any and all physical alterations been approved by the permitting agency?	—			X
64. Does the facility track and comply with any applicable regional water quality management plans under Section 208 of the Clean Water Act?	—			X

SPILL PREVENTION CONTROL AND COUNTERMEASURE (SPCC) PLANS (40 CFR PART 112) -

65-68. SPCC Plans are required of owners or operators of non-transportation related on-shore and off-shore facilities engaged in drilling, producing, refining, transferring, distributing, or consuming oil and oil products which, due to their location, can be expected to discharge oil into or upon the navigable waters of the U.S. or adjoining shorelines. SPCC plans are required if the total underground oil storage capacity is greater than 42,000 gallons or 1,320 gallons above ground provided no single container above ground has a capacity in excess of 600 gallons.

The plans must be reviewed and certified by a Registered Professional Engineer. For most facilities, the plan includes such items as: identification of all sources of potential oil spills–usually tanks; spill prevention systems such as secondary containment and diked areas; security; and procedures for handling oil transport and transfer; spill detection systems and response actions in case of a spill. The plans are kept at the facility and are not submitted to the state or EPA unless a spill occurs. Also, state and EPA inspectors routinely check to see that applicable facilities have these plans at the facility.

BEST MANAGEMENT PRACTICES (BMPs) PLAN – 40 CFR 125.1

69-70. Section 304 of the Clean Water Act includes provisions for these plans to be established on a case-by-case basis in NPDES Permits. The requirement to develop a BMP Plan is usually included as part of special conditions in an existing or reissued NPDES Permit. The purpose of these plans are to develop control, management, and response actions for the release of any toxic or hazardous substance to receiving waters. Areas of potential discharges of toxic or hazardous substances would include storage areas; loading and unloading areas; plant site run-off; in-plant transfer, process, and material handling areas; and sludge and hazardous waste disposal areas. Plans include provisions for a BMP Committee, areas of spill risk and control strategies at the facility , good housekeeping, security, training, and preventive measures.

71. Wetlands are protected under both the Rivers and Harbors Act, and the Clean Water Act. Both laws restrict persons from discharging dredge or fill materials into navigable waters and/or waters of the United States. Navigable waters include all waters subject to tidal influence, or that are being, have been, or could be used for interstate or international commerce.

72. Unlike the River and Harbors Act, which deals specifically with navigable waters, the Clean Water Act of 1972 deals with waters of the United States, which include navigable waters, all rivers and streams and their tributaries, all lakes that are larger than 10 acres, and all wetlands that are adjacent to these water bodies, as well as those wetlands that are isolated from or have no connection to a surface tributary system. Typically, a stream becomes a water of the United States when its average flow is five cubic feet per second or more.

73. Any depositing of dredge or fill materials into navigable waters or waters of the United States is considered a discharge, regardless of the purpose of the activity. Permitting requirements are determined by the location of the activity, i.e., whether the body of water is considered to be a navigable water or a water of the United States, and the extent of the discharge, i.e., how many acres are affected.

Q 57

certified testing laboratories, inc.
2905 EAST CENTURY BOULEVARD • SOUTH GATE, CALIFORNIA 90280
PHONE: (213) 564-2641 • FAX: (213) 569-7822

LABORATORY NO. 7468

REPORTED 08-18-89

CLIENT H.R. Textron
10445 Glenoaks Blvd.....
Pacoima, CA
Attn: Bill Moses

SAMPLED 08-09-89

RECEIVED 08-10-89

SAMPLE Wastewater

MARKS January - June 1989 Baseline EPA Pretreat

BASED ON SAMPLE As received

RESULTS

Analyte	Analyses Results		Method
Arsenic	0.032	mg/L	(APHA 307A)
Cadmium (Total)	<0.02	mg/L	(APHA 310A)
Copper (Total)	0.11	mg/L	(APHA 313A)
Cyanide (Total)	<0.1	mg/L	(APHA 412B,C)
Cyanide (Free)	<0.1	mg/L	(APHA 412D)
Sulfide (Dissolved)	<0.10	mg/L	(APHA 427C)
Lead (Total)	<0.1	mg/L	(APHA 316A)
Oil & Grease	<10.0	mg/L	(APHA 503A)
Temperature	80	°F	(APHA 212)
Nickel (Total)	<0.1	mg/L	(APHA 321A)
pH	7.5	units	(APHA 423)
Silver (Total)	<0.03	mg/L	(APHA 324A)
Chromium (Total)	<0.05	mg/L	(APHA 312A)
Zinc (Total)	0.28	mg/L	(APHA 328A)

Respectfully submitted,
CERTIFIED TESTING LABORATORIES, INC.

Stuart E. Salot, Ph.D.
Laboratory Director

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these Laboratories.

City of Los Angeles
Bureau of Sanitation
200 N. Main Street
City Hall East, Rm. 1400
Los Angeles, CA 90012
ATTN: EPA Pretreatment

EPA Pretreatment Category: [ ] Electroplating, 40CFR413
[X] Metal Finishing, 40CFR433

REPORT DUE:
I.W. Permit No. 306129

Name and Address of Company H.R. Textron
Facility Address 10445 Glenoaks Blvd., Pacoima, CA
Contact Person Bill Moses Telephone (805) 259-4030
Average Flow gpd 300 Sample Location Baseline EPA Pretreat
Lab Performing Analysis Certified Testing Laboratories, Inc.

- FAILURE TO PROVIDE ANY INFORMATION MAY CAUSE REJECTION OF THIS REPORT.
- FOR POLLUTANTS NOT USED IN YOUR WORK ACTIVITY, STATE "NOT USED".

Analytical Results: Complete form and attach a copy of lab analysis results.

Pollutant (1)	EPA/City Limits 1-day Maximum	Your Lab Results	Compli-ance Yes/No (4)	Pollutant (1)	EPA/City Limits 1-day Maximum	Your Lab Results	Compli-ance Yes/No (4)
Arsenic		0.032		Nickel		<0.1	
Cadmium		<0.02		pH range		7.5	
Copper		0.11		Silver (2)		<0.03	
Cyanide (Total)		<0.1		T. Chromium		<0.05	
Cyanide (Free)		<0.1		Zinc		0.28	
Diss. Sulfides		<0.10		T. Metals (3)			
Lead		<0.1		T. Toxic			
Oil and Grease		<10.0		Organics (TTO)			
Temp. Range		80					

(1) All Pollutants measured in mg/l except pH which has no units. For pollutants not used in your work activity, state "not used".
(2) Applicable only to subcategory B-Electroplating of Precious Metals otherwise limit is 5.0 mg/l.
(3) Total Metals is the sum of concentration or mass of copper, nickel, chromium (total) and zinc.
(4) In a separate sheet, state reason/s for non-compliance and actions taken to correct violations. Submit schedule of compliance.

I certify that our company [XX] is [ ] is not consistently in compliance with EPA Pretreatment Standards for the Electroplating/Metal Finishing industries and the City of Los Angeles Effluent Limits.

I have personally examined and am familiar with the information submitted on this form and attachments. Based upon my inquiry of those individuals immediately responsible for obtaining the information reported herein, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information as directed by 40 CFR 403.12(m).

W.C. Moses
Signature of Official

W.C. MOSES
Print Name

DIRECTOR, FACILITIES ENGINEERING
Title

8/23/89
Date

		Yes	No	Unk	N/A
I.	**Spill Prevention Control and Countermeasure (SPCC) Plans (40 CFR Part 112)**				
65.	Does your facility have greater than 42,000 gallons of total oil in underground storage?		X		
66.	Does your facility have greater than 1,320 gallons (including drums) total oil in above-ground storage?	X			
67.	Does your facility have greater than 600 gallons of oil in a single above-ground tank?	X			
68.	If the answer to 65, 66, or 67 is yes, a SPCC plan is required. Does your facility have a SPCC plan?		X		
	a. Has the plan been certified by a registered professional engineer?		X		
J.	**Best Management Practices (BMPs) Plan (40 CFR 125.1)**				
69.	Does your NPDES permit require a BMP Plan? (SPCC Plan)				
70.	If required, has the facility developed a plan?	X			
K.	**Wetlands**				
71.	Is this facility located adjacent to a navigable waterway?				
72.	Is this facility located adjacent to waters of the United States?				
73.	a. Has the facility ever discharged dredge or fill material into navigable waters or waters of the United States?				
	b. If "Yes," how many acres were filled?_____ Briefly describe the reason for filling wetlands: _____ _____ _____				

74. The Corps of Engineers has been involved with wetlands issues since enactment of the Rivers and Harbors Act of 1899, which was created to protect navigable waters of the United States. Section 10 of that act prohibits persons from erecting unauthorized obstructions, or altering the course, location, capacity or condition of such waters, unless the work has been authorized, through issuance of a permit, by Corps of Engineers (COE). In other words, this Section prohibits the discharge of dredged or fill material into navigable waters. Upon passage of the Fish and Wildlife Coordination Act, both the Fish and Wildlife Service (FWS) and the National Marine Fisheries Service were given the authority to review and comment on Section 10 permit applications.

75a. Under Section 401 of the Clean Water Act, the states have the authority to certify that projects involving discharges of dredged and fill material do not violate water quality criteria. Currently, over twenty states have specific regulations governing wetlands. Most of the states with wetlands regulations are coastal, and in many cases the regulations deal specifically with coastal marshes. Some states, such as Connecticut and Michigan, have specific regulations dealing with freshwater wetlands. Many states have adopted the federal definition or jurisdictional waters to include wetlands. If the state determines that a project will have an adverse impact, the state can choose not to certify the project. If the state does not certify a project involving a Section 404 permit, the COE and EPA are required to deny the Section 404 permit application.

75b. Section 404 of the CWA establishes the permitting authority for discharge of dredged or fill material into waters of the United States. Under Section 404, the COE has the authority to issue permits, but the EPA has involvement through the development of guidelines for selection of dredge and fill sites, and also the authority to veto a COE decision to issue a Section 404 permit.

76. In 1989, the COE, EPA, FWS, and Soil Conservation Service finalized a manual, entitled Federal Manual for Identifying and Delineating Jurisdictional Wetlands, that describes both the criteria used to identify wetlands, and several methods for applying these criteria. According to the Federal Manual, wetlands have three characteristics: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. The 1989 Federal Manual describes the attributes of each of these three criteria. In order for an area to be identified as a wetland, it must possess all three of these characteristics.

78. If the response to this question is yes, the Corporate Legal Department should be notified immediately.

		Yes	No	Unk	N/A
74.	If the facility has discharged dredge or fill material into navigable waters, was a Rivers and Harbors Act Section 10 permit obtained?	—			X
75.	a. If the facility discharged dredge or fill material into either navigable waters or waters of the United States, did the state certify the project in accordance with Clean Water Act Section 401?	—			X
	b. Did the facility obtain a Clean Water Act Section 404 permit for the project?	—			X
76.	a. Has the plant site been inventoried for the presence of wetlands?	—			
	b. If "Yes" to 76a, does the facility have a copy of the report and a map identifying wetlands areas?	—			X

L. Miscellaneous

77.	Are there any other comments that you consider relevant and/or significant to this section of the survey? If yes, please state.	—	X		
78.	Does the toxic chemical release information reported under Section 313 of SARA Title III exceed any limits specified in any water discharge permit?		X		—

PACOIMA

SECTION 7

DRINKING WATER

Introduction

Legal Overview: The Safe Drinking Water Act of 1974, the 1986 amendments, and related regulations are designed to protect the quality of drinking water provided by public water systems. Public water systems are defined as systems for the provision of piped water for human consumption that have at least 15 service connections or regularly serve at least 25 people daily at least 60 days a year. A public water system is either a "community water system" or a "non-community water system" (40 CFR 141.2).

A "Non-Transient, Non-Community Water System" or "NTNCWS," as defined by the 1986 amendments, refers to a public water system that is not a community water system and that regularly serves at least 25 of the same persons for at least six months per year. Most industrial facility water supply systems would fall into this category.

Note: If your water is supplied by a public water system and you provide no additional treatment, these requirements are not applicable.

The EPA regulations under this Act set maximum contaminant levels (MCLs) for certain contaminants in public water systems. The MCL is the maximum permissible level of a contaminant in water delivered to the user. The regulations specify maximum contaminant levels for turbidity, microbiological contamination (bacteria), inorganic chemicals, and certain volatile organic compounds (VOCs). The levels for turbidity and bacteria are based on the sampling methods described in 40 CFR 141.22 and 40 CFR 141.21(a), respectively, and depend on the sampling procedures specified in the permit. For an NTNCWS, the maximum contaminant levels specified for VOCs and inorganics are as follows:

Volatile Organic Compounds (VOCs)	MCL
Trichloroethylene	0.005 mg/l
Carbon tetrachloride	0.005 mg/l
1,2-Dichloroethane	0.005 mg/l
Vinyl chloride	0.002 mg/l
Benzene	0.005 mg/l
para-Dichlorobenzene	0.075 mg/l
1,1-Dichloroethylene	0.007 mg/l
1,1,1-Trichloroethane	0.2 mg/l
Inorganic	
Nitrate (as N)*	20 mg/l

*(No other inorganics)

In addition to the VOCs specified on the previous page, an NTNCWS must test for the following unregulated contaminants, although no maximum concentration has been stipulated:

Bromobenzene	1,1-Dichloroethane
Bromodichloromethane	1,1-Dichloropropene
Bromoform	1,3-Dichloropropene
Bromomethane	1,2-Dichloropropane
Chlorobenzene	1,3-Dichloropropane
Chlorodibromomethane	2,2-Dichloropropane
Chloroethane	Ethylbenzene
Chloroform	Styrene
Chloromethane	1,1,2-Trichloroethane
o-Chlorotoluene	1,1,1,2-Tetrachloroethane
p-Chlorotoluene	1,1,2,2-Tetrachloroethane
Dibromomethane	Tetrachloroethylene
m-Dichlorobenzene	1,2,3-Trichloropropane
o-Dichlorobenzene	Toluene
trans-1,2-Dichloroethylene	m-Xylene
cis-1,2-Dichloroethylene	o-Xylene
Dichloromethane	p-Xylene
Ethylene Dibromide	1,2-Dibromo-3-Chloropropane

The Safe Drinking Water Act imposes monitoring, reporting, and record keeping requirements upon the owners and operators of public water systems. In most cases, these requirements are enforced by the state in which the water system is located.

Violators of the Act, or a comparable state standard, are required to provide public notice of the violation. If an NTNCWS exceeds an applicable MCL, the system owner or operator must provide notice to the system users within 14 days by hand delivery or by continuous posting in a conspicuous place. Posting must continue for as long as the violation exists. An NTNCWS which violates monitoring or testing requirements or receives a variance or exemption must give notice by the same methods within three months.

In addition to setting MCLs, the EPA is required under the Act to promulgate maximum contaminant level goals (MCLGs). An MCLG is defined as the maximum level of a contaminant in drinking water at which no known or anticipated adverse health effects would occur, and which allows for an adequate margin of safety. The MCLGs are non-enforceable health goals; however, they are important because the Act requires that the enforceable MCLs be set as close to MCLGs as feasible.

The 1986 amendments require that all pipes, solder, or flux used in the installation or repair of plumbing in public water systems as of June 19, 1986 must be lead-free. "Lead-free" solder and flux must not contain more than 0.2 percent lead. "Lead-free pipes and pipe fittings must not contain more than 8.0 percent lead (40 CFR 141.43).

SECTION 7

DRINKING WATER

Guidance

Regulatory Authority:	Safe Drinking Water Act; 1986 Safe Drinking Water Act Amendments
Regulatory Citation:	40 CFR Parts 141-143; Corresponding State Regulations
Administering Agency:	U.S. Environmental Protection Agency; Corresponding State Agencies

1-2. Questions are self-explanatory.

3-4. Owners and operators of public water systems are required to monitor the water to determine if it is in compliance with primary drinking water standards (40 CFR 141). Maximum contaminant levels have been set for certain inorganic chemicals, volatile organic chemicals (VOCs), turbidity, and microbiological contamination (bacteria).

SECTION 7

DRINKING WATER

Survey Questions

Complete this section if any portion of the facility's drinking water supply comes from on-site wells or surface water sources, or if the facility's water supply is classified as a Public Water Supply by the state.

			Yes	No	Unk	N/A
1.	a.	If the facility has been subject to an inspection regarding drinking water issues during the last three years or since completion of the last survey, were any concerns or potential concerns uncovered? If so, describe concerns and include copies of inspection reports or correspondence. _____ _____ _____	___	___	▒▒	
	b.	Do any of the concerns or potential concerns uncovered in the inspection remain unresolved?	▒▒	___	▒▒	
2.	a.	Has the facility entered into any Consent Order, Settlement Agreement, Delayed Compliance Order, etc., with respect to drinking water? If so, describe and confirm that facility has copies of all documents. _____ _____	___	___	▒▒	
	b.	If yes, has the facility complied with the terms of the Order?	___	▒▒	▒▒	
3.		Does the facility monitor its drinking water source for the applicable primary drinking water standards?	___	▒▒	▒▒	

5. This is a good management practice.

6. Specific sampling frequencies are set forth in 40 CFR 141, for each of the regulated contaminants. The requirements for the primary drinking water standards are as follows:

Microbiological Samples	Each calendar quarter that the system provided water to the public.
Turbidity Samples	At least one per day (the state may choose to reduce this sampling frequency).
Inorganic Samples	Analysis for nitrate must have been completed by December 1980. This analysis must be repeated at intervals determined by the state.
VOCs	Every three months in accordance with the schedule below (unless reduced monitoring is granted by the state). When VOCs are not detected in the first sample or in subsequent samples, monitoring is to be repeated every five years. If VOCs are detected in the first sample or in subsequent samples, monitoring must be repeated every three months (40 CFR 141.24).

System Size	Begin Monitoring by This Date
10,000 or more	January 1, 1988
3,300 to 10,000	January 1, 1989
Less than 3,300	January 1, 1991

36 Unregulated Contaminants	Ground water samples must be taken at ground water entry points only once per year, during the first quarter. Surface water samples must be taken quarterly for one year at surface water entry points, in accordance with the schedule below:

System Size	Begin Monitoring by This Date
10,000 or more	January 1, 1988
3,300 to 10,000	January 1, 1989
Less than 3,300	January 1, 1991

7. This requirement varies from state to state.

9-10. This is a good management practice.

11. Some states require that operators of water supply treatment systems must be state-certified. Training and certification should be documented by the facility.

	Yes	No	Unk	N/A
4. Does the facility monitor its drinking water for the following:				
a. Coliform bacteria?	___	☐	☐	
b. Nitrate?	___	☐	☐	
c. Turbidity?	___	☐	☐	
d. Other? Specify: _____	___	☐	☐	
Confirm that facility has copies of analyses.				
5. Does the facility have written procedures for its drinking water monitoring program? Confirm that facility has a copy.	___	☐	☐	
6. Do sampling frequencies meet or exceed regulatory requirements?	___	☐	☐	
7. If monitoring and analysis are performed more frequently than required by the regulations, and if required, are all the results being submitted to the regulatory agency? Confirm that facility has copies.	___	☐	☐	X
8. Are instances of non-compliance with the standards reported to the regulatory agency within 48 hours? Confirm that facility has copies.	___	☐	☐	
9. Is monitoring equipment routinely calibrated and maintained?	___	☐	☐	
10. Are maintenance records maintained? Confirm that facility has copies.	___	☐	☐	
11. If the facility has a drinking water treatment system:				
a. Have certifications for operators been obtained where required? Confirm that facility has copies.	___	☐	☐	___
b. Are training programs for system operators in place and documented? Confirm that facility has copies.	___	☐	☐	✓

12-13. Samples to be used to demonstrate compliance with the Safe Drinking Water Act must be analyzed by state-approved laboratories. Samples for turbidity, free chlorine, temperature, and pH may be performed by any person acceptable to the state. (40 CFR 141.28)

14. All required monitoring results must be reported to the state within ten days of the end of the month in which the results are received, or within ten days of the end of the monitoring period specified by the state, whichever is the shortest (40 CFR 141.31(a)).

15. Record maintenance is required by 40 CFR 141.33.

16. Cross-connections are defined as inter-connections between the potable water supply and the cooling water, process water, sanitary water, or water systems. Good engineering practice calls for an air gap, although a reduced pressure backflow preventer is allowable for some purposes.

17. Modifications to the drinking water system typically must be reviewed, approved and inspected by the responsible state agency.

	Yes	No	Unk	N/A
12. If the facility performs its own laboratory analyses of samples, has the laboratory been certified or accepted by the state to conduct such analyses? Confirm that facility has a copy of certification.	___	☐	☐	X
13. If the facility contracts with an outside laboratory for sample analysis, has the outside laboratory been certified or accepted by the state? Confirm that facility has a copy of certification.	___	☐	☐	X
14. Are monitoring results reported to the control authority within the time period specified by the regulations? Confirm that facility has copies.	___	☐	☐	
15. Are reports and records retained in accordance with the regulations, as follows:				
a. Bacteriological analyses (five years)?	___	☐	☐	
b. Chemical analyses (ten years)?	___	☐	☐	
c. Actions to correct violations (three years)?	___	☐	☐	
d. Documents relating to sanitary surveys (ten years)?	___	☐	☐	
e. Records concerning variances or exceptions (five years after expiration)?	___	☐	☐	
Confirm that facility has copies.				
16. Has the drinking water distribution system been inspected for cross-connections?	___	☐	☐	
17. If the drinking water treatment system has been significantly modified or constructed after June 24, 1977, did the facility obtain written approval from the regulatory agency? Confirm that facility has a copy.	___	☐	☐	___

Name of Regulatory Authority: _____
Date of Approval: _____

18. The owner or operator of an NTNCWS is required to issue notice to persons served by the system as to the sources and health effects of lead contamination, even if the water supply is not in violation of the national drinking water regulation for lead. Such notice is not required if the owner or operator can demonstrate to the state that the drinking water system is "lead-free" (40 CFR 141.34).

19. Owners or operators of NTNCWS who are required to monitor for certain unregulated organic chemicals under 40 CFR 141.40 must send a copy of the sample analysis results to the state within thirty days. The owner or operator must notify persons served by the system by written notice within three months that monitoring results are available. The notice must identify a person and telephone number to contact for additional information (40 CFR 141.35).

The monitoring requirements are determined by the system size. They are as follows:

Number of Persons Served	Monitoring to Begin No Later Than
Over 10,000	January 1, 1988
3,300 - 10,000	January 1, 1989
Less than 3,300	January 1, 1991

NOTE: Most industrial sources serve less than 3,300 people and would need to monitor before January 1, 1991.

	Yes	No	Unk	N/A
18. a. Does the facility have documentation to show that all pipes, solder, and flux installed since June 19, 1986, meet the "lead-free" standards? Confirm that facility has a copy.				X
b. Has the facility demonstrated to the state that its water supply system is "lead-free"?				X
c. If not, were the proper notices posted no later than June 19, 1988, for three months to notify employees of the sources, health effects, and mitigation of lead contamination in drinking water? Confirm that facility has a copy.				X
19. If the facility was required to monitor for unregulated contaminants by January 1, 1989:				
a. Were the results of such monitoring sent to the state within thirty days of receipt?				X
b. Was the public notified?				X
Confirm that facility has a copy.				
20. Are there any other comments that you consider relevant and/or significant to this section of the survey? If yes, please state. Please include information relating to any other correspondence you may have had with the state related to drinking water issues.				

SECTION 8

GROUND WATER

Introduction

This section is aimed at increasing awareness of the significant regulatory, legal, and economic exposure of ground water contamination.

A relatively high percentage of private citizen litigations against industry are based on ground water contamination.

Although there is no specific national ground water protection program, most of the requirements of "Superfund" (CERCLA), RCRA, and the Safe Drinking Water Act are aimed at ground water protection. Some states do have specific ground water protection legislation. These should be checked.

Chemical Releases to ground water are extremely serious, especially if the release involves a potential drinking water source. Ground water clean-ups are also difficult and expensive.

SECTION 8

GROUND WATER

Guidance

1-13. This section is designed to:

- identify current ground water issues;
- identify potential ground water issues; and
- evaluate the level of concern associated with current or potential ground water issues.

SECTION 8

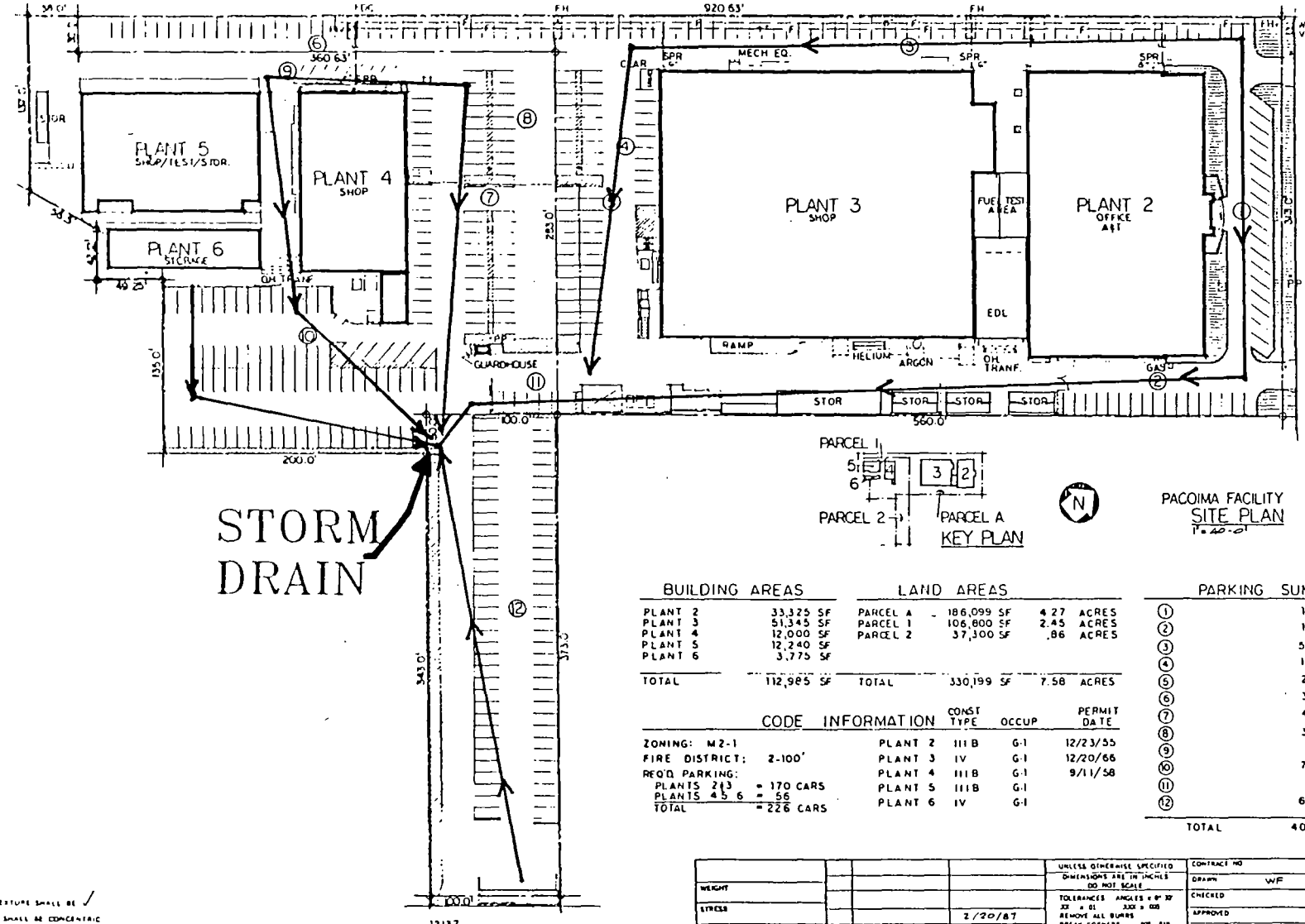
GROUND WATER

Survey Questions

			Yes	No	Unk	N/A
1.	a.	If the facility has been subject to an inspection regarding ground water issues during the last three years or since completion of the last survey, were any concerns or potential concerns uncovered? If so, describe concerns and include the copies of inspection reports or correspondence. SOIL CONTAMINATION AS A RESULT OF LEAKING UST	X			
	b.	Do any of the concerns or potential concerns uncovered in the inspection remain unresolved?	X			
2.	a.	Has the facility entered into any Consent Order, Settlement Agreement, Delayed Compliance Order, etc., with respect to ground water? If so, describe and confirm that copies of documents are on file. INFORMATION ON FILE IN FACILITIES OFFICE				
	b.	Has the facility complied with the terms of the Order?				
3.		If there is useable ground water located beneath the facility:				
	a.	Is the water used as a source of drinking water by the facility?		X		
	b.	Is the water used as a source of drinking water by others within a 2-mile radius of the site?				X
	c.	Is the water used for other purposes?				

5. "Potable" water is water suitable for drinking.

STORM WATER DISCHARGE POINT



PARCEL 1
PARCEL 2
PARCEL A
KEY PLAN

PACOIMA FACILITY
SITE PLAN
1" = 40'-0"

BUILDING AREAS

PLANT 2	33,325 SF
PLANT 3	51,345 SF
PLANT 4	12,000 SF
PLANT 5	12,240 SF
PLANT 6	3,775 SF
TOTAL	112,985 SF

LAND AREAS

PARCEL A	186,099 SF	4.27 ACRES
PARCEL 1	106,800 SF	2.45 ACRES
PARCEL 2	37,300 SF	.86 ACRES
TOTAL	330,199 SF	7.58 ACRES

PARKING SUMMARY

①	18 SPACES
②	17
③	58
④	10
⑤	22
⑥	37
⑦	47
⑧	33
⑨	8
⑩	76
⑪	7
⑫	68
TOTAL	400 SPACES

CODE INFORMATION

ZONING: M2-1
FIRE DISTRICT: 2-100'
REQ'D PARKING:
PLANTS 2&3 = 170 CARS
PLANTS 4 5 6 = 56
TOTAL = 226 CARS

	CONST TYPE	OCCUP	PERMIT DATE
PLANT 2	III B	G-1	12/23/55
PLANT 3	IV	G-1	12/20/66
PLANT 4	III B	G-1	9/11/58
PLANT 5	III B	G-1	
PLANT 6	IV	G-1	

1. SURFACE TEXTURE SHALL BE ✓
2. DIAMETERS SHALL BE CONCENTRIC WITHIN ____ DIA
3. APPLY FSCM NO 81873 TO SHAPES ONLY
4. IDENTIFY WITH PART NO AND LATEST REV LTR

NOTE UNLESS OTHERWISE SPECIFIED

WEIGHT		
STRESS		
Q A		2/20/87
		5/9/85
VAL ENGRG		1/20/85
MATL	DASH NO	NEXT ASSEMBLY / USED ON

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	WF
CHECKED	
APPROVED	
DESIGN APPROVED	
APPROVED	
ENGRG RLSE	
RELEASE DATE	

HR TEXTRON

PACOIMA FACILITY
SITE PLAN

SIZE D | FSCM NO 81873 | DRAWING NO 1603
SCALE | WEIGHT | SHEET

STATE OF CALIFORNIA — GEORGE DEUKMEJIAN, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CALIFORNIA 91754-2156
(213) 266-7500

RECEIVED
DEC 22 1989
VP Legal and Contracts

Copy K J Millman
D T Stewart
Jo Ste (for GSC)
file
12/22 - G. Blomberg
1/3 - J Woods

December 18, 1989

Mr. John Hedges
HR Textron, Inc.
25200 West Rye Canyon Rd.
Valencia, CA 91355

CLEANUP AND ABATEMENT ORDER NUMBER 89 -104, FOR HR TEXTRON FACILITY LOCATED AT 10445 GLENOAKS BOULEVARD, PACOIMA. (ID # 913310270).

Reference is made to your letter dated December 4, 1989 that outlined the conditions for groundwater investigation. Board staff have evaluated the letter and find that the issues raised in the letter have already been discussed at all the meetings held. As a result, Board staff firmly believe the necessity of groundwater monitoring wells at the subject site.

Enclosed is a Cleanup & Abatement Order directing you to submit to this Regional Board a groundwater investigation workplan for the subject facility.

This Order is issued under Section 13304 of the California Water Code.

If you fail to comply with the terms and conditions of this Order, the Board may impose civil penalities or seek injunctive relief in accordance with Section 13350 of the California Water Code.

Board staff will be happy to arrange a meeting where issues pertaining to the enclosed Order can be discussed.

If you have any questions, please call Mr. Joshua M. Workman at (213) 266-7561.

Robert P. Ghirelli

Robert P. Ghirelli, D. Env.
Executive Officer

EGS/egs

cc: please see attached mailing list

Regional Board Members
Mr. Jorge Leon, State Water Resources Control Board, Office of Chief Counsel
Ms. Marianne Macki, Harding Lawson Associates, 2804 Camino Dos Rios, Suite 207, Newbury Park, CA 91320
Mr. Russel Powers, Leighton & Associates, 3050 Daimler Street, Suite A, Santa Ana, CA 92705
Mr. Thomas Mills, Leighton & Associates, 3934 Murphy Canyon Rd, Suite B-205, San Diego, CA 92123
Mr. Michael Hickok, Pettit & Martin, 355 S. Grand Avenue, 33rd Floor, Los Angeles, CA 90071
Mr. David Dunbar, 18552 McArthur Blvd., Suite 310, Irvine CA 92715-1211
Mr. Donn Marrin, 8950 Villa La Jolla Dr., Suite 1200, La Jolla CA 92037
Mr. William Tolson, 999 Green St. #1001, San Francisco, CA 94133

STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

CLEANUP AND ABATEMENT ORDER NO. 89-104

Requiring HR Textron to cleanup and abate the effects of wastes discharged to soil and/or groundwater at its Pacoima facility.

The California Regional Water Quality Board, Los Angeles Region, finds:

1. HR Textron, Inc.; herein after called HRT, is located at 10445 Glenoaks Blvd. in the city of Pacoima, county of Los Angeles, California.

2. The property is owned by Mr. William Tolson, 999 Green Street, # 1001, San Francisco, California. HRT has been the lease holder and the operator of this facility since 1966.

3. The site is located in the San Fernando Subunit of the Los Angeles River Basin. The San Fernando Subunit contains well fields which provide domestic drinking water to the residents of the San Fernando Valley and the Great Los Angeles area.

4. HRT manufactures various components used in the aerospace industry. The company uses both chlorinated and unchlorinated solvents, cutting oils and other chemicals in its manufacturing operations. According to information provided by HRT, both above ground and underground storage tanks have been and continue to be utilized by HRT for chemical, gasoline and waste storage purposes. A workplan for underground tank leak detection was requested by this Board's staff in 1984.

5. Between 1966 and January 1985, HRT utilized two underground tanks, 1,000 -gallon capacity for waste storage purposes. As part of HRT's leak detection and site assessment program, these two tanks were removed in January, 1985.

6. Various soil assessment studies have been conducted at the site by consultants for HRT. Reviews by Board staff of the analytical data in the subject site assessment reports resulted in the following findings:

   a. The subsurface stratigraphy at the site is generally silty sands interspersed with discontinuous clay lenses and poorly -sorted sands and gravel.

b. Volatile Organic Compounds,(VOCs)including trichloroethylene (TCE) methylene chloride, 1, 1, 1- trichloroethane(TCA), petroleum hydrocarbons and oil and grease were analytically confirmed in soil samples obtained from the soil borings. These chemicals have been used and/or stored at HRT facility.

c. Clay lenses occur at around 50-55 feet below ground surface, but are not considered a permanent barrier to contaminants migration. VOC contamination was found in soil samples at a depth of 78 feet and petroleum hydrocarbons were detected at a depth of 110 feet onsite.

d. During tank removal, an undisclosed amount of soil was excavated for offsite disposal. Questions remain regarding the final extent of cleanup achieved and the potential impact of the contamination on groundwater quality.

7. The chlorinated solvents confirmed in samples obtained at the site, including methylene chloride and 1, 1, 1- TCA, are highly mobile and have densities greater than that of water. Thus, these compounds behave as "sinkers" with respect to the movement of water in the permeable sediments underlying the facility.

8. In accordance with this, Regional Board staff directed HRT in three letters dated August 27, 1987, May 12, 1988 and April 5, 1989 to submit a groundwater investigation workplan.

9. The required technical reports were not received by their respective due dates. Several meetings were held to try to reach an understanding regarding HRT's activities. During the latest meeting, held on September 26, 1989, HRT was directed again by Board staff to submit the required workplan for groundwater investigation.

10. On October 16, 1989 the Board received a letter from HRT stating that HRT has" tentatively" concluded that the release from the underground storage tanks does not pose a present threat to groundwater and thus HRT does not intend to submit a groundwater investigation workplan.

11. HRT, however, has indicated its willingness to clean up the soil and has proposed to this Board a soils remediation plan. In a letter dated November 17, 1989 , Board staff responded to the HRT proposal and indicated no objection to its implementation on condition that groundwater monitoring wells are installed. Board staff emphasized the primary purposes of

the groundwater monitoring wells to be as follows:

1. Determine if groundwater underlying the site has been impacted by the confirmed chemical releases.

2. Monitor the effectiveness of any cleanup system including the proposed soil remediation.

12. This discharge of unauthorized wastes onsite is a violation of Section 13260 of the California Water Code, which requires that any person proposing to discharge waste to land must file a report of waste discharge and receive requirements from the Board.

13. The dischargers have not submitted a report of waste discharge. The Regional Board has not considered nor adopted waste discharge requirements for this facility.

14. The discharge of wastes at HRT threatens to cause a condition of pollution and nuisance. This discharge has contaminated the underlying soils and potentially the groundwater underlying the facility. Board staff has concluded that further investigation of this site is necessary to determine if VOCs and fuel hydrocarbons had migrated to the underlying groundwater.

15. On November 27, 1978, the Regional Board adopted a revised water quality plan for the Los Angeles River Basin. This plan lists the beneficial uses of the San Fernando Subunit which underlies the facility. The beneficial uses, as described in the Basin Plan, include municipal and domestic supply, agricultural supply, industrial service supply and industrial process supply.

16. Section 13304 of the California Water Code states, in part, that:
"Any person .... who has caused or permitted..... any waste to be discharged or deposited where it is, or probably will be, discharged into the waters of the state and creates, or threatens to create a condition of pollution or nuisance, shall upon order of the Regional Board cleanup such waste or abate the effects thereof or, in the case of threatened pollution or nuisance, take other necessary remedial action."

17. This enforcement action is being taken for the protection of the environment and as such is exempt from the provisions of the California Environmental Quality Act (Public Resource Code, Section 21000 et. seq.) in accordance with Section 15321, Chapter 3, Title 14, California Code of Regulations).

Order

IT IS HEREBY ORDERED that pursuant to the California Water Code, Section 13304, the discharger shall:

1. By January 15, 1990, submit a comprehensive site characterization workplan to the Regional Board's Executive Officer for review and approval, describing in detail a groundwater investigation proposal capable of determining the full extent of any groundwater contamination originating from the facility.

2. By January 15, 1990, submit a facility audit to supplement information already provided to the Board. This audit must consist of, at a minimum, a written chronology and site plan showing all past and present use, storage and disposal of chemicals, including accidental spills, and a history of past pracitices and activities with respect to waste storage and offsite disposal. An appropriately scaled map with clear labelling of facility details including location, size and contents of all above and underground tanks and associated piping system shall be included with this audit report.

3. Implementation of the approved site characterization workplan shall begin no later than one month after its approval by the Executive Officer. The final report describing the analytical results and conclusions must be submitted to the Board no later than 90 days after workplan approval.

4. In order to insure that all work at the facility is conducted in a timely manner, monthly reports of progress are required. The first progress report under this schedule is due to this Board by February 18, 1990. The reports must include, but not be limited to, the following information.

   a. a discussion of all completed and ongoing activities during the reporting period;

   b. a discussion of proposed work activities for the next reporting period;

   c. an updated time schedule for completion of all additional work needed, and

   d. the results of any soil and/ or groundwater monitoring or testing completed.

This Order in no way limits the authority of the Regional Board, as contained in the California Water Code, to require additional investigation and cleanup pertinent to this project.

This Order may be revised by the Executive Officer as additional information from the project becomes available.

Failure to comply with the terms and conditions of this Order may result in imposition of civil liability, either by the Regional Board or judicially by the Superior Court, in accordance with Section 13350 et. seq., of the California Water Code and/or referral to the Attorney General of the State of California for such legal action as he may deem appropriate.

Robert P. Ghirelli

Robert P. Ghirelli, D. Env.
Executive Officer

12/18/89
Date

ERM-West, Inc.

Suite 600 • 1920 Main Street • Irvine, California 92714-7210 • (714) 476-3040 • Telefax (714) 476-3053

RECEIVED
APR 05 1990
ENVIRONMENTAL

April 2, 1990

Mr. John Hedges
Vice President
Contracts and Production Programs
HR Textron, Inc.
25200 West Rye Canyon Road
Valencia, California 91355

Dear John,

Transmitted with this letter is the revised remediation plan that you requested for installation and operation of a vapor extraction system at the Pacoima facility. This plan covers remediation for the first twelve months of operation. The budget has been divided into capital and operation/maintenance costs.

We note that there are three tasks - Startup Assistance, Technical Support, and System Operation and Maintenance - whose estimated scope and budget are less certain than those tasks connected with the design and construction of the system. This situation occurs primarily because of the site-specific nature of remediation efforts, and the need to estimate project operation and maintenance costs over a one-year period. We will keep you closely appraised of the scope and nature of work on these and all other tasks as work proceeds.

Finally, we have included a 20% contingency in the remediation budget for a total estimated budget of $350,000. However, we will not exceed the estimated cost of $293,000 without prior written approval of HR Textron.

Please call us at (714) 476-3040 if you have any questions.

Very truly yours,

ERM-WEST, INC.

Bruce G. Stearns
Project Manager

David B. Dunbar
Principal

Attachments Noted

cc: Paul Duff, Textron, Inc. (via facsimile)
Jeff Wheeler, HR Textron, Inc. ✓

/dd 873.01

TASK NO.	TASK NAME	ERM-WEST LABOR	ERM-WEST ODC'S	SUBCONTRACTOR*	COST*	TASK TOTAL	NATURE OF COST
873.01	Step 1 Vapor Extraction Well	$3,000	$1,000	Driller	$3,100	$7,100	CAPITAL
				Analytical Lab	$3,100	** $3,100	CAPITAL
						$10,200 + SURCHARGE = $11,500	
873.02	Step 2 Air Injection Wells	$12,000	$3,000	Driller	$11,400	$26,400	CAPITAL
				Analytical Lab	$12,400	** $12,400	CAPITAL
						$38,800 + SURCHARGE = $42,500	
873.03	Step 3 System Design	$10,000	$2,000	Engineering Design	$10,000	$22,000	CAPITAL
873.04	Step 3 Construction	$22,000	$2,500	Equipment	$48,000	$72,500 ~~$48,000~~	CAPITAL
873.05	Step 4 Bench Tests for Enhanced Recovery	$16,000	$1,500	Analytical Lab	$12,750	$30,250	EXPENSE
873.06	Startup Assistance	$15,000	$3,000	Engineering	$3,000	$21,000	CAPITAL
873.07	Remediation Plan	$20,000	$2,500			$22,500	EXPENSE
873.08	Installation Report	$8,000	$1,500			$9,500	CAPITAL
*** 873.09	Technical Support	$8,000	$1,500			$9,500	CAPITAL ~~EXPENSE~~
873.10	System Operation and Maintenance (9 months)	$40,000	$8,000	Analytical Lab	$9,000	$57,000	EXPENSE
		$154,000	$26,500		$112,750	$293,250	

* Note: Estimates of subcontractor costs are included for reference only.
HR Textron has assumed responsibility for management of subcontractors.

Total Estimated Capital: $174,000
Total Estimated Expenses: $119,250

** SURCHARGE FOR ERM-WEST MANAGEMENT OF SUBCONTRACTORS

*** CONTINGENCY

ERM-West, Inc.

Suite 600 • 1920 Main Street • Irvine, California 92714-7210 • (714) 476-3040 • Telefax (714) 476-3053

REMEDIAL ACTION PLAN

HR TEXTRON
PACOIMA FACILITY

Prepared for:
HR Textron, Inc.
25200 W. Rye Canyon Road
Valencia, California
91355

Prepared by:
ERM-West, Inc.
1920 Main St., Suite 600
Irvine, California 92714

April 1990

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APPENDIX A SCHEDULE

INTRODUCTION

This document presents a remediation plan for volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPH) removal from soil at HR Textron's Pacoima facility, which is located at 10445 Glen Oaks Boulevard, Pacoima, California. Because VOCs are the most mobile constituents and represent a higher hazard for the subsurface, immediate implementation of a vapor extraction system is recommended for the remediation plan at this site.

A leak from underground storage tanks occurred in the past at this site. The two underground storage tanks, 1,000 gallons capacity each, were used for waste oil storage. The tanks were removed in 1985, and the excavation (approximately 12 feet deep) was backfilled with imported clean soil. The investigations conducted subsequent to the removal of the tanks showed that the constituents in soil beneath the former tank pit consisted of oil hydrocarbons and VOCs to a maximum depth of 52.5 feet below the ground surface.

A clay layer, located at approximately 46 to 52.5 feet, retarded vertical migration of the soil contaminants. VOCs have not been detected below this layer, and TPH concentrations are generally in the range of 10 ppm or less in soils below the clay layer. This range of TPH values is considered to be representative of normal background organic concentrations in the sandy soils of the area. Lateral migration of constituents appears to be limited. Borings in the area of the former tank pit showed that VOCs were below laboratory detection limits east, north and northwest of the tank pit. Traces of VOCs were detected in soil samples collected above the clay layer in the cluster of borings LB-3, LB-103 and LB-103A southwest of the excavation.

The following steps are recommended for the implementation of the remediation plan:

Step 1 Installation of a production well for soil vapor extraction

Step 2 Installation of four air injection wells around the production well

Step 3 Design and installation of a soil vapor extraction and treatment system

Step 4 Bench tests to determine the feasibility of enhanced vapor recovery using heat and/or methanol

DESCRIPTION OF THE REMEDIATION PROCESS

In-situ vapor extraction or in-situ volatilization involves the removal of volatile organic compounds from subsurface soil by mechanically drawing or venting air through the soil matrix. The unit operations are common to most vapor extraction systems, although such systems may vary considerably in size and design because of site-specific conditions. The system consists of:

- Injection wells - slotted or screened pipes in the proper zone to assure the air sweep of the contaminated soil.

- Production well - slotted or screened pipe to allow the air flow loaded with constituents vapor to be transported to aboveground equipment.

- Vacuum pump/blower and associated aboveground piping used for loaded air suction from soil and transportation to subsequent processing equipment.

- Activated carbon filter for retention of contaminants before the air flow is released in the atmosphere or recycled to injection wells.

- Associated instrumentation, valves, wiring, electrical panel, etc.

In this system a pressure gradient is created by the vacuum pump through the production well. Due to the negative pressure, the air flows from the injection wells to the production well. This allows volatile chemicals in the soil to move through the air spaces between the soil particles to the production well. The air, loaded with chemicals in vapor form, is drawn into the vacuum pump/blower and transported to the carbon filter.

The efficiency of the system depends on the design sophistication and soil and constituents properties. Usually the injection wells are located equidistant around the central production well. The typical "unit" has four

injection wells and one production well. The distance from the injection wells to the production well depends on soil structure, vacuum produced by the pump and other design specifics. Based on available data at this time, we propose to install a unit for soil vapor extraction. Depending on the performance of the system and lateral extent of chemical constituents, extensions to the system may be required.

The unit design will begin after the data collected during Steps 1 and 2 of this work plan are available. Four injection wells are going to be located equidistant from the production well. Based on soil structure and available information from the previous investigation on constituents occurrence in subsurface, our best estimate is that the injection wells will be located 25 to 30 feet from the extraction well as shown in the attached site plan map. In this remediation system, the entire volume of highly contaminated soil is included. The estimated surface area to be remediated will be 35 feet by 35 feet.

The process efficiency is directly related to constituents properties: compounds with high vapor pressure and low boiling point are most effectively removed from soil; volatile organics are removed easier by in-situ vapor extraction than kerosene or oils. Halocarbons will be removed faster than the oils in soil. This situation justifies consideration of enhancement of vapor extraction at this site. The bench scale tests will determine the feasibility of using air with a small percentage of methanol to enhance recovery of the oils.

The exhaust air flow is processed by retention of toxic vapors. Activated carbon, proposed here for vapor treatment, is often used for vapor extraction systems. Because activated carbon treatment involves significant operation and maintenance cost over time, alternative treatment methods may be considered as soil remediation progresses. Alternative treatment methods for the extracted soil vapors before final treatment in the activated carbon columns may include a condenser to remove volatile and semivolatile constituents or vapor biotreatment.

Since the concentration of solvents in the soil comprise a very small fraction of the hydrocarbons to be remediated, the composition of the vapors removed from the soil may change significantly over time. During the latter stages of remediation, the vapors may consist only of non-halogenated hydrocarbons which could be safely incinerated.

The soil extraction system to be installed will be designed so that it could be adjusted to any enhancement of vapor extraction developed from bench tests. The system will also be designed to allow for the enhancement of activated carbon filters by biotechnology or replacement by vapor incineration.

Any new technique that appears applicable will be discussed with the RWQCB before any modification of the remedial plan techniques. The vapor extraction system for site remediation will operate until the cumulative contaminant removal approaches an asymptotic level (when the cumulative removal curve becomes horizontal).

WORK PLAN ACTIVITIES

STEP 1 Installation of an Extraction Well

Based upon available data from previous investigations, a production well for vapor extraction from soil will be located near the center of the limits of excavation (location of former tanks). This well has to be located such that the air flow in the soil will assure the movement of the vapors from areas of lowest concentrations (limits of the plume) to the highest concentration areas (the location of the former tanks).

The techniques to be used during the construction of the vapor extraction well are presented below. Soil samples from this boring will be analyzed to collect data on physical soil properties and chemical occurrence required to evaluate and design soil remediation using vapor extraction technique. These data on soil properties were not collected previously and are necessary for engineering and process design.

The soil boring will be installed with an 8-inch hollow stem auger. A 50 foot section of 4-inch diameter PVC pipe will be installed. The pipe will be perforated from approximately 10 feet to 50 feet below grade. Pea gravel or very coarse sand will be placed in the annulus between the 8-inch auger and the perforated pipe as the auger is withdrawn. The upper 10 feet of annular space will be grouted with cement.

Samples to be collected include 18-inch Shelby tubes from a depth of approximately 15 to 45 feet and 3-inch brass ring samples in the clay layer to a maximum depth of 51.5 feet. Care will be taken to ensure that the clay layer is not completely penetrated during sampling. However, if the clay layer is penetrated, the bottom of the bore hole will be sealed with bentonite prior to construction of the vapor extraction well. Three Shelby tubes taken from approximate depths of 15 to 18, 24 to 27 and 39 to 42 feet will be used for testing of soil physical properties; the remaining tubes will be used in bench tests for enhanced vapor recovery techniques.

To protect against the possible introduction of contaminants to the boring, the drill rig and augers will be steam cleaned prior to arrival. All sampling equipment will be cleaned in an Alconox solution and rinsed with distilled water between sampling intervals in the same hole.

Physical characteristics of sampled soils will be logged by a qualified ERM geologist. Soil samples will be screened for petroleum hydrocarbons with an HNu PID 101 meter or its equivalent. Samples will be labeled as to hole, depth, and time; placed in a chilled cooler and noted on chain of custody forms.

The 5-foot interval ring samples will be analyzed by EPA Methods 8010 and 8020 for volatile organics and 418.1 for total hydrocarbons. One sample selected from the ring samples may also be used for soil physical properties testing. The following tests will be performed for the soil physical properties that are required for remediation process and design engineering:

- engineering classification;
- moisture content;
- particle size analysis (fine sieve);
- permeability of soil matrix;
- thermal conductivity; and
- specific surface area.

STEP 2 Installation of Four Air Injection Wells

The soil borings for these wells will be installed with an 8-inch diameter hollow stem auger to a depth of approximately 50 feet. Ring samples will be collected using a modified California split-spoon sampler from ground level to the bottom of the borings at 5-foot intervals. Ring samples will be collected continuously through the clay unit to a maximum depth of 51.5 feet. Care will be taken to ensure that the clay layer is not completely penetrated during sampling. If the clay unit is penetrated, the bottom of the bore hole will be sealed with bentonite prior to construction of the well.

To protect against the possible introduction of contaminants to the borings, steam cleaned augers will be used on each boring. All sampling equipment will be steam cleaned between holes and cleaned in an Alconox solution and rinsed with distilled water between sampling intervals in the same hole.

Physical characteristics of sampled soils will be logged by a qualified ERM geologist. Soil samples will be screened for petroleum hydrocarbons with an HNu PID 101 meter or its equivalent. Samples will be labeled as to hole, depth, and time; placed in a chilled cooler and noted on chain of custody forms.

Samples for soil physical properties will be collected from each boring within distinct lithologic units. Soil samples will be analyzed by EPA Methods 8010 and 8020 (for volatile organics) and 418.1 (total hydrocarbons).

Drill cuttings and samples not designated for analyses from all borings will be stored on site until laboratory analyses of selected samples is completed. If these analyses indicate contaminants are present at concentrations that are below-regulatory action levels, the soils may be used for fill on site. If analyses indicate contaminant concentration at or above regulatory action levels, it may be necessary to dispose of the soils at an approved land fill or to remediate the soils on site prior to disposal.

Each boring will be converted to a vapor extraction well using 4-inch perforated pipe. The depth of the well is estimated to be approximately 50 feet and the screened portion of the well will extend from approximately 10 to 50 feet below the ground surface.

STEP 3 Design and Installation of a Soil Vapor Extraction and Treatment System

The activities in this step form a major part of the work required for completion of this project. There are four major tasks involved in this step:

- Design the vapor extraction and treatment system for soil remediation at the former tank pit.

- Identify and purchase remediation equipment.

- Obtain environmental and construction permits.

- Install the soil remediation equipment.

Design of the remediation system. The vapor extraction and treatment system will be designed based on the data collected during Steps 1 and 2. The attached schematic of the vapor extraction and treatment system shows the general arrangement of the remediation system. Two activated carbon vapor treatment columns will be connected in series to the line from the extraction well. When breakthrough occurs in the first column, it will be replaced by the supplier or steam regenerated on site. The replaced or regenerated column will then be connected to the outflow from the backup column. In this manner, the outflow emitted to the atmosphere will pass through a fresh activated carbon column prior to discharge.

Identify and purchase remediation equipment. ERM-West, Inc. will provide a list of equipment manufacturers and representatives who can provide the equipment and services to meet the design criteria. HR Textron will contract directly with the suppliers to obtain the equipment.

Obtain environmental and construction permits. HR Textron will obtain all permits associated with installation of the soil remediation system. ERM-West, Inc. will provide technical assistance on any aspects of permitting, if requested.

Install the soil remediation equipment. HR Textron will oversee installation of the soil remediation system that is designed. ERM-West, Inc. will provide technical assistance on any aspects of installation, if requested.

STEP 4 Bench Tests for Enhanced Vapor Recovery

Bench tests are recommended for determining methods of enhancing extraction of the oils released from the tanks. The use of these innovative techniques is necessary because the material to be removed from the soil has very low volatility. In the center of the affected area, for example, the organic phase contains 1,1,1-TCA in the range of 100 to 180 ppm and TPH (oils) in the range of 15,000 to 20,000 ppm. The material in the soil to be remediated is represented by a "solution" of these constituents. The 1,1,1-TCA has a low boiling point (74° C) and a high vapor pressure; whereas, the boiling point of the hydrocarbons in the oil fraction would be in the range of 200 to 400° C or higher and the vapor pressure is very low. Therefore, the enhancement of the volatility of this material is necessary in order to accelerate the remediation process.

The following techniques will be considered for bench tests:

- Vapor extraction with air at room temperature;
- Vapor extraction with hot air at approximately 150° C;
- Vapor extraction with solvent at room temperature; and
- Vapor extraction with solvent and hot air.

The first two techniques are known from commercial applications. The last two techniques are proprietary and will be tested for this application.

The bench tests will be performed by ERM-West and a specialized research laboratory. It is expected that 10-12 Shelby tubes collected during drilling of the extraction well will be used for these tests. The duration of each test will vary from 24 to 72 hours. The equipment for bench testing is designed to operate with minimum supervision. The confidentiality of data recorded will be assured.

POST-REMEDIATION SAMPLING FOR SITE CLOSURE

In order to verify that the remediation system was effective in removing volatile organic compounds and petroleum hydrocarbons to a level acceptable to the Regional Water Quality Control Board staff, sampling will be conducted in the area affected by the tank release. The criteria for what concentrations of contaminants are acceptable to remain after remediation and the number of confirmation borings necessary will be coordinated with the staff.

Verification will be conducted by installing each soil boring with an 10-inch diameter hollow stem auger to a depth of approximately 50 feet. Ring samples will be collected using a modified California split-spoon sampler from 5 feet below ground level to 50 feet at 5-foot intervals. The bottom sample from the 10-inch boring will be taken to verify that the bottom of the borehole is in the clay layer.

Physical characteristics of sampled soils will be logged by a qualified ERM geologist. Soil samples will be screened for petroleum hydrocarbons with an HNu PID 101 meter or its equivalent. Samples will be labeled as to hole, depth, and time; placed in a chilled cooler and noted on chain of custody forms.

To protect against the possible introduction of contaminants to the borings, steam cleaned augers will be used on each boring. All sampling equipment will be steam cleaned between holes and cleaned in an Alconox solution and rinsed with distilled water between sampling intervals in the same hole.

A steel conductor casing six inches in diameter will be placed inside the hollow stem auger and grouted into place by pumping a bentonite/cement slurry through a tremmie pipe into the bore hole while withdrawing the 10-inch augers. Once the augers are removed, a rubber plug will be pushed down through the steel conductor casing filled with grout to verify a good bottom-to-top seal in the bore hole and to remove grout from inside the casing. After the cement cures, The bottom plug will be drilled out, and 4-inch hollow stem augers will be used to complete the boring below the clay layer to a depth

of 80 feet. Ring samples will be collected at 5-foot intervals using a modified California split-spoon sampler.

Samples from the confirmation borings will be analyzed at 10-foot intervals for volatile organic compounds using EPA Methods 8010 and 8020 and for petroleum hydrocarbons using EPA Method 418.1. The samples not analyzed for chemical constituents will be held at the laboratory. In the event that a sample indicates concentrations near or exceeding the criteria developed by the Regional Water Quality Control Board, the held samples immediately above and below that sample interval will be analyzed for volatile organic compounds and petroleum hydrocarbons. Sample turnaround in the laboratory will be rapid enough that holding times will not be exceeded for the chemical analysis.

APPENDIX A

SCHEDULE

SCHEDULE

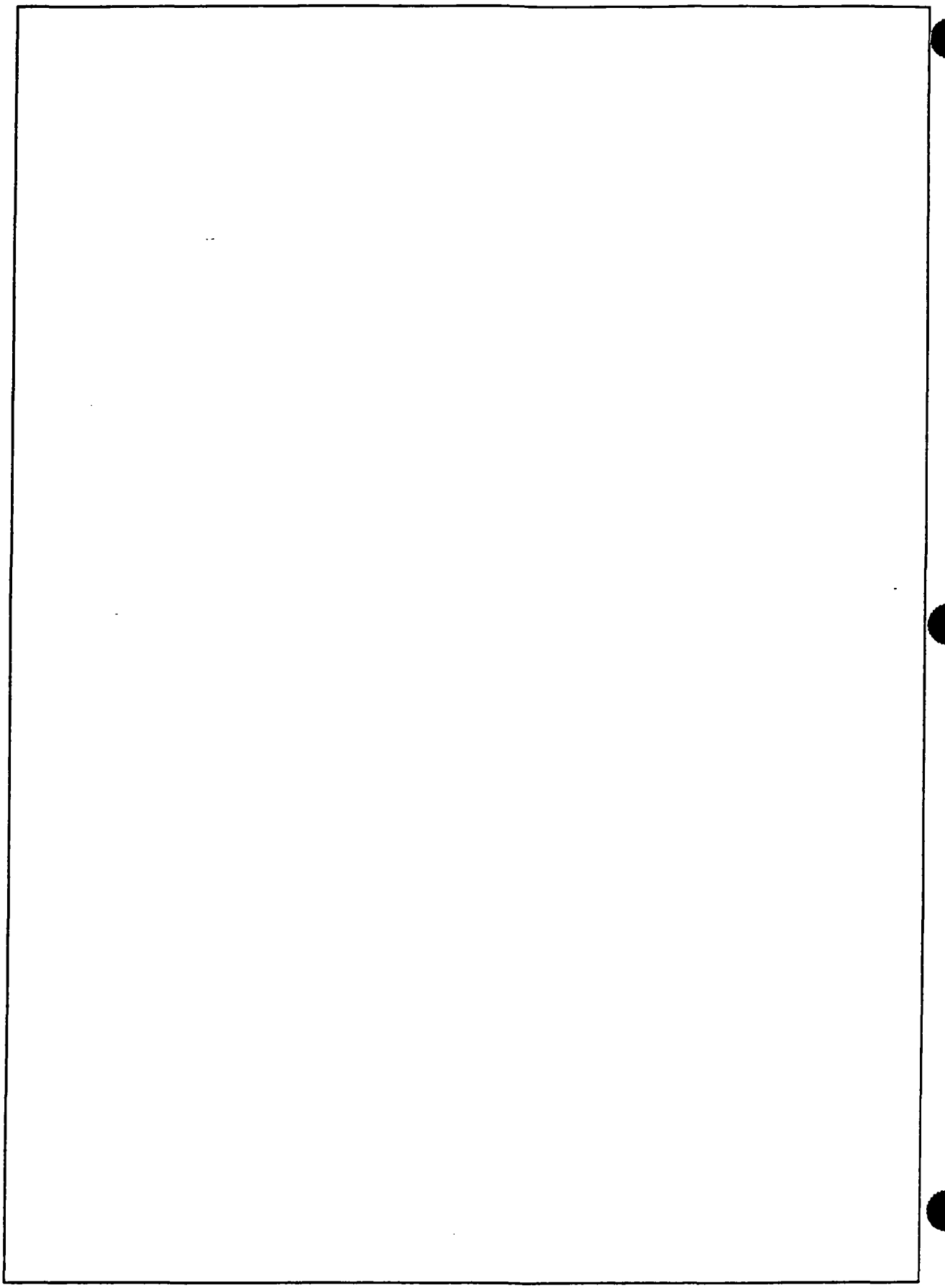
The following is the proposed schedule for the remediation plan. Scheduling the drilling subcontractor may take up to two weeks from notification to proceed.

Step 1	Week 1	Production well installation
Step 2	Weeks 1-2	Installation of air injection wells
	Weeks 1-4	Laboratory analyses of soil samples collected during installation
Step 3	Weeks 3-7	Design
	Weeks 8-9	Equipment order
	Weeks 8-20	Obtain environmental permits
	Weeks 10-20	Equipment and materials supply
	Weeks 20-22	Equipment installation
Step 4	Weeks 4-22	Enhanced recovery testing

Vapor Extraction System Start Up:

Weeks 23-24	Equipment testing
Week 24	Continuous operation

		Yes	No	Unk	N/A
4.	a. Does the facility obtain all its drinking water from sources other than ground water?	X			
	b. If the facility does use ground water as a source of drinking water, has the water been tested in accordance with the Safe Drinking Water Act (see Section 7) or applicable state regulations?				X
5.	Does the facility use ground water as a source for non-potable water. If so, specify the quantity and use: _____		X		
6.	Is the facility located near a public water supply? Distance from nearest public supply: _____		X		
7.	Does the facility utilize leaching or septic fields to treat domestic waste from the facility?		X		
8.	Does the facility utilize septic or leaching fields for disposal of other waste?		X		
9.	Did the facility previously utilize leaching or septic fields for disposal of waste other than sanitary or domestic waste? If so, describe: _____		X		



	Yes	No	Unk	N/A
10. Have there been any releases from the facility that may have impacted ground water (e.g., spills, discharges, leaking tanks and sewer pipes, cleansing of machinery in outside areas)?	X			
a. If yes, has any investigation been conducted to determine extent of contamination?	X			
b. If yes, have any remedial action steps been taken?	X			
11. Are there any other comments that you consider to be relevant and/or significant to this section of the survey? If yes, please state:		X		

PAcolm.2

SECTION 9

NONHAZARDOUS WASTES

Introduction

Overview: Solid wastes are regulated under the Resource Conservation and Recovery Act or RCRA. RCRA was passed in 1976 and, although most solid waste provisions were enacted for the first time under RCRA, RCRA is an amendment to the Solid Waste Disposal Act of 1965.

Under RCRA, "solid waste" is defined as "any garbage, refuse, sludge from a waste treatment plant, water supply treatment, or air pollution control facility, and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations and from community activities" (RCRA Section 1004(27)). The RCRA regulations expand this definition to describe a solid waste as any discarded material that is not specifically exempted by 261.4 and is being:

- abandoned,
- recycled, or
- considered inherently waste-like.

"Abandoned" is defined as being disposed of, burned or incinerated, or accumulated, stored, or treated (but not recycled) before or in lieu of being abandoned by being disposed of, burned, or incinerated.

"Recycled" is defined as being used in a manner constituting disposal, burned for energy recovery, reclaimed, or accumulated speculatively if such use is identified as regulated in Table 1 of 40 CFR 261.2.

"Considered inherently waste-like" is defined as a material that is a hazardous waste listed as F020, F021, F022, F023, F026, or F028.

A solid waste can be either hazardous or nonhazardous. Hazardous wastes, as described in Section 10, are subject to extensive control under Subtitle C of RCRA. Nonhazardous wastes are subject to fewer regulations under Subtitle D of RCRA. A waste cannot be a hazardous waste unless it first meets the definition of solid waste as defined above. It is extremely important to properly classify wastes as hazardous or nonhazardous. The penalties for incorrectly identifying a hazardous waste as nonhazardous include fines and/or imprisonment.

Please note that this Section of TESS pertains to nonhazardous solid wastes only; facility hazardous waste activities will be addressed in Section 10.

While the federal government has passed many regulations dealing with hazardous wastes, the regulation of nonhazardous waste is primarily the responsibility of the state. Federal involvement with nonhazardous wastes is currently limited to prescribing the best practicable operating procedures, controls, and monitoring requirements for solid waste disposal facilities (40 CFR 240-257). EPA has, however, proposed regulations for disposal of nonhazardous wastes in municipal landfills. These regulations are not expected to be finalized until late 1990 or early 1991. As proposed, these regulations are performance-based standards covering ground water monitoring and financial responsibility requirements.

In the absence of federal regulation, the regulation of generators, transporters, and treatment facilities is completely left to the state and county governments. Be sure to check with the state and county solid waste agencies to determine the applicable nonhazardous waste requirements in your area. There is an increasing emphasis on reduction and minimization of hazardous and nonhazardous wastes at both the federal and state level.

SECTION 9

NONHAZARDOUS WASTES

Guidance

Regulatory Authority:	The Resource Conservation and Recovery Act; Corresponding State, County and Municipal Statutes
Regulatory Citation:	40 CFR 240-262; Corresponding State, County and Municipal Regulations
Administering Agency:	U.S. Environmental Protection Agency; Corresponding State and Local Agencies

1-2. Questions are self-explanatory.

3-4. Generators of solid waste must determine if waste is hazardous by checking the following:

a. Is the waste excluded under 40 CFR 261.4?

b. Is the waste listed as hazardous in Subpart D of 40 CFR 261?

c. Does the waste meet the characteristics of hazardous waste as determined by testing or by knowledge of the materials and processes used? (See hazardous waste determination requirements in 40 CFR 262.11)

SECTION 9

NONHAZARDOUS WASTES

Survey Questions

All facilities must complete this section.

		Yes	No	Unk	N/A
1.	a. If the facility has been subject to an inspection regarding nonhazardous waste issues during the last three years or since completion of the last survey, were any concerns or potential concerns uncovered?		X		
	If so, describe concerns and include copies of inspection reports or correspondence.				
	b. Do any of the concerns or potential concerns uncovered in the inspection remain unresolved?		X		
2.	a. Has the facility entered into any Consent Order, Settlement Agreement, Delayed Compliance Order, etc., with respect to nonhazardous waste? If so, describe and confirm that facility has copies of all documents:		X		
	b. Has the facility complied with the terms of this Order?				X
3.	Does the facility have in place procedures for classifying its wastes as hazardous or non-hazardous? If so, please describe procedures.	X			
4.	Is this classification based on approved methods for sampling and analysis?	X			

7. Although not required, it is a good management practice to identify the amount of nonhazardous waste generated each year to help your facility monitor waste minimization and recycling programs, evaluate the costs of disposal, and keep abreast of potential liabilities which might arise from off-site disposal.

8. Generators of solid waste are required to determine whether any of their wastes are hazardous wastes (40 CFR 262). This activity must be repeated whenever a new waste stream is introduced or a new process is used by the generator.

Separating nonhazardous wastes from hazardous wastes:

- lowers treatment, storage, and disposal costs;
- eases the management burden of handling hazardous wastes; and
- enhances your facility's compliance level.

9-10. There are currently no federal permitting procedures for nonhazardous waste disposal facilities, treatment facilities, transporters, or generators, although performance-based standards covering disposal facilities have been proposed by EPA. You must check with the state and county agencies to determine what permits are required and when permits must be renewed.

8. B NOT REQUIRED AS FAR AS Kilowood

	Yes	No	Unk	N/A
5. Does the facility have in place procedures for identifying and classifying new waste streams? If so, please describe procedures. WASTE SEGREGATION & PROFILING AS NECESSARY	X			
6. Does the facility have in place procedures to prevent the mixing of hazardous and non-hazardous waste? If so, please describe procedures. SEPERATE STORAGE AREAS FOR HAZARDOUS AND NON-HAZ. MATERIALS & WASTE SEGREGATION	X			
7. How much nonhazardous waste (e.g., plant trash, scrap metal, plastics, wood) is generated by the facility? Tons per year: 172				
8. Have all major nonhazardous waste streams been:				
a. identified?	X			
b. documented as nonhazardous?		X		
c. separated from hazardous wastes?	X			

B. On-Site Disposal

Complete this subsection if the facility disposes of nonhazardous wastes on-site. N/A

9. Does the facility have all required permits for disposing of nonhazardous wastes on-site? Identify permits and confirm that facility has a copy.				
10. Are all permits current?				

11. Check your state and local requirements on the need to maintain non-hazardous solid waste records for wastes disposed of on-site. It is a good management policy to maintain such records.

12. State or county agencies often require controlled access to a disposal area. Check the facility's permit and the permitting agency to determine if these areas are regulated. If not required by state or county regulation, it is a good management practice to limit access to a disposal site to assure that only permitted wastes are disposed of, and to limit the facility's liability.

13. A ground water monitoring plan is a system of wells used to monitor ground water for possible contamination from the disposal site. Review your facility's permit and contact the state/county regulatory agency to determine if the site must develop and/or implement such a plan.

14. Check the facility's inspection and monitoring reports to determine if there is any evidence of contamination.

15. Check the facility permit and contact state/county agencies to determine the applicable operating procedures.

16. Good management practice and possible permit conditions.

17. Preventing storm water run-on onto the disposal site helps to reduce the amount of leachate generated. Runoff from the disposal site should be controlled to reduce erosion of the cover material and to minimize the spread of contaminants from the site. The facility's permit should be consulted to determine if such operating specifications are required.

18-20. It is Textron's policy for each location to know the status of off-site facilities used to handle any waste. Check state and county regulations for requirements concerning the use of permitted off-site disposal facilities. Ask agencies to describe the off-site disposal facility's operations and compliance history. It is a good management policy to visit and inspect off-site disposal facilities used to assure that they are using state-of-the art techniques and maintaining a good compliance record.

		Yes	No	Unk	N/A
11.	Are records maintained detailing the quantity and characteristics of the nonhazardous wastes disposed of at the facility? Confirm that facility has copies.	___			X
12.	Is there controlled access to the disposal area?	___			X
13.	If required, has a ground water monitoring program been established?	___			X
14.	If ground water monitoring results indicate contamination, have corrective actions been implemented?	___			X
15.	Do operating procedures meet all applicable regulatory specifications?	___		X	
16.	Is the disposal site located away from environmentally sensitive areas, e.g., flood plains, woodlands, etc.?	___		X	
17.	a. Are storm water run-on and runoff controlled at the disposal area?	___		X	
	b. Does the on-site disposal area have leachate and gas management?	___	___	X	
	c. Does the on-site area have a cap over completed areas?	___	___	X	

C. Off-Site Treatment and Disposal

Complete this subsection if the facility ships nonhazardous waste off-site for treatment or disposal.

		Yes	No	Unk
18.	Does the facility know the final destination of all nonhazardous wastes shipped off-site? List on Attachment 9-1.	X		

22. Liners and leachate collection systems are currently required by some permits and are proposed in new federal regulations. Facilities limit their liabilities by using only landfills with liners and leachate collection systems.

23. A manifest is a shipping document required by EPA on hazardous waste shipments (see Section 10). Some states require manifests for special wastes. Check state and county regulations to determine if waste manifesting is required.

24. State or county agencies may require transporters to obtain permits or licenses or be bonded. Check to determine if these requirements apply and if each transporter's paperwork is up-to-date.

25. Screening of all outside contractors is a good management practice to help minimize costs and potential liabilities, as the generator of the waste has the ultimate responsibility for its disposal. Contact DOT or EPA officials to obtain transporter compliance information.

26-30. If program is not required by law, it would be a good management practice. Recycling materials diverts large volumes of wastes from landfills and incinerators and makes sense because of the shortage of landfill space across the country and the difficulty in siting incinerators due to the "not in my backyard" (NIMBY) syndrome. Such a program could save the company disposal fees.

		Yes	No	Unk	N/A
19.	Does each off-site treatment or disposal facility used by the facility have a valid state or county permit?	X			
20.	Do all off-site treatment or disposal facilities have a good compliance record? Record on Attachment 9-1.	—			
21.	Have environmental audits been conducted at the off-site disposal and treatment sites used by your facility? Record on Attachment 9-1.	—	X		
22.	Do all landfills identified in Attachment 9-1:				
	a. have a liner?	—			
	b. have a leachate collection system?	—			
	c. have a gas management system?	—			
	d. have an engineered cap or cover system?	—			

D. Transportation

Complete this subsection if nonhazardous waste is transported off-site for treatment or disposal.

23.	In states where manifesting of nonhazardous waste is required, is this practice being conducted?	—			X
24.	If required, are all commercial haulers used by the facility to transport nonhazardous wastes off-site licensed and/or bonded?	—			X
25.	Has the compliance record of each transporter been investigated? Identify transporters of non-hazardous waste on Attachment 9-1.	—	X		

E. Recycling/Reduction

26.	Do state, county and/or local agencies require your facility to reduce and/or recycle non-hazardous waste?	—	X		
27.	If required, have you submitted a plan or report which documents your recycling and reduction efforts?	—			X

31. It is good management practice to recycle wastes whenever possible. Recycled wastes should be thoroughly tested to make sure that they comply with recycling regulations.

32. Some states may require that certain nonhazardous wastes be manifested when shipped off-site. Tracking of the ultimate disposition of the recycled waste or residue is a good management practice to minimize the facility's liability.

33. It is a good management practice to reduce facility liability by screening all off-site recycling facilities used. State agencies can be contacted to determine if the recycling facility is in compliance with all applicable regulations.

34. Recycling or reuse of nonhazardous solid waste is a good management practice that reduces the overall costs of disposal.

35-39. Empty containers should be carefully managed to prevent unsafe handling of chemical residues and potential liabilities at off-site facilities. Under RCRA, a container that held a RCRA hazardous waste is considered to be empty, and therefore not subject to hazardous waste regulations, if:

- all wastes have been removed that can be removed using the practices commonly employed to remove materials from that type of container, (e.g., pouring, pumping, and aspirating); and
- no more than one inch of residue remains on the bottom of the container or the inner liner, or no more than 3% by weight of the total capacity of the container remains in the container or inner liner (if the container size is 110 gallons or less), or 0.3% if the container is over 110 gallons (40 CFR 261.7(b)(1)).

If the container held a hazardous waste that is a compressed gas, it is considered to be empty when the pressure in the container reaches atmospheric (40 CFR 261.7(b)(2)).

However, if the container held an acutely hazardous waste (see list in 40 CFR 261.31-261.33), it is not considered to be empty unless it has been triple rinsed with an effective solvent, has been cleaned by another method shown to achieve equivalent removal, or has had the inner liner removed, if such liner prevented contact between the waste and the container (40 CFR 261.7(b)(3)).

	Yes	No	Unk	N/A
28. If applicable, have you met established recycling and/or reduction goals?	X			
29. If required, are you recycling any of the following items?				
Scrap metal	X			
Corrugated cardboard				X
Office paper				X
Newspaper				X
Glass, food and beverage containers				X
Tin coated steel cans				X
Aluminum	X			
Plastic beverage containers				X
Wood waste				X
Other _____				
30. If required, does the facility have a written program to minimize or reduce its nonhazardous waste?				X
31. If required, has the facility tested all wastes to identify potentially recyclable materials?				X
32. If required, are recycled wastes manifested when shipped off-site?				X
33. Have audits or investigations been completed on each recycling site used by your facility? Identify the off-site recycling facilities used and the type of wastes sent to each facility. List in Attachment 9-1.		X		
34. Are any wastes recycled on-site? List all wastes recycled on-site. Include the method of recycling and the reuse of the recycled material. Use Attachment 9-2.		X		

G. Empty Drum Management

35. How many of the following types of empty containers did the facility generate in the past year?

55-gallon drums: 150
5-gallon pails: 10
Other: _____

40. Textron recommends that employees not receive or take empty drums. Textron also recommends that drums not be given or sold to third parties other than legitimate and reputable drum recyclers.

ATTACHMENT 9-1

OFF-SITE COMMERCIAL NON-HAZARDOUS TRANSPORTERS AND TSDF FACILITIES

Treatment/Disposal/Recycling Facility		Transporter Used		Type of Waste Shipped	TSDF Services Provided					TSDF Permit Status			TSDF Compliance Status			
													Textron Audit		Agency Inspection	
Name	Address	Name	Address		Compliance Record of Transporter Checked (Y/N)	Treatment Method	Broker Storage Method	Recycling Method	Disposal Method	Type	Permit Number	Permit Expiration Date	Yes/No	Date	Yes/No	Date
Bradley Landfill	9188 Glenoaks Blvd [illegible]	Waste Management Sun Valley	9200 Glenoaks Blvd. Sun Valley, CA. 91352	Trash	N	None	N/A	N/A	Landfilled	Unk	Unk	Unk	No	—	Unk	—
A&S Environmental Recovery Inc	2008 Mated Place L.A. CA. 90021	A&S Environmental Recovery Inc	2008 Mated Place L.A. CA. 90021	Steel & Alum. Turnings	N	N/A	Unk	Refine & Reuse	N/A	Unk	Unk	Unk	No	—	Unk	—
Mobil Topanga Oil	9801 San Fernando Rd Pacoima, CA 91330	Topanga Oil (Mobil)	Same	Steel Drums (Deposit)	N	N/A	Unk	Reuse	N/A	Unk	Unk	Unk	No	—	Unk	—
Stuart Ironsides	6715 McKinley Ave. Los Angeles CA. 90001	Stuart Ironsides	Same	Steel Drums (Deposit)	N	N/A	Unk	Reuse	N/A	Unk	Unk	Unk	No	—	Unk	—
Rho-Chem Corp.	4[illegible] 1515 Avenue Inglewood, CA. 90[illegible]	Rho-Chem Corp.	Same	Steel Drums (Deposit)	N	N/A	Unk	Reuse	N/A	Unk	Unk	Unk	No	—	Unk	—
Techno-Lube Products	5314 East 61 St. Los Angeles, CA 90040	Techno-Lube Products	Same	Steel Drums (Deposit)	N	N/A	Unk	Reuse	N/A	Unk	Unk	Unk	No	—	Unk	—

Revision Date: 05/08/90

	Yes	No	Unk	N/A
36. Does the facility recycle empty drums?	X			
a. If drums are sent to a drum recycler, are all drums triple rinsed and are labels removed or painted over before recycling?	X			
b. If drums are sent to a metal recycler, are all labels obliterated and are drums shredded before shipment?				X
37. If drums are sent to a landfill, are all labels removed or painted over before shipment?				X
38. Has the facility audited each off-site facility that is used to recycle empty containers? Complete Attachment 9-1.				X
39. Do all facilities used to recycle/dispose of drums have acceptable compliance records?			X	
40. Are empty containers given to, or taken by, employees?		X		

H. Miscellaneous

41. Are there any other comments that you consider relevant and/or significant to this section of the survey? If yes, please state.		X		

_____

_____

_____

PACOIMA

SECTION 10

HAZARDOUS WASTES

Introduction

Overview: The Resource Conservation and Recovery Act (RCRA), passed in 1976 and amended by the Hazardous and Solid Waste Amendments (HSWA) in 1984, is a comprehensive program regulating and tracking the management of hazardous waste from "cradle to grave." The statute regulates hazardous waste in Subtitle C and Non-hazardous solid waste in Subtitle D. The goals of the statute are to accomplish the following:

- protect human health and the environment,
- reduce wastes, and conserve energy and natural resources,
- reduce or eliminate the generation or hazardous wastes as soon as possible.

The basis for accomplishing these goals is the statutory definitions of solid and hazardous wastes. RCRA defines solid waste to include solid, liquid, semi-solid, or contained gaseous material. Solid waste is hazardous if it meets one of the following conditions:

- Exhibits a characteristic of a hazardous waste (40 CFR Sections 261.20 - 261.24). The characteristics of a hazardous waste are:
  - ignitability,
  - corrosivity,
  - reactivity,
  - extraction procedure (EP) toxicity and/or toxicity characteristic leaching procedure (TCLP) toxicity where applicable.
- Is a waste stream or a waste of a specific chemical or compound which has been listed as hazardous (40 CFR Sections 261.31-261.33).
- Is a mixture containing a listed hazardous waste and a non-hazardous solid waste or is a by-product of the treatment of a listed hazardous waste (unless the mixture or by-product has been specifically excluded).
- Is a mixture of a characteristic hazardous waste and a non-hazardous solid waste or is a by-product of the treatment of characteristic hazardous waste (unless the mixture or by-product no longer exhibits any of the characteristics of hazardous waste).

Note: On March 29, 1990, EPA issued a new rule which will greatly expand the universe of "hazardous wastes" regulated under RCRA by adding 25 organic

chemicals to the toxicity characteristic regulation, which previously covered only eight metals and six pesticides.

The new rule establishes a new testing procedure called the "Toxicity Characteristic Leaching Procedure" (TCLP) which will be used to determine whether a waste exhibits the toxicity characteristic. A waste will exhibit the toxicity characteristic if any of the 25 new organic chemicals or existing TC chemicals are present in a waste sample extract or leachate from application of the TCLP to that waste.

Large Quantity generators are required to comply with the rule on September 25, 1990. Small Quantity generators are required to comply on March 29, 1991.

Specific administrative requirements are established for the three categories of hazardous waste handlers:

- generators,
- transporters,
- owners or operators of treatment, storage and disposal facilities (TSDFs).

Generators of more than 100 kilograms of hazardous waste or 1 kilogram of acutely hazardous waste per month must (with few exceptions) comply with all generator regulations under 40 CFR Part 262. Applicable regulatory requirements include:

- Making a hazardous waste determination with respect to each waste stream generated,
- Obtaining an EPA ID number,
- Properly labeling and storing hazardous wastes before transport,
- Manifesting hazardous wastes for off-site disposal at an authorized treatment, storage or disposal facility,
- Record keeping and reporting.

A **transporter of hazardous waste regulated under Subtitle C** is any person engaged in the transportation of hazardous wastes from the site of generation within the United States, if such transportation requires a manifest under 40 CFR Part 262. The transporter is subject to regulations under 49 CFR Parts 171 to 179 (The Hazardous Materials Transportation Act), and those under CFR Part 263 (RCRA) that require the following:

- Obtain an EPA ID number,
- Comply with the manifest system,
- Report and remediate hazardous waste discharges,
- Comply with applicable state requirements.

Treatment Storage and Disposal Facility (TSDFs), as defined in 40 CFR Part 260.10, include facilities which engage in:

- ***Treatment*** - process designed to change the physical, chemical, or biological character or composition of a hazardous waste.
- ***Storage*** - holding for a temporary period after which the waste is treated and disposed or moved to other storage.
- ***Disposal*** - the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that any constituent of that waste may enter the environment or be admitted into the air or discharged into any waters, including ground water.

The regulations (40 CFR Parts 264 and 265) set forth specific technical standards for the design and safe operation of TSDFs. These regulations provide the basis for a comprehensive permitting program. All TSDFs must obtain an operating permit and meet the applicable state and federal regulations. These regulations establish performance standards designed to minimize the release of hazardous wastes into the environment. All TSD facilities in operation before November 1980 were required to submit a Part A permit application and comply with general operating standards (40 CFR Part 265) thereby obtaining interim authority to operate as a TSD facility ("interim status") until a final permit is issued or denied. Thereafter, the facility's Part B permit application or state equivalent, had to be submitted when "called in" (or in conformance with the statutory schedule). The application, if approved, will result in the issuance of a permit to operate establishing:

- operating requirements;
- detailed record keeping and reporting obligations;
- emergency preparedness plans;
- environmental monitoring requirements, including ground water monitoring;
- minimum insurance levies; and
- financial assurance requirements to assure that funds are available to pay for closing a facility, post-closure care at disposal facilities, and third-party compensation if needed.

Many states have been authorized to administer all or parts of the RCRA program. In most cases, administration is a combination of federal and state authorities. This means that there may be unique requirements administered by the state.

The **Hazardous and Solid Waste Amendments of 1984 (HSWA)** added to the regulatory requirements in all categories. The philosophy in HSWA is to ensure that environmental impacts of hazardous waste are reduced to the maximum extent possible, by requiring:

- treatment instead of disposal when possible,
- waste reduction,

- pretreatment to reduce toxicity and mobility before land disposal,
- corrective action at all existing TSD facilities.

The **Corrective Action provisions (3004(u) and 3008(h))** require corrective action for continuing releases of hazardous constituents from prior disposal in any "solid waste management unit." This is applicable to all hazardous substances, not just hazardous wastes released to any environmental media from any disposal unit at a TSD facility. All permit applicants and interim status facilities are required to identify solid waste management units and evaluate releases.

The Land Disposal Restrictions Program is mandated by the Hazardous and Solid Waste Amendments of 1984. Land disposal restrictions have been phased in and have impacted hazardous waste disposal practices. They prohibit the land disposal of specific wastes and establish minimum standards for treatment before disposal for the balance. The basis for the regulations which have been developed evolve from:

1. The philosophy stated in this statute (1002(b)(7)) "to avoid substantial risk to human health and the environment, reliance on land disposal should be minimized or eliminated, and land disposal, particularly landfills and surface impoundments, should be the least favored for managing hazardous waste."

2. Land Disposal Definition (3004(k))

   Includes, but is not limited to "any placement of hazardous waste in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, salt bed formation, or underground mine or cave."

3. Minimal Exceptions provided (3004(d)(1), (3)(1), (g)(5))

   All waste must be treated unless "it has been demonstrated to the Administrator, to a reasonable degree of certainty, that there will be no migration of hazardous constituents from the disposal unit or injection zone for as long as the wastes remain hazardous." This requires a no migration demonstration.

Land Disposal Restrictions apply to:

- Generators of over 100 kg per month of hazardous waste.
- Generators of over 1 kg per month of acutely hazardous waste.
- To all TSD facilities (both permitted and interim status).

Land Disposal Restrictions do not apply to:

- Waste disposed of prior to the effective date.

- Waste placed in storage prior to the effective date until they are removed from storage.

- Wastes that are treated in surface impoundments which meet minimum technology requirements. The owner/operator must remove treatment residues once a year if they do not meet treatment standards. There is also a requirement for surface impoundment retrofitting.

The rules are set forth in 40 CFR in Part 268, and incorporated into relevant sections of 148, 261, 264, 165, 168, and 271. The five rule-makings which identify the wastes which are subject to the land disposal prohibitions and the applicable treatment technologies or standards have been promulgated as follows:

- Solvent and Dioxin-Containing Wastes, November 7, 1986, 51FR40572.

- California List Wastes, July 8, 1987, 52FR25760.

- First Third Wastes, August 17, 1988, 53FR31138.

- Second Third Wastes, June 23, 1989, 54FR26594.

- Third Third Wastes, (proposed rules) November 22, 1989, 54FR48372.

  Regulations for the third third wastes will probably be finalized in May, 1990. This proposal includes:

  – treatment standards with effective dates for all first and second third wastes (currently subject to requirements of 40 CFR 268.8).

  – treatment standards for first and second third wastewater residues, derived from wastes (multi-source leachate) and mixtures of hazardous/radioactive wastes.

  The treatment standards for those wastes which exhibit one or more of the following characteristics: ignitability, corrosivity, reactivity, or EP Toxicity (40 CFR 261.21-24) are significant. These standards would require treatment below the level at which the waste ceases to exhibit the characteristic which classified it as hazardous for certain characteristic wastes.

  Generators treating hazardous wastes in 90-day accumulation tanks or containers under this proposal would have to prepare a Waste Analysis Plan in accordance with 40 CFR 268.7(b). This is a new requirement, subject to review during a compliance inspection.

The land disposal of landban limited wastes will be prohibited on May 8, 1990, for all RCRA hazardous wastes, (other than newly listed or identified), for which treatment standards have not been promulgated.

Facts to be noted:

- Dilution to meet the treatment standard is prohibited. However, materials may be added as part of a treatment process.
- Storage of untreated waste is permissible solely for accumulation of waste in the amounts needed for proper treatment, recovery or disposal.
- Waste mixtures must meet the applicable treatment standard for all constituents and characteristics prior to land disposal (each waste code carries through the mixture).

SECTION 10

HAZARDOUS WASTES

Guidance

1. Fully permitted and interim status RCRA facilities are inspected by the EPA and state at least once each year. Hazardous waste generators are also subject to periodic inspections. TSD facilities receive compliance inspections and RCRA facility assessments (RFAs). The RFA is conducted to determine whether any solid waste management units (SWMUs) are present.

2. All facilities that generate solid waste are required by 40 CFR 262.11 to determine whether any of those solid wastes are subject to regulation as hazardous wastes. Please refer to Section 9 in which you were required to determine the hazardous and non-hazardous waste streams generated, received, or otherwise handled at the facility. The introduction to this section and 40 CFR 261 defines hazardous waste. If no hazardous waste activities take place at your facility, skip to Section 11.

3. All facilities that generate, transport, treat, store or dispose of hazardous waste (except conditionally exempt small quantity generators) are required by 40 CFR 262.12 to obtain an EPA identification number.

4. Generators of hazardous waste have different regulatory burdens depending on the quantity of waste generated per month. This question will determine which subsections of this section are relevant to your facility.

As stated in 40 CFR 261.5, a conditionally exempt facility is defined as one which generates no more than 100 kilograms (220 pounds) of hazardous waste per calendar month. However, acute hazardous wastes (P-listed wastes) generated in excess of one kilogram (2.2 pounds) per calendar month and contaminated soils and residues in excess of 100 kilograms (220 pounds) per calendar month, resulting from releases of acute hazardous wastes, are subject to full regulation. If the facility is conditionally exempt, complete Subsections A and B.

A small quantity generator is one which generates more than 100 kilograms (220 pounds) but less than 1000 kilograms (2200 pounds) of non-acute hazardous waste. If the facility is in this category, complete subsections A and C.

If the facility is a large quantity generator (generates more than 1,000 kilograms of hazardous waste per month), complete Subsections A and D.

5. Large quantity generators are required to have a program in place to reduce the volume and toxicity of waste generated. Small quantity generators are required to make a good-faith effort to minimize waste generation. These requirements are part of the generator's certification on the Uniform Hazardous Waste Manifest form. Waste minimization programs are also required by Corporate Policy and Procedure #7.

SECTION 10

HAZARDOUS WASTES

Survey Questions

Complete this section if the facility generates, treats, stores, and/or disposes of hazardous wastes.

	Yes	No	Unk	N/A
A. Background Information				
1. a. If the facility has been subject to an inspection regarding hazardous waste issues during the last three years or since completion of the last survey, were any concerns or potential concerns uncovered?		X		
If so, describe concerns and include copies of inspection reports or correspondence.				
b. Do any of the concerns or potential concerns uncovered in the inspection remain unresolved?		X		
2. Has the facility identified and classified all hazardous wastes generated, received, or otherwise handled?	X			
3. a. Do you have an EPA ID number?	X			
b. What is your EPA ID number? CAD041162330				
4. a. What is the maximum total quantity of hazardous waste generated per month (pounds)? 73,809 LBS.				
b. What is the maximum total quantity of acute hazardous waste generated per month (pounds)? 48 LBS.				
c. What is the maximum total quantity of acute hazardous waste residue generated per month (pounds)? Ø				
5. Does the facility have a waste minimization program? Describe program results.	X			

REDUCED TRICH [illegible] [illegible] [illegible] [illegible] STILL [illegible] REFILTER REUSE OF [illegible] REDUCTION AND REUSE OF

6. A TSDF is a facility which treats, stores, or disposes of hazardous waste on-site. A facility is a TSDF if it imports hazardous wastes from off-site, if it stores site-generated hazardous wastes for more than 90 days, if it stores hazardous wastes in surface impoundments or waste piles, if it treats hazardous wastes except in the accumulation tank or in a completely enclosed process prior to the accumulation point, or if it disposes of hazardous waste by incineration or landfill. If the facility is a TSDF, complete subsections A and D-I.

7. Facilities that have final permits or interim status are subject to the corrective action requirements for all solid waste management units (SWMUs). Facilities that at one time had filed for interim status are also subject to SWMU corrective action requirements for identifying, investigating, and cleaning up releases of hazardous constituents to the environment. Although generators are not currently subject to corrective action, former solid waste disposal areas can represent a significant environmental liability.

	Yes	No	Unk	N/A
6. Does the facility engage in on-site treatment, disposal or storage of hazardous waste for more than ninety days?	___	X	___	
If so, complete a through d.				
a. Does the facility have interim status (i.e., did the facility file a Notification of Hazardous Waste Activity at any time since the RCRA program came into effect)?	___	___	___	
b. Does the facility have a Part B permit or has the facility filed a Part B permit application?	___	___	___	
List the hazardous waste management activities included in the Part A or Part B permit. _____ _____ _____				
c. Has facility filed for withdrawal from interim status for any units?	___	X	___	
d. If the request was granted, are copies of regulatory acknowledgements on file at the facility?	___	___	___	
7. Have any SWMUs been identified at your site, either by a regulatory agency or internally?	___	X	___	
If yes, have any investigations or remediation activities been proposed or initiated?	___	___	___	N/A
8. a. Has the facility entered into any Consent Order, Settlement Agreement, etc., with respect to RCRA?	___	X	___	
If so, describe the order or agreement and confirm that the facility has copies of all documents. _____ _____ _____				

(continued)

9. Special administrative procedures are required for shipments of hazardous wastes out of the United States. These requirements are stated in 40 CFR 262 Subpart E.

	Yes	No	Unk	N/A
8. (continued)				
b. Is the facility in compliance with the terms of the Order or Agreement?	___	___	___	N/A
9. Does the facility ship any waste out of the United States?	___	X	___	
If yes, complete a through h. If no, proceed to question 10.				
a. Has receiving country consented to accept waste?	___	___	___	N/A
b. Is EPA Acknowledgement of Consent attached to the manifest or shipping papers and accompanying waste?	___	___	___	
c. Does shipment conform to terms of receiving country's consent?	___	___	___	
d. Has EPA been notified of intended export 60 days before shipment, including the information listed in 262.53(a)?	___	___	___	
e. If the state in which the facility resides requires that they be notified of the shipment in writing, has this been done and is there a file copy available?	___	___	___	
f. Does the manifest comply with the special requirements of 262.54?	___	___	___	
g. Do exception and annual reports comply with 262.55 and 262.56?	___	___	___	
h. Has facility kept the following reports for at least three years?	___	___	___	
1. notification of intent?	___	___	___	
2. EPA acknowledgement of consent?	___	___	___	
3. consignee confirmation of delivery?	___	___	___	
4. each annual report?	___	___	___	

10-11. Land disposal restrictions (LDRs) place constraints on the land disposal of RCRA hazardous wastes. A facility must certify that the LDR treatment standards are attained before a restricted waste is land disposed off-site. (See Introduction.)

12. Medical waste includes cultures of infectious agents from industrial labs, waste human blood, sharps used in patient care, discarded medical equipment, and biological waste. Facilities which generate medical waste are required to track transportation of waste to point of disposal with a uniform tracking form, to separate waste by storing in a labeled container, and to keep records. Only some states have opted to participate in the federal medical waste tracking program. Other states may have opted to develop their own program. Review your state regulations.

	Yes	No	Unk	N/A
10. Does the facility generate wastes for which land ban regulations have been promulgated?	X			
If yes, complete a through b.				
a. Based on your present knowledge of land ban requirements, does the facility comply with applicable land disposal bans?	X			
b. Does facility have certifications on file stating that the treatment standards for wastes that are being land disposed have been attained?	X			
11. a. Does the facility generate wastes for which land ban regulations have been proposed (third-third wastes)?	X			
b. If yes, have alternative disposal methods or treatment been identified for these wastes?	X			
12. If required, is the facility tracking medical wastes as defined in 259.30 from first aid stations and laboratories?				X

14-15. In order to be exempt from full regulation, small quantity generators must comply with the requirements of 40 CFR 261.5(f)-(j).

16-19. These items are not regulatory requirements for conditionally exempt generators, but they are good practice. TSD facilities may require generator ID numbers, transporter ID numbers and manifests for acceptance of hazardous waste.

	Yes	No	Unk	N/A

B. Conditionally Exempt Small Quantity Generator Requirements

Complete this subsection if the facility is a conditionally exempt small quantity generator as established in response to question 4 of this section of the survey and 40 CFR 261.5. Subsequent subsections of the Hazardous Waste section of this survey are not applicable to conditionally exempt small quantity generators.

13.	Does the facility keep a copy of all test results and waste analyses made in accordance with 40 CFR 262.11 for a period of three years?			
14.	Does the facility limit storage quantities to less than 1,000 kilograms of hazardous waste and 1 kilogram of acute hazardous waste?			
	If not, the requirements for a small quantity generator apply. Complete Subsection C.			
15.	Does the facility send its hazardous wastes only to facilities authorized in 40 CFR 261.5(f)(3) and (g)(3) to receive the waste?			
16.	Does the facility use only transporters that have an EPA ID number?			
17.	Does the facility manifest all hazardous waste shipments?			
18.	a. Does the facility maintain manifests for three years?			
	b. Are the most current uniform manifests used?			
	c. Have hazardous waste weights and volumes been verified on returned manifests?			
	d. If not, does the facility send hazardous wastes to a municipal or industrial solid waste landfill?			

20-21. Small quantity generator requirements for short-term storage of hazardous wastes prior to shipment off-site are found in 40 CFR 262.34 (d) through (f).

22-23. Generator requirements for short-term storage of hazardous wastes prior to shipment off-site are found in 40 CFR 262.34(a) and (c).

		Yes	No	Unk	N/A
19.	a. If the hazardous wastes are stored in tanks or containers prior to disposal, are the tanks or containers compatible with the waste and maintained in good condition?	___	☐	☐	
	b. Are the tanks or containers labelled with their contents (i.e., Hazardous Waste) and the accumulation start date?	___	☐	☐	
	c. Are the tanks or containers kept closed except when waste is being added or removed?	___	☐	☐	
	d. Is the tank or container storage area inspected regularly to ensure that the tanks or containers are not leaking or deteriorating?	___	☐	☐	

C. Small Quantity Generator Requirements

Complete this subsection if the facility is a small quantity generator as established in response to question 4 of this section of the survey. Small quantity generator requirements are found in 40 CFR 262 Subparts A, B, C, and D. Subsequent subsections of the Hazardous Waste section of this survey are not applicable to small quantity generators.

20.	Does the quantity of waste on-site ever exceed 6,000 kilograms (13,200 pounds)?	☐	___	☐	
	If yes, the requirements for a large quantity generator apply. Complete Subsections D-H.				
21.	Is the waste ever stored for more than 180 days (270 if shipped more than 200 miles)?	☐	___	☐	
	If yes, the requirements for a TSDF apply. Complete Subsections D-I.				
22.	Is the date upon which each period of accumulation begins clearly marked and visible for inspection on each container or tank?	___	☐	☐	

24. A generator may accumulate 55 gallons of hazardous or one quart of acutely hazardous waste at or near the points of generation if it is under operator control and the container is labeled as to contents. When the drum is filled, the generator has three days to label the container as hazardous waste with the accumulation start date and comply with 262.34.

	Yes	No	Unk	N/A
23. While being accumulated on-site, is each container or tank labeled with the words "Hazardous Waste"?	___	___	___	
24. a. Does generator accumulate hazardous waste at satellite accumulation areas (at or near the point of generation)?	___	___	___	
b. If yes, identify the number of areas. _____ _____ _____				
c. If yes, does generator accumulate more than 55 gallons of hazardous waste or more than one quart of acutely hazardous waste at or near the point of generation?	___	___	___	___
d. If yes, are the satellite storage containers:				
i. In good condition (e.g., no structural defects or severe rusting)?	___	___	___	___
ii. Compatible with the hazardous waste to be stored?	___	___	___	___
iii. Always kept closed except when adding or removing waste?	___	___	___	___
e. If yes, are the satellite storage containers marked either with the words "Hazardous Waste" or with other words that identify the contents of the containers?	___	___	___	___
f. Does generator, within three days after accumulation, comply with all regular generator standards for any amount of hazardous waste in excess of 55 gallons or any amount of acutely hazardous waste in excess of one quart collected and stored in a satellite accumulation area?	___	___	___	___

25. 40 CFR 262.34(d)(2) requires short-term storage in containers to meet the requirements of Section 265 Subpart I.

26. 40 CFR 262.34(d)(3) requires short-term storage in tanks to meet the requirements of Section 265.201.

		Yes	No	Unk	N/A
25.	a. If the wastes are stored in containers, are the containers maintained in good condition?				
	b. Are the containers compatible with the wastes?				
	c. Are the containers kept closed except to add or remove waste?				
	d. Is the container storage area inspected at least weekly for leaks and deterioration of containers?				
	e. Are incompatible wastes or materials handled or stored in the same area?				
	f. Is sufficient aisle space maintained for unobstructed access by emergency personnel and equipment?				
26.	Does the facility store hazardous waste in tanks?				
	a. If yes, are the materials placed in the tank (waste, reagents) compatible with the construction materials of the tank?				
	b. If yes, are uncovered tanks either operated to ensure at least two feet of freeboard or equipped with a containment structure, drainage control system, or diversion system with a capacity of at least the volume of the top two feet of the tank?				
	c. If the tanks are continuously fed, are the tanks equipped with waste feed cut off or by-pass systems?				
	d. If yes, are the following inspected at least once each operating day: discharge control equipment; data gathered from monitoring equipment; and waste level in the tank?				

27. Under 40 CFR 262.20(e), small quantity generators are not required to manifest their hazardous waste shipments if the waste is reclaimed under a contractual agreement and the vehicle used to transport the waste to the recycling facility and to deliver regenerated material back to the generator is owned and operated by the reclaimer.

28. In accordance with 40 CFR 262.12(c), a generator must not offer his hazardous waste to transporters or to TSDFs unless they have EPA identification numbers.

29. Pre-transport requirements for hazardous waste shipments are specified in 40 CFR 262.30 through 262.33.

The following guidance applicable to vehicles which transport hazardous waste is included in 49 CFR Part 172, Subpart F:

- Each vehicle containing any quantity of a hazardous material must be placarded on each end and each side with the type specified in this section or sections 172.519 - 172.558.
- A vehicle with several classes of materials may be placarded as DANGEROUS.
- If 5,000 pounds or more of one class of material is transported, the placard specified in Table 2 must be applied. (Not applicable for a portable tank, cargo tank, or tank car.)
- If gross weight of materials are less than 1,000 pounds, no placard is required (unless the materials are explosive, poison gas, flammable solid - dangerous when wet, radioactive, or radioactive and corrosive).
- Any packaging with a volume of less than or equal to 110 gallons containing only the residue of a hazardous material, that is not explosive, radioactive or a poison gas, need not be included in determining applicability of placarding requirements.

30. Record keeping requirements for small quantity generators are specified in 40 CFR 262.44.

		Yes	No	Unk	N/A
	e. If yes, are the following inspected at least once each week for signs of deterioration or leakage: the construction materials of the tank; the construction materials of the discharge confinement structures and the area immediately surrounding the discharge confinement structure?	___	☐	☐	___
	f. If the facility treats ignitable, reactive, or incompatible wastes in tanks, does the treatment meet the requirements of 40 CFR 265.201 and 40 CFR 265.17(b)?	___	☐	☐	___
27.	a. Do you have a contractual agreement to reclaim the hazardous waste generated by your facility?	___	___	☐	
	b. If not, do you manifest each shipment of hazardous waste as required by 40 CFR 262 Subpart B?	___	☐	☐	___
28.	Have you verified that your hazardous waste transporter and TSD facility have EPA ID numbers?	___	☐	☐	
29.	Do you properly label, mark, placard, and package your hazardous waste in accordance with applicable Department of Transportation regulations (40 CFR Part 172) before offering it for transportation off-site?	___	☐	☐	
30.	a. Does the facility keep a copy of each manifest for a period of three years?	___	☐	☐	___
	b. Does the facility keep a copy of all test results and waste analyses made in accordance with 40 CFR 262.11 for a period of three years?	___	☐	☐	

31. 40 CFR 262.42(b) requires a small quantity generator to submit a legible copy of the manifest to the Regional Administrator, with some indication that the generator has not received confirmation of delivery, if he does not receive a completed copy of the manifest from the TSDF within 60 days of the date the waste was accepted by the initial transporter.

33. 40 CFR 262.34(d)(5)(iii) requires that, relevant to their responsibilities during normal facility operations and during emergencies, all employees are thoroughly familiar with proper waste handling and emergency procedures.

37. 40 CFR 262.34(d)(5)(ii) requires the following information be posted next to the telephone at the facility:

- name and telephone number of the emergency coordinator
- location of fire alarm, fire extinguishers, spill control material
- telephone number of the fire department (unless the facility has a direct alarm)

	Yes	No	Unk	N/A
31. Does the facility submit exception reports for missing manifests?	___	☐	☐	
32. Does the facility keep a copy of exception reports for three years?	___	☐	☐	
33. Have employees received appropriate instruction in waste handling and emergency procedures?	___	☐	☐	
34. Do employees have immediate access to communication or alarm systems when handling hazardous wastes?	___	☐	☐	
35. a. Does the facility have the following required equipment?				
–Internal communication system	___	☐	☐	
–Telephone or two-way radio for off-site communication	___	☐	☐	
–Fire control, spill control and decontamination equipment	___	☐	☐	
–Sufficient volume and pressure of water for fire control	___	☐	☐	
b. Is all emergency equipment inspected and maintained regularly and readily accessible to employees?	___	☐	☐	
36. a. Does the facility have at least one employee on call as the emergency coordinator with the responsibility for coordinating emergency response measures in the event of a spill, fire or explosion?	___	☐	☐	
b. Are the emergency coordinators familiar with the requirements for emergency responses outlined in 40 CFR 262.34(d)(5)(iv)?	___	☐	☐	
37. a. Is the proper emergency information posted next to the telephone and kept up-to-date?	___	☐	☐	
b. Have you reviewed the nature and operation of your facility with the local fire department?	___	☐	☐	

39. In the event of a release which could threaten human health outside the facility or when the generator knows that the spill has reached surface water, the National Response Center must be notified. In addition, pursuant to Title III of the Superfund Amendments and Reauthorization Act (SARA), the local Community Emergency Coordinator and the State Emergency Planning Commission for any state likely to be affected by the release must be given immediate notice. (See Section 304 of SARA.)

40. In accordance with 40 CFR 262.12(c), a generator must not offer his hazardous waste to transporters or to TSDFs unless they have EPA identification numbers.

43. In accordance with 40 CFR 262.42(a), a generator must contact the transporter and TSDF if he does not receive a completed copy of the manifest within 35 days of the date the waste was accepted by the transporter. The generator must submit an Exception Report to the Regional Administrator if he does not receive a completed copy of the manifest within 45 days of the date the waste was accepted by the transporter.

	Yes	No	Unk	N/A
38. Does the facility have procedures to maintain and operate the hazardous waste portions of the facility in a manner to minimize the possibility of fires or spills?				
39. a. If the facility had any spills, were the spills contained, and were contaminated materials disposed of properly?				
b. If the spill threatened human health outside the facility or reached surface water, was the National Response Center notified, including information listed in 262.34?				

D. Large Quantity Generator Requirements

Complete this subsection and subsections E-H if the facility is a large quantity generator as established in response to question 4 of this section of the survey. Large quantity generator requirements are found in 40 CFR 262 Subparts A, B, C, and D.

	Yes	No	Unk	N/A
40. Have you verified that all hazardous waste transporters and TSD facilities have EPD ID numbers?	X			
41. Does the facility manifest each shipment of hazardous waste as required by 40 CFR 262 Subpart B?	X			
42. Does the facility keep a copy of each manifest for a period of three years as required by 40 CFR 262.40(a)?	X			
43. Does the facility submit exception reports for missing manifests?	X			

45-47. According to 40 CFR 262 Subpart D, a generator is required to keep records of any waste analyses or other determinations of whether a waste is hazardous for a period of three years. A large quantity generator is required to submit a biennial report, as described in 40 CFR 262.41, and keep a copy of the report for three years. This report requires that the facility list the types and quantities of hazardous wastes generated, shipped off-site, or remaining in storage. A description of efforts to reduce waste volume and toxicity is required to be included with the fourth quarter report. Individual states may have additional, more frequent reporting requirements. For example, South Carolina requires that each generator complete a "Quarterly Report," including the generator and transporter EPA I.D. number.

48. As required by 40 CFR 265.16 and 264.16, TSD facilities must provide a program of classroom instruction or on-the-job training that teaches employees to perform their duties in a way that ensures the facility's compliance with the hazardous waste regulations. Employees must be trained within six months of their assignment to hazardous waste duties. Facility personnel must take part in an annual review of the initial training.

49. Pre-transport requirements for hazardous waste shipments are specified in 40 CFR 262.30 through 262.33.

The following guidance applicable to vehicles which transport hazardous waste is included in 49 CFR Part 172, Subpart F:

- Each vehicle containing any quantity of a hazardous material must be placarded on each end and each side with the type specified in this section or sections 172.519 - 172.558.
- A vehicle with several classes of materials may be placarded as DANGEROUS.
- If 5,000 pounds or more of one class of material is transported, the placard specified in Table 2 must be applied. (Not applicable for a portable tank, cargo tank, or tank car.)
- If gross weight of materials are less than 1,000 pounds, no placard is required (unless the materials are explosive, poison gas, flammable solid - dangerous when wet, radioactive, or radioactive and corrosive).
- Any packaging with a volume of less than or equal to 110 gallons containing only the residue of a hazardous material, that is not explosive, radioactive or a poison gas, need not be included in determining applicability of placarding requirements.

50-51. Generator requirements for short-term storage of hazardous wastes prior to shipment off-site are found in 40 CFR 262.34 (a) and (c).

	Yes	No	Unk	N/A
44. Does the facility keep a copy of all exception reports for three years?	X			
45. Does the facility keep records of waste analyses for three years?	X			
46. Does facility meet state reporting requirements?	X			
47. Does the facility prepare and file a Biennial Generator Report?	X			
When is the next Biennial Report due? MARCH 1 92				
48. a. Does the facility provide training appropriate to their job function to all hazardous waste personnel?		X		
b. Does the facility provide training in emergency procedures to all hazardous waste personnel?		X		
c. Does the facility keep training records on file for three years?		X		
49. Do you properly label, mark, placard, and package your hazardous waste in accordance with applicable Department of Transportation regulations before offering it for transportation off-site?	X			
50. If the waste is ever stored for more than 90 days is the facility permitted as a TSDF? Complete Subsection I.				X
51. Is the date upon which each period of accumulation begins clearly marked and visible for inspection on each container or tank?	X			
52. While being accumulated on-site, is each container or tank labeled with the words "Hazardous Waste"?	X			

53. A generator may accumulate 55 gallons of hazardous or one quart of acutely hazardous waste at or near the points of generation if it is under operator control and the container is labeled as to contents. When the drum is filled, the generator has three days to label the container as hazardous waste with the accumulation start date and comply with 262.34.

54. Although closure plans are not required, large quantity generators are required to meet the closure performance standards of 40 CFR 265.111 and the decontamination standards of 40 CFR 265.114.

			Yes	No	Unk	N/A
53.	a.	Does generator accumulate hazardous waste at satellite accumulation areas (at or near the point of generation)?	X			
	b.	If yes, identify number of areas: FUEL TEST SLAB; HOT COLD MIST AREA				
	c.	If yes, does generator accumulate more than 55 gallons of hazardous waste or more than one quart of acutely hazardous waste at or near the point of generation?		X		
	d.	If yes, is the satellite storage container:				
		i. In good condition (e.g., no structural defects or severe rusting)?	X			
		ii. Compatible with the hazardous waste to be stored?	X			
		iii. Always kept closed except when adding or removing waste?	X			
	e.	If yes, is the satellite storage container marked either with the words "Hazardous Waste" or with other words that identify the contents of the containers?	X			
	f.	Does generator, within three days after accumulation, comply with all regular generator standards for any amount of hazardous waste in excess of 55 gallons or any amount of acutely hazardous waste in excess of one quart collected and stored in a satellite accumulation area?	X			
54.	a.	When the facility closes a storage tank or storage area, are all hazardous wastes removed and all structures decontaminated?	X			
	b.	Do you document the closure procedures and maintain the documentation?	X			

55-60. For large quantity generators, 40 CFR 262.34(a)(1) requires short-term storage in containers to meet the requirements of 40 CFR 265 Subpart I. Interim status TSD facilities that store hazardous wastes in containers must also meet the requirements of 40 CFR 265 Subpart I. Permitted TSD facilities that store hazardous wastes in containers must meet the requirements of 40 CFR 264 Subpart I.

61-69. For large quantity generators, 40 CFR 262.34(a)(1) requires short-term storage in tanks to meet the requirements of 40 CFR 265 Subpart J. Interim status TSD facilities that store hazardous wastes in containers must also meet the requirements of 40 CFR 265 Subpart J. Permitted TSD facilities that store hazardous wastes in tanks meet the requirements of 40 CFR 264 Subpart J. Regulatory requirements for tanks vary depending on the age of the tank, whether it has secondary containment, and whether it is above or below grade.

	Yes	No	Unk	N/A
E. Hazardous Waste Storage in Containers				
Complete this subsection if the facility is a large quantity generator or TSDF that stores hazardous wastes in containers.				
55. If the wastes are stored in containers, are the containers maintained in good condition?	X			
56. Are the containers compatible with the wastes?	X			
57. Are the containers kept closed except to add or remove waste?	X			
58. a. Is the container storage area inspected at least weekly for leaks and deterioration of containers?	X			
b. Are inspection records kept for at least three years?	X			
59. Are incompatible wastes or materials handled or stored in the same area?		X		
60. If the facility has a Part B permit, does the containment area for container storage meet the requirements of 40 CFR 264.175?	X			
F. Hazardous Waste Storage in Tanks				
Complete this subsection if the facility is a large quantity generator or TSDF that stores hazardous wastes in tanks.				
61. Are the materials placed in the tank (waste, reagents) compatible with the construction materials of the tank?	X			
62. Does the tank or tank system meet all of the requirements of 40 CFR 265.194 or 264.194 (i.e., spill prevention controls, overfill protection, etc.)?	X			

66. Tanks that do not have secondary containment and were in service for hazardous waste use before July 14, 1986, were required to be assessed by a registered professional engineer by January 12, 1988, in accordance with 40 CFR 265.191 (or 40 CFR 264.191 for permitted facilities).

67. Tanks that were in service before July 14, 1986, are required to have secondary containment meeting the requirements of 40 CFR 265.193(b) according to the schedule in 265.193(a):

- all tanks of known age - before they are 15 years old
- all tanks of unknown age at facilities built before 1980 - before the facility is 15 years old
- all tanks of unknown age at facilities built in 1980 or later - by January 12, 1995.

	Yes	No	Unk	N/A
63. If the facility treats ignitable, reactive, or incompatible wastes in tanks does the treatment meet the requirements of 40 CFR 265.201 and 40 CFR 265.17(b)?	—			X
64. Does the facility have any underground hazardous waste storage tanks?	—	X		
If yes, list each tank, its age, size, materials of construction, and contents on Attachment 12-1.				
65. Does the facility have any aboveground hazardous waste storage tanks?	X	—		
If yes, list each tank, whether it has secondary containment, its age, size, materials of construction, and contents on Attachment 12-2.				
66. a. Do you have signed assessments on file for each non-contained tank that was in service before July 14, 1986? ON FILE IN VALENCIA	X			
b. Have all deficiencies found during the assessments been corrected? ONGOING	—	X		
If yes, describe corrective actions on Attachments 12-1 and/or 12-2. If no, explain. SOIL REMEDIATION ONGOING				
67. a. Have you provided secondary containment for the tanks that currently require it?	—			X
b. Have you planned for construction of secondary containment for the remaining tanks?	X			LEAK FREE SYSTEM

68. Tanks that were put in service for hazardous waste use after July 14, 1986, are required to have secondary containment. The containment structure and tank must be assessed by a registered professional engineer, in accordance with 40 CFR 265.192.

69. Daily inspections for tank systems, as specified in 40 CFR 265.195, must include:
- overfill/spill control equipment for operating condition
- aboveground portions for corrosion and leak detection
- data from monitoring and leak-detection equipment
- area around tank and secondary containment for releases

70. In the event of a release which could threaten human health outside the facility or when the generator knows that the spill has reached surface water, the National Response Center, 800-424-8802, must be notified. In addition, pursuant to Title III of the Superfund Amendments and Reauthorization Act (SARA), the local Community Emergency Coordinator and the State Emergency Planning Commission for any state likely to be affected by the release must be given immediate notice. (See Section 304 of SARA.)

70-75. For large quantity generators, 40 CFR 262.34(a)(4) requires facilities to meet the requirements of 40 CFR 265 Subpart C. Interim status TSD facilities must also meet the requirements of 40 CFR 265 Subpart C. Permitted TSD facilities must meet the requirements of 40 CFR 264 Subpart C.

	Yes	No	Unk	N/A
68. Do you have signed assessments on file for each tank that has been put in service since July 12, 1986?	—	X		—
Have all deficiencies found during the assessments been corrected?	—		X	—

If yes, describe corrective actions on Attachments 12-1 and/or 12-2.

If no, explain.

_____

_____

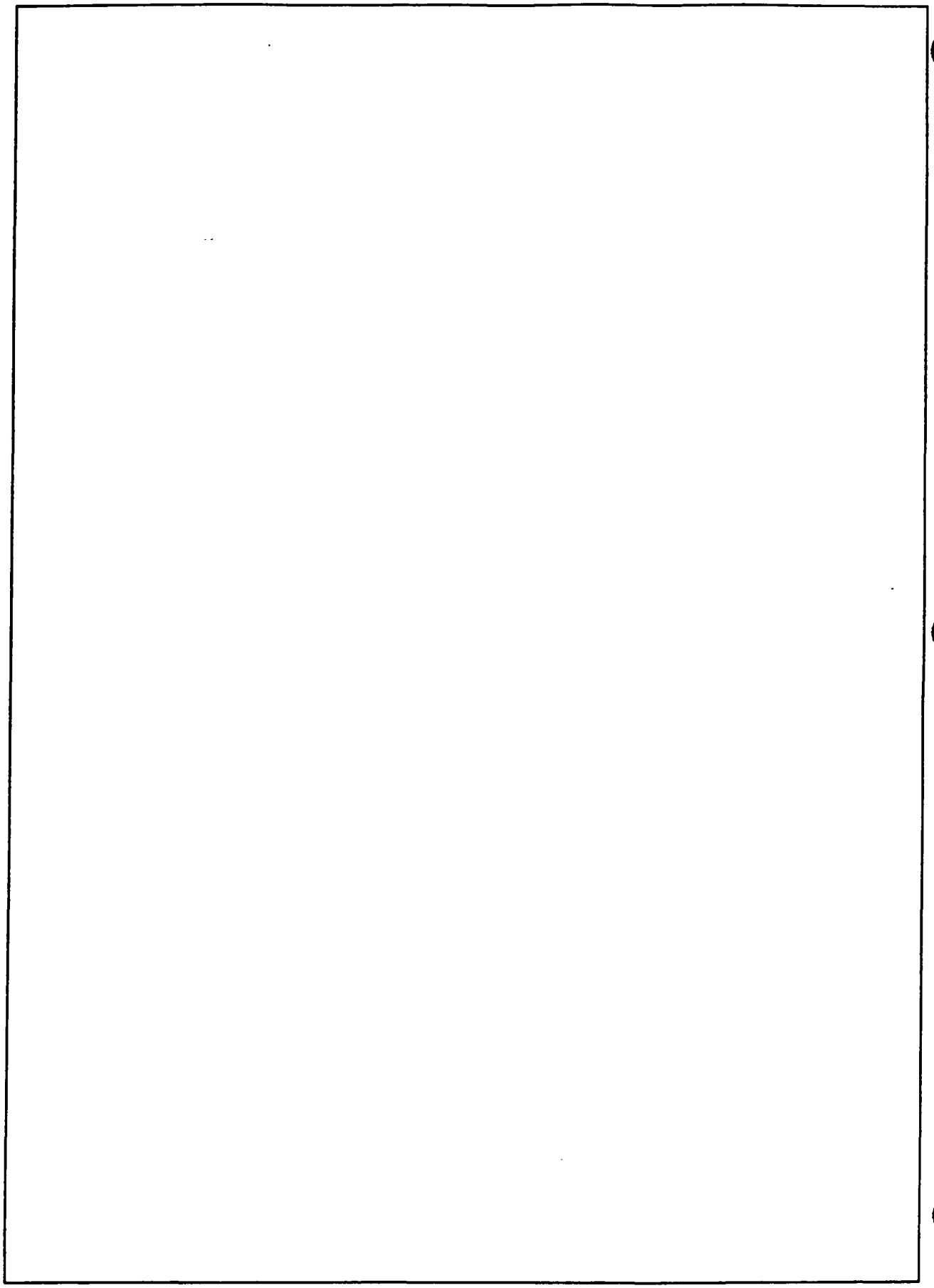
_____

69. a. Does the facility conduct the necessary daily inspections?	X			
b. Does the facility maintain documentation of the inspections?	—	X		

G. Preparedness and Prevention

Complete this subsection if the facility is a large quantity generator or a TSDF.

70. a. Does the facility have procedures to maintain and operate the hazardous waste portions of the facility in a manner to minimize the possibility of fires or spills?	X			
b. If the facility had any spills, were the spills contained, and were contaminated materials disposed of properly?	X			
c. If the spill threatened human health outside the facility or reached surface water, was the National Response Center notified including information listed in 262.34?	X			



		Yes	No	Unk	N/A
71.	a. Does the facility have the following required equipment?				
	–Internal communication system	X			
	–Telephone or two-way radio for off-site communication	X			
	–Fire control, spill control and decontamination equipment	X			
	–Sufficient volume and pressure of water for fire control	X			
72.	Does the facility routinely inspect, test and maintain its communication, fire control, spill control and decontamination equipment?	X			
73.	Do employees have immediate access to communication or alarm systems when handling hazardous wastes?	X			
74.	Is sufficient aisle space maintained for unobstructed access by emergency personnel and equipment?	X			
75.	a. Have arrangements been made or attempted with local emergency response authorities to familiarize them with potential hazards and emergencies at the facility?	X			
	b. Although not required by the regulations for small and large quantity generators, is adequate security provided through a 24-hour surveillance system (TV or guard)?	X	—		
	c. Is there an artificial or natural barrier surrounding the active portions?	X			
	d. Does the facility have the means to control entry through entrances?	X			
	e. Does the facility have signs (e.g., Danger - Unauthorized Personnel Keep Out) posted at each entrance to all active portions?	X			

76-79. For large quantity generators, 40 CFR 262.34(a)(4) requires facilities to meet the requirements of 40 CFR 265 Subpart B. Interim status TSD facilities must also meet the requirements of 40 CFR 265 Subpart D. Permitted TSD facilities must meet the requirements of 40 CFR 264 Subpart D.

		Yes	No	Unk	N/A
H.	**Contingency Plan and Emergency Procedures**				
	Complete this subsection if the facility is a large quantity generator or a TSDF.				
76.	Does the facility have an up-to-date Contingency Plan that meets the requirements of 40 CFR 265.52 and 265.56 (Part 264.52 and 264.56 for permitted facilities)?	—			
77.	Are copies of the Contingency Plan maintained at the facility and sent to local police and fire departments, hospitals, and local and state emergency response teams?	—			
78.	a. Has at least one employee been designated as the emergency coordinator and are the emergency coordinators thoroughly familiar with the Contingency Plan?	—			
	b. Is an emergency coordinator on the premises or on call at all times?	—			
	c. Is the emergency coordinator authorized to commit company resources as necessary to carry out the Contingency Plan?	—			
79.	a. Has the Contingency Plan ever been used in response to an emergency?	—	—		
	b. If yes, was a report submitted to the regulatory agency within 15 days of the incident as required by 40 CFR 265.56(j)?	—			X
	c. Was the plan effective?	—			X
	d. If not, was the plan revised to be more effective?	—			X

80. All TSDFs are required either to have interim status (Part A) or a final permit (Part B). Regulations for applying for these permits are found in 40 CFR 270.

81. If the facility imports hazardous waste, a manifest must be obtained from the consignment (destination) state if the state supplies and requires the use of its manifest, if not, a federal manifest form must be used.

		Yes	No	Unk	N/A
I.	**Treatment, Storage, and Disposal Facility Requirements**				
	Complete this subsection if the facility is a TSDF. A facility is a TSDF if it imports hazardous wastes from off-site, if it is a large quantity generator which stores site-generated hazardous wastes for more than 90 days, if it stores hazardous wastes in surface impoundments or waste piles, if it treats hazardous wastes (except in the accumulation tank or in a completely enclosed process prior to the accumulation point), or if it disposes of hazardous waste on-site by incineration or landfill.				
80.	a. Does the facility have a Part A permit?	___			
	b. Has the facility applied for a Part B permit?	___			
	c. If so, has the permit been issued?	___	___		
	d. If the facility filed for a Part A permit, but has not filed a Part B permit application, has the facility:				
	1) ceased operations as a TSDF?	___			
	2) begun interim status closure?	___			
	3) submitted certification of clean closure or begun post-closure care requirements?	___			
	e. Does the facility have copies of the applications and permits on file?	___			
81.	a. Does the facility import hazardous wastes from off-site?	___	___		
	b. If yes, briefly explain the purpose and fate of the imported hazardous waste. _____ _____ _____				
	c. If so, does the manifest include the foreign generator and importer's name, address, and EPA ID as required by 262.60?	___			___
	d. Have the U. S. importer or his agent and the initial transporter signed the certification?	___			___

82. TSDFs are required to develop and follow a waste analysis plan that describes procedures to obtain the information that must be known to properly treat, store or dispose of the waste. These requirements are found in 40 CFR 265.13 and 264.13 (for sites with a final permit).

83. As required by 40 CFR 265.14 and 264.14, TSD facilities must prevent the unknowing entry and minimize the unauthorized entry of people onto the active portion of the facility. This may be done by 24-hour surveillance systems or by barriers. Each entrance must be posted with a sign with the legend "Danger - Unauthorized Personnel Keep Out."

84. As required by 40 CFR 265.15 and 264.15, TSD facilities must develop and follow a written schedule for inspecting all monitoring equipment, safety and emergency equipment, operating and structural equipment, and security devices.

85. As required by 40 CFR 265.16 and 264.16, TSD facilities must provide a program of classroom instruction or on-the-job training that teaches employees to perform their duties in a way that ensures the facility's compliance with the hazardous waste regulations. Employees must be trained within six months of their assignment to hazardous waste duties. Facility personnel must take part in an annual review of the initial training.

86. A ground water monitoring program is required for all facilities operating surface impoundments, landfills, land treatment, and in some cases, waste piles. Requirements for the ground water monitoring program are described in 40 CFR 265 Subpart F (for interim status facilities) and 40 CFR 264 Subpart F (for facilities with a final permit).

		Yes	No	Unk	N/A
82.	Does the facility have and follow a waste analysis plan?	___	___	___	
83.	Has the facility complied with security provisions?	___	___	___	
84.	a. Does the facility have a written inspection schedule?	___	___	___	
	b. Does the facility keep a file of completed inspection logs for three years?	___	___	___	
	c. Does the facility have a regular program of correcting deficiencies found during inspections?	___	___	___	
85.	a. Does the facility provide training appropriate to their job function to all hazardous waste personnel?	___	___	___	
	b. Does the facility provide training in emergency procedures to all hazardous waste personnel?	___	___	___	
	c. Does the facility keep training records on file for three years?	___	___	___	
86.	a. Does the facility operate any units that require ground water monitoring?	___	___	___	
	b. If yes, have any indicator parameters exceeded background concentrations?	___	___	___	___
	c. If yes, have any hazardous constituents been detected above background concentrations?	___	___	___	___
87.	Is the facility required to perform corrective action for ground water contamination?	___	___	___	

89. 40 CFR 265 Subpart G and 40 CFR 264 Subpart G require all TSD facilities to have written closure plans on file describing the steps that will be taken to remove hazardous wastes from the site at closure and to decontaminate all equipment, structures and soils affected by hazardous waste activities. Hazardous waste disposal facilities are required to have post-closure plans describing activities that will be carried out over a 30-year post-closure period to prevent migration of hazardous constituents from the closed disposal unit.

90. 40 CFR 265 Subpart H and 40 CFR 264 Subpart H describe the financial assurance requirements for TSD facilities. Several methods are available to provide financial assurance for closure and post-closure costs. In addition, TSD facilities are required to have liability insurance for their hazardous waste units. All hazardous waste management units are required to have coverage for sudden accidental occurrences until they are certified closed. Hazardous waste disposal units are also required to have coverage for nonsudden accidental occurrences during the active life of the unit.

		Yes	No	Unk	N/A
88.	a. Is the facility an owner or operator of surface impoundments that treat, store, or dispose of hazardous waste?	___	___	▒▒	
	b. If so, does the facility follow operating, monitoring and inspection requirements as outlined in 264.221-227?	___	▒▒	▒▒	___
89.	a. Does the facility have written closure plans on file for all hazardous waste management units?	___	▒▒	▒▒	
	b. Does the facility have written post-closure plans on file for all waste disposal units?	___	▒▒	▒▒	
90.	Is your facility included in the financial assurance documentation for closure and post-closure care prepared by Textron?	___	▒▒	▒▒	

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SECTION 11

USED OIL

Introduction

Overview: Under RCRA, "used oil" means any oil that has been refined from crude oil, used, and, as a result of use, is contaminated by physical or chemical impurities. Examples of used oil include: car and truck crankcase oil; transmission fluid; brake fluid; compressor, turbine, and bearing oils; hydraulic oils; metalworking oils; gear oils; electrical oils; and spent industrial process oils.

To date, EPA has not declared used oil to be a hazardous waste, although this issue is currently under consideration. However, many states have declared used oil to be a hazardous waste and in those states, used oil must be handled in accordance with the hazardous waste management requirements discussed in Section 10. Be sure to check state regulations for specific state requirements.

Although EPA has thus far not listed used oil as a hazardous waste, EPA has made clear that, under the RCRA "mixture rule," used oil that is mixed with a hazardous waste, either accidentally or intentionally, is a hazardous waste and must be managed as such.

Generally, EPA has not imposed regulations on the recycling or reuse of used oil, with two notable exceptions. First, EPA has developed regulations that apply to used oil burned for energy recovery. As explained below, the applicability of these regulations depends on the constituents of the oil.

Second, EPA has banned outright the use of waste or used oil that is contaminated with dioxin or any other hazardous waste (other than a waste identified solely on the basis of ignitability) for dust suppression or road treatment (40 CFR 266.23(b)).

Used Oil versus Hazardous Waste

Under the federal regulations, a used oil is considered a hazardous waste if either:

1. The used oil was mixed with a listed hazardous waste, or

2. The used oil was mixed with a characteristic hazardous waste and the resulting mixture tests hazardous.

If a used oil is mixed with a characteristic hazardous waste and the resulting mixture does not test hazardous, the mixture remains a "used oil" and is not a hazardous waste. Note: The EPA takes the position that where the mixing of a characteristic

hazardous waste and a non-hazardous waste results in the mixture no longer testing hazardous, such mixing constitutes hazardous waste treatment and is subject to EPA's hazardous waste treatment requirements. Such "treatment" does not require a treatment permit if the mixing occurs in a qualified tank or container pursuant to the 90-day accumulation rule (see 40 CFR 262.34).

Note: Used oil that exhibits a hazardous waste characteristic but that has not been mixed with a hazardous waste is regarded as a "used oil" for purposes of the regulations governing the burning of used oil and hazardous waste for energy recovery.

EPA's Rebuttable Presumption on Mixing: EPA has established a rebuttable presumption that any used oil containing more than 1,000 ppm total halogens has been mixed with halogenated hazardous waste and must be managed as a hazardous waste (40 CFR 266.40(c)). This presumption may be rebutted by demonstrating that the used oil was not, in fact, mixed with a hazardous waste (for example, by showing that the used oil does not contain significant concentrations of halogenated hazardous constituents identified by EPA).

Burning and Regulations for Used Oil and "Hazardous Waste Fuel"

EPA has established regulations applicable to the burning of both used oil and "hazardous waste fuel." With respect to used oil, the federal regulations distinguish between "on-specification" used oil and "off-specification" used oil.

On-Specification Used Oil: Used oil that meets the following quality specifications is known as "on-specification" used oil:

Arsenic	5 ppm maximum
Cadmium	2 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum
Flash point	100° F minimum
Total halogens	4,000 ppm maximum

There are no federal restrictions on the burning or other reuse of on-specification used oil. Thus, on-specification used oil may be sold to, and burned in, both non-industrial and industrial boilers and furnaces. However, generators of on-specification used oil that is burned for energy recovery must comply with certain record keeping requirements (40 CFR 266.43(b)(1) and (6)).

Off-Specification Used Oil: Used oil that does not meet the quality specifications described above cannot be burned in residential, commercial, or institutional (i.e., non-industrial) boilers or furnaces, unless the boiler or furnace complies with RCRA standards for hazardous waste incinerators (40 CFR 264 Subpart O). However, off-specification used oil can be burned in industrial boilers and furnaces if certain

"administrative" requirements are met. EPA may establish additional requirements governing the burning of used oil in industrial boilers and furnaces in the future.

Note: Off-specification used oil may be blended with other (used) oil to meet the specifications and thus render the oil "on-specification" used oil (50 Fed. Reg. at 49188).

Hazardous Waste Fuels: Any hazardous waste (including used oil that has been mixed with hazardous waste) that has at least 5,000 BTU/lb may be burned in industrial boilers and furnaces for energy recovery. Such wastes are called "hazardous waste fuels." As with off-specification used oil, marketers and burners of hazardous waste fuel must comply with certain "administrative" requirements. EPA is expected to establish additional requirements governing the burning of hazardous waste fuel in boilers and furnaces in the near future.

Note: Used oil that is burned for energy recovery that contains less than 50 ppm PCBs may be burned in industrial boilers and furnaces. Used oil containing 50 or more ppm PCBs may be burned only in certain qualified devices.

"Administrative" Requirements for Marketers and Burners: Marketers and burners of off-specification used oil (40 CFR 266 Subpart E) and hazardous waste fuel (40 CFR Subpart D) must:

- notify EPA of their marketing activities;
- obtain an EPA identification number;
- use manifests (for hazardous waste fuels) or invoices (for off-specification used oil);
- meet record keeping requirements; and
- comply with RCRA storage standards for facilities storing hazardous waste fuels (does not apply to storage of off-specification used oil).

SECTION 11

USED OIL

Guidance

Regulatory Authority:	The Resource Conservation and Recovery Act; Corresponding State Statutes
Regulatory Citation:	40 CFR 266
Administering Agency:	U.S. Environmental Protection Agency; Corresponding State Agencies

3. Generators of waste oil are required to determine whether any of their wastes are hazardous wastes (40 CFR 262). Used oil may contain hazardous waste constituents and therefore should be analyzed and carefully handled on-site.

SECTION 11

USED OIL

Survey Questions

Complete this section if used oil is generated at the facility or burned for energy recovery at the facility.

			Yes	No	Unk	N/A
1.	a.	If the facility has been subject to an inspection regarding waste oil issues during the last three years or since completion of the last survey, were any concerns or potential concerns uncovered? If so, describe concerns and include copies of inspection reports or correspondence.		X		
	b.	Do any of the concerns or potential concerns uncovered in the inspection remain unresolved?		X		
2.	a.	Has the facility entered into any Consent Order, Settlement Agreement, Delayed Compliance Order, etc., with respect to waste oil? If so, describe and confirm that the facility has copies of all documents:_____		X		
	b.	If yes, has the facility complied with the terms of the order?				X
3.		Does the facility test used oils to determine if they are hazardous? DEXSIL CHLOR-D-TECT 1000 KITS	X			
4.		If your state has declared used oil to be a hazardous waste, is the used oil handled in accordance with the management requirements discussed in Section 10?	X			

7-8. All off-site treatment and disposal facilities, including facilities that handle waste oils, pose potential liabilities for the company that ships waste to the facility. Many waste oil handlers are now listed as Superfund sites. The facility should be very careful when choosing off-site oil recycling facilities. Some states treat waste oil as a special waste and require shipments to be manifested.

9-10. 40 CFR 266.40 specifies that used oil burned for energy recovery must meet the specifications described in the introduction to this section. Regulatory statutes 40 CFR 266.43(B)(1) and (6) require generators to maintain copies of each analysis (or other information used to make the determination) for three years. They must also maintain the following information on each shipment:

- name and address of the facility receiving the shipment;
- quantity of used fuel oil delivered;
- date of shipment or delivery; and
- a cross-reference to the record of the used oil analysis.

	Yes	No	Unk	N/A
5. Does the facility store used oil on-site? If so, describe how the used oil is stored. STORED IN BERMED AREA IN 55 GAL. STEEL DRUMS	X			
6. Does the facility recycle or dispose of non-hazardous used oil on-site? Describe on-site used oil recycling or disposal activities on Attachment 9-2.		X		
7. a. Does the facility recycle or dispose of non-hazardous used oil off-site? Describe off-site recycling or disposal on Attachment 9-1. OIL IS EITHER REFINED OR INCINERATED OFFSITE FOR ENERGY RECOVERY	X			
b. Are shipments of waste oil manifested?	X			
c. Are records of waste oil amounts and shipments maintained?	X			
8. Has the facility audited the off-site facilities used to handle nonhazardous used oil? Record on Attachment 9-1.		X		
9. If used oil is burned for energy recovery:				
a. Does the facility test the oil to determine if it meets specifications?	X			
b. If the used oil recovery meets specifications, does the facility maintain required records?	X			

10-12. Off-specification used oil can be marketed for energy recovery only to burners or other marketers who have notified EPA of their used oil management activities and to burners who burn the used oil in an industrial furnace or boiler identified in 40 CFR 260.10 (40 CFR 266.41(b)). Notification to EPA on the location and general description of used oil management activities must be made (40 CFR 266.43(b)(3)).

11. Oil with a halogen content of over 1,000 ppm is considered a hazardous waste unless the generator proves that the oil has not been mixed with a hazardous waste.

12. Required by 40 CFR 266 Subparts D and E.

	Yes	No	Unk	N/A
10. If the used oil burned for energy recovery does not meet specifications:				
a. Does the facility prohibit its use in non-industrial boilers?	—		X	—
Describe procedures:_____				
b. Does the facility meet record keeping requirements?	—		X	—
11. a. If the used oil has been mixed with hazardous wastes or has a halogen level above 1,000 ppm, is the used oil treated as a hazardous waste in accordance with the hazardous waste management requirements discussed in Section 10?	X			—
b. Are procedures in place to prevent mixing of used oils with hazardous waste?	X			
12. If the facility markets used oil directly to a burner, have the following requirements been fulfilled:				
a. Does the fuel meet specifications under 40 CFR 266.40(e)?	—			X
b. Have the proper notifications been made to EPA stating the location and general description of used oil activities?	—			—
13. If the state in which the facility is located regulates used oils more strictly than the U.S. EPA, are the more stringent standards being met?	X			—
14. Are there any other comments that you consider relevant and/or significant to this section of the survey? If so, please state.	—	X		

ATTACHMENT 12-1

UNDERGROUND STORAGE TANKS (PRESENT AND FORMER)

QUESTIONS	TANK ID NO.	TANK ID NO.	TANK ID NO.
ID NUMBER UNK	#1	#2	
AGE 19 YEAR	SAME	SAME	
CONTENTS : PETROLEM HYDROCARBONS VOC'S			
CAPACITY 1000 GALS EACH			
MONTHLY THROUGHPUT 2000 GALS FOR BOTH			
SHELL CONSTRUCTION MATERIAL STEEL			
LINING MATERIAL STEEL			
INSTALLATION TYPE: NEW OR RETROFIT NEW			
PIPING MATERIAL STEEL			
INSTALLATION TYPE: NEW OR RETROFIT NEW			
DESCRIPTION OF CONTAINMENT SYSTEM N/A			
DESCRIPTION OF OVERFILL/SPILL CONTROL EQUIPMENT N/A			
REMOTE LEVEL INDICATOR (Y/N) N			
DATE OF INTEGRITY TESTING 1966 ?			
IF INSTALLED PRIOR TO 5/7/85, WAS "UST" NOTIFICATION FORM SENT TO US EPA (Y/N) Y			
IF INSTALLED AFTER TO 5/7/85, WAS "UST" NOTIFICATION FORM SENT TO US EPA (Y/N)			
IF REMOVED FROM SERVICE • REMOVAL DATE 1/85			
• DESCRIPTION OF REMOVAL PROCEDURES SOIL TESTING, REMOVAL OF TANKS ; PROPER DISP.			
• WAS CONTAMINATION ASSESSMENT PERFORMED? YES			
• DESCRIBE RESULTS OF CONTAMINATION ASSESSMENT SOIL CONTAMINATED / PETRO-HYDROCARBONS / CHLORINATED SOLVENTS			
• WAS CONTAMINATED SOIL REMOVED? (QUANTITY) ON GOING			
TYPE OF SURROUNDING SOIL DIRT ; ROCK			

ATTACHMENT 12-2

ABOVE-GROUND STORAGE TANKS (PRESENT AND FORMER)

QUESTIONS	TANK ID NO.	TANK ID NO.	TANK ID NO.
ID NUMBER CAD041162330	#1	#2	#3
AGE 1 YEAR	SAME	SAME	SAME
CONTENTS SOLUBLE OIL			
CAPACITY 750 GALS			
MONTHLY THROUGHPUT 750 GALS			
SHELL CONSTRUCTION MATERIAL POLYETHLENE			
LINING MATERIAL SAME			
INSTALLATION TYPE: NEW OR RETROFIT NEW			
PIPING MATERIAL NONE			
INSTALLATION TYPE: NEW OR RETROFIT N/A			
DESCRIPTION OF CONTAINMENT SYSTEM BERM			
DESCRIPTION OF OVERFILL/SPILL CONTROL EQUIPMENT N/A			
REMOTE LEVEL INDICATOR (Y/N) N			
DATE OF INTEGRITY TESTING			
IF REMOVED FROM SERVICE • REMOVAL DATE N/A			
• DESCRIPTION OF REMOVAL PROCEDURES N/A			
• WAS CONTAMINATION ASSESSMENT PERFORMED? N/A			
• DESCRIBE RESULTS OF CONTAMINATION ASSESSMENT N/A			
• WAS CONTAMINATED SOIL REMOVED? (QUANTITY) N/A			
TYPE OF SURROUNDING SOIL N/A			

TEXTRON INC.
ENVIRONMENTAL-SELF SURVEY

ATTACHMENTS

NUMBER	TITLE
4-1	Chemical Usage
5-1	Description of Air Emission Points
5-2	Description of Facility Boilers
5-3	Air Emissions Complaint Log
6-1	Water Flow Diagram and Water Balance
6-2	Wastewater Treatment System
6-3	Non-Point Source Discharges
6-4	Wastewater Discharge Monitoring Parameters
9-1	Off-Site Commercial Non-Hazardous Transporters and TSDF Facilities
9-2	Non-Hazardous Wastes (Used Oil, Metal Scraps, Etc.) Recycled On-Site
12-1	Above-Ground Storage Tanks (Present and Former)
12-2	Underground Storage Tanks (Present and Former)
13-1	Release Reporting Log
14-1	List of Lists
14-2	EPCRA-Worksheets
18-1	Media Coverage Log
19-1	Guide to Record Retention Requirements

Revision Date: 05/09/90

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SECTION 12

STORAGE TANKS

Introduction

Overview: Tanks are regulated under the following federal laws:

- Subtitle C of the Resource Conservation and Recovery Act
- Subtitle I of the Resource Conservation and Recovery Act
- Clean Water Act

Tanks used to store **hazardous wastes** are regulated under Subtitle C of the Resource Conservation and Recovery Act (RCRA). The Hazardous and Solid Waste Amendments of 1984 added Subtitle I to RCRA which regulates Underground Storage Tanks (USTs) containing **petroleum** and **hazardous substances** (other than hazardous wastes). UST regulations are implemented at the state and local level. Although federal regulations set minimum requirements, state and local regulations may be more stringent.

RCRA requirements for tanks storing hazardous wastes cover the design of tank systems, general operating requirements, inspections, response to leaks and spills, closure/postclosure care, and special requirements for ignitable/reactive and incompatible wastes (40 CFR 265.190-265-201). These regulations apply to aboveground, on-ground, and partially or totally underground tanks that are used to treat or store hazardous wastes. Requirements for tanks storing hazardous waste are discussed in Section 10. Requirements for tanks storing hazardous substances or petroleum are discussed in this section.

Underground Storage Tanks (USTs): Under RCRA Subtitle I, an underground storage tank is defined as any non-earthen stationary tank (including underground pipes connecting to the tanks) used to contain regulated substances which have 10 percent or more of its volume (including the volume of underground pipes) beneath the ground surface (40 CFR 280.1). This definition includes swimming pools, devices such as sumps, treatment units, equipment, and machinery that contain petroleum or other regulated substances unless otherwise excluded. Process use of hydraulic oil, for example, and certain wastewater treatment tanks are excluded, as well as tanks under 110 gallons. A regulated substance is defined as the following:

- any substance regulated as a "hazardous substance" under CERCLA (except RCRA hazardous wastes);
- petroleum, including crude oil or any fraction of crude oil that is liquid at standard conditions of temperature and pressure (40 CFR 280.1); or
- mixtures of petroleum and other regulated substances such as motor fuels, distillate fuel oils, residual fuel oils, lubricants, petroleum solvents, or used oils.

Effective December 22, 1988, owners and operators of underground storage tanks containing regulated substances must comply with performance requirements for new tanks and leak detection/corrective action requirements for all underground tanks containing such substances.

The following tanks are excluded from the underground storage tank regulations:

- Farm or residential tanks of 1,100 gallons or less capacity used to store motor fuel for noncommercial purposes;
- Tanks used to store heating oil for consumptive use on the premises (some states require that these tanks be registered);
- Septic tanks
- Pipeline facilities regulated under other acts or laws;
- Surface impoundments, pits, ponds, or lagoons;
- Storm water or wastewater collection systems;
- "Flow-through process tanks";
- "Liquid trap or associated gathering lines related to oil or gas production and gathering operations";
- Storage tanks on or above the floor of an underground area.

Existing Requirements: The RCRA regulations establish responsibilities for persons who own underground storage tanks, deposit regulated substances into underground storage tanks, and/or sell underground storage tanks. Tank owners are responsible for submitting a notice with respect to their tanks to the state agency designated in 40 CFR 280.22. All new tanks installed must meet certain release prevention requirements. People who deposit regulated substances in underground tanks and people who sell underground tanks must inform tank owners about their responsibilities under RCRA. Federal and state enforcement and inspection officials may request information from the tank owner; inspect and sample tanks; monitor and test tanks and the surrounding areas; and levy civil penalties of up to $10,000 per day per tank for failure to submit a notice regarding the tank or providing false information.

Tanks installed before December 22, 1988 must be upgraded or closed by December 22, 1998. Upgrading of petroleum UST systems includes retrofitting of corrosion protection and spill/overfill controls.

Existing systems must comply with one of the following requirements by December 22, 1998:

- New UST performance standards under 40 CFR 280.20,
- The upgrading requirements stated in 40 CFR 280.21(b)-(d), or
- Closure requirements under 40 CFR 280.71 Subpart G.

Existing tanks and associated nonpressurized piping are subject to leak detection and monitoring requirements based on the age of the tank. Tank systems installed before 1965, or at an unknown date, were required to be monitored for leaks

beginning December 22, 1989. Tank systems installed from 1965 through 1969 are subject to leak detection requirements as of December 22, 1990. The following table illustrates the deadlines for leak detection:

Installation Year	December 22, 1989	December 22, 1990	December 22, 1991	December 22, 1992	December 22, 1993
Unknown	X				
Before 1965	X				
1965-69		X			
1970-74			X		
1975-79				X	
1980-88					X

Federal deadlines dictate that tanks installed after December 22, 1988 are subject to leak detection monitoring upon installation. Pressurized piping associated with all underground storage tanks are subject to monitoring as of December 22, 1990. Leak detection monitoring deadlines at the state and local levels may vary.

Leak detection for petroleum tank systems consists of a program of inventory monitoring and tank tightness testing depending on the tank's performance characteristics and size. Pressurized piping in such systems must have an automatic line leak detector and annual tightness testing conducted in accordance with the regulations. All new underground hazardous substance tank systems, and by December 22, 1998, all existing hazardous substance tank systems, must also have interstitial monitoring systems and secondary containment systems as part of the leak detection program. Any underground storage tank system that cannot be subjected to one of the prescribed leak detection methods must be closed by the date such methods are required for implementation.

The owner/operator of a tank brought into use after May 8, 1986 must submit a notification form to the designated state agency within 30 days. For existing tanks (and tanks that were out of service after January 1, 1974, but which remain in the ground), the owner/operator was required to submit a notification form by May 8, 1986. Tanks taken out of service prior to January 1, 1974 are not affected by these notification requirements.

Requirements for New Tanks: The final standards for underground storage tanks holding hazardous substances and petroleum products became effective December 22, 1988 (53 FR 37082-37212). The requirements will be phased in as described below. The new standards establish measures for both new and existing UST systems to prevent, detect and clean up releases of petroleum products and hazardous substances.

Certain underground storage tanks are excluded from the final regulations. These include (but are not limited to) systems with a capacity of 110 gallons or less, systems storing *de minimis* concentrations of regulated substances, certain wastewater treatment systems, and equipment that contains regulated substances for operational purposes.

In addition to the technical requirements discussed below, the new UST regulations include state program approval requirements as well as financial responsibility requirements for all owners/operators of underground storage tanks that contain petroleum. These new regulations became effective on January 24, 1989. The requirements are being phased in over a 21-month period. Those firms with a tangible net worth of $20 million or more, with the exception of smaller "petroleum marketing firms," must be in compliance as of the effective date of the regulations.

The final rule governing USTs, while consisting of many specific federal requirements, allows the state agencies some flexibility. Therefore, it is necessary to check with your state and local agencies to determine if your program varies from the federal regulations.

Under the final standards, a **new UST** must meet the following requirements:

- Certification that the tank and piping are properly installed;
- Provision of devices to prevent spills and overfills;
- Protection from corrosion;
- Provision of leak detection equipment on tank and piping.

When placing a new UST system into service, the owner/operator must follow national codes of practice and must certify that proper installation procedures were followed. New hazardous substance USTs (installed after December 22, 1988) must have secondary containment with interstitial monitoring, or an alternative method approved by the agency responsible for implementation. Existing hazardous substance USTs must meet these requirements by December 22, 1998.

The following standards are applicable to **new and existing UST systems:**

- **Corrosion Protection** - the owner/operator must monitor and maintain cathodic protection to ensure that the UST system remains free of corrosion.

- **Spill/Overfill Protection** - the owner/operator must follow proper tank filling practices to prevent releases due to spills and overfills. New or upgraded tank systems must use devices that prevent overfills and control or contain spills.

- **Release Detection** - release detection is required for all new and existing tanks. Owners and operators of new and existing UST systems must provide a method, or combination of methods, of release detection that meet the following criteria:

  - can detect a release from any portion of the tank and the connected underground piping that contains the product;
  - is installed, calibrated, operated, and maintained in accordance with the manufacturer's instructions; and
  - meets the performance requirements of 40 CFR 280.41, 280.42, 280.43, and 280.44.

The schedule for the phase-in of release detection is described in 40 CFR 280.40(c).

- **Release Reporting and Response** - the tank owner/operator must report suspected releases to the agency responsible for implementation within 24 hours. If a release has been confirmed, the owner/operator must begin corrective action.

- **Tank Repairs** - tanks must be repaired in accordance with nationally-recognized industry standards, including tests that must be conducted to ensure the quality of repairs.

- **Tank Closure** - the owner/operator must notify the implementing agency 30 days in advance of closure. Permanent tank closures must follow industry codes. An assessment must be performed at the time of closure to ensure that a release has not occurred at the site.

Spill Prevention Control and Countermeasure Plans (SPCC): The Clean Water Act was enacted in part to prohibit the discharge of harmful quantities of oil into navigable U.S. waters. Under the Act, the definition of oil includes oil of any kind or in any form, including but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with waste other than dredged spoil.

The Act requires the preparation and implementation of Spill Prevention Control and Countermeasure (SPCC) Plans by owners and operators of onshore and offshore facilities that have discharged or have the potential to discharge oil in harmful quantities (40 CFR 112.3). SPCC Plans are designed to minimize the potential for oil spills and should be kept on file at the facility. An SPCC Plan must be certified by a Registered Professional Engineer and reviewed every three years.

Facilities are exempt if they have a storage capacity of:

- less than 42,000 gallons of oil underground, and
- less than 1,320 gallons above ground (as long as no single container has a capacity above 660 gallons).

Facilities with permanent outdoor drum storage must include the drum storage capacity to determine if an SPCC Plan is required.

If your facility is required to have an SPCC Plan, that plan must address specific requirements for underground oil storage tanks, including the following (40 CFR 112.7(e)(2)):

- Compatibility of the material and construction of the tank with the material stored and conditions of storage;

- Adequate secondary containment;

- Drainage of rainwater;
- Corrosion protection for new underground metallic storage tanks;
- Special measures to control leakage through defective internal heating coils;
- Fail-safe engineering for tank installations;
- Observation of plant effluent to detect possible system problems that could lead to an oil spill; and
- Prompt correction of visible oil leaks.

The SPCC Plan requirements for aboveground tanks include those stated above for underground with the addition of the following requirements:

- Avoidance of metallic storage tanks partially underground (unless provided with adequate corrosion protection);
- Periodic inspection and integrity testing of aboveground tanks.

SECTION 12

STORAGE TANKS

Guidance

Authority:	The Clean Water Act; The Resource Conservation and Recovery Act; Subtitle C - Hazardous Wastes; Subtitle I - Underground Storage Tanks; Petroleum and Hazardous Substances; Corresponding State Statutes
Regulatory Citation:	40 CFR 112; 40 CFR 280 and 281; Corresponding State Regulations
Administering Agency:	U.S. Environmental Protection Agency; Designated State Agencies

1-2. Questions are self-explanatory

3-4. See introduction to this section.

SECTION 12

STORAGE TANKS

Survey Questions

Facilities with storage tanks must complete this section.

		Yes	No	Unk	N/A
1.	If the facility has been subject to an inspection regarding storage tank issues during the last three years or since completion of the last survey, were any concerns or potential concerns uncovered?	—	X		
	If so, describe concerns and include copies of inspection reports or correspondence.				
	a. Do any of the concerns or potential concerns uncovered in the inspection remain unresolved?		X		
2.	a. Has the facility entered into any Consent Order, Settlement Agreement, Delayed Compliance Order, etc., with respect to tanks? If so, describe and confirm that facility has copies of all documents._____ _____	—	—		
	b. If yes, has the facility complied with the terms of the Order?	—			—
3.	Use Attachment 12-1 to list all Underground Storage Tanks (UST) located at the facility. Include wastewater treatment tanks, sumps, underground storage tanks containing used oil, underground bulk storage tanks, electrical equipment, and hydraulic lift tanks. Complete all relevant information for each tank.				

6. The owner of an UST must notify the state or local agency designated in 40 CFR 280.22 of the tank's existence. If a tank was used to store a regulated substance and removed from service after January 1, 1974, but remains in the ground, the owner must also have submitted a notification form to the designated state agency by May 8, 1986. Owners and operators of newly installed tanks must submit a tank notification form within 30 days of bringing a new tank into operation certifying the specified method used to ensure proper installation (40 CFR 280.22).

The term "owner" is defined in 40 CFR 280.12 as follows:

- For tanks in service on or after November 8, 1984, the "owner" is the person (or commercial entity) who currently owns the UST;
- For tanks taken out of service before November 8, 1984, the "owner" is the person who owned the tank immediately before discontinuation of its use.

6a. Forms should have been submitted by May 8, 1986, for tanks in use after January 1, 1974 or within 30 days after the installation date for tanks installed after May 8, 1986.

7. Tank owners must report the information in items (a)-(g) to the state agency designated in 40 CFR 280.22. **Note:** For tanks installed after December 22, 1988, a certificate of compliance with the regulations must also be made.

ATTACHMENT 12-1

UNDERGROUND STORAGE TANKS (PRESENT AND FORMER)

QUESTIONS	TANK ID NO.	TANK ID NO.	TANK ID NO.
ID NUMBER UNK	#1	#2	
AGE 19 YEAR	SAME	SAME	
CONTENTS : PETROLEM HYDROCARISONS VOC'S	/	/	
CAPACITY 1000 GALS EACH	/	/	
MONTHLY THROUGHPUT 2000 GALS FOR BOTH	/	/	
SHELL CONSTRUCTION MATERIAL STEEL	/	/	
LINING MATERIAL STEEL	/	/	
INSTALLATION TYPE: NEW OR RETROFIT NEW	/	/	
PIPING MATERIAL STEEL	/	/	
INSTALLATION TYPE: NEW OR RETROFIT NEW	/	/	
DESCRIPTION OF CONTAINMENT SYSTEM N/A	/	/	
DESCRIPTION OF OVERFILL/SPILL CONTROL EQUIPMENT N/A	/	/	
REMOTE LEVEL INDICATOR (Y/N) N	/	/	
DATE OF INTEGRITY TESTING 1966 ?	/	/	
IF INSTALLED PRIOR TO 5/7/85, WAS "UST" NOTIFICATION FORM SENT TO US EPA (Y/N) Y	/	/	
IF INSTALLED AFTER TO 5/7/85, WAS "UST" NOTIFICATION FORM SENT TO US EPA (Y/N)	/	/	
IF REMOVED FROM SERVICE • REMOVAL DATE 1/85	/	/	
• DESCRIPTION OF REMOVAL PROCEDURES SOIL TESTING, REMOVAL OF TANKS & PROPER DISP.	/	/	
• WAS CONTAMINATION ASSESSMENT PERFORMED? YES	/	/	
• DESCRIBE RESULTS OF CONTAMINATION ASSESSMENT FOUND CONTAMINATED W/ PETRO-HYDROCHARBONS & CHLORONATED SOLVENTS	/	/	
• WAS CONTAMINATED SOIL REMOVED? (QUANTITY) ON GOING	/	/	
TYPE OF SURROUNDING SOIL DIRT & ROCK	/	/	

	Yes	No	Unk	N/A
4. List all aboveground oil storage tanks of greater than 200 gallons located at the facility and all bulk gas tanks (volume greater than 2 cubic feet) on Attachment 12-2.				
A. Please complete Subsection A if the facility has any underground Storage Tanks Containing Hazardous Substances and/or Petroleum Products				
5. Does the facility store any hazardous substances or petroleum products in underground storage tanks?	—	X		
6. If any USTs at the site contain petroleum products or hazardous substances as defined in CERCLA Section 104(14), or contained these materials after January 1, 1974, and were still in the ground as of May 8, 1986; or were brought into use after May 8, 1986: N/A				
a. Was an EPA Form 7530-a ("Notification for UST in Use") or state form prepared and submitted to the designated agency for each tank?	—			
b. Are copies of these notification forms kept at the site?	—			
c. Is the information on the forms consistent with the tank inventory and documentation?	—			
7. Did the facility report the following information on each tank to the designated state agency:				
a. Status of use?	—			
b. Age?	—			
c. Capacity in gallons?	—			
d. Material of tank construction?	—			
e. Material of piping construction?	—			
f. Type(s) of internal/external protection?	—			
g. Contents?	—			

8. Site location maps of UST systems are required in some states, including recording the UST system's presence on the property deed when property containing a UST system is being sold.

9. It is good management practice to remove non-essential tanks. The procedures for handling out-of-service tanks and closure are presented in 40 CFR 280.70 -.74 (Subpart G).

10. Performance standards for new UST systems are found in 40 CFR 280.20. Metal piping in such systems that contains regulated substances must be cathodically protected and meet the requirements of 40 CFR 280.20. State and local regulations for new tank installation may be more stringent. Be sure to check those requirements. Under 40 CFR 280.31,cathodic protection installed to prevent corrosion in new or existing UST systems must be inspected for proper operation by a qualified cathodic protection tester within six months of installation and at least every three years thereafter.

11. Under 40 CFR 280.42, new hazardous substance UST systems (and by December 22, 1998, existing hazardous substance UST systems) must have secondary containment systems to contain regulated substances released until they are detected and removed and must prevent the release of regulated substances to the environment throughout the operational life of the system.

12. Under CFR 280.32 of the new regulations, owners and operators must use an UST system made of or lined with materials that are compatible with the substance stored in the UST system.

13. Inventory procedures are defined in CFR 280.43. Product inventory control must be able to detect a release of at least 1.0 percent of flow-through plus 130 gallons on a monthly basis. Inventory volume measurements for regulated substance inputs, withdrawals, and the amount still remaining in the tank are recorded daily.

13 & 15-16. Required currently for UST systems installed before 1965 or of unknown age, will be required by December 22, 1990 for UST systems installed before 1970.

14. Manual and automatic tank gauging requirements are described in 40 CFR 280.43(b) and (d).

ATTACHMENT 12-2

ABOVE-GROUND STORAGE TANKS (PRESENT AND FORMER)

QUESTIONS	TANK ID NO.	TANK ID NO.	TANK ID NO.
ID NUMBER	UNK	109321	KO-676
AGE	UNK	20 YRS.	5 YRS.
CONTENTS	111 TRICHLOROETHANE	STODDARD SOLVENT	CONCENTRATED SOLUBLE OIL
CAPACITY	500 GALLONS	2000GALS.	330GAL
MONTHLY THROUGHPUT		?	
SHELL CONSTRUCTION MATERIAL	STEEL	STEEL	STEEL
LINING MATERIAL	STEEL	UNK	UNK
INSTALLATION TYPE: NEW OR RETROFIT	?	NEW	NEW
PIPING MATERIAL	N/A	STEEL PIPING AND VALVES	N/A
INSTALLATION TYPE: NEW OR RETROFIT	?	NEW	NEW
DESCRIPTION OF CONTAINMENT SYSTEM	CONCRETE BERMED AREA	TRENCHED CONCRETE BERMED PAD PLUMBED TO 6500GAL	CONCRETE BERMED AREA
DESCRIPTION OF OVERFILL/SPILL CONTROL EQUIPMENT	NONE	SPILL CONTAINMENT TANK, CAP. OF AREA TANK 13,320	NONE
REMOTE LEVEL INDICATOR (Y/N)	N	N	N
DATE OF INTEGRITY TESTING	?	12-4-70	3-85 & 3-87
IF REMOVED FROM SERVICE • REMOVAL DATE	N/A	N/A	N/A
• DESCRIPTION OF REMOVAL PROCEDURES			
• WAS CONTAMINATION ASSESSMENT PERFORMED?			
• DESCRIBE RESULTS OF CONTAMINATION ASSESSMENT			
• WAS CONTAMINATED SOIL REMOVED? (QUANTITY)			
TYPE OF SURROUNDING SOIL	CONCRETE PAD	CONCRETE PAD	CONCRETE PAD

ATTACHMENT 12-2

ABOVE-GROUND STORAGE TANKS (PRESENT AND FORMER)

QUESTIONS	TANK ID NO.	TANK ID NO.	TANK ID NO.
ID NUMBER	NONE	325	UNK
AGE	?	?	25 YRS APPROX
CONTENTS	111 TRICHLORETHANE	FREON	STODDARD SOLVENT
CAPACITY	500 GALLONS	235 GALLONS	1000 GALLONS
MONTHLY THROUGHPUT	150 GALS	100 GALLONS	150 GALLONS
SHELL CONSTRUCTION MATERIAL	STEEL	STAINLESS STEEL	STEEL
LINING MATERIAL	STEEL	UNK	UNK
INSTALLATION TYPE: NEW OR RETROFIT	?	NEW	NEW
PIPING MATERIAL	N/A	STEEL	STEEL
INSTALLATION TYPE: NEW OR RETROFIT	?	NEW	NEW
DESCRIPTION OF CONTAINMENT SYSTEM	BERMED AREA	NONE	TANK IN CONCRETE BERMED AREA
DESCRIPTION OF OVERFILL/SPILL CONTROL EQUIPMENT	NONE	NONE	NONE
REMOTE LEVEL INDICATOR (Y/N)	N	N	N
DATE OF INTEGRITY TESTING	UNK	UNK	UNK
IF REMOVED FROM SERVICE • REMOVAL DATE	N/A	N/A	N/A
• DESCRIPTION OF REMOVAL PROCEDURES	N/A	N/A	
• WAS CONTAMINATION ASSESSMENT PERFORMED?	N/A	N/A	
• DESCRIBE RESULTS OF CONTAMINATION ASSESSMENT	N/A	N/A	
• WAS CONTAMINATED SOIL REMOVED? (QUANTITY)	N/A	N/A	
TYPE OF SURROUNDING SOIL	CONCRETE	ASPHALT	CONCRETE

ATTACHMENT 12-2

ABOVE-GROUND STORAGE TANKS (PRESENT AND FORMER)

QUESTIONS	TANK ID NO.	TANK ID NO.	TANK ID NO.
ID NUMBER	UNK	UNK	30375
AGE	25 YRS. APPROX	25 YRS. APPROX.	19 YRS.
CONTENTS	STEEL CUTTING OIL	ALUMINUM CUTTING OIL	STODDARD SOLVENT
CAPACITY	1000 GALS.	1000 GALS	4000 GALLONS
MONTHLY THROUGHPUT	138 GALS	267 GALS.	?
SHELL CONSTRUCTION MATERIAL	STEEL	STEEL	STEEL
LINING MATERIAL	UNK	UNK.	UNK
INSTALLATION TYPE: NEW OR RETROFIT	NEW	NEW	NEW
PIPING MATERIAL	STEEL	STEEL	STEEL
INSTALLATION TYPE: NEW OR RETROFIT	NEW	NEW	NEW
DESCRIPTION OF CONTAINMENT SYSTEM	TANK IS IN A BERMED AREA	TANK IS IN A BERMED AREA	TRENCHED CON. BERMED PAD PLUMBED TO 6500 GAL SP. II
DESCRIPTION OF OVERFILL/SPILL CONTROL EQUIPMENT	NONE	NONE	CONTAINMENT TANK FOR TOTAL CAP 13,320
REMOTE LEVEL INDICATOR (Y/N)	N	N	N
DATE OF INTEGRITY TESTING	UNK	UNK	1971
IF REMOVED FROM SERVICE • REMOVAL DATE	N/A	N/A	N/A
• DESCRIPTION OF REMOVAL PROCEDURES			
• WAS CONTAMINATION ASSESSMENT PERFORMED?			
• DESCRIBE RESULTS OF CONTAMINATION ASSESSMENT			
• WAS CONTAMINATED SOIL REMOVED? (QUANTITY)			
TYPE OF SURROUNDING SOIL	CONCRETE	CONCRETE	CONCRETE

ATTACHMENT 12-2

ABOVE-GROUND STORAGE TANKS (PRESENT AND FORMER)

QUESTIONS	TANK ID NO.	TANK ID NO.	TANK ID NO.
ID NUMBER	2014319	2H12484	3102780
AGE	2 YRS	2 YRS	2 YRS.
CONTENTS	WASTE SOLUBLE OIL	WASTE SOLUBLE OIL	WASTE SOLUBLE OIL
CAPACITY	750	750	750
MONTHLY THROUGHPUT	750	750	750
SHELL CONSTRUCTION MATERIAL	POLYETHYLENE	POLYETHYLENE	POLYETHYLENE
LINING MATERIAL	SAME	SAME	SAME
INSTALLATION TYPE: NEW OR RETROFIT	NEW	NEW	NEW
PIPING MATERIAL	NONE	NONE	NONE
INSTALLATION TYPE: NEW OR RETROFIT	N/A	N/A	N/A
DESCRIPTION OF CONTAINMENT SYSTEM	CONCRETE BERM	CONCRETE BERM	CONCRETE BERM
DESCRIPTION OF OVERFILL/SPILL CONTROL EQUIPMENT	N/A	N/A	N/A
REMOTE LEVEL INDICATOR (Y/N)	N	N	N
DATE OF INTEGRITY TESTING			
IF REMOVED FROM SERVICE • REMOVAL DATE	N/A	N/A	N/A
• DESCRIPTION OF REMOVAL PROCEDURES			
• WAS CONTAMINATION ASSESSMENT PERFORMED?			
• DESCRIBE RESULTS OF CONTAMINATION ASSESSMENT			
• WAS CONTAMINATED SOIL REMOVED? (QUANTITY)			
TYPE OF SURROUNDING SOIL	BERMED & CONCRETE PAD	SAME	SAME

	Yes	No	Unk	N/A
8. Does the facility have a map showing the location of each tank? N/A	—			
9. Do you have procedures in place to ensure that unnecessary tanks at your facility are removed?	—			
10. Have all new USTs and piping installed after May 7, 1985 been cathodically protected or designed to prevent any release?	—			X
11. Is secondary containment provided for all UST systems installed after December 22, 1988, containing hazardous substances?	—			X
12. Are the material and construction of tanks and piping compatible with the material stored and conditions of storage (i.e., pressure and temperature)?	—			
13. Are inventory control procedures in place and practiced to monitor contents of USTs?	—			
14. Are the following inventory procedures used:				
a. Measure tank levels with gauging stick at least daily?	—			
b. Obtain reading from meters at dispensers?	—			
c. Determine mass balance by comparing quantity of material delivered to tank to quantity of material used?	—			
d. Tank liquid measurements taken at the beginning and end of a 36-hour period during which no liquid is added to or removed from the tank?	—			

13 & 15-16. Required currently for UST systems installed before 1965 or of unknown age, will be required by December 22, 1990 for UST systems installed before 1970.

15. Record keeping is a key component of managing USTs. Retain all notices, reports, orders, invoices, inspection results, inventory logs, and corrective action plans, and use data for federal or state inspections.

16. Inventory discrepancies should be investigated promptly to determine whether a release has occurred. The sooner you confirm a leak, the less likely it is to have grown to a point where it requires extensive reporting and remediation. A written procedure helps ensure a rapid response.

17. The owners and operators must ensure that releases due to spilling or overfilling do not occur and that transfer operations are monitored constantly to prevent overfilling and spilling (40 CFR 280.30). Spills and overfills are a major source of contamination from an underground storage tank.

18. Many leaks stem from piping connected to the UST. Methods of release detection for piping are described in 40 CFR 280.44. Requirements for leak detection testing are set forth in 40 CFR 280.40.

19. If the tank is equipped with a leak detection system, the system should be calibrated properly and secured against possible tampering (40 CFR 280.40).

20. All UST systems must comply with the release detection requirements of Subpart D within the Phase-In Release Detection Time period depicted in 40 CFR 280.40. Tanks must be checked at least once a month for signs of leakage using one of the release detection methods outlined in 40 CFR 280.42, .43, and .44, e.g., automatic tank gauging, monitoring for vapors in the soil, interstitial monitoring, monitoring for liquids in the ground water, or other approved methods. In addition, as provided in 40 CFR 280.41 and 280.42, tightness testing must be conducted on tanks. Pipes are subject to special requirements set forth in 40 CFR 280.41(b) and 280.44.

	Yes	No	Unk	N/A
15. If applicable, are inventory and use records maintained for all USTs? N/A	—			X
16. If applicable, is there a procedure in place to address discrepancies and losses in inventory records?	—			X
17. Do you prevent spills and overfills of your tanks by assuring that the tank volume exceeds the volume of products to be transferred?	X			
18. Are the pipes connected to USTs checked for signs of leakage?	—			
19. If the tank has a leak detection system in place:				
a. Is the system routinely calibrated in accordance with the manufacturer's instructions?	X			
b. Is there a means to prevent tampering with the system?	X			
c. Do you know which tanks at the facility qualify for tank tightness testing once every five years under 40 CFR 280.41(a)(1)?	—			
d. Have all other tanks for which tank tightness testing is required been tested annually? N/A	—			
20. Is the facility complying with release detection requirements listed in 40 CFR 280.40 using at least one of the methods described in 40 CFR 280.43(d)-(h) in addition to inventory control or tank gauging?	—			

22. The EPA has encouraged state and local authorities to administer their own underground tank programs. Many state and local requirements are more stringent than the new regulations. You are responsible for keeping your plant in compliance.

24. Reports of all releases including suspected releases, spills and overfills must be reported to the implementing agency within 24 hours or another reasonable time period specified by the implementing agency unless the suspected release was based on a monitoring equipment malfunction. (40 CFR 280.50 and 280.53). Under CERCLA, the person in charge of a facility that releases a "reportable quantity" of a hazardous substance must contact the NRC immediately (40 CFR 302.6). Refer to 40 CFR 302.4 for a list of hazardous substances and their reportable quantities. State and local reporting requirements may be more stringent and often do not include "reportable quantity" or *de minimis* levels.

26. Under 40 CFR 280.34(a)(3), owners and operators must submit to the implementing agency all corrective actions planned or taken. 40 CFR 280.60-280.67 (Subpart F) defines the release response and corrective actions to be followed.

27. The financial responsibilities of owners/operators of USTs containing petroleum have been promulgated by EPA and were effective as of January 24, 1989. These responsibilities are defined in 40 CFR 280.93. Owners or operators of underground storage tanks must demonstrate financial responsibility for taking corrective action and compensating third parties for bodily injury and property damage resulting from sudden and non-sudden accidental releases from underground storage tanks containing petroleum.

Several mechanisms can be used to satisfy federal and state requirements, including insurance, self-insurance, indemnification, security bonds, trust funds or state tank funds. State UST regulations should be referenced for financial responsibility requirements.

The regulations require one of the following on a per occurrence basis:

- At least $1 million to cover the costs of a leak or spill from underground storage tanks if you are a petroleum marketer (handle an average of 10,000 gallons of petroleum per month); or
- At least $500,000 if you are not a petroleum marketer.

The regulations also require, on an annual aggregate basis:

- At least $1 million for owners or operators of 1-100 petroleum underground storage tanks; and
- At lease $2 million for owners or operators of 101 or more petroleum underground storage tanks.

These financial requirements must be met within timetables based on the number of underground storage tanks owned (40 CFR 280.91).

		Yes	No	Unk	N/A
21.	Do you have procedures in place for annual calibration and/or preventative maintenance inspections of all electronic equipment such as inventory gauges, cathodic protection and monitoring devices in accordance with the manufacturer's instructions?	X			
22.	Do you monitor developments in state and local regulations and have ways of assuring compliance with the administrative and technical requirements of these regulations?	X			
23.	Have there been any releases from or near any USTs?		X		
24.	Have all such releases been reported?	N/A			
25.	Are there written or other formal procedures for investigating and reporting releases to the EPA and to state and local authorities?	X			
26.	Are there written or other formal procedures to ensure that corrective actions are taken immediately to address releases?	X			
27.	Does the facility have financial assurance documentation on file which satisfies the financial responsibility requirements of the EPA and state underground storage tank regulations?				

If so, describe._____

_____

_____

_____

_____

_____

B. SPCC Requirements

Complete this section if the facility has an oil storage capacity of:

- 42,000 gallons or more underground capacity, or
- 1,320 gallons or more aboveground capacity (including outdoor 55-gallon drum capacity) or any single container with a capacity over 660 gallons.

28. 40 CFR 112 establishes requirements for preventing the discharge of oil into or upon the navigable waters of the United States. "Navigable waters" has a very broad definition under the regulations and includes wetlands. These regulations include the preparation and implementation of a SPCC Plan. The requirements for preparing and implementing SPCC Plans are found in 40 CFR 112.3 and 112.7. The owner or operator of your facility must review and evaluate the SPCC Plan every three years. If applicable, the owner/operator must amend the plan within six months of this review to include more effective prevention and control technology. If the SPCC Plan is amended, the amendment(s) must be reviewed and certified by a registered professional engineer (40 CFR 112.5(c)).

29. Under 40 CFR 112.7(e)(2)(ii), all bulk oil storage tank installations should provide secondary containment. The capacity of the secondary containment should equal the entire contents of the largest single tank plus sufficient freeboard to allow for precipitation.

Under 40 CFR 112.7(c), the facility should include appropriate containment and/or diversionary structures or equipment to prevent discharged oil from reaching a navigable watercourse.

30. Under 40 CFR 112(e)(1), before a diked area is emptied, the accumulated storm water should be examined to be sure that no oil will be discharged. It is a good management practice to maintain records of these examinations.

31. According to 40 CFR 112.7(e)(2)(i), no tank should be used for oil storage unless its material and construction are compatible with the material stored and the conditions of storage.

32. Buried tanks should undergo regular leak testing (40 CFR 112.7(e)(2)(iv)). Leaking tanks should be taken out of service, repaired, or replaced.

33-34. As a good management practice, the inspection records for your facility should document:

- date of leak testing and name of the inspector;
- results of the test;
- corrective action needed, if any; and
- date corrective action was taken.

35. All tanks containing oil should be visually examined by a competent person for condition and need for maintenance on a scheduled periodic basis. Such examination should include all tank supports and foundations (40 CFR 112.7(e)(vi)).

36. New and existing tanks should be fail-safe engineered, as far as practical, to avoid spills. Consideration should be given to providing one or more of the overfill prevention devices listed in this question (40 CFR 112.7(e)(2)(vii)).

		Yes	No	Unk	N/A
28.	a. Does the site have a written Spill Prevention Control and Countermeasure (SPCC) Plan?	___	☒	☐	
	b. Is the Plan up to date?	___	☒	☐	CAR
	c. Was the Plan reviewed by and certified by a Registered Professional Engineer?	___	☒	☐	
	d. Is a copy of the plan maintained at the facility?	___	☐	☐	
29.	Is secondary containment provided for all bulk oil storage tanks?	X	☐	☐	___
30.	Is storm water retained in diked areas inspected for oil contamination before drainage to ensure compliance with applicable water quality standards?	X	☐	☐	___
31.	Are tank materials used for oil storage compatible with the material stored and conditions of storage (i.e., temperature and pressure)?	X	☐	☐	
32.	Are underground oil storage tanks subject to periodic leak testing?	N/A ___	☐	☐	
	Date of last testing _____.				
33.	Are records of tank testing, inspection and corrective actions maintained on-site?	N/A ___	☐	☐	
34.	Are records maintained to document testing and corrective action?	N/A ___	☐	☐	
35.	Are tank supports and foundations subject to inspection?	___	☒	☐	
36.	Are underground oil tanks equipped with overfill prevention (e.g., high liquid level alarms, high liquid level cutoff devices, direct audible or code signal communication between the tank gauge and pumping station, a fast response system for determining the liquid level of each bulk storage tank, or properly calibrated fill gauge)?	N/A ___	☐	☐	

37. According to 40 CFR 112.7(e)(2)(viii)(E), liquid level sensing devices should be tested regularly to ensure proper operation.

38. Underground piping installations should include protective wrapping and coating of the piping and cathodic protection if soil conditions warrant. When a pipeline is not in service, or is in standby service for an extended period of time, the terminal connection at the transfer point must be capped or blankflanged and marked as to origin (40 CFR 112.7(e)(3)).

39. 40 CFR 112.7(e)(4) requires onshore tank car and tank truck loading/unloading facilities to have containment, measures to prevent premature vehicular departure, and valve examination procedures.

40. The master flow and drain valves and any other valves that will permit direct outward flow of the tank's content to the surface should be securely locked in the closed position when in non-operating or non-standby status (40 CFR 112.7(e)(9)).

41. Aboveground tanks must be tested periodically to ensure integrity (40 CFR 112.7(e)(2)(vi)). As a good management practice, the inspection records for your facility should document:

- date of leak testing and name of the inspector;
- results of the test;
- corrective action needed, if any; and
- date corrective action was taken.

42. New and existing tanks should be fail-safe engineered, as far as practical, to avoid spills. Consideration should be given to providing one or more of the overfill prevention devices listed in this question (40 CFR 112.7(e)(2)(viii)).

	Yes	No	Unk	N/A
37. Are liquid level sensing devices tested regularly? HAVE NONE Frequency: _____ Date last tested _____	___	X		
38. If the site has any buried piping installations:				
a. Is the terminal connection at the transfer point capped and locked when not in service?	___			✓
b. Has all piping not in service been emptied?	___			✓
39. Are any safeguards utilized to prevent oil delivery vehicle departure before complete disconnect of flexible or fixed transfer lines (e.g., interlocked warning light, physical barrier system, or warning signs)?	___	X		
40. Are the storage tank master flow and drain valves locked in the closed position when in non-operating or standby status?	___			
41. Are the aboveground oil storage tanks subject to periodic integrity testing? CAP REQUIRED Date of last testing _____.	___	X		
42. Are aboveground oil tanks equipped with overfill prevention (e.g., high liquid level alarms, high liquid level cutoff devices, direct audible or code signal communication between the tank gauge and pumping station, a fast response system for determining the liquid level of each bulk storage tank, properly calibrated fill gauge)? CAP REQUIRED	___	X		

43. Aboveground valves and pipelines must undergo regular examinations by operating personnel. It may be appropriate to periodically leak-test piping in areas where facility drainage is such that a failure in the piping may lead to a spill (40 CFR 112.7(e)(3)(iv)).

44. 40 CFR 112.7(e)(3)(v) requires that drivers of vehicles be warned not to endanger aboveground piping due to vehicle size.

45. Drainage systems from storage areas or undiked areas should not flow directly into water courses (40 CFR 112.7(e)(1)). When plant drainage goes directly into water courses and not into wastewater treatment plants, retained storm water should be inspected before drainage occurs.

46. Under 40 CFR 112.4, the owner or generator of the facility must report and provide specified information, including a copy of the SPCC plan, to EPA's regional administrator if there have been two oil spill events into or upon navigable waters within a twelve-month period.

	Yes	No	Unk	N/A
43. Are all aboveground valves and pipelines subjected to regular inspection? Frequency _____ Date last inspected _____	—			
44. Is aboveground piping physically protected from vehicular traffic?	X			
45. If the tanks utilize internal heating coils:				
a. Are all discharges from such coils prevented from discharging into surface waters?	—			X
b. Are all discharges monitored?	—			X
46. a. Have there been two or more oil spills into or upon navigable waters within any twelve-month period?	—	X		
b. If so, were they reported in accordance with 40 CFR 112.4?	—			—
C. Miscellaneous				
47. Are there any other comments that you consider relevant and/or significant to this section of the survey? If yes, please state on an attached page.	—	X		

INDIVIDUAL TANK QUESTIONNAIRE

Guidance

3. Required currently for UST systems installed before 1965 or of unknown age, will be required by December 22, 1990 for UST systems installed before 1970.

INDIVIDUAL TANK QUESTIONNAIRE

For each tank listed in Attachment 12-1 and 12-2, fill out the following information: (Make additional copies as necessary.)

Tank ID No. _____

	Yes	No	Unk	N/A
1. If the tank contain petroleum products or hazardous substances as defined in CERCLA Section 104(14), or contained these materials after January 1, 1974, and was still in the ground as of May 8, 1986; or were brought into use after May 8, 1986:				
a. Was an EPA Form 7530-a ("Notification for UST in Use") or state form prepared and submitted to the designated agency?	___	☐	☐	___
b. Are copies of this notification form kept at the site?	___	☐	☐	___
c. Is the information on the form consistent with the tank inventory and documentation?	___	☐	☐	___
2. Are the material and construction of the tank and piping compatible with the material stored and conditions of storage (i.e., pressure and temperature)?	___	☐	☐	
3. Are inventory control procedures in place and practiced to monitor contents of the tank?	___	☐	☐	

5-6. Required currently for UST systems installed before 1965 or of unknown age, will be required by December 22, 1990 for UST systems installed before 1970.

8. Required for all pressurized piping per 40 CFR 280.40 by December 22, 1990.

	Yes	No	Unk	N/A
4. Are the following inventory procedures used:				
a. Measure tank levels with gauging stick at least daily?	___	☐	☐	
b. Obtain reading from meters at dispensers?	___	☐	☐	
c. Determine mass balance by comparing quantity of material delivered to tank to quantity of material used?	___	☐	☐	
d. Tank liquid measurements taken at the beginning and end of a 36-hour period during which no liquid is added to or removed from the tank?	___	☐	☐	
5. Are inventory and use records maintained for this tank?	___	☐	☐	
6. Is there a procedure in place to address discrepancies and losses in inventory records?	___	☐	☐	
7. Are spills and overfills of the tank prevented by assuring that the tank volume exceeds the volume of products to be transferred?	___	☐	☐	
8. Are the pipes connected to the tank checked for signs of leakage?	___	☐	☐	

9d-10. Required currently for UST systems installed before 1965, or of unknown age, will be required by December 22, 1990 for UST systems installed before 1970.

	Yes	No	Unk	N/A
9. If the tank has a leak detection system in place:				
a. Is the system routinely calibrated in accordance with the manufacturer's instructions?	—			—
b. Is there a means to prevent tampering with the system?	—			—
c. Does this tank qualify for tank tightness testing once every five years under 40 CFR 280.41(a)(1)?	—			—
d. If the answer to 9c is no, has the tank been tested annually?	—			—
10. Is the facility complying with release detection requirements listed in 40 CFR 280.40 using at least one of the methods described in 40 CFR 280.43(d)-(h) in addition to inventory control or tank gauging.	—			—
11. Have there been any releases from or near this tank?	—	—		
12. Have all such releases been reported?	—		—	

UST WASTE STORAGE TANKS

INDIVIDUAL TANK QUESTIONNAIRE

For each tank listed in Attachment 12-1 and 12-2, fill out the following information: (Make additional copies as necessary.)

Tank ID No. UNK

	Yes	No	Unk	N/A
1. If the tank contain petroleum products or hazardous substances as defined in CERCLA Section 104(14), or contained these materials after January 1, 1974, and was still in the ground as of May 8, 1986; or were brought into use after May 8, 1986:				
a. Was an EPA Form 7530-a ("Notification for UST in Use") or state form prepared and submitted to the designated agency? UST TANK REMOVED 1/85	—			X
b. Are copies of this notification form kept at the site?	—			X
c. Is the information on the form consistent with the tank inventory and documentation?	—			X
2. Are the material and construction of the tank and piping compatible with the material stored and conditions of storage (i.e., pressure and temperature)?	X			
3. Are inventory control procedures in place and practiced to monitor contents of the tank?	—		X	

	Yes	No	Unk	N/A
4. Are the following inventory procedures used:				N/A
a. Measure tank levels with gauging stick at least daily?				
b. Obtain reading from meters at dispensers?				
c. Determine mass balance by comparing quantity of material delivered to tank to quantity of material used?				
d. Tank liquid measurements taken at the beginning and end of a 36-hour period during which no liquid is added to or removed from the tank?				
5. Are inventory and use records maintained for this tank?				
6. Is there a procedure in place to address discrepancies and losses in inventory records?				
7. Are spills and overfills of the tank prevented by assuring that the tank volume exceeds the volume of products to be transferred?				
8. Are the pipes connected to the tank checked for signs of leakage?				

	Yes	No	Unk	N/A
9. If the tank has a leak detection system in place: N/A UST Removed 1/85				
a. Is the system routinely calibrated in accordance with the manufacturer's instructions?	—			—
b. Is there a means to prevent tampering with the system?	—			—
c. Does this tank qualify for tank tightness testing once every five years under 40 CFR 280.41(a)(1)?	—			—
d. If the answer to 9c is no, has the tank been tested annually?	—			—
10. Is the facility complying with release detection requirements listed in 40 CFR 280.40 using at least one of the methods described in 40 CFR 280.43(d)-(h) in addition to inventory control or tank gauging.	—			—
11. Have there been any releases from or near this tank?	X	—		
12. Have all such releases been reported?	X		—	

INDIVIDUAL TANK QUESTIONNAIRE

For each tank listed in Attachment 12-1 and 12-2, fill out the following information: (Make additional copies as necessary.)

Tank ID No. 3102780

	Yes	No	Unk	N/A
1. If the tank contain petroleum products or hazardous substances as defined in CERCLA Section 104(14), or contained these materials after January 1, 1974, and was still in the ground as of May 8, 1986; or were brought into use after May 8, 1986:				
a. Was an EPA Form 7530-a ("Notification for UST in Use") or state form prepared and submitted to the designated agency?	—			X
b. Are copies of this notification form kept at the site?	—			X
c. Is the information on the form consistent with the tank inventory and documentation?	—			X
2. Are the material and construction of the tank and piping compatible with the material stored and conditions of storage (i.e., pressure and temperature)?	X			
3. Are inventory control procedures in place and practiced to monitor contents of the tank?	N/A			

	Yes	No	Unk	N/A
4. Are the following inventory procedures used:				
a. Measure tank levels with gauging stick at least daily?	N/A			
b. Obtain reading from meters at dispensers?				
c. Determine mass balance by comparing quantity of material delivered to tank to quantity of material used?				
d. Tank liquid measurements taken at the beginning and end of a 36-hour period during which no liquid is added to or removed from the tank?				
5. Are inventory and use records maintained for this tank?				
6. Is there a procedure in place to address discrepancies and losses in inventory records?				
7. Are spills and overfills of the tank prevented by assuring that the tank volume exceeds the volume of products to be transferred?				
8. Are the pipes connected to the tank checked for signs of leakage?	X			

		Yes	No	Unk	N/A
9.	If the tank has a leak detection system in place:				
	a. Is the system routinely calibrated in accordance with the manufacturer's instructions?				X
	b. Is there a means to prevent tampering with the system?				X
	c. Does this tank qualify for tank tightness testing once every five years under 40 CFR 280.41(a)(1)?				X
	d. If the answer to 9c is no, has the tank been tested annually?				X
10.	Is the facility complying with release detection requirements listed in 40 CFR 280.40 using at least one of the methods described in 40 CFR 280.43(d)-(h) in addition to inventory control or tank gauging.				X
11.	Have there been any releases from or near this tank?		X		
12.	Have all such releases been reported? N/A				

INDIVIDUAL TANK QUESTIONNAIRE

For each tank listed in Attachment 12-1 and 12-2, fill out the following information: (Make additional copies as necessary.)

Tank ID No. 2H12484

	Yes	No	Unk	N/A
1. If the tank contain petroleum products or hazardous substances as defined in CERCLA Section 104(14), or contained these materials after January 1, 1974, and was still in the ground as of May 8, 1986; or were brought into use after May 8, 1986:				
a. Was an EPA Form 7530-a ("Notification for UST in Use") or state form prepared and submitted to the designated agency?	—			X
b. Are copies of this notification form kept at the site?	—			X
c. Is the information on the form consistent with the tank inventory and documentation?	—			X
2. Are the material and construction of the tank and piping compatible with the material stored and conditions of storage (i.e., pressure and temperature)?	X			
3. Are inventory control procedures in place and practiced to monitor contents of the tank?	N/A	—		

	Yes	No	Unk	N/A
4. Are the following inventory procedures used:				
a. Measure tank levels with gauging stick at least daily?				N/A
b. Obtain reading from meters at dispensers?				
c. Determine mass balance by comparing quantity of material delivered to tank to quantity of material used?				
d. Tank liquid measurements taken at the beginning and end of a 36-hour period during which no liquid is added to or removed from the tank?				
5. Are inventory and use records maintained for this tank?				
6. Is there a procedure in place to address discrepancies and losses in inventory records?				
7. Are spills and overfills of the tank prevented by assuring that the tank volume exceeds the volume of products to be transferred?				
8. Are the pipes connected to the tank checked for signs of leakage?	X			

	Yes	No	Unk	N/A
9. If the tank has a leak detection system in place:				
a. Is the system routinely calibrated in accordance with the manufacturer's instructions?	—			X
b. Is there a means to prevent tampering with the system?	—			X
c. Does this tank qualify for tank tightness testing once every five years under 40 CFR 280.41(a)(1)?	—			X
d. If the answer to 9c is no, has the tank been tested annually?	—			X
10. Is the facility complying with release detection requirements listed in 40 CFR 280.40 using at least one of the methods described in 40 CFR 280.43(d)-(h) in addition to inventory control or tank gauging.	—			X
11. Have there been any releases from or near this tank?	—	X		
12. Have all such releases been reported? N/A	—		—	

TRICH STORAGE

INDIVIDUAL TANK QUESTIONNAIRE

For each tank listed in Attachment 12-1 and 12-2, fill out the following information: (Make additional copies as necessary.)

Tank ID No. UNK

	Yes	No	Unk	N/A
1. If the tank contain petroleum products or hazardous substances as defined in CERCLA Section 104(14), or contained these materials after January 1, 1974, and was still in the ground as of May 8, 1986; or were brought into use after May 8, 1986:				
a. Was an EPA Form 7530-a ("Notification for UST in Use") or state form prepared and submitted to the designated agency?				X
b. Are copies of this notification form kept at the site?				X
c. Is the information on the form consistent with the tank inventory and documentation?				X
2. Are the material and construction of the tank and piping compatible with the material stored and conditions of storage (i.e., pressure and temperature)?	X			
3. Are inventory control procedures in place and practiced to monitor contents of the tank?	X			

	Yes	No	Unk	N/A	
4. Are the following inventory procedures used:					
a. Measure tank levels with gauging stick at least daily?	—	☐	☐		HRS ... PMS N/A
b. Obtain reading from meters at dispensers?	X	☐	☐		
c. Determine mass balance by comparing quantity of material delivered to tank to quantity of material used?	X	☐	☐		
d. Tank liquid measurements taken at the beginning and end of a 36-hour period during which no liquid is added to or removed from the tank?	—	X	☐		REQUIRED FOR ABOVE GROUND
5. Are inventory and use records maintained for this tank?	—	☐	☐		
6. Is there a procedure in place to address discrepancies and losses in inventory records?	—	☐	☐	?	
7. Are spills and overfills of the tank prevented by assuring that the tank volume exceeds the volume of products to be transferred?	—	X	☐		
8. Are the pipes connected to the tank checked for signs of leakage?	X	☐	☐		

		Yes	No	Unk	N/A
9.	If the tank has a leak detection system in place:				
	a. Is the system routinely calibrated in accordance with the manufacturer's instructions?	—			X
	b. Is there a means to prevent tampering with the system?	X			—
	c. Does this tank qualify for tank tightness testing once every five years under 40 CFR 280.41(a)(1)?	—			X
	d. If the answer to 9c is no, has the tank been tested annually?	—			X
10.	Is the facility complying with release detection requirements listed in 40 CFR 280.40 using at least one of the methods described in 40 CFR 280.43(d)-(h) in addition to inventory control or tank gauging.	—			X
11.	Have there been any releases from or near this tank?	—	X		
12.	Have all such releases been reported? N/A	—		—	

WATER SOLUBLE

INDIVIDUAL TANK QUESTIONNAIRE

For each tank listed in Attachment 12-1 and 12-2, fill out the following information: (Make additional copies as necessary.)

Tank ID No. 2014319

	Yes	No	Unk	N/A
1. If the tank contain petroleum products or hazardous substances as defined in CERCLA Section 104(14), or contained these materials after January 1, 1974, and was still in the ground as of May 8, 1986; or were brought into use after May 8, 1986:				
a. Was an EPA Form 7530-a ("Notification for UST in Use") or state form prepared and submitted to the designated agency?	—			X
b. Are copies of this notification form kept at the site?	—			X
c. Is the information on the form consistent with the tank inventory and documentation?	—			X
2. Are the material and construction of the tank and piping compatible with the material stored and conditions of storage (i.e., pressure and temperature)?	X			
3. Are inventory control procedures in place and practiced to monitor contents of the tank? N/A	—			

	Yes	No	Unk	N/A
4. Are the following inventory procedures used:				
a. Measure tank levels with gauging stick at least daily?	N/A			
b. Obtain reading from meters at dispensers?				
c. Determine mass balance by comparing quantity of material delivered to tank to quantity of material used?				
d. Tank liquid measurements taken at the beginning and end of a 36-hour period during which no liquid is added to or removed from the tank?				
5. Are inventory and use records maintained for this tank?				
6. Is there a procedure in place to address discrepancies and losses in inventory records?				
7. Are spills and overfills of the tank prevented by assuring that the tank volume exceeds the volume of products to be transferred?				
8. Are the pipes connected to the tank checked for signs of leakage?	X			

	Yes	No	Unk	N/A
9. If the tank has a leak detection system in place:				
a. Is the system routinely calibrated in accordance with the manufacturer's instructions?				X
b. Is there a means to prevent tampering with the system?				X
c. Does this tank qualify for tank tightness testing once every five years under 40 CFR 280.41(a)(1)?				X
d. If the answer to 9c is no, has the tank been tested annually?				X
10. Is the facility complying with release detection requirements listed in 40 CFR 280.40 using at least one of the methods described in 40 CFR 280.43(d)-(h) in addition to inventory control or tank gauging.				X
11. Have there been any releases from or near this tank?		X		
12. Have all such releases been reported?				

STODDARD

INDIVIDUAL TANK QUESTIONNAIRE

For each tank listed in Attachment 12-1 and 12-2, fill out the following information: (Make additional copies as necessary.)

Tank ID No. 30375

	Yes	No	Unk	N/A
1. If the tank contain petroleum products or hazardous substances as defined in CERCLA Section 104(14), or contained these materials after January 1, 1974, and was still in the ground as of May 8, 1986; or were brought into use after May 8, 1986:				
a. Was an EPA Form 7530-a ("Notification for UST in Use") or state form prepared and submitted to the designated agency?	—			X
b. Are copies of this notification form kept at the site?	—			X
c. Is the information on the form consistent with the tank inventory and documentation?	—			X
2. Are the material and construction of the tank and piping compatible with the material stored and conditions of storage (i.e., pressure and temperature)?	X			
3. Are inventory control procedures in place and practiced to monitor contents of the tank?	N/A	—		

	Yes	No	Unk	N/A
4. Are the following inventory procedures used:				
a. Measure tank levels with gauging stick at least daily?	N/A			
b. Obtain reading from meters at dispensers?				
c. Determine mass balance by comparing quantity of material delivered to tank to quantity of material used?				
d. Tank liquid measurements taken at the beginning and end of a 36-hour period during which no liquid is added to or removed from the tank?				
5. Are inventory and use records maintained for this tank?				
6. Is there a procedure in place to address discrepancies and losses in inventory records?				
7. Are spills and overfills of the tank prevented by assuring that the tank volume exceeds the volume of products to be transferred?				
8. Are the pipes connected to the tank checked for signs of leakage?	X			

	Yes	No	Unk	N/A
9. If the tank has a leak detection system in place:				
a. Is the system routinely calibrated in accordance with the manufacturer's instructions?				X
b. Is there a means to prevent tampering with the system?				X
c. Does this tank qualify for tank tightness testing once every five years under 40 CFR 280.41(a)(1)?				X
d. If the answer to 9c is no, has the tank been tested annually?				X
10. Is the facility complying with release detection requirements listed in 40 CFR 280.40 using at least one of the methods described in 40 CFR 280.43(d)-(h) in addition to inventory control or tank gauging.				X
11. Have there been any releases from or near this tank?		X		
12. Have all such releases been reported?				

FREON

INDIVIDUAL TANK QUESTIONNAIRE

For each tank listed in Attachment 12-1 and 12-2, fill out the following information: (Make additional copies as necessary.)

Tank ID No. 325

	Yes	No	Unk	N/A
1. If the tank contain petroleum products or hazardous substances as defined in CERCLA Section 104(14), or contained these materials after January 1, 1974, and was still in the ground as of May 8, 1986; or were brought into use after May 8, 1986:				
a. Was an EPA Form 7530-a ("Notification for UST in Use") or state form prepared and submitted to the designated agency?	—			X
b. Are copies of this notification form kept at the site?	—			X
c. Is the information on the form consistent with the tank inventory and documentation?	—			X
2. Are the material and construction of the tank and piping compatible with the material stored and conditions of storage (i.e., pressure and temperature)?	X			
3. Are inventory control procedures in place and practiced to monitor contents of the tank? MATERIAL IS RECYCLED	X			

	Yes	No	Unk	N/A
4. Are the following inventory procedures used:				
a. Measure tank levels with gauging stick at least daily?				
b. Obtain reading from meters at dispensers?				
c. Determine mass balance by comparing quantity of material delivered to tank to quantity of material used?				
d. Tank liquid measurements taken at the beginning and end of a 36-hour period during which no liquid is added to or removed from the tank?				
5. Are inventory and use records maintained for this tank?				
6. Is there a procedure in place to address discrepancies and losses in inventory records?				
7. Are spills and overfills of the tank prevented by assuring that the tank volume exceeds the volume of products to be transferred?		X		
8. Are the pipes connected to the tank checked for signs of leakage?	X			

ABOVE GROUND TANK
N/A

	Yes	No	Unk	N/A
9. If the tank has a leak detection system in place:				
a. Is the system routinely calibrated in accordance with the manufacturer's instructions?				X
b. Is there a means to prevent tampering with the system?				X
c. Does this tank qualify for tank tightness testing once every five years under 40 CFR 280.41(a)(1)?				X
d. If the answer to 9c is no, has the tank been tested annually?				X
10. Is the facility complying with release detection requirements listed in 40 CFR 280.40 using at least one of the methods described in 40 CFR 280.43(d)-(h) in addition to inventory control or tank gauging.				X
11. Have there been any releases from or near this tank?		X		
12. Have all such releases been reported?				

SOLUBLE OIL CONC

INDIVIDUAL TANK QUESTIONNAIRE

For each tank listed in Attachment 12-1 and 12-2, fill out the following information: (Make additional copies as necessary.)

Tank ID No. KO-676

		Yes	No	Unk	N/A
1.	If the tank contain petroleum products or hazardous substances as defined in CERCLA Section 104(14), or contained these materials after January 1, 1974, and was still in the ground as of May 8, 1986; or were brought into use after May 8, 1986:				
	a. Was an EPA Form 7530-a ("Notification for UST in Use") or state form prepared and submitted to the designated agency? ABOVE GROUND TANK	—			X
	b. Are copies of this notification form kept at the site?	—			X
	c. Is the information on the form consistent with the tank inventory and documentation?	—			X
2.	Are the material and construction of the tank and piping compatible with the material stored and conditions of storage (i.e., pressure and temperature)?	X			
3.	Are inventory control procedures in place and practiced to monitor contents of the tank? N/A	—			

		Yes	No	Unk	N/A
4.	Are the following inventory procedures used:				
	a. Measure tank levels with gauging stick at least daily? N/A ABOVE GROUND TANK	—			
	b. Obtain reading from meters at dispensers?	—	X		
	c. Determine mass balance by comparing quantity of material delivered to tank to quantity of material used?	—	X		
	d. Tank liquid measurements taken at the beginning and end of a 36-hour period during which no liquid is added to or removed from the tank?	—	X		
5.	Are inventory and use records maintained for this tank?	—	X		
6.	Is there a procedure in place to address discrepancies and losses in inventory records?	—			
7.	Are spills and overfills of the tank prevented by assuring that the tank volume exceeds the volume of products to be transferred? TANK IS FILLED OFFSITE	X			
8.	Are the pipes connected to the tank checked for signs of leakage?	X			

	Yes	No	Unk	N/A
9. If the tank has a leak detection system in place:				
a. Is the system routinely calibrated in accordance with the manufacturer's instructions?				X
b. Is there a means to prevent tampering with the system?				X
c. Does this tank qualify for tank tightness testing once every five years under 40 CFR 280.41(a)(1)?				X
d. If the answer to 9c is no, has the tank been tested annually?				X
10. Is the facility complying with release detection requirements listed in 40 CFR 280.40 using at least one of the methods described in 40 CFR 280.43(d)-(h) in addition to inventory control or tank gauging.				X
11. Have there been any releases from or near this tank?		X		
12. Have all such releases been reported?	N/A			

STODDARD
A.S.T

INDIVIDUAL TANK QUESTIONNAIRE

For each tank listed in Attachment 12-1 and 12-2, fill out the following information: (Make additional copies as necessary.)

Tank ID No. 109342

		Yes	No	Unk	N/A
1.	If the tank contain petroleum products or hazardous substances as defined in CERCLA Section 104(14), or contained these materials after January 1, 1974, and was still in the ground as of May 8, 1986; or were brought into use after May 8, 1986:				
	a. Was an EPA Form 7530-a ("Notification for UST in Use") or state form prepared and submitted to the designated agency? ABOVE GROUND	—			X
	b. Are copies of this notification form kept at the site?	—			X
	c. Is the information on the form consistent with the tank inventory and documentation?	—			X
2.	Are the material and construction of the tank and piping compatible with the material stored and conditions of storage (i.e., pressure and temperature)?	X			
3.	Are inventory control procedures in place and practiced to monitor contents of the tank? REQUIRED?	—			

		Yes	No	Unk	N/A
4.	Are the following inventory procedures used:				
	a. Measure tank levels with gauging stick at least daily? (ABOVE GROUND) N/A	—			
	b. Obtain reading from meters at dispensers?	—			
	c. Determine mass balance by comparing quantity of material delivered to tank to quantity of material used?	—			
	d. Tank liquid measurements taken at the beginning and end of a 36-hour period during which no liquid is added to or removed from the tank?	—			
5.	Are inventory and use records maintained for this tank?	—			
6.	Is there a procedure in place to address discrepancies and losses in inventory records?	—			
7.	Are spills and overfills of the tank prevented by assuring that the tank volume exceeds the volume of products to be transferred?	X			
8.	Are the pipes connected to the tank checked for signs of leakage?	X			

		Yes	No	Unk	N/A
9.	If the tank has a leak detection system in place:				
	a. Is the system routinely calibrated in accordance with the manufacturer's instructions?				X
	b. Is there a means to prevent tampering with the system?				X
	c. Does this tank qualify for tank tightness testing once every five years under 40 CFR 280.41(a)(1)?				X
	d. If the answer to 9c is no, has the tank been tested annually?				X
10.	Is the facility complying with release detection requirements listed in 40 CFR 280.40 using at least one of the methods described in 40 CFR 280.43(d)-(h) in addition to inventory control or tank gauging.				X
11.	Have there been any releases from or near this tank?		X		
12.	Have all such releases been reported?	N/A			

ALUM O.L

INDIVIDUAL TANK QUESTIONNAIRE

For each tank listed in Attachment 12-1 and 12-2, fill out the following information: (Make additional copies as necessary.)

Tank ID No. UNK

		Yes	No	Unk	N/A
1.	If the tank contain petroleum products or hazardous substances as defined in CERCLA Section 104(14), or contained these materials after January 1, 1974, and was still in the ground as of May 8, 1986; or were brought into use after May 8, 1986: N/A ABOVE GROUND TANK				
	a. Was an EPA Form 7530-a ("Notification for UST in Use") or state form prepared and submitted to the designated agency?				X
	b. Are copies of this notification form kept at the site?				X
	c. Is the information on the form consistent with the tank inventory and documentation?				X
2.	Are the material and construction of the tank and piping compatible with the material stored and conditions of storage (i.e., pressure and temperature)?	X			
3.	Are inventory control procedures in place and practiced to monitor contents of the tank? N/A				

	Yes	No	Unk	N/A
4. Are the following inventory procedures used:				
a. Measure tank levels with gauging stick at least daily?	N/A			
b. Obtain reading from meters at dispensers?				
c. Determine mass balance by comparing quantity of material delivered to tank to quantity of material used?				
d. Tank liquid measurements taken at the beginning and end of a 36-hour period during which no liquid is added to or removed from the tank?				
5. Are inventory and use records maintained for this tank?				
6. Is there a procedure in place to address discrepancies and losses in inventory records?				
7. Are spills and overfills of the tank prevented by assuring that the tank volume exceeds the volume of products to be transferred?				
8. Are the pipes connected to the tank checked for signs of leakage?	X			

	Yes	No	Unk	N/A
9. If the tank has a leak detection system in place:				
a. Is the system routinely calibrated in accordance with the manufacturer's instructions?				X
b. Is there a means to prevent tampering with the system?				X
c. Does this tank qualify for tank tightness testing once every five years under 40 CFR 280.41(a)(1)?				X
d. If the answer to 9c is no, has the tank been tested annually?				X
10. Is the facility complying with release detection requirements listed in 40 CFR 280.40 using at least one of the methods described in 40 CFR 280.43(d)-(h) in addition to inventory control or tank gauging.				X
11. Have there been any releases from or near this tank?		X		
12. Have all such releases been reported? N/A				

STEEL OIL

INDIVIDUAL TANK QUESTIONNAIRE

For each tank listed in Attachment 12-1 and 12-2, fill out the following information: (Make additional copies as necessary.)

Tank ID No. UNK

	Yes	No	Unk	N/A
1. If the tank contain petroleum products or hazardous substances as defined in CERCLA Section 104(14), or contained these materials after January 1, 1974, and was still in the ground as of May 8, 1986; or were brought into use after May 8, 1986:				
a. Was an EPA Form 7530-a ("Notification for UST in Use") or state form prepared and submitted to the designated agency?	—			X
b. Are copies of this notification form kept at the site?	—			X
c. Is the information on the form consistent with the tank inventory and documentation?	—			X
2. Are the material and construction of the tank and piping compatible with the material stored and conditions of storage (i.e., pressure and temperature)?	X			
3. Are inventory control procedures in place and practiced to monitor contents of the tank? N/A ABOVE GROUND	—			

	Yes	No	Unk	N/A
4. Are the following inventory procedures used:				
a. Measure tank levels with gauging stick at least daily?	N/A			
b. Obtain reading from meters at dispensers?				
c. Determine mass balance by comparing quantity of material delivered to tank to quantity of material used?				
d. Tank liquid measurements taken at the beginning and end of a 36-hour period during which no liquid is added to or removed from the tank?				
5. Are inventory and use records maintained for this tank?				
6. Is there a procedure in place to address discrepancies and losses in inventory records?				
7. Are spills and overfills of the tank prevented by assuring that the tank volume exceeds the volume of products to be transferred?				
8. Are the pipes connected to the tank checked for signs of leakage?	X			

	Yes	No	Unk	N/A
9. If the tank has a leak detection system in place:				
a. Is the system routinely calibrated in accordance with the manufacturer's instructions?	—			✓
b. Is there a means to prevent tampering with the system?	—			✓
c. Does this tank qualify for tank tightness testing once every five years under 40 CFR 280.41(a)(1)?	—			✓
d. If the answer to 9c is no, has the tank been tested annually?	—			✓
10. Is the facility complying with release detection requirements listed in 40 CFR 280.40 using at least one of the methods described in 40 CFR 280.43(d)-(h) in addition to inventory control or tank gauging.	—			✓
11. Have there been any releases from or near this tank?	—	✓		
12. Have all such releases been reported? N/A	—		—	

STODDARD SOLVENT CONT-

INDIVIDUAL TANK QUESTIONNAIRE

For each tank listed in Attachment 12-1 and 12-2, fill out the following information: (Make additional copies as necessary.)

Tank ID No. UNK.

	Yes	No	Unk	N/A
1. If the tank contain petroleum products or hazardous substances as defined in CERCLA Section 104(14), or contained these materials after January 1, 1974, and was still in the ground as of May 8, 1986; or were brought into use after May 8, 1986:				
a. Was an EPA Form 7530-a ("Notification for UST in Use") or state form prepared and submitted to the designated agency?	—			X
b. Are copies of this notification form kept at the site?	—			X
c. Is the information on the form consistent with the tank inventory and documentation?	—			X
2. Are the material and construction of the tank and piping compatible with the material stored and conditions of storage (i.e., pressure and temperature)?	X			
3. Are inventory control procedures in place and practiced to monitor contents of the tank? N/A ABOVE GROUND TANK LEAK WOULD BE OBVIOUS	—	X		

	Yes	No	Unk	N/A
4. Are the following inventory procedures used:				
a. Measure tank levels with gauging stick at least daily?				N/A
b. Obtain reading from meters at dispensers?				
c. Determine mass balance by comparing quantity of material delivered to tank to quantity of material used?				
d. Tank liquid measurements taken at the beginning and end of a 36-hour period during which no liquid is added to or removed from the tank?				
5. Are inventory and use records maintained for this tank?				
6. Is there a procedure in place to address discrepancies and losses in inventory records?				
7. Are spills and overfills of the tank prevented by assuring that the tank volume exceeds the volume of products to be transferred?				
8. Are the pipes connected to the tank checked for signs of leakage?	X			

	Yes	No	Unk	N/A
9. If the tank has a leak detection system in place:				
a. Is the system routinely calibrated in accordance with the manufacturer's instructions?				X
b. Is there a means to prevent tampering with the system?				X
c. Does this tank qualify for tank tightness testing once every five years under 40 CFR 280.41(a)(1)?				X
d. If the answer to 9c is no, has the tank been tested annually?				X
10. Is the facility complying with release detection requirements listed in 40 CFR 280.40 using at least one of the methods described in 40 CFR 280.43(d)-(h) in addition to inventory control or tank gauging.				X
11. Have there been any releases from or near this tank?		X		
12. Have all such releases been reported?				

PACOIMA

SECTION 13

CERCLA

Introduction

Overview: The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), also known as Superfund, was enacted in December 1980 to provide the federal government with the authority to identify and clean up releases of Hazardous Substances from both operating facilities and closed or abandoned disposal sites.

CERCLA was amended in 1986 by the Superfund Amendments and Reauthorization Act of 1986 (SARA). SARA clarified and strengthened provisions under the original CERCLA, and enlarged the scope of Superfund by adding several new provisions, including Emergency Planning and Community Right-to-Know (EPCRA) (see Section 14).

The regulations under CERCLA are divided into two parts:

- The National Contingency Plan (40 CFR 300) - Provides the standards and procedures for the discovery and remediation of Hazardous Substance releases.

- Hazardous Substance Spill Reporting (40 CFR 302) - Defines the Hazardous Substances that require reporting when released into the environment above a certain quantity and establishes a release reporting system. The Substances and their Reportable Quantities (RQs) are listed in Table 302.4.

National Contingency Plan: The National Contingency Plan (NCP) provides the regulatory framework and procedures for all federal response activities to releases of Hazardous Substances (HSs) under CERCLA. Hazardous Substances are specifically listed materials defined by reference to other environmental statutes including the Clean Water Act, the Resource Conservation and Recovery Act, the Clean Air Act, and the Toxic Substances Control Act. A complete listing of Hazardous Substances is provided in Attachment 14-1. Additional Hazardous Substances may be designated by the EPA if they present substantial danger to public health or welfare of the environment when released. Certain substances, including petroleum and natural and synthetic gas, are exempt. Any Hazardous Substance disposed of in the past may present a potential liability if the material was sent to a site from which there are uncontrolled releases or threats of such releases.

Contributors of Hazardous Substances to such a site, along with the owner and operator of the site, and anyone who transported materials to the site can be considered a Potentially Responsible Party (PRP). Site PRPs may be required to

conduct site studies and cleanup activities, repay the government for its cleanup costs, and pay penalty costs if they fail to conduct activities ordered by the government.

The NCP includes provisions for the following activities:

- ***Site Discovery*** - EPA has established a national inventory of sites subject to possible response action based on the agency's site discovery activities. This list is maintained and updated on a data base called the Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS). A site may be added to this list based on information received in several ways, the most common of which are listed below:

  - EPA may have received a report of a Reportable Quantity release of a Hazardous Substance (Section 103(a) - see Hazardous Spill Reporting below);

  - the owner or operator may have identified the facility in complying with the one time reporting requirement for owners or operators of treatment, storage and disposal facilities that did not obtain RCRA interim status (Section 103(c) Report);

  - a citizen or a member of a police, health, or fire department may have filed a report of a suspected site;

  - EPA or the state may have initiated a survey (e.g., 1979 Eckhardt survey regarding off-site disposal facilities used by major U.S. companies);

  - information may be uncovered during facility closures or property transfers; and

  - EPA may have conducted an investigation under Section 104(e). Under such an investigation, EPA may send a letter requesting any and all relevant information on the recipient's possible contribution to a specific site. This letter is usually the first notice that the recipient has that he/she may be involved in a Superfund action. Any facility that receives such a letter should contact the Corporate Legal Department immediately and refer to Corporate's policy and procedure with respect to responding to government requests for information.

- ***Preliminary Assessment/Site Investigation*** - After a potential site has been identified, a Site Investigation is conducted to determine the extent of contamination and the most appropriate type of response. This phase includes a Preliminary Assessment and possibly a more detailed Site Inspection. The Preliminary assessment is based on information from site management practices, generators, current and historic aerial photographs, personal interviews and possible perimeter inspections. Site Inspections are more detailed studies designed to assess pathways

of contamination from the site. Site Inspections usually involve sampling and a review of historic information. EPA or a designated consultant will contact you to arrange a Site Investigation. Notify the Corporate Environmental Affairs Department and Corporate Legal Department as soon as such contact is made.

- ***Ranking*** - The results of the Site Investigation are utilized to rank the facility in terms of the severity of the release, its threat to human health or the environment, and the necessity for remedial action. This is accomplished using the Hazard Ranking System (HRS). The HRS weighs the risks posed by chemical releases from each site and assigns a numerical score. These site scores allow the agency to rank sites according to the relative severity of the risks they pose, which determines whether or not they will be added to the National Priority List (NPL). Sites on the NPL are eligible for remedial cleanup activities financed by the federal Superfund. If a site scores more than 28.5 on the HRS, it can be proposed for addition to the NPL. A user's manual for the HRS can be found in 40 CFR 300, Appendix A.

- ***Removal Actions*** - After the site has been listed, a removal action may be initiated. A removal action is a short-term or temporary response action implemented to alleviate immediate or significant risks to public health and the environment. Note that a Remedial Action is a much longer process and requires preliminary steps as described below.

- ***Remedial Investigations/Feasibility Studies (RI/FS)*** - After a site is on the NPL but before a remedial action is conducted, an RI/FS must be conducted. This consists of studies that further characterize the extent of the release and the threat to public health and the environment, and that develop and evaluate remedial alternatives with regard to their consistency with the provisions of the NCP.

- ***Selection of Remedy*** - The information developed during the RI/FS is used to select a specific remedial option. This process includes an evaluation of alternative remedies and selection of the remedy which is consistent with CERCLA guidelines. During this phase, EPA is required to document the advantages and disadvantages of alternatives and specify the selected remedy. This EPA documentation is known as a Record of Decision, or ROD.

- ***Remedial Action*** - This phase develops an engineering design for the selected cleanup alternative, implements the remedial action, and monitors the effectiveness of the remedial action.

Hazardous Substance Spill Reporting: CERCLA also requires the reporting of uncontrolled spills or releases of Hazardous Substances. Under CERCLA, a release is defined as "any spilling, leaking, pumping, pouring, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, but excludes any release which results in exposure to persons solely within a workplace...." Environment is defined to include "(A) the navigable waters, the waters of the contiguous zone, and the ocean waters of which the natural resources are under the exclusive management authority of the U.S. under the Fishery Conservation

and Management Act of 1976, and (B) any other surface water, ground water, drinking water supply, land surface or subsurface strata, or ambient air within the U. S. or under the jurisdiction of the U.S."

For each Hazardous Substance, the EPA has established a Reportable Quantity or RQ. The RQ is the amount of the material that, if released, requires notification and response. The RQs are listed in 40 CFR 302, Table 302.4. A listing of CERCLA RQs is also provided in Attachment 14-1.

If a facility releases a Reportable Quantity of a Hazardous Substance into the environment in a 24-hour period, they must notify the National Response Center (NRC) at (800) 424-8802 as soon as a Reportable Quantity has been released. Reporting delays of only one or two hours could result in the imposition of a penalty. Also, a facility cannot satisfy its obligation to report to the National Response Center by notifying the state or local authorities. The NRC duty officer will relay information to the On-Scene Coordinator (OSC) at either the EPA Regional Office or the U.S. Coast Guard District Office. The OSC will determine whether, and in what manner, to respond to the release. Textron Corporate Environmental Affairs Department must also be immediately notified at (401) 457-2437. In addition, the party responsible for the release must notify potentially injured parties through notices published in local newspapers within fifteen days of the release (Section 111(g)).

Both CERCLA and EPCRA (Section 14) have emergency release notification requirements that apply to Hazardous Substances. If a facility releases a Hazardous Substance, it is important that the facility comply with applicable requirements of both regulations. Note that while CERCLA reporting is triggered whenever the facility has a release that enters the environment, EPCRA reporting is required only when the release goes beyond the property line. In addition, CERCLA requires notification to the NRC, while EPCRA requires notification to local and state agencies.

NOTE: In the event of a release, please comply with Textron's corporate policy and procedure regarding spill/release reporting.

SECTION 13

CERCLA

Guidance

Regulatory Authority:	The Comprehensive Environmental Response Compensation and Liability Act or "Superfund"; Corresponding State Statutes
Regulatory Citation:	40 CFR 300 and 40 CFR 302; Corresponding state regulations
Administering Agency:	U.S. Environmental Protection Agency; Corresponding State Agencies

1.-2. Questions are self-explanatory.

SECTION 13

CERCLA

Survey Questions

Complete this section if the facility:

- **uses or stores any Hazardous Substances;**
- **has had a Reportable Quantity of a Hazardous Substance; or**
- **has treated, stored, or disposed of hazardous wastes either on-site or at an off-site facility.**

			Yes	No	Unk	N/A
1.	a.	If the facility has been subject to an inspection regarding CERCLA issues during the last three years or since completion of the last survey, were any concerns or potential concerns uncovered? If so, describe concerns and include copies of inspection reports or correspondence.	___	___	▒▒	
	b.	Do any of the concerns or potential concerns uncovered in the inspection remain unresolved?	▒▒	___	▒▒	
2.	a.	Has the facility entered into any Consent Order, Settlement Agreement, Delayed Compliance Order, etc., with respect to CERCLA? If so, describe and confirm that the facility has copies of all documents. _____ _____ _____	___	___	▒▒	
	b.	If yes, has the facility complied with the terms of the Order, Agreement, etc.?	___	▒▒	▒▒	___

3. A CERCLA 103(a) Notice is a report of a Reportable Quantity Release of a Hazardous Substance. (See Introduction to this section.)

4. A CERCLA 103(c) Report is a notification from owners or operators of treatment, storage, and disposal facilities who did not apply for RCRA interim status by June 1981.

5. CERCLIS, an acronym for Comprehensive Environmental Response Compensation and Liability Information System, is EPA's comprehensive database and management system that inventories and tracks releases addressed by the Superfund program. In other words, once a site is listed on CERCLIS, it must be evaluated to determine if it should be cleaned up according to procedures and standards specified by the EPA. Currently, there are approximately 30,000 sites in the CERCLIS database.

7. A CERCLA 104(e) Request is a request for information concerning a facility's use of a hazardous waste site and is usually the first indication that the recipient may be involved in a Superfund action. (See Introduction to this section.)

7c. Refer to Textron's policy concerning responding to government requests for information.

		Yes	No	Unk	N/A
3.	Has the facility ever prepared or filed a CERCLA 103(a) Notice with the U.S. EPA or the state? If so, confirm that the facility has a copy.	___	___	___	
4.	a. Has the facility ever prepared or filed a CERCLA 103(c) Notice with the U.S. EPA? If so, confirm that the facility has a copy.	___	___	___	
	b. Has the U.S. EPA ever conducted a follow-up inspection to the 103(c) Notice? If yes, confirm that the facility has a copy of the inspection report and Hazard Ranking Scoring (if any). Inspection Date: _____ Hazard Ranking Score: _____	___	___	___	
5.	Is the facility included on the CERCLIS list?	___	___	___	
6.	Has the facility ever been listed or considered for listing on the federal National Priorities List (NPL) or a comparable state list intended for remedial action? If yes, check the stage that currently applies to the facility. ___ Site Discovery ___ Preliminary Assessment ___ Site Inspection ___ Ranking ___ Removal Action ___ RI/FS ___ Selection of Remedy ___ Remedial Action	___	___	___	
7.	a. Has the facility received a Section 104(e) information request for an off-site facility?	___	___	___	
	b. Has the facility received a 104(e) relating to its own site? If so, confirm that the facility has a copy.	___	___	___	
	c. If the response to either 7(a) or 7(b) is yes, has the Corporate Office been notified of the information request(s)?	___	___	___	

8. Potentially Responsible Parties (PRPs) may be required to conduct site studies and cleanup activities, repay the government for its cleanup costs, and pay penalty costs if they fail to undertake activities ordered by the government.

10. CERCLA requires facilities to notify the NRC if they release a Reportable Quantity of a Hazardous Substance into the environment in a 24-hour period. In addition, Corporate Environmental Management Policy No. 4 calls for sending Spill information to the Director of Environmental Affairs. A listing of CERCLA RQs is provided in Attachment 14-1.

10c. See Emergency Release reporting requirements under EPCRA (40 CFR Part 355.40).

			Yes	No	Unk	N/A
8.	a.	Is the facility involved as a PRP in any Superfund or proposed Superfund action? Describe the action. Explain below: _____ _____ _____	__	__		
	b.	Has the Corporate Office been notified of this involvement?	__			
9.	a.	Has neighboring real property experienced spills, leaks, or other releases of hazardous substances? If so, explain. _____ _____ _____	__	__		
	b.	If yes, are efforts underway to contain and remediate the site?	__			
10.	a.	Has the facility ever had a CERCLA Reportable Quantity release? If so, record on Attachment 13-1.	__	__		
	b.	If yes, was the National Response Center notified?	__			
	c.	If the release may have resulted in exposure to persons other than those at the facility, were state and local authorities notified?	__			
11.		Are there any other comments that you consider relevant and/or significant to this section of the survey? If yes, please state.	__	__		

PAcomp

SECTION 14

EPCRA
EMERGENCY PLANNING AND
COMMUNITY RIGHT-TO-KNOW

Introduction

Overview: On December 4, 1984, a release of methyl isocyanate gas escaped from a Union Carbide chemical plant in Bhopal, India. More than 2,500 people lost their lives. Thousands more were injured, some permanently. The accident at Bhopal appears to be the result of many factors, including that employees were inadequately trained and supervised and that the local community had not been prepared for emergency procedures. In an effort to prevent such a disaster from occurring in the United States, Congress enacted the Emergency Planning and Community Right-to-Know Act (EPCRA), which is also known as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986.

Below are the six major provisions contained within EPCRA:

- Planning for chemical emergencies;
- Emergency release reporting;
- Material Safety Data Sheets submission;
- Hazardous chemical inventory reporting;
- Toxic chemical release reporting; and
- Public access to information gathered under the law.

Before reviewing the above provisions, be aware that there are **four** groups of chemicals subject to reporting requirements under EPCRA and, to complicate matters further, some of these chemicals appear in more than one group. The four groups are as follows:

> ***Extremely Hazardous Substances:*** This list consists of over 300 chemicals and because these chemicals have been identified as having the potential to cause significant injury or damage during an emergency, EPA chose to make them the focus of the "emergency planning" requirements found in Sections 301-303 of EPCRA or 40 CFR Part 355, Appendix A.

Hazardous Substances: Hazardous substances are listed under Superfund or CERCLA hazardous waste cleanup regulations. (See 40 CFR Part 302.4 for list.) The current list contains over 700 substances. Releases of these chemicals above certain quantities must be reported immediately to the National Response Center and state and local officials, according to the release reporting requirements in Section 304 of EPCRA or 40 CFR Part 355.40.

Hazardous Chemicals: These chemicals are not on any one list, but are defined by Occupational Safety and Health Administration (OSHA) regulations as chemicals which represent a physical or health hazard. Under this definition, thousands of chemicals may be subject to the reporting requirements if your facility manufactures, processes, or stores them above certain amounts. Inventories of these chemicals and material safety data sheets for each of them must be submitted to state and local authorities and the fire department with jurisdiction over your facility. (Sections 311 and 312 of EPCRA or 40 CFR Part 370)

Toxic Chemicals: There are over 300 chemicals or chemical categories on this list. Estimates of intentional and accidental releases of these chemicals into all media—air, land, and water—must be reported annually if you manufacture, process or otherwise use these chemicals in an amount above a certain quantity. (See Section 313 or 40 CFR Part 372.)

Below are summaries of the six major provisions in EPCRA.

EMERGENCY PLANNING AND RELEASE REPORTING

1. ***Emergency Planning (Sections 301-303; 40 CFR Part 355.30):*** The Emergency Planning requirements were developed to assist local communities prepare for and respond to emergencies involving *extremely hazardous substances*. According to EPCRA, each state was required to create a State Emergency Response Commission (SERC), which, in turn, designated Local Emergency Planning Districts and appointed a Local Emergency Planning Committee (LEPC) for each District. SERCs must coordinate the activities of all LEPCs in the state. LEPCs must include representatives of community groups, health and law enforcement officials, fire fighters, and owners and operators of industrial plants and other users of *extremely hazardous substances*. The LEPCs were required to develop and distribute local emergency response plans by October 17, 1988. These plans must be updated annually and, among other things, must include procedures for notifying the public that a release has occurred, plans for evacuation, a list of emergency equipment available, and the names of industrial facility coordinators who will help to implement the plan.

The list of *extremely hazardous substances* includes a *Threshold Planning Quantity (TPQ)*" for each substance. If an extremely hazardous substance was present at your facility—at any one time and in an amount that equaled or exceeded the TPQ—your facility was required to:

- Notify the SERC on or before May 1, 1987 that the facility is subject to the emergency planning requirements; and
- Appoint a facility emergency coordinator and submit his or her name to the LEPC by September 17, 1987.

If the facility became subject to these requirements after the dates above, then a notice must have been or should be submitted within 60 days of becoming subject to the requirements. You must also notify the LEPC of any changes at the facility that might affect the local emergency response plan and submit any pertinent information to the LEPC. Finally, facilities must also promptly submit information requested by the LEPC for the local emergency response plan.

Note: It is good management practice to participate in LEPC activities and Textron encourages facilities with an interest in participating to do so.

2. ***Emergency Release Reporting (Section 304; 40 CFR Part 355.40):*** Facility owners and operators are required to immediately report to the LEPC and the SERC, for the area likely to be affected and by expedited means, such as a telephone, any release in excess of the Reportable Quantity (RQ) during a 24-hour period, of an "extremely hazardous substance" listed in 40 CFR 355, or a "hazardous substance" listed in 40 CFR 302, which <u>may</u> result in exposure to persons other than those at the facility. The notice under this section should include the following information:

   - the chemical name;
   - whether the substance is an extremely hazardous substance;
   - the quantity of the substance released;
   - the media to which the substance was released (e.g., air, water, soil);
   - the time and duration of the release;
   - the known health effects of this substance;
   - precautions that should be taken in the event of exposure;
   - a person at the facility who can be contacted for further information.

   In addition, a written follow-up notice must also be provided to the SERC and LEPC, updating the above information and explaining the actions taken in response to the release. If the chemical is a Hazardous Substance, oral and immediate notification must also be provided to the National Response Center.

3. ***Material Safety Data Sheets (Section 311; 40 CFR Part 370):*** Facilities that are required to prepare or have available a material safety data sheet under the Occupational Safety and Health Act must submit MSDSs, or a list of the hazardous chemicals on-site which require an MSDS, to the LEPC, the SERC and the local fire department by October 1987 or within three months after first being required to maintain an MSDS at the facility. Submission of MSDSs or the list was required only if you met the following thresholds for:

Hazardous Chemicals	10,000 pounds or more on-site at any one time
Extremely Hazardous Substances (EHS)	500 pounds or more at any one time or in an amount equal to or greater than the threshold planning quantity whichever is less

In October 1990, these thresholds may be reduced to zero.

4. ***Hazardous Chemical Inventory Forms (Section 312; 40 CFR Part 370):*** Facilities that are required to prepare or have available a Material Safety Data Sheet for a hazardous chemical under OSHA, are also required to prepare "Hazardous Chemical Inventory Forms," by March 1 of each year, if the amounts on-site at any one time during the preceding year exceed the thresholds established for the MSDS submission requirement.

When calculating amounts to determine if you meet or exceed the above thresholds, you must:

- consider only the amount on-site at any one time during the previous year; do not aggregate the volume of the chemical purchased or stored on-site during the entire year; and
- include the amounts of a hazardous chemical and/or extremely hazardous substance found in a mixture in a quantity above 1% or 0.1% if the chemical is a carcinogen.

There is a "two-tier" reporting system. Tier I forms may be used only if your state does not require a Tier II form. Tier 1 forms require general information on the location and use of the chemicals. Tier II forms require more detailed information. Copies of these forms and instructions for completing them may be found in 40 CFR Part 370.40 and 370.41. Copies of the Tier 1 or Tier II forms must be submitted by March 1 to the PEPC, the SERC and the fire department.

5. ***Toxic Chemical Release Inventory Reporting: (Section 313; 40 CFR Part 372):*** This reporting requirement applies to facilities that engage in the following activities:

- manufacture, process or otherwise use any of the toxic chemicals listed in 40 CFR Part 372.65 in quantities exceeding the following thresholds.

if "manufactured or processed"–	75,000 pounds in 1987 50,000 pounds in 1988 25,000 pounds in 1989 or thereafter,
if "otherwise used"–	10,000 pounds in any one year;

- have ten or more full-time employees; and
- fall within the Standard Industrial Classification (SIC) Codes 20-39.

The regulated SIC Codes are:

20 Food and Kindred Products Manufacturing
21 Tobacco Manufacturers
22 Textile Mill Products
23 Apparel and Other Finished Products Made From Fabrics and Other Similar Material
24 Lumber and Wood Products, Except Furniture
25 Furniture and Fixtures
26 Paper and Allied Products
27 Printing, Publishing and Allied Industries
28 Chemicals and Allied Products
29 Petroleum Refining and Related Industries
30 Rubber and Miscellaneous Plastic Products
31 Leather and Leather Products
32 Stone, Clay, Glass and Concrete Products
33 Primary Metal Industries
34 Fabricated Metal Products, Except Machinery and Transportation Equipment
35 Machinery, Except Electrical
36 Electrical and Electronic Machinery, Equipment and Supplies
37 Transportation Equipment
38 Measuring, Analyzing and Controlling Instruments; Photographic, Medical and Optical Goods; Watches and Clocks
39 Miscellaneous Manufacturing Industries

Calculating Thresholds: To determine if your facility exceeds the thresholds, you must calculate the total quantity of each toxic chemical which is present in pure form or in a mixture in amounts over 1%, or 0.1%, if the chemical is regulated by OSHA as a carcinogen.

Exemptions: Toxic chemicals contained in "articles" are exempt if the article does not release a toxic chemical as a result of processing or use. Amounts of toxic chemicals used in the following ways are also exempt:

- as a structural component of the facility (e.g., copper pipes);
- as a product for routine janitorial or facility ground maintenance (e.g., fertilizers and pesticides similar in type or concentration to consumer products);
- personal use by employees or use as supplies at a cafeteria or store;
- for motor vehicle maintenance;
- used in research labs under the supervision of a "technically qualified individual";
- use in process waters and non-contact cooling water drawn from the environment or from municipal sources or toxic chemicals present in air used either as compressed air or as part of combustion;
- present in a mixture or trade name product below 1% or 0.1% if the chemical is a carcinogen.

Supplier Notification (40 CFR Part 372.45): To assist you in determining toxic chemical quantities, suppliers of toxic chemicals must notify manufacturers in writing that a mixture or trade name product contains one or more of the toxic chemicals on the list and the name of each toxic chemical. Notifications must be attached to or incorporated into a MSDS and include the percent by weight of each toxic chemical in the mixture or trade name product. Notifications should be made with the first shipment of each calendar year. This notification is not required if the *deminimis* or article exemptions apply, or the product or mixture meets specific OSHA MSDS exemptions.

What Must be Reported: The "Toxic Chemical Release Reporting Form" and instructions for completing it may be found in 40 CFR Part 372.85. The form requires the following information:

- the name and location of facility;
- identity of the toxic chemical (unless it can be established that this is a trade secret);
- whether the toxic chemical is manufactured, processed or used;
- the maximum quantity of the chemical on-site at any time during the year;
- the total quantity of the chemical released during the year to air, water, or land which includes the amounts of routine and permitted releases as well as accidental ones;
- off-site locations to which you transferred wastes containing the chemicals and the quantity of the chemical sent to those locations (e.g., list POTWs, and treatment and disposal facilities; recycling facilities are excluded); and
- treatment or disposal methods used for each waste stream containing the chemical and an estimate of the efficiency of the treatment method.

An optional waste minimization section is also included in the form.

These forms must be submitted annually, on or before July 1, for the previous calendar year, and certified as accurate and complete by a senior official with management responsibility for the person completing the form.

Reports must be maintained for three years.

6. ***Public Access (Section 321-330):*** Reports required under EPCRA are available to the public. In addition, EPA is required to enter release estimates provided in the toxic chemical release inventory reports into a computerized national database. Anyone with a personal computer and a modem may gain access to the database.

SECTION 14

EPCRA
EMERGENCY PLANNING AND
COMMUNITY RIGHT-TO-KNOW

Guidance

Regulatory Authority:	Superfund Amendments and Reauthorization; Act of 1986
Regulatory Citation:	40 CFR Parts 300, 302, 350, 355, 370, 372, 373, 374; Corresponding State Regulations
Administering Agency:	U.S. Environmental Protection Agency; Corresponding State Agencies

1 & 2. Questions 1 through 2 are self-explanatory.

SECTION 14

EPCRA
EMERGENCY PLANNING AND
COMMUNITY RIGHT-TO-KNOW

Complete individual portions of this section if the facility meets the applicability requirements detailed at the beginning of each subsection.

	Yes	No	Unk	N/A
A. Background				
Complete this section if the facility manufactures, processes, or uses any Hazardous Chemicals or any of the chemicals listed on Attachment 14-1, i.e., Hazardous Substances (see CERCLA), Extremely Hazardous Substances (see 302 (EHS)), or Toxic Chemicals (see Sec. 313)				
1. If the facility has been subject to an inspection regarding Emergency Planning and Community Right-to-Know issues during the last three years or since completion of the last survey, were any concerns or potential concerns uncovered? If so, describe concerns and include copies of inspection reports or correspondence.				
a. Do any of the concerns or potential concerns uncovered in the inspection remain unresolved?				
2. a. Has the facility entered into any Consent Order, Settlement Agreement, Delayed Compliance Order, etc., with respect to EPCRA? If so, describe and confirm that the facility has copies of all documents: _____ _____ _____				
b. If yes, has the facility complied with the Consent Order, etc.?				

3. In Attachment 4-1, you listed all facility Chemicals. Some of these chemicals will be hazardous if they require an MSDS under OSHA (see Introduction for definition of hazardous chemicals). OSHA hazardous chemicals are regulated under EPCRA. Other EPCRA regulated chemicals are listed in Attachment 14-1. To determine if your facility has other EPCRA regulated chemicals, compare the chemicals listed in Attachment 4-1 with the chemicals listed in Attachment 14-1. You may find it helpful to record this information in the EPCRA Worksheets included as Attachment 14-2.

Calculating Mixtures. Mixtures and trade name products imported, processed, or used at a facility must be evaluated for the presence of these Toxic Chemicals. In addition, beginning with the first product shipment in 1989, owners/operators who supply mixtures or trade name products containing listed Toxic Chemicals must notify their customers about the presence and concentration of those chemicals in their products.

When determining the chemical usages for the facility (Attachment 4-1), a percentage breakdown of the hazardous chemical constituents of a mixture is generally provided in the Hazardous Ingredients section of a product's MSDS. Other relevant information such as chemical formula, specific gravity, and vapor Physical Chemical Characteristics heading is also included.

Reporting is required if:

- a hazardous chemical ingredient of the mixture is present in the mixture in reportable quantities (i.e., 0.1 percent for carcinogens and 1.0 percent for other health hazards), unless the mixture has been tested as a whole or unless the material is bound in such a way that employees cannot be exposed,
- the quantity of a hazardous chemical ingredient of the mixture exceeds the threshold quantity (i.e., 25,000 pounds if manufactured or processed or 10,000 pounds if otherwise used).

4. An Extremely Hazardous Substance (EHS) is a chemical identified by EPA as having the potential to cause significant injury or damage during an emergency. For each EHS, EPA identified a Threshold Planning Quantity (TPQ). A TPQ is a quantity which EPA has designated as being sufficient to trigger emergency planning activities for that chemical at the local level. A list of EHSs and TPQs is presented in Attachment 14-1.

6. Each facility subject to these requirements must identify an Emergency Coordinator and submit his/her name to the Local Emergency Planning Committee (40 CFR 355.30 (c)).

7. Facilities are required to promptly notify the Local Emergency Planning Committee of any "relevant" facility changes, i.e., changes that could affect the local emergency plan (40 CFR 355.30(d)(1)).

	Yes	No	Unk	N/A
3. Does the facility manufacture, process, use, or store any EPCRA regulated chemicals, i.e., Hazardous Substances, Extremely Hazardous Substances, and Toxic Chemicals in Attachment 14-1?	___	___	▒▒	

B. Emergency Response Planning

Complete this section if the facility has on-site any Extremely Hazardous Substances (EHSs) in quantities at or above the Threshold Planning Quantity (TPQ).

4. In Question 3 you identified all Extremely Hazardous Substances (EHSs). Now, check the Threshold Planning Quantity (TPQ) for each (Attachment 14-1). Does the facility have any EHSs in quantities that equal or exceed the TPQ?	___	___	▒▒	___
5. Did the facility notify the State Commission that it was subject to the Emergency Response Planning requirements by May 17, 1987, or within sixty days of becoming subject to the requirements?	___	▒▒	▒▒	___
6. Has the facility designated an Emergency Coordinator and submitted his/her name to the Local Emergency Planning Committee (LEPC)?	___	▒▒	▒▒	___
Name: _____				
7. Has the LEPC been notified promptly of any facility changes which could affect the local emergency plan?	___	▒▒	▒▒	___

8. Local Emergency Planning Committees have very broad authority to request information from a facility for the development of the Local Emergency Plan. Facilities must respond to these requests "promptly" (40 CFR 355.30(d)(2)).

9. The Emergency Release Reporting requirements (40 CFR 355.40) apply to any facility that:

- produces, uses, or stores a Hazardous Chemical, and
- releases a CERCLA Hazardous Substance or an Extremely Hazardous Substance to the environment in a quantity that exceeds the EPA designated Reportable Quantity (RQ) during a 24-hour period, if the release is likely to migrate beyond the facility boundary.

It is a good management practice to identify facility chemicals that could be subject to reporting before a release occurs. This includes Extremely Hazardous Substances listed in 40 CFR 355 Appendix A and CERCLA Hazardous Substances listed in 40 CFR 302, Table 302.4.

10. This is a good management practice.

11 & 12. Detected releases must be reported "immediately," even during evening hours. Both oral reports and written, follow-up notices are required (40 CFR 355.40(b)).

	Yes	No	Unk	N/A
8. Has the facility promptly provided the LEPC with requested information about the facility?	___	☐	☐	___

Address of LEPC _____

_____

_____

Telephone No. of LEPC _____

C. Emergency Release Reporting

Complete this section if the facility uses or stores any Hazardous Substances (HSs) or Extremely Hazardous Substances (EHSs).

9. In Question 3, you identified all Hazardous Substances and Extremely Hazardous Substances. Now check the Reportable Quantity amounts in Attachment 14-1. Does the facility have a Hazardous Substance or an Extremely Hazardous Substance in a Reportable Quantity amount?	___	___	☐	
10. If yes, are there procedures in place to determine whether a reportable release has occurred?	___	☐	☐	___
11. Has the facility established 24-hour notification procedures which include the additional requirements under Emergency Release Reporting?	___	☐	☐	

12. See Emergency Release Reporting requirements in Introduction.

13. MSDSs or lists must be submitted by the following deadlines for each Hazardous Chemical on-site in quantities at or exceeding the thresholds on that particular day (40 CFR 370.21(a) and (B)):

October 17, 1987; October 17, 1988; and October 17, 1989

- Hazardous Chemicals (except EHSs) — 10,000 pounds
- Extremely Hazardous Substances — 500 pounds or TPQ, whichever is lower.

If a list is submitted, chemicals must be categorized by OSHA Hazard Category. The OSHA categories are Immediate Health Hazard, Delayed Health Hazard, Fire Hazard, Sudden Release of Pressure Hazard, and Reactive Hazard.

	Yes	No	Unk	N/A
12. Has the facility had a release which was reportable under EPCRA? If yes, complete Attachment 13-1.	___	___	▒▒	
a. If so, did the facility provide immediate oral notification to the State Emergency Response Commission, the Emergency Coordinator of the LEPC, and the NRC Confirm that the facility recorded this information for each release.	___	▒▒	▒▒	___
b. If so, was a written, updated follow-up notice provided to the State Emergency Response Commission and the Emergency Coordinator of the LEPC? Confirm that the facility has this information for each release.	___	▒▒	▒▒	___

D. Material Safety Data Sheet Submission

Complete this section if the facility has a Hazardous Chemical or an Extremely Hazardous Substance (EHS) on-site in a quantity that exceeds the thresholds provided in the guidance to Question 13.

13. Did the facility submit MSDSs, by October 17, 1987 for Hazardous Chemicals and Extremely Hazardous Substances which were present in amounts equal to or above the threshold quantity to the fire department the LEPC, and the State Commission? If a list was submitted, confirm that the facility has a copy. If MSDSs were submitted, confirm that the facility has a copy of the cover letter.	___	▒▒	▒▒	
14. If significant new information about a chemical has been discovered, or if a new Hazardous Chemical or EHS has been brought on-site in quantities at or above the threshold amount, has an MSDS or revised list been submitted to the fire department, LEPC, and State Commission within three months? Confirm that the facility has a copy.	___	▒▒	▒▒	

15. Tier I and Tier II reports require detailed information about each facility Hazardous Chemical. The requested information includes annual usage and storage amounts, storage methods, and storage locations. Tier II reports request greater detail. A facility may submit only the Tier I report unless it is specifically requested to provide the additional information by EPA or the LEPC. The reports are due by March 1 of each year for activities in the previous calendar year for Hazardous Chemicals and Extremely Hazardous Substances on-site at any time above the threshold quantity. The first report was due on March 1, 1988 (40 CFR 370.25). The thresholds are as follows:

Activities in 1987, 1988, and 1989

- Hazardous Chemicals (except EHSs) — 10,000 pounds
- Extremely Hazardous Substances — 500 pounds or TPQ, whichever is lower.

16. Include amounts of Hazardous Chemicals and/or Extremely Hazardous Substances found in a mixture in a quantity above 1%, or 0.1% if the chemical is a carcinogen. For example, review raw materials such as brass, where copper is a hazardous chemical and it is greater than 1% in brass.

17. See Attachment 14-1 for a listing of Toxic Chemicals.

		Yes	No	Unk	N/A
E.	**Hazardous Chemical Inventory Forms**				
15.	Did the facility submit a Tier I or Tier II report by March 1st for Hazardous Chemicals or EHSs present on-site or at any one time during the previous calendar year, in amounts equal to or above the threshold amount, to the fire department, the LEPC, and the State Commission? Confirm that the facility has a copy.	___	▒▒	▒▒	___
	Note: State or local reporting requirements may be more stringent than federal requirements. You are responsible for keeping your plant in compliance.				
16.	When calculating amounts to determine if the facility met or exceeded thresholds for reporting, were mixtures and trade name products reviewed to determine if they contained a hazardous chemical or an EHS?	___	▒▒	▒▒	
F.	**Toxic Chemical Release Reporting**				
	Complete this section if the facility falls within SIC Codes 20 through 39, employs ten or more full-time employees and manufactures, processes, imports, or uses any Toxic Chemical in an amount that exceeds the threshold provided in the guidance to Question 18.				
17.	In Question 3, you identified all facility Toxic Chemicals. Does the facility manufacture, process, or otherwise use Toxic Chemicals in regulated quantities?	___	___	▒▒	
18.	Did the facility submit a Toxic Chemical Release Inventory Form by July 1st for each Toxic Chemical above the threshold to the EPA and the state governor's designee? Confirm that the facility has a copy.	___	▒▒	▒▒	

18. Toxic Chemical Release Reporting is an annual reporting requirement and applies to facilities which:

- have ten or more full-time employees;
- are in SIC codes 20 through 39; and
- manufacture, process, or otherwise use a listed Toxic Chemical in excess of the threshold quantity during a calendar year (40 CFR 372.10).

For facilities which manufacture or process a Toxic Chemical, the thresholds are (40 CFR 372.12):

- 75,000 pounds per year in 1987;
- 50,000 pounds per year in 1988; and
- 25,000 pounds per year in 1989 and thereafter.

For facilities which otherwise use a Toxic Chemical, the threshold is 10,000 pounds per year in 1987 and thereafter.

SARA provides the following definitions (40 CFR 372.3):

- "Manufacture" means to produce, prepare, import, or compound a Toxic Chemical including coincidental production of a Toxic Chemical.

- "Process" means the preparation of a Toxic Chemical after its manufacture for distribution in commerce (a) in the same form or physical state as, or in a different physical form or state from that in which it is received; or (b) as part of an article containing the Toxic Chemical. Process includes:
  - making mixtures,
  - repackaging,
  - incorporating a chemical into an article, or
  - use of a chemical as a feedstock or raw material for making another chemical.

  The term process also applies to the processing of a Toxic Chemical that is a component of a mixture or other trade name product (including processing of a Toxic Chemical that is an impurity in a product).

- "Otherwise used" refers to any use of a Toxic Chemical at a regulated facility that is not an activity covered by the terms manufacture or process and includes use of a Toxic Chemical contained in a mixture or trade name product.

Remember that this report must be submitted annually and must accurately describe activities during the preceding year. Information for the report must therefore be collected each year and the information must be updated before submission.

20. See Summary of Toxic Chemical Release Inventory Reporting in Introduction or 40 CFR Part 372.45.

	Yes	No	Unk	N/A
19. Describe how Toxic Chemical release data are collected? _____ _____ _____				
20. Are procedures in place to determine if supplier notification requirements are being met?	___			
F. Miscellaneous				
21. Are there any other comments that you consider relevant and/or significant to this section of the survey? If yes, please state.	___	___		

PACOIMA

SECTION 15

TOXIC SUBSTANCES

Introduction

Overview: The Toxic Substances Control Act (TSCA) was created in 1976 to regulate chemicals identified or suspected of being toxic to human health or the environment. TSCA was enacted by Congress so that data could be developed concerning the effects of chemical substances on human health and the environment. The burden of developing data required to identify, evaluate, and regulate toxic chemicals was placed on chemical manufacturers and processors. TSCA also gave the EPA authority to regulate chemicals identified or suspected of posing human health or environmental threats. Title I of TSCA, enacted in 1976 and amended in 1981, 1983, 1984, and 1988, contains the provisions concerning the control of toxic substances. Title II, enacted in 1986, includes the Asbestos Hazard Emergency Response Act (AHERA) provisions for identifying, developing and implementing asbestos management plans for schools.

Title I of TSCA has thirty-one sections. Major sections include:

Section 3 - Definitions,
Section 4 - Chemical Test Provisions,
Section 5 - Premanufacture Notifications,
Section 6 - Chemical Regulations,
Section 8 - Notification Requirements,
Section 12 - Export Provisions,
Section 13 - Import Provisions,
Sections 14, 15 and 16 - Prohibitions and Civil and Criminal Penalties, and
Sections 21 & 22 - Citizen and Employee Rights.

The civil and criminal penalties allowable under TSCA are among the most severe for environmental matters. EPA's regulations governing toxic chemicals are found in 40 CFR Sections 702 - 799.

Applicability: Section 3 of TSCA defines what chemicals are regulated by this statute, and what types of facilities are required to comply with TSCA. By definition, TSCA regulated "chemical substances" include "...any organic or inorganic substance of a particular molecular identity, including any combination of such substances occurring in whole or in part as a result of a chemical reaction or occurring in nature, and any element or uncombined radical." TSCA chemical substances do not include mixtures, pesticides (when manufactured, processed, or distributed in commerce as a pesticide), tobacco or tobacco products, materials regulated under the Atomic Energy Act, articles subject to taxation, or foods, food additives, drugs, cosmetics, or devices (when manufactured, processed or distributed for use as a food, food additive, drug, cosmetic, or device). For the most part, TSCA regulations do not

apply to chemical substances without a separate commercial purpose, such as those produced incidental to the manufacturing or processing of chemicals, including products of reactions between chemical substances and sunlight, or as a result of the end use of a chemical substance, such as curing of glues and adhesives.

Facilities that must comply with TSCA include manufacturers, processors, and, for some parts, distributors and users of chemical substances. The definition of manufacturers includes importers of chemical substances. Exemptions are granted in some parts for small quantity manufacturers, and for research and development, or test marketing purposes.

Table 15-1 summarizes the TSCA regulations, and indicates what types of facilities must comply with the regulations, and what exemptions have been allowed. The remainder of the introduction summarizes TSCA regulations.

Reporting and Record Keeping: Section 8 of TSCA prescribes the reporting and record keeping requirements for toxic chemicals. Specific reporting and record keeping requirements include:

Inventory of Chemical Substances (40 CFR 710): Section 8 (b) requires EPA to compile a list of each chemical substance which is manufactured or processed in the United States. As new chemicals are manufactured, these chemicals are to be added to the list. Initial inventory reports were to be submitted on or before May 1, 1978 for the reporting year 1977 by chemical manufacturers, which included facilities classified under SIC Major Group 28, chemicals and Allied Products, and under SIC Code 2911, Petroleum Refining.

Exemptions were allowed for small quantity manufacturers and importers. The initial inventory report required information on whether the chemical was manufactured or imported, the sites at which the chemical was manufactured or imported, whether a chemical was processed at a site and not distributed for commercial purposes, and the amount of the chemical that was imported or manufactured. EPA is required to periodically update the Chemical Inventory. Updating is accomplished by requiring certain manufacturers and importers of chemicals included on the inventory to submit reports on the amounts of each chemical substance that is manufactured, or imported. The first chemical inventory update occurred in 1986. The first recurring reporting period will be from August 25 through December 23, 1990. Subsequent recurring reporting periods will occur every four years.

Premanufacture Notifications (40 CFR 720): Section 5 of TSCA prescribes premanufacture notification requirements for new chemicals. Under Section 5, manufacturers and importers of new chemicals must submit a Premanufacture Notification Form (EPA Form 7710-25) to the EPA at least 90 days before importing or manufacturing a new chemical. As a part of the premanufacture notification review, EPA may issue orders limiting or prohibiting the manufacture, processing, commercial distribution, use or disposal of a substance pending the

development of data concerning health and environmental effects. Exemptions are allowed for research and development. Test marketing exemptions can be obtained upon submitting an application to the EPA. After the premanufacture review, if the new chemical is manufactured or imported, the manufacturer or importer must submit to EPA a Notice of Commencement of Manufacture or Import.

Significant New Uses (40 CFR 721): Section 5 also gives EPA the authority to specify reporting and testing requirements for significant new uses of chemicals. Manufacturers, importers and processors are required to submit to EPA a Premanufacture Notice Form (EPA Form 7710-25) if they intend to engage in a new use for a chemical already on EPA's Chemical Inventory. Based on this submittal, EPA determines what constitutes a significant new use for a chemical and promulgates regulations concerning reporting, record keeping, handling and disposal for listed chemicals.

Premanufacture Notification Exemptions (40 CFR 723): Exemptions can be granted for chemicals manufactured or imported in small quantities, defined as less than 1,000 kg per year. Exemptions are also granted for the manufacture of specific polymers (40 CFR 723.250). However, the importer or manufacturer must apply to the EPA in order to obtain such an exemption. Moreover, at any given time, no more than one person may hold a premanufacturing exemption for any one chemical. This application must be submitted at least 21 days before manufacturing or importing commences.

Reporting and Record Keeping for Specific Chemicals (40 CFR 704): Part 704 lists specific chemicals for which reporting and record keeping requirements have been promulgated. Prior to June 1988, EPA used the rule-making process for developing chemical specific reporting requirements. Currently, eight chemicals are included in these rules (40 CFR 704.25 - 704.102).

In 1988, EPA promulgated the Comprehensive Information Assessment Rule (CAIR) to streamline chemical reporting. EPA developed a form to be used for all chemicals for which reporting requirements have been established. Not all questions need to be answered for all chemicals. Exemptions are granted for research and development, small volume manufacturers, repackagers who do not otherwise process the chemical, persons who previously submitted data, and persons who manufacture, import, or process the chemical as a by-product or as part of an article. Nineteen chemicals are included under reporting requirements for this rule. CAIR reporting requirements are summarized in 40 CFR 704.225 which lists the chemicals, who must report, exemptions, the reporting period, and what questions must be answered. Once a chemical has been listed, manufacturers, importers, and processors subject to the reporting requirements must submit completed questionnaires within 90 days. Table 15-2 lists chemicals currently included under CAIR regulations.

Chemical Information Rules (40 CFR 712): For specifically listed chemical substances, manufacturers and processors are required to report information on production, use, and exposure related information. Listed chemicals for which reporting requirements have been established are found in 40 CFR 712.30. EPA Form 7710-35 is used to submit the information. This is the Preliminary Assessment Information Rule (PAIR) used to develop a database on exposure-related data for listed chemicals.

Health and Safety Data Reporting (40 CFR 716): Health and safety reporting requirements are found in 40 CFR 716. Manufacturers, importers, and processors are subject to reporting requirements under this rule. 40 CFR 716.120 includes a list of chemicals and mixtures for which health and safety studies are to be submitted to the EPA. Health and safety information that must be reported includes any unpublished research on health or environmental effects of a listed chemical that is in the possession of the manufacturer, importer, or processor.

Records and Reports of Allegations (40 CFR 717): Manufacturers, importers, and processors of chemicals are required to maintain records concerning allegations that a chemical has exhibited harmful effects to human health or the environment (40 CFR 717). Allegations may be submitted in writing or orally. It is the responsibility of the manufacturer, importer, or processor to maintain records of alleged adverse reactions to any chemical. Records must be retained for at least thirty years from the date of the allegation.

Chemical Regulation: Section 6 of TSCA enables EPA to regulate specific hazardous chemicals. Under Section 6, EPA has the authority to: 1) prohibit or limit the amount of a chemical substance or mixture that can be commercially manufactured, processed, or distributed; 2) prohibit or limit the amount or concentration of a chemical substance or mixture that can be commercially manufactured, processed, or distributed for specific purposes; 3) specify marking and labelling of articles containing specific chemical substances or mixtures; 4) require manufacturers and processors to collect and retain records of production, and to conduct tests of specific chemical substances or mixtures; 5) prohibit or regulate commercial uses of chemical substances and mixtures; 6) regulate or prohibit disposal of articles containing specific chemical substances and mixtures; and 7) require manufacturers to notify distributors and the public of the risks associated with specific chemical substances and mixtures. EPA has formalized the Section 6 rule making procedures in 40 CFR 750.

Currently, the following chemicals are regulated under Section 6, metal working fluids (40 CFR 747), polychlorinated biphenyls (PCBs) (40 CFR 761), fully halogenated chlorofluoroalkanes (40 CFR 762), asbestos (40 CFR 763), and dibenzo-para-dioxins and dibenzofurans (40 CFR 766). Sections 16 and 17 of the self-survey deal with PCBs and asbestos, respectively. The other chemicals are addressed in this section.

Import and Export Provisions (40 CFR 707): Section 12 prescribes requirements for chemical exporters. Export rules specify that EPA be notified before any chemical specifically regulated under TSCA is exported. Notification requirements include the name of the chemical, the name and address of the exporter, the destination country or countries, and the section of TSCA under which EPA has taken action (40 CFR 707.67). Notification is not required for a chemical if EPA suspends other TSCA actions, or if test data collected under 40 CFR 766 show no positive tests (40 CFR 707.72). Notification requirements pertain only to export of the chemical substance, and do not apply to articles containing regulated chemicals, with the exception of articles that contain PCBs or those articles specifically identified by EPA.

Section 13 of TSCA describes requirements for importers of toxic chemicals. Under the regulations, the definition of importer includes "the person primarily liable for the payment of any duties on the merchandise, or an authorized agent acting on his behalf, or the consignee, or the importer of record, or the actual owner, or the transferee". Under this broad definition, facilities that import chemicals may be subject to the rules of Section 13. Responsibility for promulgation of Section 13 rules is given to the Treasury Department, and specific rules can be found in 19 CFR 12.118 through 12. 127, and 127.28. Basically, Section 13 requires that importers sign a statement certifying that "all chemical substances in this shipment comply with all applicable rules or orders under TSCA and that I am not offering a chemical substance for entry in violation of TSCA or any applicable rule or order of TSCA." Even if imported chemicals are not subject to TSCA regulations, such as pesticides which are regulated under FIFRA, the importer is required to sign a statement certifying that the imported chemicals are not subject to TSCA regulations. Section 13 prohibits the importation of chemical substances, mixtures or articles that are not in compliance with TSCA.

Chemical Testing: Section 4 of TSCA gives EPA the authority to require manufacturers and importers of new chemicals, or chemicals for which significant new uses are proposed to conduct tests on health and environmental effects, and on chemical fate in the environment. If EPA suspects that a chemical already in production poses a substantial risk to human health or the environment, the agency may require, through a consent agreement, that the manufacturers of that chemical conduct testing. Section 4 test programs are specified by EPA in a rule making procedure. 40 CFR 790 describes the test rule procedures, and test guidelines are found in 40 CFR 792 - 798. 40 CFR 799 lists specific chemicals for which test rules have been promulgated.

Reimbursement Provisions (40 CFR 791): Recognizing the expense associated with conducting health and environmental investigations, TSCA includes reimbursement provisions. This rule requires that any other manufacturer or importer of a chemical for which testing has been required under a TSCA Section 4 Test Rule, partially reimburse the firm or firms that had been required to conduct the tests. The

reimbursement period extends for a minimum of five years after finalization of the Section 4 test program. Chemicals subject to testing and reimbursement are listed in 40 CFR 799. Small quantity exemptions allowed under other TSCA regulations do not apply to chemicals subject to a Section 4 test program.

TABLE 15-1
TSCA SUMMARY
AND
40 CFR ORGANIZATION

40 CFR PART	Types of Facilities Affected M = Manufacturer I = Importer P = Processor D = Distributor U = User	EXEMPTIONS				Reporting Period
		Small Quantity	Research and Development	Test Marketing	Chemical Use	
704 - Reporting and Record Keeping CAIR	I, M, P (as listed for specific chemicals)	YES Based on sales and volume	YES	NO	YES	Based on Effective Date of Rule
707 - Import and Export Regulations	I, M	NO	NO	NO	YES	N/A
710 - Chemical Inventory IUR	I, M	YES Based on Type and Volume	YES	NO	YES	Every Four Years Beginning in 1986
712 - Chemical Information PAIR	I, M, P	YES Based on Sales and Volume	YES	NO	NO	Based on Effective Date of Rule

TABLE 15-1
TSCA SUMMARY
AND
40 CFR ORGANIZATION

40 CFR PART	Types of Facilities Affected M = Manufacturer I = Importer P = Processor D = Distributor U = User	EXEMPTIONS				Reporting Period
		Small Quantity	Research and Development	Test Marketing	Chemical Use	
716 - Health and Safety Reporting	I, M, P	NO	NO	NO	NO	10 Years After Effective Date for Listed Chemical
717 - Allegation Record Keeping	I, M, P	NO	NO	NO	YES	Maintain Records for 30 years
720 - Premanufacturing Notification	I, M	NO	YES	YES	YES	At Least 90 Days Before Production or Importation Begins

TABLE 15-1
TSCA SUMMARY
AND
40 CFR ORGANIZATION

40 CFR PART	Types of Facilities Affected M = Manufacturer I = Importer P = Processor D = Distributor U = User	EXEMPTIONS				Reporting Period
		Small Quantity	Research and Development	Test Marketing	Chemical Use	
721 - Significant New Uses	I, M, P	NO	YES	YES	YES	At Least 90 Days Before Production Importing or Processing Begins
723 - Premanufacture Notification Exemptions	I, M	YES	NO	NO	NO	At Least 21 Days Before Manufacture or Import Begins
750 - Section 6 Rulemaking Procedures	N/A	N/A	N/A	N/A	N/A	N/A
747, 761-766 - Regulation of Specific Chemicals	D, I, M, P, U	NO	N/A	N/A	YES	NO

TABLE 15-1
TSCA SUMMARY
AND
40 CFR ORGANIZATION

40 CFR PART	Types of Facilities Affected M = Manufacturer I = Importer P = Processor D = Distributor U = User	EXEMPTIONS				Reporting Period
		Small Quantity	Research and Development	Test Marketing	Chemical Use	
790 - Test Procedures	I, M, P	NO	NO	NO	NO	Determined By Consent Order
791 - Data Reimbursement	I, M, P	NO	NO	NO	N/A	N/A
792 - Good Laboratory Practices	Laboratories and Research Sponsors	N/A	N/A	N/A	N/A	N/A
795-798 - Testing Guidelines	Rules apply to Chemical Testing Procedures for Fate Health and Environmental Effects	N/A	N/A	N/A	N/A	

TABLE 15-1
TSCA SUMMARY
AND
40 CFR ORGANIZATION

40 CFR PART	Types of Facilities Affected M = Manufacturer I = Importer P = Processor D = Distributor U = User	EXEMPTIONS				Reporting Period
		Small Quantity	Research and Development	Test Marketing	Chemical Use	
799 - Chemical Testing Requirements	I, M, P Based on submittal of Part 720 or 721 Notification	NO	NO	NO	NO	

TABLE 15-2

40 CFR 704.225
CHEMICALS WITH SPECIFIC REPORTING REQUIREMENTS

CAS No.	Chemical Name
60-35-5	Acetamide (Ethanamide)
91-08-7	Benzene, 1,3-diisocyanato-2-methyl(2,6 toluene diisocyanate)
584-84-9	Benzene 2,4-diisocyanato-1-methyl(2,4 toluene diisocyanate)
26471-62-5	Benzene 1,3-diisocynatomethyl - (toluene diisocyanate)
1321-38-6	Benzene, diisocynatomethyl - (unspecific toluene diisocyanate)
101-14-4	Benzenamine 4,4-methylenebis[2-chloro-(MBOCA)]
7782-50-5	Chlorine
624-92-0	Dimethyl disulfide
79-27-6	1,1,2,2-tetrabromoethane
115-96-8	Ethanol, 2-chloro-phosphate (3:1)(Tris(2-chloroethyl)phosphate)
57-56-7	Hydrazinecarboxamide
563-41-7	Hydrazinecarboxamide, monohydrochloride
7803-49-8	Hydroxylamine (Oxammomium)
5470-11-1	Hydroxylamine, hydrochloride (Hydroxylammonium chloride)
10039-54-0	Hydroxylamine, sulfate (2:1)(Hydroxylammonium)
10046-00-1	Hydroxylamine, sulfate (2:2) Hydroxylamine acide sulfate)
93-00-5	2-Naphthalene sulfonic acid, 6-amino (Broenner's Acid)
85-01-8	Phenanthrene
129-00-0	Pyrene (Benzo [def] phenanthrene)

SECTION 15

TOXIC SUBSTANCES

Guidance

Regulatory Authority:	**Toxic Substances Control Act**
Regulatory Citation:	**40 CFR Parts 702 - 799**
Administering Agency:	**Environmental Protection Agency**

1-2. Questions are self explanatory

3-4. With the exception of specific chemicals regulated under Section 6 of TSCA, TSCA regulations pertain to the manufacture, processing, importation, and, in some cases, distribution of chemicals. In order to determine if a facility is subject to TSCA regulation, it is necessary to determine if the facility manufactures, or processes chemicals for commercial purposes.

Manufacture, as defined in Section 3 of TSCA, means to import, produce, or manufacture. EPA further refines this definition to include manufacturing for commercial purposes. Manufacture for commercial purposes is for the purpose of recognizing an immediate or potential commercial advantage, and includes the use of the chemical in research and development, test marketing, or as an intermediate.

Process is defined as preparation of a chemical substance or mixture, after it is manufactured, for commercial distribution either as part of an article containing the chemical, or in a mixture, whether or not the physical state of the original chemical substance has been altered. Under this broad definition, any facility that uses chemical substances as a part of the manufacturing process may be considered as a processor. For example, a facility that purchases resins to make plastics may be considered as a processor. On the other hand, a die casting facility would not be considered as a processor based on the use of release compounds used to separate the casting from the die, if the release compounds were the only chemicals used in the manufacturing process.

SECTION 15

TOXIC SUBSTANCES

Survey Questions

Complete this section if the facility imports, manufactures, processes, distributes, or uses chemical substances.

	Yes	No	Unk	N/A
A. Background Information				
1. a. If the facility has been subject to an inspection regarding TSCA issues during the last three years or since completion of the last survey, were any concerns or potential concerns uncovered?		X		
If so, describe concerns and include copies of inspection reports or correspondence. _____ _____ _____				
b. Do any of the concerns or potential concerns uncovered in the inspection remain unresolved?		X		
2. a. Has the facility entered into any Consent Order, Settlement Agreement, delayed Compliance Order, etc., with respect to TSCA?		X		
b. If "Yes" to 2a, has the facility complied with the terms of the Order, Agreement, etc.?				X
3. Does this facility manufacture or import any chemical substances?		X		
If "Yes," complete Parts B & C of this Section				
4. Does this facility process any chemical substances?				
If "Yes," complete Part C of this Section				

5. Under Section 6 of TSCA, EPA can regulate the manufacturing, processing, distribution, use, and disposal of chemicals. Currently, the following chemical substances are regulated under this provision, **metal working fluids containing mixed mono and diamides of organic acids (40 CFR 747), polychlorinated biphenyls (40 CFR 761) (covered in Section 16), fully halogenated chlorofluoroalkanes (40 CFR 762), asbestos (40 CFR 763) (covered in Section 17), and dibenzo-para-dioxins/dibenzofurans (40 CFR 766).**

6. Section 8(a) of TSCA enables EPA to promulgate reporting requirements for specific chemicals. The list of specific chemicals is found in 40 CFR 704. Chemicals currently subject to specific reporting requirements are included in this question. Exemptions are granted to small manufacturers (40 CFR 704.3), to facilities that use listed chemicals in small quantities solely for research and development, and to facilities that produce the chemical as a byproduct or impurity (40 CFR 704.5). Reporting exemptions may be further qualified for listed chemicals. The 1988 Chemical Assessment Information Rule amended the format for reporting requirements. Under this rule, EPA developed a form for use for all chemicals. In the rule making process, EPA identifies which questions must be answered for listed chemicals. Table 15-2 lists chemicals included in 40 CFR 704.225

	Yes	No	Unk	N/A
5. Does this facility manufacture, import, process, distribute, or use any of the chemicals listed below:				
a. Metal working fluids containing mixed mono and diamides of organic acids?	___	___	___	
b. Fully halogenated chlorofluoroalkanes?	___	___	___	
c. Organic compounds that may be contaminated with dibenzo-para-dioxins or dibenzofurans?	___	___	___	

If "Yes" to any of the above, complete Part D of this Section

6. Does this facility manufacture, import, or process, or has this facility intended to manufacture, import, or process any of the chemicals listed below:				
a. 11-aminoundecanoic acid?	___	___	___	
b. 9,10-anthaquinone?	___	___	___	
c. P-tert-butylbenzoic acid (P-TBBA), P-tert-butyltoluene (P-TBT), or P-tert-butylbenzaldehyde (P-TBB)?	___	___	___	
d. chlorinated naphthalenes?	___	___	___	
e. chlorinated terphenyl?	___	___	___	
f. hexafluoropropylene oxide (HFPO)?	___	___	___	
g. hexachloronorbornadiene (HEX-BCH)?	___	___	___	
h. 4,4-methylenebis(2-chloroaniline) (MBOCA)?	___	___	___	
i. Any of the chemicals listed in 40 CFR 704.225?	___	___	___	

If "Yes" to any of the above, complete Part E of this Section.

7. TSCA requires EPA to maintain a list of chemicals manufactured, processed, or imported into the United States. The first Chemical Inventory was compiled in 1978, as a result of reports submitted in 1977 by manufacturers, processors and importers that met certain standards. The initial report was confined to facilities in SIC Major Group 28 chemicals and Allied Products, and SIC 2911 Petroleum Refining.

EPA encouraged any facility that manufactured or imported chemicals to submit a report for the initial inventory.

8. Section 8 also calls for EPA to periodically update the master chemical inventory compiled from the 1977 reports. The first inventory update reporting period was from August 25 through December 23, 1986. Facilities that manufactured or imported for commercial purposes 10,000 pounds or more of any of the chemical substances listed in EPA's chemical inventory, or chemicals for which Premanufacture notices had been filed in their fiscal year prior to the reporting period were required to submit reports under this rule. Exemptions were allowed for small manufacturers (40 CFR 710.29), and for facilities that used the chemical for certain activities, such as research and development (40 CFR 710.30).

9. Facilities that submitted chemical inventory reports are required to retain the records used to prepare the reports for at least four years following the reporting period (40 CFR 710.37).

10. EPA is required to update the chemical inventory every four years. The first recurring reporting period will occur from August 23 through December 23, 1990. The same criteria used to determine if a facility had to submit a report in 1986 apply to each recurring reporting period (40 CFR 710.33).

11-12. Chemical importers are required to certify either that all imported chemical substances, including those in mixtures, comply with TSCA regulations, or that the imported chemical substance or mixture is exempt from TSCA regulations. For example, pesticides, when used as such, are exempted from TSCA regulations.

13. Prior to importing or manufacturing a new chemical substance, the importer or manufacturer is required to submit a Premanufacture Notification Form. A new chemical substance is one that is not on EPA's inventory of chemical substances. Chemicals not subject to notification requirements include mixtures (although the individual substances that make up the mixture are subject to reporting), new chemicals that will be manufactured or imported in small quantities solely for research and development (although certain record keeping and notice requirements apply), new chemicals manufactured solely for export (if properly labeled), any byproducts that in themselves are not used for commercial purposes, and chemicals that result solely from certain incidental or end-use reactions. Persons may apply for a test marketing exemption that will be valid for limited quantities and a specified duration.

14. EPA has developed a form for the premanufacture notice (form No. 7710-25). This form must be completed for each new chemical that is to be manufactured or imported, and that is not covered under the research and development exemption. The premanufacture notice must be submitted at least 90 calendar days before the manufacture or import for commercial purposes is scheduled to begin.

	Yes	No	Unk	N/A
B. Chemical Manufacturer and Importer Requirements				
7. If required, did this facility submit a chemical inventory report in 1977?	X			
8. a. If required, did this facility submit a chemical inventory update report in 1986?	X			
b. If "Yes" to 8a, how was this information reported (check those that apply)?				
On EPA Form 7740-8 ____	X			
On computer tape ____				
9. Has the facility maintained records used to prepare the 1986 chemical inventory update?	—			
10. Is this facility required to submit a chemical inventory update report for the first recurring reporting period?	X	—		
11. Does this facility import any chemicals, or chemical mixtures?	—	X		
12. Is a TSCA certification statement signed by the facility, or its agent for all imported chemicals or chemical mixtures?	—			X
13. Does this facility import or manufacture new chemicals?	—	X		
14. For each new chemical that has been manufactured or imported, has the facility submitted to the EPA a pre-manufacture notification form?	—			X

15. EPA will issue a ruling on any premanufacture notification which will describe the approval to manufacture or import the chemical substance, and any need for testing. For most new chemicals, the manufacturer or importer must submit test data on the new chemical. Test data include:

- All data in the submitter's possession that relate to effects on human health or the environment, including data on the chemical in pure, technical grade or formulated forms;
- A report or literature search on i) health effects, ii) ecological effects, iii) physical and chemical properties, iv) environmental fate, and v) human exposure monitoring or tests. The manufacturer or importer may be required to conduct experiments to develop a database;
- The submitter must also submit to the EPA data that have been collected but that do not appear in scientific literature, that are either in the possession or control of the submitter, or that the submitter is aware of.

16. **Significant New Uses:** EPA also recognizes that uses for chemicals may change over time, and that significant new uses may require additional reporting and record keeping requirements as specified by EPA.

17. Subpart E of Section 721 includes those chemicals for which significant new uses have been established as well as the significant new use subject to the regulations. Reporting and record keeping requirements are set out in Section 721 Subparts A and C. Manufacturers, importers and processors of these chemicals are required to comply with the regulations, unless specifically exempted.

18. Record keeping requirements for new chemicals include the information submitted in the premanufacture notification, and data on the first three years of production. This information must be retained for a minimum of five years from the date the chemical was first manufactured or imported for commercial purposes (40 CFR 720.78).

19. **Notice of Commencement:** After EPA review period for a premanufacture notification, the importer or manufacturer must submit EPA a notice that the chemical is being imported or manufactured. The notification must be submitted to EPA within 30 calendar days after the first day that the chemical is imported or manufactured. The commencement notice must include the specific chemical identity, premanufacture notice number, and date when the chemical is first manufactured or imported.

	Yes	No	Unk	N/A
15. Has EPA issued a ruling on all pre-manufacture notification forms that this facility has submitted?	___	___	___	N/A
If "Yes," provide a list of the EPA issued premanufacturer notification numbers issued, and a description of the EPA ruling: _____ _____ _____ _____				
16. If required, has this facility submitted a premanufacture notification form for a significant new use for any chemical?	N/A ___	___	___	
17. a. Has the facility manufactured or imported any chemical listed in 40 CFR 721, significant new use rules?	___	___	___	
b. If "Yes" to 17a, has the facility complied with the reporting and testing rules for each listed chemical?	___	___	___	___
18. Has the facility retained information contained in the premanufacture notice, and records on volume manufactured or imported during the first three years for the following chemicals:				
• Each new chemical that requires the facility to submit a premanufacture notice, and	___	___	___	___
• New chemicals that the facility has manufactured or imported for commercial purposes.	___	___	___	___
19. Has the facility submitted to EPA a a Notification of Commencement of Manufacturer or Import for the following:				
• Each new chemical that requires the facility to submit a premanufacture notice, and	___	___	___	___
• New chemicals that the facility has manufactured or imported for commercial purposes.	___	___	___	___

20. EPA has developed specific guidelines for using new chemical substances solely for research and development purposes (40 CFR 720.36).

The research and development guidelines require that each person who may come in contact with the chemical be notified of any known or potential health risks associated with the chemical. Notification requirements include labelling containers, placing notices in areas where exposure may occur, or sending written notices to persons who may be potentially exposed to the chemical. If the chemical is distributed to persons not in the manufacturer's employ, the manufacturer must supply written notification that the chemical is to be used solely for research and development, and of any known or suspect health risks associated with exposure to the chemical.

21. EPA may allow the manufacture or importing of small quantities of new chemical substances for test marketing purposes if an exemption is applied for and granted (40 CFR 720.38).

The test marketing exemption may be allowed for manufacturers or importers who demonstrate that the chemical does not pose an unreasonable risk to human health or the environment as a result of the test marketing. In order to obtain a test marketing exemption, the manufacturer or importer must submit an application to the EPA. The application must include information on existing data concerning health and environmental effects, the maximum quantity of the chemical that will be required for test marketing purposes, the maximum number of persons who may be exposed to the chemical, and a description of the test marketing program.

22. EPA will approve or deny the application within forty-five days.

23. Records also have to be maintained for new chemicals that are used either for research and development purposes or for test marketing purposes. Record keeping requirements for these chemicals include: information obtained on notification procedures used, documentation on laboratory practices used to handle chemicals for R&D, names, addresses, amounts, and notices used for persons, other than the manufacturer or importer, to whom the chemical was distributed, and documentation on compliance with test marketing restrictions imposed by EPA. These records must be retained for at least five years (40 CFR 720.78).

	Yes	No	Unk	N/A
20. If the facility manufactures or imports new chemicals for research and development purposes:	N/A			
a. Does the facility notify persons who may be exposed to new chemicals of the known or suspected health risks associated with such exposure?	—			X
b. Does the facility notify persons to whom it distributes the chemical, that the chemical will be used for research and development purposes only, etc?	—			X
21. Has the facility applied for a test marketing exemption from the EPA for each new chemical manufactured or imported for test marketing purposes?	—			N/A
22. For each test marketing exemption application, has the EPA issued a ruling within 45 days?	—	—		X
Confirm that the facility has a copy of the EPA decision.				
23. Has the facility maintained records for at least five years for each new chemical for which the facility is exempted from submitting a premanufacture notice by R & D or test marketing rules?	—			X

24a. If the manufacturer or importer intends to manufacture or import less than 1,000 kg per year of the chemical for commercial purposes, the manufacturer or importer may apply for a small volume exemption. The manufacturer or importer must submit a notification of intent to the EPA at least 21 days before manufacturing begins. This notification requirement must include the manufacturer's name, that the manufacturer is seeking a low volume exemption, chemical identification, monomeric composition of polymers, anticipated impurities, generic name (if the manufacturer claims confidentiality), description of use, site of manufacture, available test data, and a certification. EPA will grant only one small volume exemption per chemical. Hence, if one manufacture has been granted a small volume exemption, EPA will not issue small volume exemptions to other manufacturers. EPA is required to review the small volume exemption notification within twenty-one days.

24b. Some polymers are exempted from premanufacture notice requirements. The exemption is based on the chemical composition, number average molecular weight, and stability of the chemical. Certain polyesters are also exempted. The manufacturer must submit a limited premanufacture notice at least 21 calendar days prior to commencing manufacture. Within 21 days of receipt, EPA will make a determination of the exemption. EPA may extend the review period or limit the use, distribution, and disposal of polymers (40 CFR 723.250)

24c. Facilities granted a premanufacture notice exemption for a polymer must retain for five years records on the first three years of production and on the chemical composition of the polymer (40 CFR 723.250(r)).

25. Under the Preliminary Assessment Information Rule (PAIR), EPA can require manufacturers and processors of specific chemicals to provide information on production, use, and exposure (40 CFR 712). Chemicals for which reporting requirements have been established are listed in 40 CFR 712.30. 40 CFR 712.30 is periodically updated to reflect new chemicals for which preliminary assessment information must be reported. Only information that is readily obtainable need be reported. This information is required to be submitted to EPA within 60 days after the effective date of the listing of a chemical, or for facilities that begin manufacturing, importing or processing the chemical after the effective date, within 60 days after initiating the manufacture, importing or processing or a listed chemical. Exemptions are allowed for small manufacturers, importers or processors, for use of the chemicals solely for research and development, and for persons who have already submitted the information for other purposes.

27. For chemicals listed in 40 CFR 716.120, manufacturers, importers and processors are required to submit to the EPA any unpublished studies or reports concerning health and environmental effects. Under this section, the definition of a study is broad, and includes but is not limited to tests on carcinogenicity, mutagenicity, oncogenicity, metabolic effects, toxicity, ecological and environmental investigations, human exposure data, and monitoring data. According to these guidelines, toxicity tests conducted for effluent monitoring may be included in these provisions. EPA periodically updates the list (40 CFR 716.45).

28. Manufacturers, importers, and processors are required to submit a list of ongoing studies, initiated studies, known studies not in possession of the reporting person, and studies previously sent to the EPA without confidentiality waivers. These lists are required to be submitted to the EPA within sixty days after the effective date that a chemical has been included in 40 CFR 716.120, or within 60 days of proposing to manufacture, import, or process a listed chemical. Completed studies for listed chemicals must also be submitted. Unless specifically removed by the EPA, the reporting period continues for ten years after the effective date of inclusion on the list.

		Yes	No	Unk	N/A
24.	a. If allowed, has the facility submitted a premanufacturing notification to the EPA for small volume exemption?				X
	b. If allowed, has the facility submitted a premanufacture exemption notice to the EPA for manufacture of polymers?				X
	c. If "Yes" to 24b, has the facility maintained, for at least five years, records on production and chemical documentation.				X
C.	**Manufacturer, Importer, and Processor Requirements**				
25.	If required, has this facility submitted a Preliminary Assessment Information Manufacturer's Report for any chemical listed in 40 CFR 712.30?				N/A
26.	If "Yes" to 25, did the facility submit the report to the EPA on or before the required date?				X
27.	Does this facility manufacture, import, or process any of the chemicals listed in 40 CFR 716.120?		X		
28.	If required, has this facility submitted reports to the EPA on health and safety or environmental effects for chemicals listed under 40 CFR 716.120?				X
29.	Is this facility conducting health and safety studies for chemicals listed in 40 CFR 716.120?				N/A

30. Facilities that manufacture, import, or process chemicals are required to retain records of allegations concerning adverse effects of a chemical substance on human health or the environment. The definition of manufacturer under 40 CFR 717 is broader than that used in other sections. For this section, manufacturer applies to substances that are produced coincidentally to the manufacturing process, including byproducts and impurities. Processors are subject to record keeping requirements if they process chemicals to produce mixtures or if they repackage chemical substances or mixtures.

This rule does not apply to facilities involved solely with mining or extraction of ore and other mineral resources, or to facilities that may cause a chemical to be produced as the result of certain incidental or end use reactions.

31. Allegations subject to record keeping are those submitted either in writing or orally. In addition to allegations, information on "significant adverse reactions" must also be recorded. Such reactions include human health effects, and environmental effects (717.12).

32-33. 40 CFR 799 lists chemical substances for which testing requirements have been promulgated. Manufacturers, processors, and importers are subject to testing requirements. The data collected by these tests will be used to assess the potential for listed chemicals to impact human health or the environment.

34. Regulated metal working fluids are those that contain P-84-529 (mixed mono and diamides of organic acids), P-84-310 (triethanolamine salts of substituted organic acids), or P-83-1005 (triethanolamine salts of tricarboxylic acid) or P-83-1062 (tricarboxylic acid).

Adding nitrites or nitrosating agents to these substances can lead to the formation of suspect carcinogens. Hence EPA has developed regulations governing manufacturers, processors, distributors, and users of these substances (40 CFR 747).

35. EPA has regulated the manufacture, import distribution, and use of chlorofluoroalkanes which were used in aerosol propellants, since 1978 (40 CFR 762). EPA has identified essential use exemptions, which include non-consumer articles used as cleaner-solvents, lubricants or coatings for electrical and electronic equipment, in articles necessary for the safe maintenance of aircraft and military uses. (40 CFR 762.58).

36. Reporting requirements have been established for manufacturers and processors of chlorofluoroalkanes (40 CFR 762.60).

37. In order to ascertain the presence of halogenated dibenzo-para-dioxins (HDDs) and halogenated dibenzofurans (HDFs) in chemicals and chemical intermediates, EPA has required manufacturers, importers, and processors of the chemicals listed in 40 CFR 766.25 to test these chemicals for HDDs and HDFs (40 CFR 766.25).

	Yes	No	Unk	N/A
30. Does the facility have a system for recording allegations of adverse chemical effects on human health or the environment?				
31. Does the facility have a system to handle the receipt of oral and written allegations that any chemical substances manufactured, imported, or processed by the facility are suspected of causing adverse health or environmental effects?				
32. Does this facility manufacture, import, or process any of the chemicals listed in 40 CFR 799 Subpart B or Subpart D?				
33. If "Yes" to 32, is this facility currently, or has it conducted tests for these chemicals as described in 40 CFR 799?				
D. Regulated Chemicals				
34. Does the facility prohibit employees from adding nitrosating agents to any metalworking fluids containing P-84-529, P-84-310, or P-83-1005?				
35. Does this facility manufacture, import or process chlorofluoroalkanes for uses other than as a food, food additive, drug, cosmetic, or related device, or those uses listed in 40 CFR 762.58?				
36. If required, does this facility submit to the EPA an annual report concerning the manufacture or processing of chlorofluoroalkanes?				
37. Does this facility manufacture, import, or process any of the chemicals listed in 40 CFR 766.25?				

If "Yes," complete questions 43-47.

38. EPA allows exemptions for small quantity producers (100 kg or less) and for research and development (40 CFR 766.32).

39. Persons who manufactured processed or imported chemicals listed in 766.25 between January 1, 1984 and June 5, 1987, and who were required to test for HDDs or HDFs were to submit letters of intention to test on or before September 3, 1987. Persons who manufacture, process or import any of the listed chemicals after June 5, 1987 are required to submit a letter of intent to test within 60 days of first manufacturing, importing or processing the listed chemical (40 CFR 766.35(a)).

40. Test protocols have to be submitted to EPA within 12 months for chlorinated substances and 24 months for brominated substances after the effective date of the regulation (June 5, 1987) or after commencing to manufacture or process the listed chemical (40 CFR 766-35(a)(2)).

41. Affected facilities are required to report results on:

1. Chemical analysis
2. Unpublished health and safety studies
3. Allegations of harmful affects

Time frames for submitting these data are defined in 40 CFR 766.35(b).

42-43. Persons submitting positive test results to EPA, i.e., results indicating the presence of or adverse health effects from exposure to HDD/HDFs, are required to submit, within 90 days of reporting the positive results, a completed EPA Form 7910-51 "Dioxins/Furans Report" (40 CFR 766.35(c)).

44-45. Facilities that manufactured or imported the chemicals listed in 40 CFR 766.38(a) prior to June 5, 1987 were required to submit Part II of EPA Form 7910-51 on or before September 29, 1987. A separate form was to be submitted for each chemical reported (40 CFR 766.38).

	Yes	No	Unk	N/A
38. If allowed, has the facility requested a small quantity or research and development exemption?				N/A
40. If the facility is required to report test results, has the facility submitted a letter of intent concerning the manufacture or importation of these chemicals within the required time frame?				N/A
45. If the facility is required to report test results, did the facility submit to the EPA the necessary test protocols within the required time frame?				✓
41. If the facility is required to submit test results, did the facility submit the necessary test results to the EPA within the required time frame?				N/A
42. Were any of the test results positive for HDDs/HDFs?				N/A
43. If test results were positive, did the facility submit a completed EPA Form 7910-51 "Dioxins/Furans Report" within the required time frame?				✓
44. Does the facility manufacture or import any chemicals that have as an intermediate or feedstock chemical one of the chemicals listed in 40 CFR 766.38 (a)?				N/A
45. If "Yes" to 44, did the facility submit the necessary form to the EPA on or before September 29, 1987?				✓

Specific Chemicals with Reporting Requirements:

46. **11-aminoundecanoic acid** This substance, abbreviated 11-AA, is regulated when manufactured, imported or processed as an intermediate in some polymerizations, and as a component in photo processing solutions (40 CFR 704.25). Within thirty days of making a management commitment concerning this chemical, manufacturers who intended to initiate the import, manufacture or processing of this chemical after July 22, 1986 were required to submit a premanufacture notice to EPA.

47. **Anthraquinone:** Companies that manufacture or import 9,10-anthraquinone after July 20, 1987 must submit annual reports to the EPA within 60 days after the end of each fiscal year for which this chemical was manufactured or imported. The report must include the quantity manufactured or imported, the company name and headquarters address, and the name address and telephone number of the principal technical contact (40 CFR 704.30).

48. **P-tert-butylbenzoic acid (P-TBBA), p-tert-butyltoluene (P-TBT), and p-tert-butylbenaldehyde (P-TBB):** Companies that manufactured, imported or processed any of these chemicals during the companies "latest fiscal year" prior to June 25, 1986, or who commence the manufacture or importation of these chemicals after June 25, 1986, or who process these chemicals, other than as isolated chemical intermediates, after June 25, 1986 must submit annual reports to the EPA for each fiscal year in which these chemicals were manufactured, imported, or processed. Specific reporting requirements are described in 40 CFR 704.33.

49. **Chlorinated napthalenes:** Companies that imported or manufactured chlorinated naphthalenes on October 4, 1984, or who intended or did import or manufacture any of these substances after October 4, 1984 must prepare annual reports and submit them to the EPA. Specific reporting requirements are found in 40 CFR 704.83.

		Yes	No	Unk	N/A
E.	**Specific Reporting Requirements**				
46.	a. Has this facility actually or intended to manufacture, import or process 11-aminoundecanoic acid?		X		
	b. If "Yes" to 46a, has the facility sent a premanufacture notice to the US EPA?				X
47.	a. Has this facility manufactured or imported 9,10-anthaquinone since July 20, 1987?		X		
	b. If "Yes" to 47a, has the facility submitted an annual report to the US EPA listing the amount of 9,10-anthraquinone manufactured or imported during the reporting year?				X
48.	a. Does this facility currently, or has this facility, since June 25, 1986, imported, manufactured or processed P-TBBA, P-TBT, or P-TBB?		X		
	b. If "Yes" to 48a, has this facility submitted annual reports to the US EPA concerning the import, manufacture or processing of P-TBBA, P-TBT, or P-TBB for each fiscal year during which any of these chemicals were manufactured, imported, or processed?				X
49.	a. Does this facility manufacture or import, or intend to manufacture or import chlorinated naphthalenes?		X		
	b. If "Yes" to 49a, has this facility complied with the notification requirements for chlorinated napthalenes?				X

50. If any of the chlorinated napthalenes listed in 40 CFR 704.83(b) are presented in a manufacturer's solid, semi-solid, or gaseous wastes, the manufacturer must report:

1) the quantity of the listed chemicals present in the waste,
2) the identity and concentrations of the constituents,
3) waste generation in relation to production,
4) the waste generation source, and
5) the waste disposal method (40 CFR 704.83(e)(8)).

This information must be reported on or before November 6, 1984 or within thirty days after the initial manufacturing date (40 CFR 704.83(f)).

51. **Chlorinated terphenyl:** Facilities that manufacture or import chlorinated terphenyls are subject to reporting requirements, unless they qualify for the small manufacturer exemption. Facilities that manufactured or imported this substance on the effective date of the regulation, which was March 26, 1984, or that intended to manufacture or import this chemical after the effective date are required to submit notices to the US EPA.

52. **Hexaflouropropylene oxide:** This substance is used as intermediate in the manufacture of fluorinated substances, and is subject to specific TSCA reporting requirements (40 CFR 704.104). Facilities that manufactured, imported or processed, or who proposed to manufacture, import or process HFPO as of December 10, 1987 had to submit a report to EPA on or before February 8, 1988. After December 10, 1987, facilities that propose to import, manufacture or process HFPO must submit a report to the EPA within thirty days of making a firm management decision to commit resources to the importing, manufacturing or processing of HFPO. Reporting requirements for this substance include completion of EPA Form 7710-25, the Premanufacture Notice Form.

53. **Hexachloronorbornadiene:** Hex-BCH is an intermediate in the formation of several pesticides. Facilities that manufactured, imported or processed HEX-BCH or that propose to manufacture, import, or process HEX-BCH on or after January 2, 1986 must submit reports to the EPA. Reporting requirements for HEX-BCH are quite detailed. Additionally, as long as the facility manufactures, imports, or processes HEX-BCH, it must submit updated reports every three years.

54. **4,4-methylenebis(2-chloroaniline) (MBOCA):** MBOCA is used in the manufacture of ...., and is regulated in 40 CFR 704.175. Facilities that as of June 2, 1986 manufacture, propose to manufacture, or propose to modify the manner in which MBOCA is manufactured are subject to the reporting requirements of this section. Specific reporting requirements are described in paragraph d of this section.

55. In December 1988, EPA adopted the Comprehensive Assessment Information Rule (CAIR), which substantially modified chemical specific reporting requirements. A major provision of CAIR was the adoption of one form for all chemicals. Each listed chemical, however, has specific reporting requirements. The list of chemicals and specific reporting requirements are found in 40 CFR 704.200, first published in the December 22, 1988 Federal Register. Exemptions are granted for small processors, and persons whose sole activity is repackaging of a listed chemical (40 CFR 704.210), and also for research and development, small manufacturers, and persons who manufacture, import, or process a listed chemical as part of an article, as a byproduct, as an impurity, or as a non-isolated intermediate (40 CFR 704.5).

			Yes	No	Unk	N/A
50.	a.	Do any waste streams generated by this facility contain one or more chlorinated naphthalene compounds?				?
	b.	If "Yes" to 50a, has this facility complied with the notifications requirements for the presence of chlorinated napthalenes in waste streams?				
51.	a.	Does this facility manufacture or import chlorinated terphenyl?		X		
	b.	If "Yes" to 51a, has this facility complied with the notification requirements for chlorinated terphenyl?				X
52.	a.	Does this facility process, import, or manufacture, or intend to process, import or manufacture hexaflouropropylene oxide?		X		
	b.	If "Yes" to 52a, has the facility complied with the reporting requirements for HFPO?				X
53.	a.	Does this facility manufacture, process, or import HEX-BCH?		X		
	b.	If "Yes" to 53a, has the facility complied with the reporting requirements for HEX-BCH?				X
54.	a.	Does this facility manufacture MBOCA?		X		
	b.	If "Yes" to 54a, has the facility complied with the reporting requirements for MBOCA?				X
55.		Does the facility manufacture, process, or import any of the chemical substances listed in 40 CFR 704.225?		X		

56. For chemicals listed in 40 CFR 704.225, reports were to be submitted no later than 90 days after February 6, 1989 (40 CFR 704.223).

57. Persons submitting reports must retain the report and supporting records for a minimum of three years (40 CFR 704.11).

	Yes	No	Unk	N/A
56. If "Yes," has the facility complied with the reporting requirements listed in 40 CFR 709.225? Confirm that the facility has copies of reports submitted to EPA.	___			___
57. Does the facility have provisions to retain records for at least three years?	___			___

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SECTION 16

POLYCHLORINATED BIPHENYLS

Introduction

Overview: Polychlorinated biphenyls (PCBs) are a family of chemical compounds that have been extensively used for several purposes, most commonly as a fire retardant in the oils of electrical equipment. PCBs may currently be found in, among other things, transformers, capacitors and light ballasts. It is believed that PCBs pose unique health and environmental hazards because they are very persistent chemicals.

Although in some states PCB wastes are regulated as hazardous wastes under the Resource Conservation and Recovery Act (RCRA), the major authority for regulation of PCBs is the Toxic Substances Control Act (TSCA). TSCA regulates all phases of PCB management, including:

- Manufacturing
- Use
- Distribution in commerce
- Processing
- Releases
- Storage
- Disposal
- Record keeping and reporting
- Importing and exporting

CERCLA and the Clean Water Act contain requirements relating to notification of PCB spills.

Definitions:

- PCB large high voltage capacitors - capacitors that contain 1.36 kg (3 lbs.) or more of dielectric fluid and which operate at or above 2,000 volts (a.c. or d.c.).
- PCB large low voltage capacitors - capacitors which contain 1.36 kg (3 lbs.) or more of dielectric fluid and operate below 2,000 volts (a.c. or d.c.).
- PCB transformer - transformer that contains 500 ppm PCB or greater.
- PCB-contaminated transformer - transformer that contains 50 to 500 ppm PCB.
- PCB waste - those PCBs and PCB items that are subject to the disposal requirements of Subpart D of 40 CFR 761. Specifically, PCB wastes no longer serve their intended purposes and contain more than 50 ppm PCB (oil, soil).

PCB wastes fall into one of two waste codes: PCB 1 for PCB articles, transformers, and capacitors, and PCB two for PCB containers.

- PCB container - any package, can, bottle, bag, barrel, drum, tank, or other device that contains PCBs or PCB articles and whose surface(s) have been in direct contact with PCBs.
- PCB items - any PCB article, PCB article container, PCB container, or PCB equipment that deliberately or unintentionally contains or has a part of any PCB or PCBs.
- PCB equipment - any manufactured item, other than a PCB container or a PCB article container, which contains a PCB article or other PCB equipment.
- PCB article - any manufactured article, other than a PCB container, that contains PCBs and whose surface(s) has been in direct contact with PCBs.

SECTION 16

POLYCHLORINATED BIPHENYLS

Guidance

Authority:	The Toxic Substances Control Act; The Resource Conservation And Recovery Act; Corresponding State Statutes
Regulatory Citation:	40 CFR 761
Administering Agency:	U.S. Environmental Protection Agency; Corresponding State Agencies

1-2. Questions are self-explanatory.

SECTION 16

POLYCHLORINATED BIPHENYLS

Survey Questions

Complete this section if facility uses or stores PCBs or PCB-containing equipment. Subpart G of this section should be completed if the facility has had a PCB release or spill.

			Yes	No	Unk	N/A
A.	**Background**					
1.	a.	If the facility has been subject to an inspection regarding PCB issues during the last three years or since completion of the last survey, were any concerns or potential concerns uncovered? If so, describe concerns and include copies of inspection reports or correspondence.	___	___	▒▒	
	b.	Do any of the concerns or potential concerns uncovered in the inspection remain unresolved?	▒▒	___	▒▒	
2.	a.	Has the facility entered into any Consent Order, Settlement Agreement, Delayed Compliance Order, etc., with respect to PCB? If so, describe. _____ _____ _____ _____	___	___	▒▒	___
	b.	If yes, has the facility complied with the terms of the Order?	___	▒▒	▒▒	___

3-4. Questions are self-explanatory.

5. Waste oils may unknowingly be contaminated with PCBs. TSCA prohibits the use of oils with any detectable amount of PCBs to be used as a sealant, dust suppressant or coating (40 CFR 761.20(d)).

6. Servicing of electromagnets, switches, or voltage regulators with a PCB concentration greater than or equal to 500 ppm, and that involves removal and rework of the internal components is prohibited (40 CFR 761.30(h)). Such equipment may be converted to PCB contaminated or to a non-PCB classification by draining and refilling the dielectric fluid. If, after a minimum of three months of in-service use following the servicing, the PCB concentration is less than 500 ppm but greater than or equal 50 ppm, the equipment can be reclassified as PCB contaminated. If the PCB concentration is less than 50 ppm, the equipment can be reclassified as non-PCB (40 CFR 761.30(h)(v)).

		Yes	No	Unk	N/A
3.	Do any of the following facility items contain PCBs:				
	a. Transformers?	___	___	___	
	b. Capacitors?	___	___	___	
	c. Light Ballasts?	___	___	___	
	d. Hydraulic systems?	___	___	___	
	e. Process/lubricating oils or systems?	___	___	___	
	f. Surface soils or impoundments?	___	___	___	
	g. Heat transfer media (i.e., Dowtherm, etc.)?	___	___	___	
	h. Microwave ovens?	___	___	___	
	i. Electromagnets, switches, and voltage regulators?	___	___	___	
	j. Other: _____	___	___	___	
4.	Are all PCBs or PCB items at the facility totally enclosed in a manner that will minimize exposure to human beings or the environment? *Describe facility procedures to prevent the contamination of other materials:* _____ _____ _____ _____	___	___	___	
5.	Does the facility prohibit the use of waste oil as a sealant, coating or dust control agent?	___	___	___	
6.	Does the facility prohibit repair of electromagnets, switches, and voltage regulators with a PCB concentration equal to or over 500 ppm?	___	___	___	
7.	Is proper protective equipment provided to personnel involved with PCBs?	___	___	___	

8. Effective October 1, 1988 the use and storage for reuse of PCB large high voltage capacitors and PCB large low voltage capacitors which pose an exposure risk to food or feed is prohibited (40 CFR 761.30(l)(i)).

9. Effective October 1, 1988 all PCB large (high and low) voltage capacitors must be removed from use (40 CFR 761.30(l)(ii)). An exception is made for those located within electrical substations or within contained and restricted access indoor installations.

11.a. Effective October 1, 1985 the use and storage for reuse of PCB transformers that pose an exposure risk to food or feed was prohibited (40 CFR 761.30(a)(1)). It is the owner's responsibility to determine if the transformer poses a risk.

11.b. Restrictions to PCB transformer servicing are found in 40 CFR 761.30(a)(2). Repairs which involve removal and reworking of internal components are prohibited by 40 CFR 761.30(h)(2).

11.c. Storage of combustible items with a PCB transformer enclosure, within 5 meters of a PCB transformer enclosure, or within 5 meters of an unenclosed PCB transformer is prohibited (40 CFR 761.40(a)(1)(viii)).

12.a. All PCB transformers that contain 500 ppm PCB or greater must be marked with the M_L; marking is not required for PCB-contaminated transformers, i.e., those that contain 50 to 500 ppm PCB (40 CFR 761.40(a)(2) and (c)(1)). The M_L mark is described in 40 CFR 761.40 and 761.45.

12.b. Effective December 1, 1985, vault doors, machinery room door, fence, hallway, or means of access to a PCB transformer must be marked as required by 40 CFR 761.40(j).

12.d. PCB transformers that are in use or stored for re-use must be inspected at least once every three months during the periods of January-March, April-June, July-September and October-December with a minimum of 30 days between inspections. Inspections must check for leaks on or around the transformer, but should not require shutdown of the unit (40 CFR 761.30(a)(1)(ix)). Inspections are required only yearly for transformers that have been tested and shown to have a PCB concentration under 60,000 ppm or if these transformers are located upon an impervious base with an undrained secondary containment capacity for 100% of the liquid. (40 CFR 761.30(a)(1)(xiii)).

	Yes	No	Unk	N/A
B. Capacitors				
Complete this subsection if the facility uses or stores PCB capacitors.				
8. Have all PCB large voltage capacitors (high and low voltage) which pose an exposure risk to food or feed been removed?	___	☐	☐	
9. If required, have all PCB large capacitors (high and low voltage) been removed?	___	☐	☐	___
10. Are all PCB large high and low voltage capacitors marked?	___	☐	☐	
C. Transformers				
Complete this subsection if the facility uses or stores PCB transformers.				
11. Does the facility prohibit the following:				
a. Use of PCB transformers that pose a risk to food or feed?	___	☐	☐	
b. PCB transformer servicing?	___	☐	☐	
c. Storage of combustibles near PCB transformers?	___	☐	☐	
12. Have the following procedures been implemented with regard to in-use transformers:				
a. Marking of transformers?	___	☐	☐	
b. Marking of access ways (e.g., doors, fences)	___	☐	☐	
c. Registration with the local fire department?	___	☐	☐	
d. Inspections?	___	☐	☐	
e. Secondary containment?	___	☐	☐	

13.a. PCB containers must be marked during storage, transportation and disposal.

13.b. Electrical motors with a PCB concentration over 50 ppm PCB must be marked during storage, transportation, and disposal.

13.c. PCB article containers must be labeled at all times.

13.d. Each transport vehicle loaded with PCB containers that contain more than 45 kg (99.4 lbs.) of PCB liquids or one or more PCB transformers must bear a PCB mark on each side and end. This marking is required in addition to placarding requirements imposed by DOT.

15. PCB container storage requirements are found in 40 CFR 761.65(c)(6) and (c)(7).

18. Areas used to store PCBs and PCB items for disposal and for more than 30 days must meet the following requirements?

- Adequate roof and walls to prevent rainwater from reaching stored items.
- An adequate floor with continuous curbing at least six inches high.
- Floor and curbing that provide containment volume equal to at least two times the internal volume of the largest article or 25% the total stored volume, whichever is greater.
- No drain valves, floor drains, expansion joints, sewer lines, or other openings.
- Floor and curbing constructed of continuous smooth and impervious materials.
- A location outside a 100-year flood plain.

The storage initiation date must be placed upon all articles and containers when they are placed into storage. Records must be maintained to provide an inventory and enable the location of stored items by date (40 CFR 761.65(c)(3) and 40 CFR 761.180(a)). Inspections must be conducted at least once a month and records of inspections must be maintained (40 CFR 761.65(c)(5)).

The regulations also allow temporary storage of non-leaking and structurally undamaged PCB large high voltage capacitors and undrained PCB-contaminated electrical equipment on pallets next to a permanent storage facility (40 CFR 761.65(c)(2)). This area must be inspected weekly.

19. Non-leaking PCB articles and equipment, leaking PCB articles and PCB equipment placed in non-leaking containers with sufficient sorbent materials, PCB containers holding non-liquid PCBs, and PCB containers containing liquid PCBs at a concentration between 50 and 500 ppm, may be placed in temporary storage for a maximum of 30 days if the following requirements are fulfilled (40 CFR 761.65(c)(1) and (5)):

- Items are marked with the date storage began.
- An SPCC Plan is prepared (in accordance with 40 CFR 112) for containers in the area.
- The area is inspected weekly and documentation of inspections is retained (40 CFR 761.65(c)(2)).
- Records are maintained to provide an inventory and enable the location of stored items by date (40 CFR 761.65(c)(8) and 40 CFR 761.180(a)).
- Each container bears a notation that indicates that the liquids in the drum do not exceed 500 ppm PCB and the date the item was removed from service.

		Yes	No	Unk	N/A
D.	**Marking**				
13.	Are the following PCB items also marked:				
	a. PCB containers?	___	___	___	___
	b. Electric motors using PCB coolants?	___	___	___	___
	c. PCB article containers?	___	___	___	___
	d. Transport vehicles?	___	___	___	___
E.	**Storage**				
14.	Is the facility currently storing any PCBs or PCB items for disposal or re-use? Specify: _____ _____ _____ _____	___	___	___	
15.	Are all PCBs stored in approved containers?	___	___	___	___
16.	Does the facility have procedures to assure the disposal of PCB articles and containers within one year of placement into storage?	___	___	___	___
17.	Has the facility investigated other materials as substitutes for PCBs? If so, what were the results? _____ _____ _____	___	___	___	
18.	If the site has a permanent PCB storage facility, does it meet all applicable requirements?	___	___	___	___
19.	If the site stores PCBs temporarily, does it meet all applicable requirements?	___	___	___	___

20. The TSCA regulations state that unless a person can demonstrate an alternative, equally effective method of destroying PCBs and receives approval for that method, all PCBs (50 ppm or greater) must be incinerated. The following exemptions apply:

- Mineral oil dielectric fluids with PCB concentrations between 50 and 500 ppm PCB may also be disposed of in high efficiency boilers and PCB landfills (40 CFR 761.60(a)(2)).
- Non-mineral oil dielectric fluids with a PCB concentration between 50 and 500 ppm may be disposed of in high efficiency boilers and PCB landfills (40 CFR 761.60(a)(3)).
- Non-liquid PCBs at concentrations of 50 ppm or greater in the form of contaminated rags, soil or other debris may be disposed of in a PCB landfill (40 CFR 761.60(a)(4)).
- Dredged materials and municipal sewage sludges may be disposed of in a PCB landfill (40 CFR 761.60(a)(5)).
- Drained and flushed PCB transformers may be disposed of in a PCB landfill (40 CFR 761.60(b)(1)).
- PCB small capacitors not owned by a PCB capacitor manufacturer may be disposed of as municipal solid waste (40 CFR 761.60(b)(2)(iv)).
- PCB contaminated capacitors may be disposed of in a PCB landfill (40 CFR 760.61(b)(4)).
- Drained and/or flushed PCB hydraulic machines may be disposed of as municipal solid waste or salvaged (40 CFR 761.60(b)(3)).
- Drained PCB-contaminated electrical equipment, excluding capacitors, may be disposed of as municipal solid waste (40 CFR 760.61(b)(4)).
- Drained PCB articles may also be disposed of in a PCB landfill (40 CFR 761.60(b)(5)).
- The disposal of drained PCB articles which contain between 50 and 500 ppm PCB is not covered by the TSCA regulations (40 CFR 761.60(b)(5)(ii)).

24. Where a spill exceeds 10 pounds of PCBs by weight, the responsible party must notify the National Response Center and EPA's Pesticides and Toxic Substances Branch and proceed to decontaminate the spill area per TSCA spill policy in the shortest possible time after discovery, but in no case later than 24 hours after discovery. Spills of 10 pounds or less must also be cleaned up according to policy but notification is not required. NOTE: The PCB spill cleanup policy does not apply to spills of PCBs that directly contaminate surface waters, sewers, drinking water supplies, grazing lands or vegetable gardens. These spills are to be negotiated on a case-by-case basis with the applicable EPA Regional Office.

25. Spill material with a PCB concentration of 50 ppm or greater must be incinerated or disposed of in a PCB landfill (40 CFR 761.60(a)(4),(d) and 761.65(c)(5)).

26. On April 2, 1987 EPA published a TSCA policy for the clean-up of spilled PCBs. The policy describes different procedures for different spills, depending upon size, concentration, and location. The regulations provide more stringent requirements at locations that pose a greater risk of human exposure.

	Yes	No	Unk	N/A
F. Disposal				
20. Does the facility comply with EPA disposal method requirements?	___			
21. Has the facility conducted audits of PCB disposal facilities or contacted regulatory authorities to identify potential non-compliance or liability issues? List facilities: _____ _____ _____ _____	___			
22. Has the facility received notices of destruction from incineration facilities for each shipment of PCBs sent to the facility?	___			
G. Releases				
Complete this subsection if the facility has ever had a PCB spill.				
23. a. Has the facility ever experienced a PCB release? Describe spill(s) and clean-up procedures: _____ _____ _____ _____	___	___		
b. What PCB levels were observed before and after the clean-up? _____ _____ _____				
24. If required, was this release reported?	___			
25. Was all spill debris properly disposed of?	___			
26. Is the facility familiar with PCB spill clean-up requirements?	___			

27. Before a PCB container or piece of contaminated equipment can be re-used, the item must be triple rinsed with a solvent. The solubility of PCBs in the solvent must be 5% or more by weight. Each rinse must use a volume of the normal dilutent equal to approximately 10% of the PCB container capacity (40 CFR 761.79). Disposal of the container is not regulated under TSCA; all other solids and rinsates generated by the process must be disposed of per TSCA requirements.

28. Facilities that use or store more than 45 kg (99.4 lbs.) of PCBs in containers or one or more PCB transformers must compile an annual report and submit it to the regional EPA (40 CFR 761.180(a)).

29. Generators storing PCB waste on-site must: (1) notify EPA of storage activities; (2) complete Form 7710-53; (3) submit form to EPA by April 4, 1990; and (4) obtain a unique identification number. Generators not storing PCB waste on-site are exempt from filing the form, but must comply with manifesting requirements.

30. A generator who relinquishes control of the waste by transporting PCB wastes for commercial off-site storage or disposal shall prepare a manifest on EPA Form 8700-22. (40 CFR 761.207.) Small quantity generators must prepare manifests also.

31. The manifest requirements are modeled after the RCRA hazardous waste program and include provisions for filing exception reports if the generator does not receive verification that its PCB waste was received and/or disposed of within a designated time.

32. A transformer containing less than 50 ppm is considered non-PCB and is not regulated by federal PCB rules, but may be subject to certain state regulations regarding use, disposal, or servicing.

		Yes	No	Unk	N/A
H.	**Decontamination**				
27.	Are all PCB containers and contaminated equipment properly decontaminated before re-use or disposal as municipal waste?	___	___	___	
I.	**Record Keeping and Reporting**				
28.	If required, has the facility prepared and submitted an Annual Report to the EPA?	___	___	___	___
29.	Has the facility notified EPA of PCB waste storage activity?	___	___	___	___
30.	Does the facility manifest all shipments of PCB wastes greater than 50 ppm?	___	___	___	___
31.	If required, have exception reports been filed?	___	___	___	___
J.	**Miscellaneous**				
32.	Has the facility reviewed any state and local requirements pertaining to the use, storage, and disposal of PCBs?	___	___	___	___
33.	Is the facility in compliance with all state and local requirements?	___	___	___	___
34.	Are there any other comments that you consider relevant and/or significant to this section of the survey? If yes, please state.	___	___		

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SECTION 17

ASBESTOS

Introduction

Asbestos is a general term used to describe a number of naturally occurring, fibrous, hydrated mineral silicates which have been recognized as a very serious human health hazard. Asbestos is regulated by several different regulatory programs, specifically the Clean Air Act, the Toxic Substances Control Act (TSCA) and the Occupational Safety and Health Act (OSHA).

Asbestos can be found in numerous places in the plant environment. For example, asbestos can be found in:

- Cooling towers as transite panels
- Electrical wiring insulation
- Concrete pipes and block
- Wall boards
- Gaskets on HVAC systems
- Ceiling tiles
- Fire doors
- Fire bricks for boilers
- Cloth expansion joints on HVAC systems
- Fire curtains
- Grout and caulking
- Floor tiles
- Mastic for floor tiles
- Clutch material for powered equipment drive mechanisms
- Transite material for powered equipment drive mechanisms
- Insulation for pipes, ducts, boilers
- Roofing materials

A material is considered asbestos if it contains greater than one percent asbestos by weight. In terms of disposal and transportation, the reportable quantity is one pound.

Under the Clean Air Act, the U.S. EPA regulates asbestos through the National Emissions Standards for Hazardous Air Pollutants (NESHAPS). Standards have been set for various activities involving asbestos, including demolition or renovation actions and waste disposal. These requirements include:

- asbestos-containing building materials (ACM) must be removed before demolition.

- asbestos must be wetted before removal.

- asbestos must be disposed in sealed, leak-tight containers which are properly labeled.

NESHAPS defines small-scale short duration projects as those involving 160 square feet or 260 linear feet. Maintaining or removing this amount of asbestos triggers several regulatory responses, including notifying appropriate state or federal agencies and using appropriately trained (and in some cases, state licensed) contractors, workers and consultants. These requirements can vary from state to state.

The majority of states have some form of accreditation program for asbestos workers and have abatement standards with enforcement authority from EPA. This enforcement varies, but most states have authority to conduct on-site investigations and assess civil fines.

There are two sets of regulations under the Toxic Substance Control Act. The Asbestos Hazard Emergency Response Act addresses the problem of asbestos in public and private elementary and secondary schools. TSCA has also established worker protection standards for state and local government employees not covered by OSHA.

The Occupational Safety and Health Administration sets exposure limits and standards for worker protection in fixed site workplaces under the General Industry Standards and Construction Standards.

It is not always necessary to remove asbestos once found. To effectively maintain asbestos in place, however, an Operation and Maintenance (O&M) Plan should be developed for each plant. The Plan should be developed from the results of a comprehensive building survey with bulk sampling of Asbestos-Containing Materials (ACM). The plan should include proper methods of repair of ACMs, a respiratory protection program, record keeping, provisions for periodic inspections and reassessments of ACMs, emergency repair procedures and allowances for a designated plant asbestos coordinator.

The maintenance of an O&M Plan is less expensive than removal at the outset, but the cost of maintaining a program over an extended period may exceed removal costs. The most effective method of dealing with a large quantity of asbestos is to prioritize areas for removal and maintain the remainder of the ACM.

In July 1989, EPA proposed a rule imposing a three-stage ban on the manufacture, importation, processing and distribution of various asbestos-containing products. All materials will be banned by August 26, 1996 and certain products sooner. The rule also requires that products subject to the manufacturing ban, but not subject to the distribution in commerce ban, be clearly labeled in a manner described in 40 CFR 763.171.

SECTION 17

ASBESTOS

Guidance

Regulatory Authority:	Occupational Safety and Health Act; Clean Air Act; Toxic Substances Control Act
Regulatory Citation:	29 CFR 1910.1001, 29 CFR 1926.58, 40 CFR 61, Subpart M 40 CFR 763 Subpart D - Reporting Commercial and Industrial Uses of Asbestos
Administering Agency:	Occupational Safety and Health Administration; U.S. Environmental Protection Agency

1.-4. Questions are self-explanatory.

SECTION 17

ASBESTOS

Survey Questions

All facilities must complete this section.

			Yes	No	Unk	N/A
1.	a.	If the facility has been subject to a government or plant inspection regarding asbestos during the last three years or since completion of the last survey, were any concerns or potential concerns uncovered? If so, describe circumstances, and provide copies of inspection reports or correspondence. _____ _____ _____	___	X	☐	
	b.	Do any of the concerns or potential concerns uncovered in the inspection remain unresolved?	☐	X	☐	
2.	a.	Has the facility entered into any Consent Order, Settlement Agreement, Delayed Compliance Order, etc., with respect to asbestos? If so, describe and provide copies of all documents.	___	X	☐	
	b.	Has the facility complied with the terms of this Order?	___	☐	☐	X
3.		Is asbestos present on-site? If so, describe use and location: _____ _____ _____	___	X	☐	
4.		Have any studies been conducted to determine whether asbestos is present in the facility or how much asbestos is on-site? If yes, what were the results? _____ _____ _____	___	☐	☐	

5. Thermal asbestos is that used for its insulating properties, e.g., pipe, roofing materials, air duct, boiler, or blown-in insulation. Surface insulation is that used for decorative, fireproofing, or noise attenuating properties, decorative plaster and spray-on materials, for example, floor tiles and transite board or siding.

6. Under NESHAPS, friable asbestos is defined as any material containing more than one percent asbestos by weight that hand pressure can crumble, pulverize, or reduce when dry.

7. NESHAPS restricts the use of asbestos-containing materials which are spray applied (40 CFR 61.148) and bans the installation of insulating materials that contain commercial asbestos if the materials are either molded and friable or wet-applied and friable after drying (40 CFR 61.150). In addition, EPA has banned new uses of asbestos in buildings (40 CFR Part 763).

8. The U.S. EPA has set requirements under the Clean Air Act for demolition and renovation activities under 40 CFR 61. Asbestos must be adequately wetted during its removal to ensure that it will remain wet until collected for disposal (40 CFR 61.147).

		Yes	No	Unk	N/A
5.	a. Approximately how much asbestos is on-site? Thermal _____ in linear feet Surface _____ in square feet				
	b. Is there any friable asbestos on-site?		X		
6.	What percent of on-site asbestos is friable: _____ What percent is potentially friable: _____				
7.	a. Is there a site procedure restricting the installation of asbestos as an insulating or other building material?				
	b. Have materials in the facility that do not fall under the current ban on installation, but will be covered as part of the Ban and Phase Down Rule (40 CFR Part 763), been identified?				
	c. Have these materials been documented and a suitable replacement, asbestos-free material, been selected?				X
8.	Are materials involved in demolition/renovation and routine maintenance and repair activities, sampled and analyzed for asbestos content before they are disturbed?	X			

If asbestos is not present on-site and procedures are in place to restrict the installation of asbestos-containing materials, proceed to Section 18.

9.	Have procedures been established, which are consistent with regulations, for the proper handling of asbestos during demolition operations, renovation, or routine maintenance?				

10. The Reportable Quantity (RQ) for friable asbestos is defined in 40 CFR Ch. 1, Part 302, as one pound. The RQ is applicable to friable asbestos only. When a release meets or exceeds the RQ, notification must be immediately directed to the National Response Center (800) 424-8802.

The RQ for asbestos is also defined by the Department of Transportation (DOT) as one pound for transportation purposes. 49 CFR Part 171-177 prescribes methods of transporting RQs of asbestos.

12. Notification of asbestos demolition must be postmarked at least ten days prior to the demolition of more than 260 linear feet of piping insulation or 160 square feet of asbestos on other components (40 CFR 61.146). Notification must be made to the agency having authority for the NESHAP program (see Air section).

13. NESHAP sets requirements for disposal of asbestos-containing waste material for manufacturing, demolition, renovation, spraying and fabricating operations (40 CFR 61.152). Asbestos which is to be disposed of must be sealed while it is still wet in a leak-tight container (minimum 6 mil plastic) and labeled with the following (40 CFR 151):

Caution
Contains Asbestos - Avoid Opening or Breaking Container
Breathing Asbestos Is Hazardous to Your Health

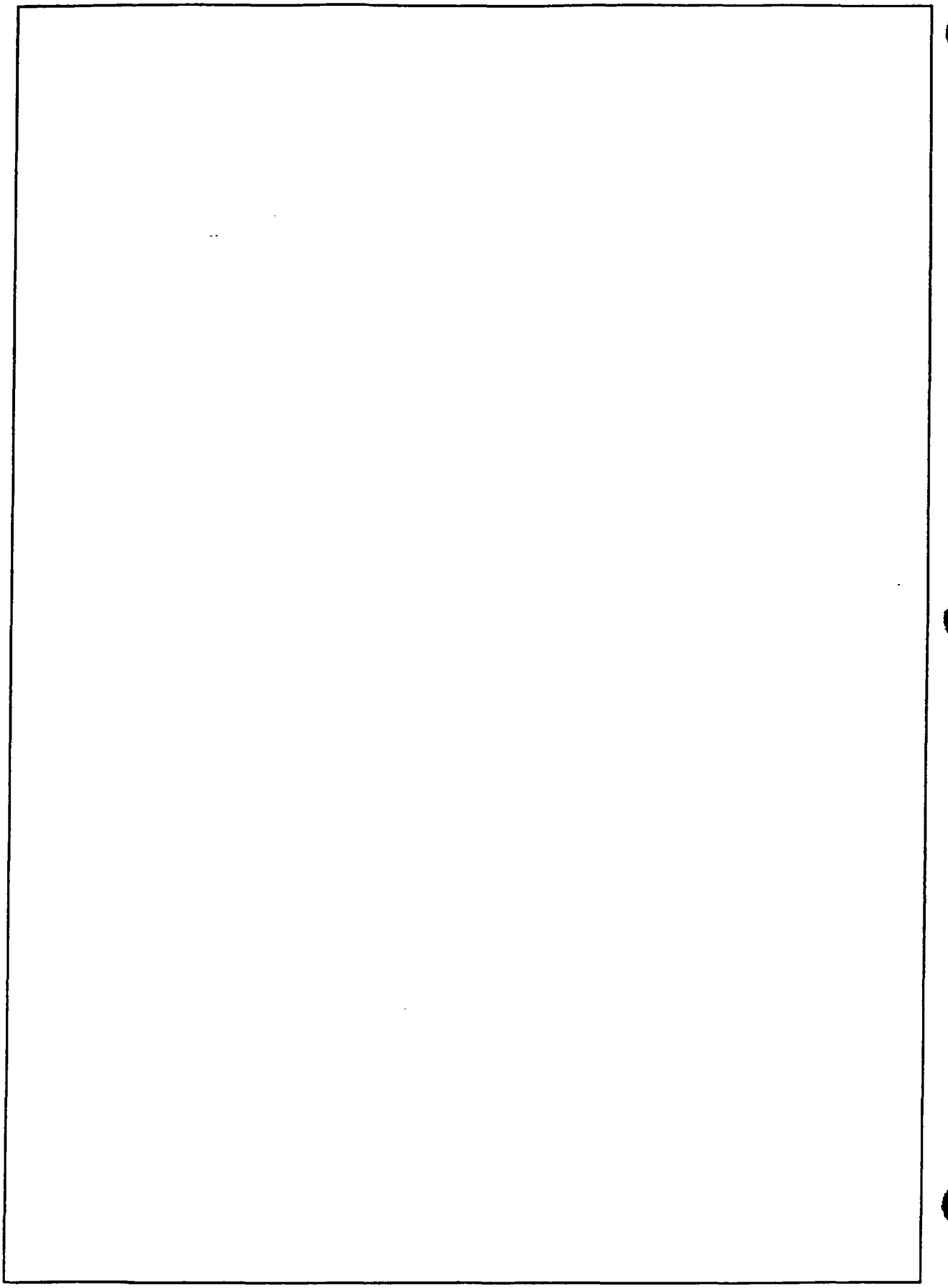
Alternatively, use warning labels specified by OSHA under 29 CFR 1910.1001(g)(2)(ii).

14. In most states, asbestos is a nonhazardous waste and may be disposed of in a solid waste landfill provided the facility meets certain operating requirements including the prevention of visible emissions, controlled or marked access and use of an approved disposal method. Standards for disposal sites which may accept asbestos are found in 40 CFR 61.156.

15. This is a good management practice.

16. OSHA requires training for all employees who are exposed to airborne concentrations of asbestos (29 CFR 1910.1001(j)(s) or 29 CFR 1926.58. It is good management practice to ensure that all maintenance personnel receive training.

			Yes	No	Unk	N/A
10.	a.	Have there been any instances where the Reportable Quantity (RQ) of one pound of friable asbestos has been met or exceeded in a release episode?	___	___	___	
	b.	If so, were the proper authorities notified?	___	___	___	
	c.	If so, have corrective actions been taken to eliminate friable asbestos?	___	___	___	
11.	a.	Are renovations or demolitions done by in-house personnel? If so, are the renovations large scale or small scale: _____	___	___	___	
	b.	If renovations are large scale, are personnel trained as abatement workers?	___	___	___	___
	c.	Are licensed contractors used?	___	___	___	___
	d.	Does the plant conduct clearance testing after asbestos abatement?	___	___	___	___
	e.	Are records maintained?	___	___	___	___
12.		Is there a procedure in place to assure that the appropriate agencies are notified prior to asbestos demolition and renovation projects?	___	___	___	
13.		Are the proper procedures followed for disposal of asbestos?	___	___	___	
14.		Does the disposal site used for asbestos meet with applicable requirements for such activities?	___	___	___	
15.		If required, does the facility have a written asbestos abatement plan?	___	___	___	
16.		Are maintenance personnel aware and trained in the location of asbestos and procedures to effect repairs?	___	___	___	



	Yes	No	Unk	N/A
17. Are there any other comments that you consider relevant and/or significant to this section of the survey? If yes, please state.				
_____	___	___		
_____				

SECTION 18

COMMUNITY RELATIONS

Introduction

The Comprehensive Environmental Response, Compensation and Liability Act, or "Superfund," and Title III of the Superfund Amendments and Reauthorization Act, or "SARA," have recently given the public access to facility chemical information that was previously unavailable. This includes information about the types and quantities of chemicals used and the types and quantities of toxic chemicals released via accidents or routine emissions.

The public may find this new facility chemical information confusing or alarming. It is possible, therefore, that communities and environmentally-minded citizens will take a more active role in trying to obtain additional facility data or seeking new safeguards, e.g., new regulations for their community.

To both provide community members with the assurances they deserve and prevent unnecessary restrictions on your business, it is important that the facility adopt an active community relations program. Diligently monitoring community opinion, carefully considering possible effects that facility operations may have on the community, and respecting public opinion are key components of a good plan.

SECTION 18

COMMUNITY RELATIONS

Guidance

1-4. Questions are self-explanatory.

SECTION 18

COMMUNITY RELATIONS

Survey Questions

All facilities must complete this section.

		Yes	No	Unk	N/A
1.	Has the facility been the subject of any media coverage relating to environmental issues in the past three years or since the completion of the last survey? If so, describe incident and type of publicity. _____ _____ _____		X		
2.	Is the facility confident that current operations will avoid negative publicity, e.g., noncompliance problems, public complaints, alarming chemical releases or recent accidents? If not, please describe the nature of the facility's concern. _____ _____ _____	X			
3.	Are there environmental groups in the area specifically concerned about the facility's activities? Describe activities and provide the name(s) of the environmental groups. _____ _____ _____		X		
4.	Does the facility monitor the activities of state and local groups that are involved in public opinion issues, e.g., the Local Emergency Planning Commission (LEPC), state trade associations, environmental groups, and the press?	X			

5. The SARA Toxic Chemical Release reports may cause concern in your community if emission quantities in your report:

- were never previously released to the public;
- are likely to be considered high by the public (e.g., over 1,000 pounds);
- are the highest in your area;
- are related to common chemicals considered by the local public to be particularly harmful (e.g., carcinogens); or
- conflict with permit restrictions.

If the emissions are at a level of concern, the facility should organize a proactive program to deal with possible community concerns. This program can include:

- a study of ways to reduce the emission levels;
- substitution of less toxic chemicals;
- waste reduction programs; and
- organization of responses to potential public or media questions regarding chemical emissions.

6. Participation of plant personnel in community and civic activities creates a sense of goodwill and helps the community to understand the functions of the facility. It is a helpful way to establish trust.

	Yes	No	Unk	N/A
5. If the facility submitted a Toxic Chemical Release Inventory Report under Section 313 of SARA Title III (see Section 14) in the preceding July, were all emissions under levels that would be anticipated to be of concern by the public? If not, please describe potential public concerns.	X			
6. Do facility personnel participate in community and civic activities? If so, describe the activities.				?
7. Does the facility have a plan to maintain and to improve community relations? Describe.				
8. Does the facility have an emergency plan for community and employee notification/ explanation of environmental mishaps? Describe.				
9. Has a single spokesperson for community contact been designated? If so, provide name, title, and phone number.				
10. Are proposed press releases reviewed and coordinated with Corporate Environmental Affairs and/or Corporate Legal Department?				

Mtg. PACOIMA

SECTION 18

COMMUNITY RELATIONS

Introduction

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The public may find this new facility chemical information confusing or alarming. It is possible, therefore, that communities and environmentally-minded citizens will take a more active role in trying to obtain additional facility data or seeking new safeguards, e.g., new regulations for their community.

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SECTION 18

COMMUNITY RELATIONS

Guidance

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SECTION 18

COMMUNITY RELATIONS

Survey Questions

All facilities must complete this section.

		Yes	No	Unk	N/A
1.	Has the facility been the subject of any media coverage relating to environmental issues in the past three years or since the completion of the last survey? If so, describe incident and type of publicity. _____ _____ _____	___	___	[redacted]	
2.	Is the facility confident that current operations will avoid negative publicity, e.g., noncompliance problems, public complaints, alarming chemical releases or recent accidents? If not, please describe the nature of the facility's concern. _____ _____ _____	___	[redacted]	[redacted]	
3.	Are there environmental groups in the area specifically concerned about the facility's activities? Describe activities and provide the name(s) of the environmental groups. _____ _____ _____	[redacted]	___	[redacted]	
4.	Does the facility monitor the activities of state and local groups that are involved in public opinion issues, e.g., the Local Emergency Planning Commission (LEPC), state trade associations, environmental groups, and the press?	___	[redacted]	[redacted]	

	Yes	No	Unk	N/A
5. If the facility submitted a Toxic Chemical Release Inventory Report under Section 313 of SARA Title III (see Section 14) in the preceding July, were all emissions under levels that would be anticipated to be of concern by the public? If not, please describe potential public concerns. _____ _____ _____	___	☐	☐	
6. Do facility personnel participate in community and civic activities? If so, describe the activities. _____ _____ _____	___	☐	☐	
7. Does the facility have a plan to maintain and to improve community relations? Describe. _____ _____ _____	___	☐	☐	
8. Does the facility have an emergency plan for community and employee notification/ explanation of environmental mishaps? Describe. _____ _____ _____	___	☐	☐	
9. Has a single spokesperson for community contact been designated? If so, provide name, title, and phone number. _____ _____ _____	___	☐	☐	
10. Are proposed press releases reviewed and coordinated with Corporate Environmental Affairs and/or Corporate Legal Department?	___	☐	☐	

PACOIMP

SECTION 19

ENVIRONMENTAL MANAGEMENT

Introduction

Overview: Developing an effective and complete environmental management program is a challenging task and becomes even more challenging depending on the number and size of the facilities that must be managed. Below are only some of the elements that help to develop an effective and complete environmental management program:

A. Environmental Policies and Procedures

B. Legislative and Regulatory Tracking and Advisory Program

C. Training and Awareness Program

D. Reporting and Record Keeping Systems

The survey questions in the Environmental Management section are designed to help you assess the above components.

SECTION 19

ENVIRONMENTAL MANAGEMENT

Guidance

1. Policies that are in written form are often more effective and well thought out than verbal policies.

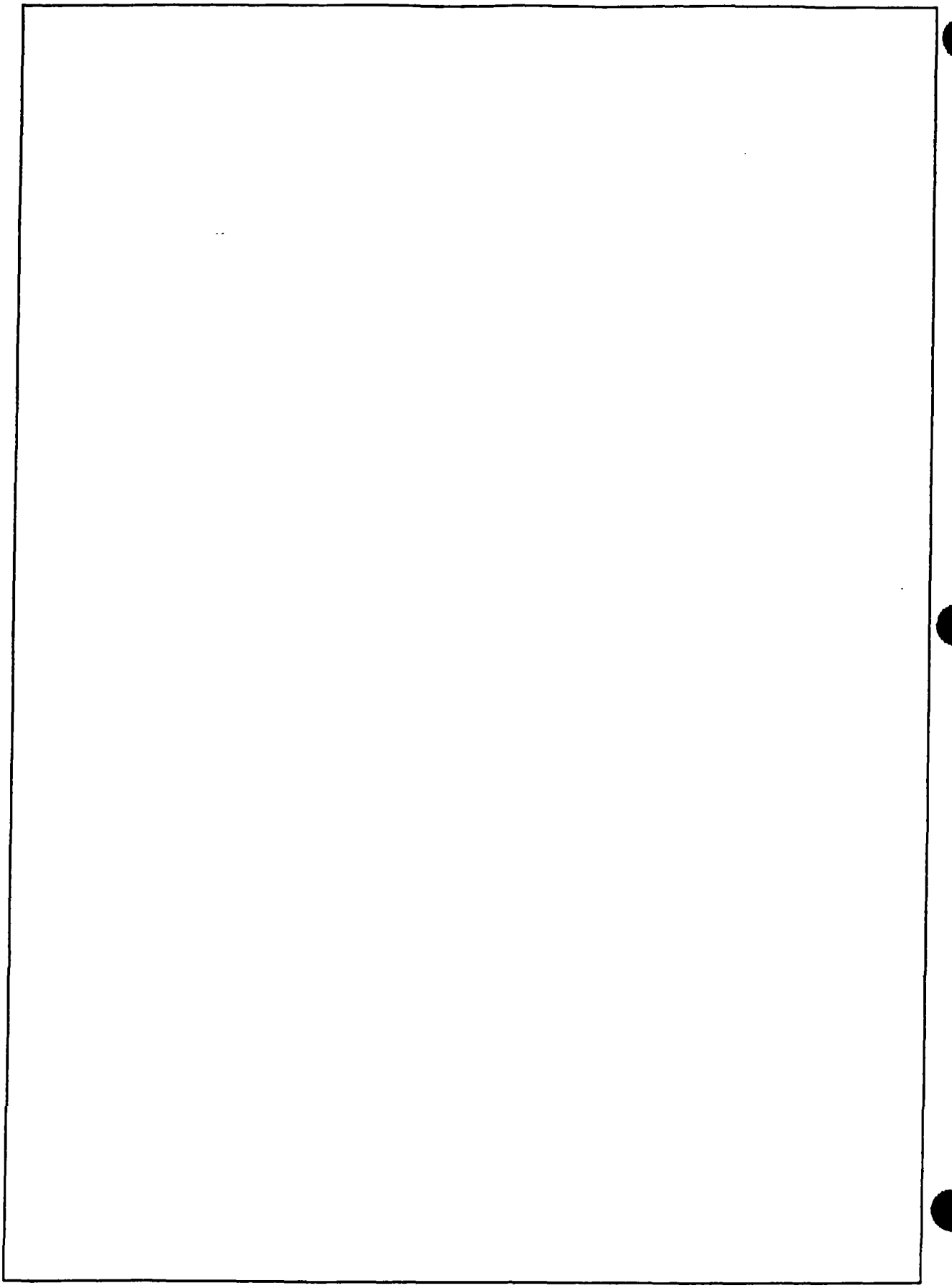
SECTION 19

ENVIRONMENTAL MANAGEMENT

Survey Questions

All facilities must complete this section.

		Check last column if written policy. Yes	No	
A.	**Policy and Procedures**			
1.	Has the facility implemented its own specific policies and procedures or protocols?			
	a. Record Retention?	X		—
	b. Facility Inspections/Audits?	X		—
	c. Minimizing Waste?	X		—
	d. Monitoring Emissions?	X		—
	e. Reporting to Government Agencies?	X		—
	f. Responding to Citizen and Environmental Groups?	X		—
	g. Responding to Media?	—		— ?
	h. Training?	X		—
	i. Reporting to Management?	X		—
	j. Selection of Hazardous Waste Treatment, Storage, and Disposal Facilities?	X		—
	k. Selection of Hazardous Waste and Material Transporters?	X		—
	l. Drum/Container Handling?	X		—
	m. New Chemical Usage?	X		—



	Yes	No	Unk	N/A
2. Please identify any other policy and procedures which have been developed and implemented at the facility.		N/A		

B. Legislative and Regulatory Tracking and Advisory Program

3. Is someone at the facility responsible for the following: (If so, identify the name of the individual(s) responsible.)	Yes	No	Unk	N/A
a. Air Pollution Control?	—	[redacted]		
b. Water Pollution Control?	—	[redacted]		
c. Hazardous Waste Management?	—	[redacted]		
d. Nonhazardous Waste Management?	—	[redacted]		
e. PCB Management?	—	[redacted]		—
f. CERCLA or Superfund? (Includes spill/release reporting)	—	[redacted]		
g. Emergency Planning and Community Right-to-Know?	—	[redacted]		
h. Drinking Water Supply?	—	[redacted]		X
i. Spill Prevention and Control?	—	[redacted]		—
j. Toxic Substances Control?	—	[redacted]		—

(continued)

6-10. Training requirements can be found under the Resource Conservation and Recovery Act (RCRA), the Occupational Safety and Health Act (OSHA), the Clean Water Act (CWA) and the Department of Transportation (DOT) regulations.

RCRA: RCRA includes the following training requirements:

1. Small quantity generators must ensure that all employees are familiar with proper waste handling and emergency procedures relevant to their responsibilities (See 40 CFR 262.34(d)(5)).

2. Large quantity generators must comply with the contingency planning and personnel training requirements of interim status standards for owners/operators of hazardous waste treatment, storage and disposal facilities (TSDFs) (see 40 CFR 262.34(a)(4)).

3. TSDFs, including those with interim status, and large quantity generators must:

   a. provide training on safe equipment operation and emergency response procedures;

   b. train new employees within six months of hire;

   c. provide annual refresher courses; and

   d. maintain individual training records, including written job titles and descriptions (see 40 CFR 264.16 and 265.16). Under RCRA, an effective contingency planning and emergency procedure program requires training (see 40 CFR 264.52 and 265.52).

OSHA: Under OSHA, you must establish a training program for employees exposed to hazardous chemicals in the work area (see 29 CFR 1910.120(e)). The training program must address the following:

a. how the hazard communication program is implemented;
b. how to read labels and material safety data sheets;
c. hazards associated with chemicals;
d. protective measures; and
e. the methods to detect chemicals (e.g., visually, by smell, or by analytical instruments).

OSHA, as a result of the amendments made to Superfund in October 1986, also requires extensive training for employees involved in cleanups at Superfund and RCRA sites, operations at TSDFs and "other emergency response operations."

Clean Water Act (CWA): Under 40 CFR 112.7(e)(10), owners and operators of large oil facilities are responsible for instructing personnel in the operation and maintenance of equipment to prevent oil discharges. Your facility is a large oil facility if it has

- greater than 42,000 gallons of total oil in underground storage;
- greater than 1,320 gallons of total oil in above-ground storage;
- greater than 600 gallons of oil in a single above-ground tank.

Under the DOT regulations, if you offer hazardous materials for transportation, you must instruct employees having responsibility for preparing hazardous materials for shipment as to the regulations (e.g., packaging, labeling, etc.).

		Yes	No	Unk	N/A
3.	(continued)				
	k. Asbestos?	—			—
	l. Storage Tanks?	—			—
	m. Chemical Accounting?	—			
	n. Ground Water?	—			—
4.	Do all individuals identified above have access to resources at the facility to assist them in keeping current on environmental laws and regulations for which they are responsible (e.g., Federal Statutes, Code of Federal Regulations, Federal Register, State Laws and Regulations, Environmental Reporters, Local Ordinances, etc.)?	✓			
C.	**Training and Awareness**				
6.	Is training provided to facility personnel in the following areas:				
	a. Hazardous Waste Management?	✓			
	b. Emergency Response?	✓			—
	c. Spill Prevention, Control and Countermeasure?	✓			—
	d. Wastewater Treatment Plant Operations?	—			✓
	e. Hazard Communication?	✓			
7.	Is training provided to facility personnel by qualified instructors?	✓			
8.	Does your facility training program include regular refresher courses?	—			

11. A list of videotapes available from the Corporate Environmental Affairs Department is included in Textron's Guide for the Environmental Coordinator.*

12. This is a good management practice.

	Yes	No	Unk	N/A
9. Is continuous training provided to all staff in the facility on the operation of emergency and contingency plans?	X			
10. Is there a procedure in place to identify new employees required to receive training?	—			
11. Is the facility aware that the Corporate Environmental Affairs Department distributes training tapes for use during facility training programs?	X	—		
12. Does your training and awareness program make employees in other departments, such as purchasing, engineering and product design, aware of the impacts their activities have on the environmental program?	X			
D. Reporting and Record Keeping				
13. Does the staff responsible for environmental compliance routinely meet with facility management to discuss current environmental issues and concerns?	X			
14. Does the environmental staff meet with divisional representatives to discuss current environmental issues or concerns?	X			

15. See "Environmental Resources Guide" in Textron's Guide for the Environmental Coordinator.

18. A summary of federal record retention requirements may be found in Attachment 19-1. Note: Before destroying records, the facility should consult with Textron's Litigation Counsel, Andrew C. Spacone, to determine if documents are relevant to lawsuits filed by Textron against its insurance carriers for coverage of certain environmental matters.

	Yes	No	Unk	N/A
15. Is all of the following information easily retrievable?				
a. Emergency telephone numbers for				
– National Response Center?	X			
– Local Fire Department?	X			
– State and Local Emergency Response and Planning Committees?	X			
– Facility Emergency Coordinators?	X			
– Backup Facility Emergency Coordinators?	X			
– Environmental Hotlines?	X			
b. Regulatory agency contacts?	X			
c. Corporate/Division environmental contacts?	X			
d. Federal, state and local environmental laws and regulations?	X			
e. Important correspondence concerning environmental management?	X			
f. Facility plot plans?	X			
g. Utility diagrams?	X			
h. Topographical maps?		X		
i. Public relations contact?	X			
j. Calendar of regulatory deadlines?	X			
16. Are records well organized and easily identifiable?	X			
17. Is access to the files controlled?	X			
18. Is there a procedure in place for removing outdated records?	X			

WORKSHEETS

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ATTACHMENT 4-1

CHEMICAL USAGE

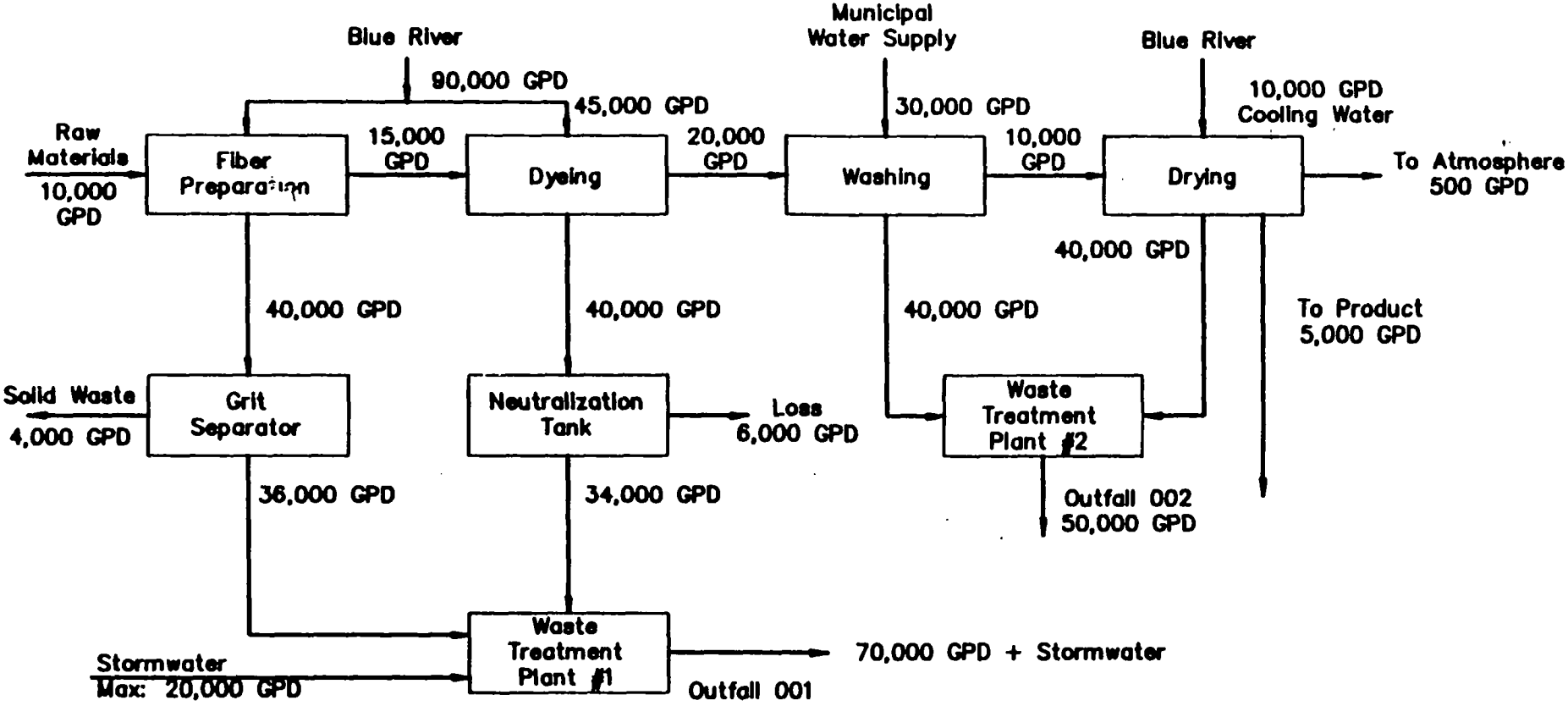
Chemical, Raw Material or Trade Name Product	Chemical Composition				Annual Usage (Pounds)	Maximum Quantity of Material Stored at any One Time (Pounds)
	Chemical (%)	Chemical (%)	Chemical (%)	Chemical (%)		

Revision Date: 05/09/90

ATTACHMENT 5-3

AIR EMISSIONS COMPLAINT LOG

DATE	TIME	IDENTIFY INDIVIDUAL CALLING PLANT (NAME, ADDRESS)	TEXTRON EMPLOYEE RECEIVING INITIAL CALL	NATURE OF COMPLAINT	DESCRIPTION OF CAUSE	CORRECTIVE ACTION TAKEN	NAME OF TEXTRON OFFICIAL RESPONSIBLE FOR FOLLOW-UP	WAS INCIDENT FURTHER DETAILED ON RELEASE LOG IN SECTION 13



GPD = Gallons Per Day

ATTACHMENT 6–1

EXAMPLE WATER FLOW DIAGRAM
AND WATER BALANCE

Revision Date: 5/9/90

ATTACHMENT 6-1

WATER FLOW DIAGRAM AND WATER BALANCE

Prepare diagram for your facility:

Revision Date: 4/25/90

ATTACHMENT 6-2

WASTEWATER TREATMENT SYSTEM

- Designed System Flow Rate (gpm): _____
- Current Maximum Flow Rate (gpm): _____
- Describe Conditions for Maximum Flow Rate:

- Provide a diagram that shows the basic steps in treatment process, e.g., neutralization, cyanide oxidation, filter press, etc.

gpm = gallons per minute

ATTACHMENT 6-3

NON-POINT SOURCE DISCHARGES

- Description of Source (i.e., runoff from process area, parking, etc.)
- Control Measures (i.e., retention basin, lines, capacity 3.0 million gallons with sluice gate for discharge control)

ATTACHMENT 9-2

NON-HAZARDOUS WASTES (USED OIL, METAL SCRAPS, ETC.) RECYCLED ON-SITE

WASTE TYPE	METHOD OF RECYCLING	MATERIAL REUSED AS	DISPOSITION OF ANY RESIDUE	RECYCLING PERMIT REQUIRED (Y/N)

ATTACHMENT 12-1

UNDERGROUND STORAGE TANKS (PRESENT AND FORMER)

QUESTIONS	TANK ID NO.	TANK ID NO.	TANK ID NO.
ID NUMBER			
AGE			
CONTENTS			
CAPACITY			
MONTHLY THROUGHPUT			
SHELL CONSTRUCTION MATERIAL			
LINING MATERIAL			
INSTALLATION TYPE: NEW OR RETROFIT			
PIPING MATERIAL			
INSTALLATION TYPE: NEW OR RETROFIT			
DESCRIPTION OF CONTAINMENT SYSTEM			
DESCRIPTION OF OVERFILL/SPILL CONTROL EQUIPMENT			
REMOTE LEVEL INDICATOR (Y/N)			
DATE OF INTEGRITY TESTING			
IF INSTALLED PRIOR TO 5/7/85, WAS "UST" NOTIFICATION FORM SENT TO US EPA (Y/N)			
IF INSTALLED AFTER TO 5/7/85, WAS "UST" NOTIFICATION FORM SENT TO US EPA (Y/N)			
IF REMOVED FROM SERVICE • REMOVAL DATE			
• DESCRIPTION OF REMOVAL PROCEDURES			
• WAS CONTAMINATION ASSESSMENT PERFORMED?			
• DESCRIBE RESULTS OF CONTAMINATION ASSESSMENT			
• WAS CONTAMINATED SOIL REMOVED? (QUANTITY)			
TYPE OF SURROUNDING SOIL			

ATTACHMENT 12-2

ABOVE-GROUND STORAGE TANKS (PRESENT AND FORMER)

QUESTIONS	TANK ID NO.	TANK ID NO.	TANK ID NO.
ID NUMBER			
AGE			
CONTENTS			
CAPACITY			
MONTHLY THROUGHPUT			
SHELL CONSTRUCTION MATERIAL			
LINING MATERIAL			
INSTALLATION TYPE: NEW OR RETROFIT			
PIPING MATERIAL			
INSTALLATION TYPE: NEW OR RETROFIT			
DESCRIPTION OF CONTAINMENT SYSTEM			
DESCRIPTION OF OVERFILL/SPILL CONTROL EQUIPMENT			
REMOTE LEVEL INDICATOR (Y/N)			
DATE OF INTEGRITY TESTING			
IF REMOVED FROM SERVICE • REMOVAL DATE			
• DESCRIPTION OF REMOVAL PROCEDURES			
• WAS CONTAMINATION ASSESSMENT PERFORMED?			
• DESCRIBE RESULTS OF CONTAMINATION ASSESSMENT			
• WAS CONTAMINATED SOIL REMOVED? (QUANTITY)			
TYPE OF SURROUNDING SOIL			

ATTACHMENT 12-2

ABOVE-GROUND STORAGE TANKS (PRESENT AND FORMER)

QUESTIONS	TANK ID NO.	TANK ID NO.	TANK ID NO.
ID NUMBER			
AGE			
CONTENTS			
CAPACITY			
MONTHLY THROUGHPUT			
SHELL CONSTRUCTION MATERIAL			
LINING MATERIAL			
INSTALLATION TYPE: NEW OR RETROFIT			
PIPING MATERIAL			
INSTALLATION TYPE: NEW OR RETROFIT			
DESCRIPTION OF CONTAINMENT SYSTEM			
DESCRIPTION OF OVERFILL/SPILL CONTROL EQUIPMENT			
REMOTE LEVEL INDICATOR (Y/N)			
DATE OF INTEGRITY TESTING			
IF REMOVED FROM SERVICE • REMOVAL DATE			
• DESCRIPTION OF REMOVAL PROCEDURES			
• WAS CONTAMINATION ASSESSMENT PERFORMED?			
• DESCRIBE RESULTS OF CONTAMINATION ASSESSMENT			
• WAS CONTAMINATED SOIL REMOVED? (QUANTITY)			
TYPE OF SURROUNDING SOIL			

ATTACHMENT 13-1

RELEASE REPORTING LOG

Date/Time	Description of Incident:								Description of Any Injuries	Reportable Quantity Released Yes/No	Oral and Written Notification (Y/N)					Media Coverage Yes/No	Cle Action Pla
	Chemical		Duration of Release	Amt Released	Media						LEPC	SERC	NRC	Textron Corporate	Other Parties		
	EHS	CERCLA			Air	Water	Land	Off-site									

Revision Date: 05/09/90

ATTACHMENT 13-1

RELEASE REPORTING LOG

Date/Time	Description of Incident:								Description of Any Injuries	Reportable Quantity Released Yes/No	Oral and Written Notification (Y/N)					Media Coverage Yes/No	Cle Action Pla
	Chemical		Duration of Release	Amt Released	Media						LEPC	SERC	NRC	Textron Corporate	Other Parties		
	EHS	CERCLA			Air	Water	Land	Off-site									

Revision Date: 05/09/90

ATTACHMENT 13-1

RELEASE REPORTING LOG

Date/Time	Description of Incident:								Description of Any Injuries	Reportable Quantity Released Yes/No	Oral and Written Notification (Y/N)					Media Coverage Yes/No	Cle Action Pla
	Chemical		Duration of Release	Amt Released	Media						LEPC	SERC	NRC	Textron Corporate	Other Parties		
	EHS	CERCLA			Air	Water	Land	Off-site									

Revision Date: 05/09/90

ATTACHMENT 13-1

RELEASE REPORTING LOG

Date/Time	Description of Incident:								Description of Any Injuries	Reportable Quantity Released Yes/No	Oral and Written Notification (Y/N)					Media Coverage Yes/No	Cle Action Plan
	Chemical		Duration of Release	Amt Released	Media						LEPC	SERC	NRC	Textron Corporate	Other Parties		
	EHS	CERCLA			Air	Water	Land	Off-site									

Revision Date: 05/09/90

ATTACHMENT 13-1

RELEASE REPORTING LOG

Date/Time	Description of Incident:								Description of Any Injuries	Reportable Quantity Released Yes/No	Oral and Written Notification (Y/N)					Media Coverage Yes/No	Cle Action Pla
	Chemical		Duration of Release	Amt Released	Media						LEPC	SERC	NRC	Textron Corporate	Other Parties		
	EHS	CERCLA			Air	Water	Land	Off-site									

Revision Date: 05/09/90

ATTACHMENT 13-1

RELEASE REPORTING LOG

Date/Time	Description of Incident:								Description of Any Injuries	Reportable Quantity Released Yes/No	Oral and Written Notification (Y/N)					Media Coverage Yes/No	Cle Action Pla
	Chemical		Duration of Release	Amt Released	Media						LEPC	SERC	NRC	Textron Corporate	Other Parties		
	EHS	CERCLA			Air	Water	Land	Off-site									

Revision Date: 05/09/90

ATTACHMENT 13-1

RELEASE REPORTING LOG

Date/Time	Description of Incident:								Description of Any Injuries	Reportable Quantity Released Yes/No	Oral and Written Notification (Y/N)					Media Coverage Yes/No	Cle Action Plan
	Chemical		Duration of Release	Amt Released	Media						LEPC	SERC	NRC	Textron Corporate	Other Parties		
	EHS	CERCLA			Air	Water	Land	Off-site									

Revision Date: 05/09/90

ATTACHMENT 14-2

EPCRA WORKSHEET

CHEMICAL OR CHEMICAL CONSTITUENT	CAS #	311 OSHA MSDS REQUIRED? (Y OR N)	302 EHS (Y OR N)	313 TOXIC (Y OR N)	304 CERCLA HS (Y OR N)	ANNUAL USAGE (LBS.)	MAXIMUM QUANTITY AT ANY ONE TIME (LBS.)	DESCRIBE APPLICABLE EXEMPTIONS

Note: When transferring data from Attachment 4-1 to 14-2, usage x % constituent = annual use.

ATTACHMENT 14-2

EPCRA WORKSHEET

CHEMICAL OR CHEMICAL CONSTITUENT	CAS #	311 OSHA MSDS REQUIRED? (Y OR N)	302 EHS (Y OR N)	313 TOXIC (Y OR N)	304 CERCLA HS (Y OR N)	ANNUAL USAGE (LBS.)	MAXIMUM QUANTITY AT ANY ONE TIME (LBS.)	DESCRIBE APPLICABLE EXEMPTIONS

Note: When transferring data from Attachment 4-1 to 14-2, usage x % constituent = annual use.

ATTACHMENT 14-2

EPCRA WORKSHEET

CHEMICAL OR CHEMICAL CONSTITUENT	CAS #	311 OSHA MSDS REQUIRED? (Y OR N)	302 EHS (Y OR N)	313 TOXIC (Y OR N)	304 CERCLA HS (Y OR N)	ANNUAL USAGE (LBS.)	MAXIMUM QUANTITY AT ANY ONE TIME (LBS.)	DESCRIBE APPLICABLE EXEMPTIONS

Note: When transferring data from Attachment 4-1 to 14-2, usage x % constituent = annual use.

ATTACHMENT 14-2

EPCRA WORKSHEET

Chemical or Chemical Constituent	CAS #	311 OSHA MSDS Required? (Y OR N)	302 EHS (Y OR N)	313 TOXIC (Y OR N)	304 CERCLA HS (Y OR N)	Annual Usage (lbs.)	Maximum Quantity at Any One Time (lbs.)	Describe Applicable Exemptions

Note: When transferring data from Attachment 4-1 to 14-2, usage x % constituent = annual use.

ATTACHMENT 14-2

EPCRA WORKSHEET

CHEMICAL OR CHEMICAL CONSTITUENT	CAS #	311 OSHA MSDS REQUIRED? (Y OR N)	302 EHS (Y OR N)	313 TOXIC (Y OR N)	304 CERCLA HS (Y OR N)	ANNUAL USAGE (LBS.)	MAXIMUM QUANTITY AT ANY ONE TIME (LBS.)	DESCRIBE APPLICABLE EXEMPTIONS

Note: When transferring data from Attachment 4-1 to 14-2, usage x % constituent = annual use.

ATTACHMENT 14-2

EPCRA WORKSHEET

CHEMICAL OR CHEMICAL CONSTITUENT	CAS #	311 OSHA MSDS REQUIRED? (Y OR N)	302 EHS (Y OR N)	313 TOXIC (Y OR N)	304 CERCLA HS (Y OR N)	ANNUAL USAGE (LBS.)	MAXIMUM QUANTITY AT ANY ONE TIME (LBS.)	DESCRIBE APPLICABLE EXEMPTIONS

Note: When transferring data from Attachment 4-1 to 14-2, usage x % constituent = annual use.

ATTACHMENT 14-2

EPCRA WORKSHEET

CHEMICAL OR CHEMICAL CONSTITUENT	CAS #	311 OSHA MSDS REQUIRED? (Y OR N)	302 EHS (Y OR N)	313 TOXIC (Y OR N)	304 CERCLA HS (Y OR N)	ANNUAL USAGE (LBS.)	MAXIMUM QUANTITY AT ANY ONE TIME (LBS.)	DESCRIBE APPLICABLE EXEMPTIONS

Note: When transferring data from Attachment 4-1 to 14-2, usage x % constituent = annual use.

United States
Environmental Protection
Agency

OPTS (OS-120)
OSWER (TS-779)

EPA 560/4-90-011
January 1990

EPA

Title III
List Of Lists

Consolidated List Of Chemicals Subject To Reporting Under The Emergency Planning And Community Right-To-Know Act (Title III Of The Superfund Amendments And Reauthorization Act Of 1986)

- **SARA Section 302 Extremely Hazardous Substances**
- **CERCLA Hazardous Substances**
- **SARA Section 313 Toxic Chemicals**

SARA TITLE III
CONSOLIDATED CHEMICAL LIST

This consolidated chemical list includes chemicals subject to reporting requirements under Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA)[1], also known as the Emergency Planning and Community Right-to-Know Act (EPCRA). It has been prepared to help firms handling chemicals determine whether they need to submit reports under sections 302, 304, or 313 of Title III and, for a specific chemical, what reports may need to be submitted. This list should be used as a reference tool, not as a definitive source of compliance information.

The chemicals on the consolidated list are ordered by Chemical Abstract Service (CAS) registry number. Categories of chemicals, which do not have CAS registry numbers, but which are cited under CERCLA and section 313, are placed at the end of the list. For reference purposes, the chemicals (with their CAS numbers) are ordered alphabetically at the end of this document. Long chemical names may have been truncated to facilitate printing of this list.

The list includes chemicals referenced under four federal statutory provisions, discussed below. More than one chemical name may be listed for one CAS number because the same chemical may appear on different lists under different names. For example, for CAS number 8001-35-2, the names toxaphene (from the section 313 list), camphechlor (from the section 302 list), and camphene, octachloro- (from the CERCLA list) all appear on this consolidated list.

(1) SARA Section 302 Extremely Hazardous Substances (EHSs)

The presence of EHSs in quantities in excess of the Threshold Planning Quantity (TPQ), requires certain emergency planning activities to be conducted. The extremely hazardous substances and their TPQs are listed in 40 CFR Part 355, Appendices A and B.

TPQ. The consolidated list presents the TPQ (in pounds) for section 302 chemicals in the column following the chemical name. For chemicals that are solids, there may be two TPQs given (e.g., 500/10,000). In these cases, the lower quantity applies for solids in powder form with particle size less than 100 microns, or if the substance is in solution or in molten form. Otherwise, the 10,000 pound TPQ applies.

EHS RQ. Releases of reportable quantities (RQ) of EHSs are subject to reporting under section 304 of Title III. If a final RQ has not been assigned under CERCLA to a chemical listed under section 302, a statutory RQ of one pound applies for section 304 reporting. The EHS RQ column lists the one-pound statutory RQ for EHSs not listed under CERCLA.

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[1] This consolidated list does not include all chemicals subject to the reporting requirements in sections 311 and 312 of SARA Title III. These hazardous chemicals, for which material safety data sheets (MSDS) must be developed under Occupational Safety and Health Act Hazard Communication Standards, are identified by broad criteria, rather than by enumeration. There are over 500,000 products that satisfy the criteria.

(2) CERCLA Hazardous Substances ("RQ chemicals")

Releases of CERCLA hazardous substances, in quantities equal to or greater than their reportable quantity (RQ), are subject to reporting to the National Response Center under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA, or "Superfund"). Such releases are also subject to state and local reporting under section 304 of Title III. CERCLA hazardous substances, and their reportable quantities, are listed in 40 CFR Part 302, Table 302.4. On January 23, 1989, all section 302 chemicals not already listed under CERCLA were proposed for listing, and on August 30, 1989, adjusted RQs (not included in this document) were proposed for these chemicals.

RQ. The CERCLA RQ column in the consolidated list shows the RQs (in pounds) for chemicals that are CERCLA hazardous substances. An asterisk ("*") following the RQ indicates that no reporting of releases is required if the diameter of the pieces of the solid metal released is 100 micrometers (0.004 inches) or greater.

Note that the consolidated list does not include all CERCLA regulatory synonyms. See 40 CFR Part 302, Table 302.4 for a complete list.

(3) SARA Section 313 Toxic Chemicals

Emissions or releases of chemicals listed under section 313 must be reported annually as part of SARA Title III's community right-to-know provisions. The rule containing these chemicals was published on February 16, 1988 (53 FR 4500) (40 CFR 372).

Section 313. The notation "313" in the column for section 313 indicates that the chemical is subject to reporting under section 313 under the name listed. An "X" in this column indicates that the same chemical with the same CAS number appears on another list with a different chemical name.

A number of chemical categories are subject to section 313 reporting. They appear at the end of the CAS number listing. Be aware that certain chemicals reportable under section 302 or CERCLA may belong to section 313 categories. For example, mercuric acetate (CAS number 1600-27-7), listed under section 302, is not specifically listed under section 313, but could be reported under section 313 as "Mercury Compounds" (no CAS number). Also be aware that using or processing dissociable ammonium salts may produce ammonia in solution. Ammonia is reportable under section 313.

(4) RCRA Hazardous Wastes

The consolidated list includes specific chemicals from the P and U lists only (40 CFR 261.33). This listing is provided as an indicator that companies may already have data on a specific chemical that may be useful for Title III reporting. It is not intended to be a comprehensive list of RCRA P and U chemicals. RCRA hazardous wastes consisting of waste streams on the F and K lists, and wastes exhibiting the characteristics of ignitibility, corrosivity, reactivity, and EP toxicity, are not included here.

RCRA Code. The letter-and-digit code in the RCRA Code column is the chemical's RCRA hazardous waste code.

Information Sources

For additional copies of this or other Title III documents, send requests to:

Section 313 Document Distribution Center
P.O. Box 12505
Cincinnati, OH 45212

Refer to document number EPA 560/4-90-011 for additional copies of this document.

A dBase version of this consolidated list is available on disk from:

National Technical Information Service (NTIS)
5285 Port Royal Road
Springfield, VA 22161
(703) 487-4600

Refer to PB89 158653.

Questions concerning changes to the list or other aspects of Title III may be submitted in writing to:

Emergency Planning and Community Right-to-Know Information Hotline
U.S. Environmental Protection Agency (OS-120)
401 M Street, SW
Washington, DC 20460

Alternatively, you may call the hotline at (800) 535-0202 between the hours of 8:30 AM and 7:30 PM Eastern Time (in Washington, D.C. and Alaska call (202) 479-2449).

SARA TITLE III
CONSOLIDATED CHEMICAL LIST
02/02/90

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Sec 313	RCRA Code
50-00-0	Formaldehyde	500		100	313	U122
50-07-7	Mitomycin C	500/10,000		10		U010
50-14-6	Ergocalciferol	1,000/10,000	1			
50-18-0	Cyclophosphamide			10		U058
50-29-3	DDT			1		U061
50-32-8	Benzo[a]pyrene			1		U022
50-55-5	Reserpine			5,000		U200
51-21-8	Fluorouracil	500/10,000	1			
51-28-5	2,4-Dinitrophenol			10	313	P048
51-43-4	Epinephrine			1,000		P042
51-75-2	Nitrogen mustard	10	1		313	
51-75-2	Mechlorethamine	10	1		X	
51-79-6	Urethane			100	313	U238
51-79-6	Carbamic acid, ethyl ester			100	X	U238
51-79-6	Ethyl carbamate			100	X	U238
51-83-2	Carbachol chloride	500/10,000	1			
52-68-6	Trichlorfon			100	313	
52-85-7	Famphur			1,000		P097
53-70-3	Dibenz[a,h]anthracene			1		U063
53-96-3	2-Acetylaminofluorene			1	313	U005
54-11-5	Nicotine	100		100		P075
54-11-5	Pyridine, 3-(1-methyl-2-pyrrolidinyl)-,(S)	100		100		P075
54-11-5	Nicotine and salts			100		P075
54-62-6	Aminopterin	500/10,000	1			
55-18-5	N-Nitrosodiethylamine			1	313	U174
55-21-0	Benzamide				313	
55-63-0	Nitroglycerin			10	313	P081
55-91-4	Isofluorphate	100		100		P043
55-91-4	Diisopropylfluorophosphate	100		100		P043
56-04-2	Methylthiouracil			10		U164
56-23-5	Carbon tetrachloride			10	313	U211
56-25-7	Cantharidin	100/10,000	1			
56-38-2	Parathion	100		10	313	P089
56-49-5	3-Methylcholanthrene			10		U157
56-53-1	Diethylstilbestrol			1		U089
56-55-3	Benz[a]anthracene			10		U018
56-72-4	Coumaphos	100/10,000		10		
57-12-5	Cyanides (soluble salts and complexes)			10		P030
57-14-7	1,1-Dimethyl hydrazine	1,000		10	313	U098
57-14-7	Dimethylhydrazine	1,000		10	X	U098

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Section 304 Sec 313	RCRA Code
57-14-7	Hydrazine, 1,1-dimethyl-	1,000		10	X	U098
57-24-9	Strychnine	100/10,000		10		P108
57-24-9	Strychnine, and salts			10		P108
57-47-6	Physostigmine	100/10,000	1			
57-57-8	beta-Propiolactone	500	1		313	
57-64-7	Physostigmine, salicylate (1:1)	100/10,000	1			
57-74-9	Chlordane	1,000		1	313	U036
57-97-6	7,12-Dimethylbenz[a]anthracene			1		U094
58-36-6	Phenoxarsine, 10,10'-oxydi-	500/10,000	1			
58-89-9	Lindane	1,000/10,000		1	313	U129
58-89-9	Hexachlorocyclohexane (gamma isomer)	1,000/10,000		1	X	U129
58-90-2	2,3,4,6-Tetrachlorophenol			10		U212
59-50-7	p-Chloro-m-cresol			5,000		U039
59-88-1	Phenylhydrazine hydrochloride	1,000/10,000	1			
59-89-2	N-Nitrosomorpholine				313	
60-00-4	Ethylenediamine-tetraacetic acid (EDTA)			5,000		
60-09-3	4-Aminoazobenzene				313	
60-11-7	4-Dimethylaminoazobenzene			10	313	U093
60-11-7	Dimethylaminoazobenzene			10	X	U093
60-29-7	Ethyl ether			100		U117
60-34-4	Methyl hydrazine	500		10	313	P068
60-35-5	Acetamide				313	
60-41-3	Strychnine, sulfate	100/10,000	1			
60-51-5	Dimethoate	500/10,000		10		P044
60-57-1	Dieldrin			1		P037
61-82-5	Amitrole			10		U011
62-38-4	Phenylmercury acetate	500/10,000		100		P092
62-38-4	Phenylmercuric acetate	500/10,000		100		P092
62-44-2	Phenacetin			100		U187
62-50-0	Ethyl methanesulfonate			1		U119
62-53-3	Aniline	1,000		5,000	313	U012
62-55-5	Thioacetamide			10	313	U218
62-56-6	Thiourea			10	313	U219
62-73-7	Dichlorvos	1,000		10	313	
62-74-8	Sodium fluoroacetate	10/10,000		10		P058
62-74-8	Fluoroacetic acid, sodium salt	10/10,000		10		P058
62-75-9	N-Nitrosodimethylamine	1,000		10	313	P082
62-75-9	Nitrosodimethylamine	1,000		10	X	P082
62-75-9	Methanamine, N-methyl-N-nitroso-	1,000		10	X	P082
63-25-2	Carbaryl			100	313	

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Sec 313	RCRA Code
64-00-6	Phenol, 3-(1-methylethyl)-, methylcarbamat	500/10,000	1			
64-18-6	Formic acid			5,000		U123
64-19-7	Acetic acid			5,000		
64-67-5	Diethyl sulfate				313	
64-86-8	Colchicine	10/10,000	1			
65-30-5	Nicotine sulfate	100/10,000	1			
65-85-0	Benzoic acid			5,000		
66-75-1	Uracil mustard			10		U237
66-81-9	Cycloheximide	100/10,000	1			
67-56-1	Methanol			5,000	313	U154
67-63-0	Isopropyl alcohol (mfg-strong acid process				313	
67-64-1	Acetone			5,000	313	U002
67-66-3	Chloroform	10,000		10	313	U044
67-72-1	Hexachloroethane			100	313	U131
68-76-8	Triaziquone				313	
70-25-7	Guanidine, N-methyl-N'-nitro-N-nitroso-			10		U163
70-30-4	Hexachlorophene			100		U132
70-69-9	Propiophenone, 4'-amino	100/10,000	1			
71-36-3	n-Butyl alcohol			5,000	313	U031
71-43-2	Benzene			10	313	U019
71-55-6	1,1,1-Trichloroethane			1,000	313	U226
71-55-6	Methyl chloroform			1,000	X	U226
71-63-6	Digitoxin	100/10,000	1			
72-20-8	Endrin	500/10,000		1		P051
72-43-5	Methoxychlor			1	313	U247
72-54-8	DDD			1		U060
72-55-9	DDE			1		
72-57-1	Trypan blue			10		U236
74-83-9	Bromomethane	1,000		1,000	313	U029
74-83-9	Methyl bromide	1,000		1,000	X	U029
74-85-1	Ethylene				313	
74-87-3	Chloromethane			100	313	U045
74-87-3	Methyl chloride			100	X	U045
74-88-4	Methyl iodide			100	313	U138
74-89-5	Monomethylamine			100		
74-90-8	Hydrogen cyanide	100		10	313	P063
74-90-8	Hydrocyanic acid	100		10	X	P063
74-93-1	Methyl mercaptan	500		100		U153
74-93-1	Thiomethanol	500		100		U153
74-95-3	Methylene bromide			1,000	313	U068

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Section 304 Sec 313	RCRA Code
75-00-3	Chloroethane			100	313	
75-00-3	Ethyl chloride			100	X	
75-01-4	Vinyl chloride			1	313	U043
75-04-7	Monoethylamine			100		
75-05-8	Acetonitrile			5,000	313	U003
75-07-0	Acetaldehyde			1,000	313	U001
75-09-2	Dichloromethane			1,000	313	U080
75-09-2	Methylene chloride			1,000	X	U080
75-15-0	Carbon disulfide	10,000		100	313	P022
75-20-7	Calcium carbide			10		
75-21-8	Ethylene oxide	1,000		10	313	U115
75-21-8	Oxirane	1,000		10	X	U115
75-25-2	Bromoform			100	313	U225
75-25-2	Tribromomethane			100	X	U225
75-27-4	Dichlorobromomethane			5,000	313	
75-34-3	1,1-Dichloroethane			1,000		U076
75-35-4	Vinylidene chloride			100	313	U078
75-35-4	1,1-Dichloroethylene			100	X	U078
75-36-5	Acetyl chloride			5,000		U006
75-44-5	Phosgene	10		10	313	P095
75-50-3	Trimethylamine			100		
75-55-8	Propyleneimine	10,000		1	313	P067
75-55-8	Aziridine, 2-methyl	10,000		1	X	P067
75-56-9	Propylene oxide	10,000		100	313	
75-60-5	Cacodylic acid			1		U136
75-64-9	tert-Butylamine			1,000		
75-65-0	tert-Butyl alcohol				313	
75-69-4	Trichloromonofluoromethane			5,000		U121
75-71-8	Dichlorodifluoromethane			5,000		U075
75-74-1	Tetramethyllead	100	1			
75-77-4	Trimethylchlorosilane	1,000	1			
75-78-5	Dimethyldichlorosilane	500	1			
75-79-6	Methyltrichlorosilane	500	1			
75-86-5	Acetone cyanohydrin	1,000		10		P069
75-87-6	Acetaldehyde, trichloro-			5,000		U034
75-99-0	2,2-Dichloropropionic acid			5,000		
76-01-7	Pentachloroethane			10		U184
76-02-8	Trichloroacetyl chloride	500	1			
76-13-1	Freon 113				313	
76-44-8	Heptachlor			1	313	P059

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Sec 313	RCRA Code
77-47-4	Hexachlorocyclopentadiene	100		10	313	U130
77-78-1	Dimethyl sulfate	500		100	313	U103
77-81-6	Tabun	10	1			
78-00-2	Tetraethyl lead	100		10		P110
78-34-2	Dioxathion	500	1			
78-53-5	Amiton	500	1			
78-59-1	Isophorone			5,000		
78-71-7	Oxetane, 3,3-bis(chloromethyl)-	500	1			
78-79-5	Isoprene			100		
78-81-9	iso-Butylamine			1,000		
78-82-0	Isobutyronitrile	1,000	1			
78-83-1	Isobutyl alcohol			5,000		U140
78-84-2	Isobutyraldehyde				313	
78-87-5	1,2-Dichloropropane			1,000	313	U083
78-87-5	Propane 1,2-dichloro-			1,000	X	U083
78-88-6	2,3-Dichloropropene			100		
78-92-2	sec-Butyl alcohol				313	
78-93-3	Methyl ethyl ketone			5,000	313	U159
78-93-3	Methyl ethyl ketone (MEK)			5,000	X	U159
78-94-4	Methyl vinyl ketone	10	1			
78-97-7	Lactonitrile	1,000	1			
78-99-9	1,1-Dichloropropane			1,000		
79-00-5	1,1,2-Trichloroethane			100	313	U227
79-01-6	Trichloroethylene			100	313	U228
79-06-1	Acrylamide	1,000/10,000		5,000	313	U007
79-09-4	Propionic acid			5,000		
79-10-7	Acrylic acid			5,000	313	U008
79-11-8	Chloroacetic acid	100/10,000	1		313	
79-19-6	Thiosemicarbazide	100/10,000		100		P116
79-21-0	Peracetic acid	500	1		313	
79-22-1	Methyl chloroformate	500		1,000		U156
79-31-2	iso-Butyric acid			5,000		
79-34-5	1,1,2,2-Tetrachloroethane			100	313	U209
79-44-7	Dimethylcarbamyl chloride			1	313	U097
79-46-9	2-Nitropropane			10	313	U171
80-05-7	4,4'-Isopropylidenediphenol				313	
80-15-9	Cumene hydroperoxide			10	313	U096
80-15-9	Hydroperoxide, 1-methyl-1-phenylethyl-			10	X	U096
80-62-6	Methyl methacrylate			1,000	313	U162
80-63-7	Methyl 2-chloroacrylate	500	1			

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Sec 313	RCRA Code
81-07-2	Saccharin (manufacturing)			100	313	U202
81-07-2	Saccharin and salts			100		U202
81-81-2	Warfarin	500/10,000		100		P001
81-81-2	Warfarin, & salts, conc.>0.3%			100		P001
81-88-9	C.I. Food Red 15				313	
82-28-0	1-Amino-2-methylanthraquinone				313	
82-66-6	Diphacinone	10/10,000	1			
82-68-8	Quintozene			100	313	U185
82-68-8	Pentachloronitrobenzene			100	X	U185
82-68-8	PCNB			100	X	U185
83-32-9	Acenaphthene			100		
84-66-2	Diethyl phthalate			1,000	313	U088
84-74-2	n-Butyl phthalate			10	X	U069
85-00-7	Diquat			1,000		
85-01-8	Phenanthrene			5,000		
85-44-9	Phthalic anhydride			5,000	313	U190
85-68-7	Butyl benzyl phthalate			100	313	
86-30-6	N-Nitrosodiphenylamine			100	313	
86-50-0	Azinphos-methyl	10/10,000		1		
86-50-0	Guthion	10/10,000		1		
86-73-7	Fluorene			5,000		
86-88-4	Antu	500/10,000		100		P072
86-88-4	Thiourea, 1-naphthalenyl-	500/10,000		100		P072
87-62-7	2,6-Xylidine				313	
87-65-0	2,6-Dichlorophenol			100		U082
87-68-3	Hexachloro-1,3-butadiene			1	313	U128
87-68-3	Hexachlorobutadiene			1	X	U128
87-86-5	Pentachlorophenol			10	313	U242
87-86-5	PCP			10	X	U242
88-05-1	Aniline, 2,4,6-trimethyl-	500	1			
88-06-2	2,4,6-Trichlorophenol			10	313	U230
88-72-2	o-Nitrotoluene			1,000		
88-75-5	2-Nitrophenol			100	313	
88-85-7	Dinoseb	100/10,000		1,000		P020
88-89-1	Picric acid				313	
90-04-0	o-Anisidine				313	
90-43-7	2-Phenylphenol				313	
90-94-8	Michler's ketone				313	
91-08-7	Toluene-2,6-diisocyanate	100		100	313	
91-20-3	Naphthalene			100	313	U165

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Sec 313	RCRA Code
91-22-5	Quinoline			5,000	313	
91-58-7	2-Chloronaphthalene			5,000		U047
91-59-8	beta-Naphthylamine			10	313	U168
91-80-5	Methapyrilene			5,000		U155
91-94-1	3,3'-Dichlorobenzidine			1	313	U073
92-52-4	Biphenyl				313	
92-67-1	4-Aminobiphenyl				313	
92-87-5	Benzidine			1	313	U021
92-93-3	4-Nitrobiphenyl				313	
93-72-1	Silvex (2,4,5-TP)			100		U233
93-76-5	2,4,5-T acid			1,000		U232
93-79-8	2,4,5-T esters			1,000		
94-11-1	2,4-D Esters			100		
94-36-0	Benzoyl peroxide				313	
94-58-6	Dihydrosafrole			10		U090
94-59-7	Safrole			100	313	U203
94-75-7	2,4-D			100	313	U240
94-75-7	2,4-D Acid			100	X	U240
94-75-7	2,4-D, salts and esters			100		U240
94-79-1	2,4-D Esters			100		
94-80-4	2,4-D Esters			100		
95-47-6	o-Xylene			1,000	313	U239
95-47-6	Benzene, o-dimethyl-			1,000	X	U239
95-48-7	o-Cresol	1,000/10,000		1,000	313	U052
95-50-1	1,2-Dichlorobenzene			100	313	U070
95-50-1	o-Dichlorobenzene			100	X	U070
95-53-4	o-Toluidine			100	313	U328
95-57-8	2-Chlorophenol			100		U048
95-63-6	1,2,4-Trimethylbenzene				313	
95-80-7	2,4-Diaminotoluene			10	313	
95-94-3	1,2,4,5-Tetrachlorobenzene			5,000		U207
95-95-4	2,4,5-Trichlorophenol			10	313	U230
96-09-3	Styrene oxide				313	
96-12-8	1,2-Dibromo-3-chloropropane			1	313	U066
96-12-8	DBCP			1	X	U066
96-33-3	Methyl acrylate				313	
96-45-7	Ethylene thiourea			10	313	U116
97-56-3	C.I. Solvent Yellow 3				313	
97-63-2	Ethyl methacrylate			1,000		U118
98-01-1	Furfural			5,000		U125

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Section 304 Sec 313	Section 304 RCRA Code
98-05-5	Benzenearsonic acid	10/10,000	1			
98-07-7	Benzoic trichloride	100		10	313	U023
98-07-7	Benzotrichloride	100		10	X	U023
98-09-9	Benzenesulfonyl chloride			100		U020
98-13-5	Trichlorophenylsilane	500	1			
98-16-8	Benzenamine, 3-(trifluoromethyl)-	500	1			
98-82-8	Cumene			5,000	313	U055
98-86-2	Acetophenone			5,000		U004
98-87-3	Benzal chloride	500		5,000	313	U017
98-88-4	Benzoyl chloride			1,000	313	
98-95-3	Nitrobenzene	10,000		1,000	313	U169
99-08-1	m-Nitrotoluene			1,000		
99-35-4	1,3,5-Trinitrobenzene			10		U234
99-55-8	5-Nitro-o-toluidine			100		U181
99-59-2	5-Nitro-o-anisidine				313	
99-65-0	m-Dinitrobenzene			100		
99-98-9	Dimethyl-p-phenylenediamine	10/10,000	1			
99-99-0	p-Nitrotoluene			1,000		
100-01-6	p-Nitroaniline			5,000		P077
100-02-7	4-Nitrophenol			100	313	U170
100-02-7	p-Nitrophenol			100	X	U170
100-14-1	Benzene, 1-(chloromethyl)-4-nitro-	500/10,000	1			
100-21-0	Terephthalic acid				313	
100-25-4	p-Dinitrobenzene			100		
100-41-4	Ethylbenzene			1,000	313	
100-42-5	Styrene			1,000	313	
100-44-7	Benzyl chloride	500		100	313	P028
100-47-0	Benzonitrile			5,000		
100-75-4	N-Nitrosopiperidine			10	313	U179
101-14-4	4,4'-Methylenebis(2-chloroaniline)			10	313	U158
101-14-4	MBOCA			10	X	U158
101-55-3	4-Bromophenyl phenyl ether			100		U030
101-61-1	4,4'-Methylenebis(N,N-dimethyl)benzenamine				313	
101-68-8	Methylenebis(phenylisocyanate)				313	
101-68-8	MBI				X	
101-77-9	4,4'-Methylenedianiline				313	
101-80-4	4,4'-Diaminodiphenyl ether				313	
102-36-3	Isocyanic acid, 3,4-dichlorophenyl ester	500/10,000	1			
103-23-1	Bis(2-ethylhexyl) adipate				313	
103-85-5	Phenylthiourea	100/10,000		100		P093

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Sec 313	RCRA Code
104-94-9	p-Anisidine				313	
105-46-4	sec-Butyl acetate			5,000		
105-67-9	2,4-Dimethylphenol			100	313	U101
106-42-3	p-Xylene			1,000	313	U239
106-42-3	Benzene, p-dimethyl-			1,000	X	U239
106-44-5	p-Cresol			1,000	313	U052
106-46-7	1,4-Dichlorobenzene			100	313	U072
106-47-8	p-Chloroaniline			1,000		P024
106-49-0	p-Toluidine			100		U353
106-50-3	p-Phenylenediamine				313	
106-51-4	Quinone			10	313	U197
106-51-4	p-Benzoquinone			10	X	U197
106-88-7	1,2-Butylene oxide				313	
106-89-8	Epichlorohydrin	1,000		100	313	U041
106-93-4	1,2-Dibromoethane			1	313	U067
106-93-4	Ethylene dibromide			1	X	U067
106-96-7	Propargyl bromide	10	1			
106-99-0	1,3-Butadiene				313	
107-02-8	Acrolein	500		1	313	P003
107-05-1	Allyl chloride			1,000	313	
107-06-2	1,2-Dichloroethane			100	313	U077
107-06-2	Ethylene dichloride			100	X	U077
107-07-3	Chloroethanol	500	1			
107-10-8	n-Propylamine			5,000		U194
107-11-9	Allylamine	500	1			
107-12-0	Propionitrile	500		10		P101
107-12-0	Ethyl cyanide	500		10		P101
107-13-1	Acrylonitrile	10,000		100	313	U009
107-15-3	Ethylenediamine	10,000		5,000		
107-16-4	Formaldehyde cyanohydrin	1,000	1			
107-18-6	Allyl alcohol	1,000		100		P005
107-19-7	Propargyl alcohol			1,000		P102
107-20-0	Chloroacetaldehyde			1,000		P023
107-21-1	Ethylene glycol				313	
107-30-2	Chloromethyl methyl ether	100		10	313	U046
107-44-8	Sarin	10	1			
107-49-3	Tepp	100		10		P111
107-49-3	Tetraethyl pyrophosphate	100		10		P111
107-92-6	Butyric acid			5,000		
108-05-4	Vinyl acetate	1,000		5,000	313	

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Sec 313	RCRA Code
108-05-4	Vinyl acetate monomer	1,000		5,000	X	
108-10-1	Methyl isobutyl ketone			5,000	313	U161
108-23-6	Isopropyl chloroformate	1,000	1			
108-24-7	Acetic anhydride			5,000		
108-31-6	Maleic anhydride			5,000	313	U147
108-38-3	m-Xylene			1,000	313	U239
108-38-3	Benzene, m-dimethyl-			1,000	X	U239
108-39-4	m-Cresol			1,000	313	U052
108-46-3	Resorcinol			5,000		U201
108-60-1	Bis(2-chloro-1-methylethyl)ether			1,000	313	U027
108-60-1	Dichloroisopropyl ether			1,000	X	U027
108-88-3	Toluene			1,000	313	U220
108-90-7	Chlorobenzene			100	313	U037
108-91-8	Cyclohexylamine	10,000	1			
108-94-1	Cyclohexanone			5,000		U057
108-95-2	Phenol	500/10,000		1,000	313	U188
108-98-5	Thiophenol	500		100		P014
108-98-5	Benzenethiol	500		100		P014
109-06-8	2-Picoline			5,000		U191
109-61-5	Propyl chloroformate	500	1			
109-73-9	Butylamine			1,000		
109-77-3	Malononitrile	500/10,000		1,000		U149
109-86-4	2-Methoxyethanol				313	
109-89-7	Diethylamine			1,000		
109-99-9	Furan, tetrahydro-			1,000		U213
110-00-9	Furan	500		100		U124
110-16-7	Maleic acid			5,000		
110-17-8	Fumaric acid			5,000		
110-19-0	iso-Butyl acetate			5,000		
110-57-6	Trans-1,4-dichlorobutene	500	1			
110-75-8	2-Chloroethyl vinyl ether			1,000		U042
110-80-5	2-Ethoxyethanol			1,000	313	U359
110-80-5	Ethanol, 2-ethoxy-			1,000	X	U359
110-82-7	Cyclohexane			1,000	313	U056
110-86-1	Pyridine			1,000	313	U196
110-89-4	Piperidine	1,000	1			
111-42-2	Diethanolamine				313	
111-44-4	Bis(2-chloroethyl) ether	10,000		10	313	U025
111-44-4	Dichloroethyl ether	10,000		10	X	U025
111-54-6	Ethylenebisdithiocarbamic acid, salts & es			5,000		U114

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Sec 313	RCRA Code
111-69-3	Adiponitrile	1,000	1			
111-91-1	Bis(2-chloroethoxy) methane			1,000		U024
114-26-1	Propoxur				313	
115-02-6	Azaserine			1		U015
115-07-1	Propylene (Propene)				313	
115-21-9	Trichloroethylsilane	500	1			
115-26-4	Dimefox	500	1			
115-29-7	Endosulfan	10/10,000		1		P050
115-32-2	Dicofol			10	313	
115-90-2	Fensulfothion	500	1			
116-06-3	Aldicarb	100/10,000		1		P070
117-79-3	2-Aminoanthraquinone				313	
117-80-6	Dichlone			1		
117-81-7	Di(2-ethylhexyl) phthalate			100	313	U028
117-81-7	Bis(2-ethylhexyl)phthalate			100	X	U028
117-81-7	DEHP			100	X	U028
117-84-0	n-Dioctylphthalate			5,000	313	U107
117-84-0	Di-n-octyl phthalate			5,000	X	U107
118-74-1	Hexachlorobenzene			10	313	U127
119-38-0	Isopropylmethylpyrazolyl dimethylcarbamate	500	1			
119-90-4	3,3'-Dimethoxybenzidine			100	313	U091
119-93-7	3,3'-Dimethylbenzidine			10	313	U095
119-93-7	o-Tolidine			10	X	U095
120-12-7	Anthracene			5,000	313	
120-58-1	Isosafrole			100		U141
120-71-8	p-Cresidine				313	
120-80-9	Catechol				313	
120-82-1	1,2,4-Trichlorobenzene			100	313	
120-83-2	2,4-Dichlorophenol			100	313	U081
121-14-2	2,4-Dinitrotoluene			10	313	U105
121-21-1	Pyrethrins			1		
121-29-9	Pyrethrins			1		
121-44-8	Triethylamine			5,000		
121-69-7	N,N-Dimethylaniline				313	
121-75-5	Malathion			100		
122-09-8	Benzeneethanamine, alpha,alpha-dimethyl-			5,000		P046
122-14-5	Fenitrothion	500	1			
122-66-7	1,2-Diphenylhydrazine			10	313	U109
122-66-7	Hydrazine, 1,2-diphenyl-			10	X	U109
122-66-7	Hydrazobenzene			10	X	U109

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Sec 313	RCRA Code
123-31-9	Hydroquinone	500/10,000	1		313	
123-33-1	Maleic hydrazide			5,000		U148
123-38-6	Propionaldehyde				313	
123-62-6	Propionic anhydride			5,000		
123-63-7	Paraldehyde			1,000		U182
123-72-8	Butyraldehyde				313	
123-73-9	Crotonaldehyde, (E)-	1,000		100		U053
123-86-4	Butyl acetate			5,000		
123-91-1	1,4-Dioxane			100	313	U108
123-92-2	iso-Amyl acetate			5,000		
124-04-9	Adipic acid			5,000		
124-40-3	Dimethylamine			1,000		U092
124-41-4	Sodium methylate			1,000		
124-48-1	Chlorodibromomethane			100		
124-65-2	Sodium cacodylate	100/10,000	1			
124-87-8	Picrotoxin	500/10,000	1			
126-72-7	Tris(2,3-dibromopropyl) phosphate			10	313	U235
126-98-7	Methacrylonitrile	500		1,000		U152
126-99-8	Chloroprene				313	
127-18-4	Tetrachloroethylene			100	313	U210
127-18-4	Perchloroethylene			100	X	U210
127-82-2	Zinc phenolsulfonate			5,000		
128-66-5	C.I. Vat Yellow 4				313	
129-00-0	Pyrene	1,000/10,000		5,000		
129-06-6	Warfarin sodium	100/10,000	1			
130-15-4	1,4-Naphthoquinone			5,000		U166
131-11-3	Dimethyl phthalate			5,000	313	U102
131-74-8	Ammonium picrate			10		P009
131-89-5	2-Cyclohexyl-4,6-Dinitrophenol			100		P034
132-64-9	Dibenzofuran				313	
133-06-2	Captan			10	313	
133-90-4	Chloramben				313	
134-29-2	o-Anisidine hydrochloride				313	
134-32-7	alpha-Naphthylamine			100	313	U167
135-20-6	Cupferron				313	
137-26-8	Thiram			10		U244
139-13-9	Nitrilotriacetic acid				313	
139-65-1	4,4'-Thiodianiline				313	
140-29-4	Benzyl cyanide	500	1			
140-76-1	Pyridine, 2-methyl-5-vinyl-	500	1			

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Sec 313	RCRA Code
140-88-5	Ethyl acrylate			1,000	313	U113
141-32-2	Butyl acrylate				313	
141-66-2	Dicrotophos	100	1			
141-78-6	Ethyl acetate			5,000		U112
142-28-9	1,3-Dichloropropane			5,000		
142-71-2	Cupric acetate			100		
142-84-7	Dipropylamine			5,000		U110
143-33-9	Sodium cyanide (Na(CN))	100		10		P106
143-50-0	Kepone			1		U142
144-49-0	Fluoroacetic acid	10/10,000	1			
145-73-3	Endothall			1,000		P088
148-82-3	Melphalan			1		U150
149-74-6	Dichloromethylphenylsilane	1,000	1			
151-38-2	Methoxyethylmercuric acetate	500/10,000	1			
151-50-8	Potassium cyanide	100		10		P098
151-56-4	Ethyleneimine	500		1	313	P054
151-56-4	Aziridine	500		1	X	P054
152-16-9	Diphosphoramide, octamethyl-	100		100		P085
156-10-5	p-Nitrosodiphenylamine				313	
156-60-5	1,2-Dichloroethylene			1,000	313	U079
156-62-7	Calcium cyanamide				313	
189-55-9	Dibenz[a,i]pyrene			10		U064
191-24-2	Benzo[ghi]perylene			5,000		
193-39-5	Indeno(1,2,3-cd)pyrene			100		U137
205-99-2	Benzo[b]fluoranthene			1		
206-44-0	Fluoranthene			100		U120
207-08-9	Benzo(k)fluoranthene			5,000		
208-96-8	Acenaphthylene			5,000		
218-01-9	Chrysene			100		U050
225-51-4	Benz[c]acridine			100		U016
297-78-9	Isobenzan	100/10,000	1			
297-97-2	Thionazin	500		100		P040
297-97-2	O,O-Diethyl O-pyrazinyl phosphorothioate	500		100		P040
298-00-0	Parathion-methyl	100/10,000		100		P071
298-00-0	Methyl parathion	100/10,000		100		P071
298-02-2	Phorate	10		10		P094
298-04-4	Disulfoton	500		1		P039
300-62-9	Amphetamine	1,000	1			
300-76-5	Naled			10		
301-04-2	Lead acetate			5,000		U144

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Sec 313	RCRA Code
302-01-2	Hydrazine	1,000		1	313	U133
303-34-4	Lasiocarpine			10		U143
305-03-3	Chlorambucil			10		U035
309-00-2	Aldrin	500/10,000		1	313	P004
311-45-5	Diethyl-p-nitrophenyl phosphate			100		P041
315-18-4	Mexacarbate	500/10,000		1,000		
316-42-7	Emetine, dihydrochloride	1/10,000	1			
319-84-6	alpha-BHC			10		
319-85-7	beta-BHC			1		
319-86-8	delta-BHC			1		
327-98-0	Trichloronate	500	1			
329-71-5	2,5-Dinitrophenol			10		
330-54-1	Diuron			100		
333-41-5	Diazinon			1		
334-88-3	Diazomethane				313	
353-42-4	Boron trifluoride compound with methyl eth	1,000	1			
353-50-4	Carbonic difluoride			1,000		U033
357-57-3	Brucine			100		P018
359-06-8	Fluoroacetyl chloride	10	1			
371-62-0	Ethylene fluorohydrin	10	1			
379-79-3	Ergotamine tartrate	500/10,000	1			
460-19-5	Cyanogen			100		P031
463-58-1	Carbonyl sulfide				313	
465-73-6	Isodrin	100/10,000		1		P060
470-90-6	Chlorfenvinfos	500	1			
492-80-8	C.I. Solvent Yellow 34			100	313	U014
492-80-8	Auramine			100	X	U014
494-03-1	Chlornaphazine			100		U026
496-72-0	Diaminotoluene			10		
502-39-6	Methylmercuric dicyanamide	500/10,000	1			
504-24-5	Pyridine, 4-amino-	500/10,000		1,000		P008
504-24-5	4-Aminopyridine	500/10,000		1,000		P008
504-60-9	1,3-Pentadiene			100		U186
505-60-2	Mustard gas	500	1		313	
506-61-6	Potassium silver cyanide	500		1		P099
506-64-9	Silver cyanide			1		P104
506-68-3	Cyanogen bromide	500/10,000		1,000		U246
506-77-4	Cyanogen chloride			10		P033
506-78-5	Cyanogen iodide	1,000/10,000	1			
506-87-6	Ammonium carbonate			5,000		

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Sec 313	RCRA Code
506-96-7	Acetyl bromide			5,000		
509-14-8	Tetranitromethane	500		10		P112
510-15-6	Chlorobenzilate			10	313	U038
513-49-5	sec-Butylamine			1,000		
514-73-8	Dithiazanine iodide	500/10,000	1			
528-29-0	o-Dinitrobenzene			100		
532-27-4	2-Chloroacetophenone				313	
534-07-6	Bis(chloromethyl) ketone	10/10,000	1			
534-52-1	4,6-Dinitro-o-cresol	10/10,000		10	313	P047
534-52-1	4,6-Dinitro-o-cresol and salts			10		P047
535-89-7	Crimidine	100/10,000	1			
538-07-8	Ethylbis(2-chloroethyl)amine	500	1			
540-59-0	1,2-Dichloroethylene				313	
540-73-8	Hydrazine, 1,2-dimethyl-			1		U099
540-88-5	tert-Butyl acetate			5,000		
541-09-3	Uranyl acetate			100		
541-25-3	Lewisite	10	1			
541-41-3	Ethyl chloroformate				313	
541-53-7	Dithiobiuret	100/10,000		100		P049
541-73-1	1,3-Dichlorobenzene			100	313	U071
542-62-1	Barium cyanide			10		P013
542-75-6	1,3-Dichloropropylene			100	313	U084
542-75-6	1,3-Dichloropropene			100	X	U084
542-76-7	Propionitrile, 3-chloro-	1,000		1,000		P027
542-76-7	3-Chloropropionitrile	1,000		1,000		P027
542-88-1	Bis(chloromethyl) ether	100		1	313	P016
542-88-1	Chloromethyl ether	100		1	X	P016
542-88-1	Dichloromethyl ether	100		1	X	P016
542-90-5	Ethylthiocyanate	10,000	1			
543-90-8	Cadmium acetate			10		
544-18-3	Cobaltous formate			1,000		
544-92-3	Copper cyanide			10		P029
554-84-7	m-Nitrophenol			100		
555-77-1	Tris(2-chloroethyl)amine	100	1			
556-61-6	Methyl isothiocyanate	500	1			
556-64-9	Methyl thiocyanate	10,000	1			
557-19-7	Nickel cyanide			10		P074
557-21-1	Zinc cyanide			10		P121
557-34-6	Zinc acetate			1,000		
557-41-5	Zinc formate			1,000		

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Sec 313	RCRA Code
558-25-8	Methanesulfonyl fluoride	1,000	1			
563-12-2	Ethion	1,000		10		
563-41-7	Semicarbazide hydrochloride	1,000/10,000	1			
563-68-8	Thallium(I) acetate			100		U214
569-64-2	C.I. Basic Green 4				313	
573-56-8	2,6-Dinitrophenol			10		
584-84-9	Toluene-2,4-diisocyanate	500		100	313	
591-08-2	1-Acetyl-2-thiourea			1,000		P002
592-01-8	Calcium cyanide			10		P021
592-04-1	Mercuric cyanide			1		
592-85-8	Mercuric thiocyanate			10		
592-87-0	Lead thiocyanate			100		
593-60-2	Vinyl bromide				313	
594-42-3	Perchloromethylmercaptan	500		100		
594-42-3	Trichloromethanesulfenyl chloride	500		100		
597-64-8	Tetraethyltin	100	1			
598-31-2	Bromoacetone			1,000		P017
606-20-2	2,6-Dinitrotoluene			100	313	U106
608-93-5	Pentachlorobenzene			10		U183
609-19-8	3,4,5-Trichlorophenol			10		
610-39-9	3,4-Dinitrotoluene			10		
614-78-8	Thiourea, (2-methylphenyl)-	500/10,000	1			
615-05-4	2,4-Diaminoanisole				313	
615-53-2	N-Nitroso-N-methylurethane			1		U178
621-64-7	N-Nitrosodi-n-propylamine			10	313	U111
621-64-7	Di-n-propylnitrosamine			10	X	U111
624-83-9	Methyl isocyanate	500		1	313	P064
625-16-1	tert-Amyl acetate			5,000		
626-38-0	sec-Amyl acetate			5,000		
627-11-2	Chloroethyl chloroformate	1,000	1			
628-63-7	Amyl acetate			5,000		
628-86-4	Mercury fulminate			10		P065
630-10-4	Selenourea			1,000		P103
630-20-6	Ethane, 1,1,1,2-tetrachloro-			100		U208
630-60-4	Ouabain	100/10,000	1			
631-61-8	Ammonium acetate			5,000		
636-21-5	o-Toluidine hydrochloride			100	313	U222
639-58-7	Triphenyltin chloride	500/10,000	1			
640-19-7	Fluoroacetamide	100/10,000		100		P057
644-64-4	Dimetilan	500/10,000	1			

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Sec 313	RCRA Code
675-14-9	Cyanuric fluoride	100	1			
676-97-1	Methyl phosphonic dichloride	100	1			
680-31-9	Hexamethylphosphoramide				313	
684-93-5	N-Nitroso-N-methylurea			1	313	U177
692-42-2	Diethylarsine			1		P038
696-28-6	Phenyl dichloroarsine	500		1		P036
696-28-6	Dichlorophenylarsine	500		1		P036
732-11-6	Phosmet	10/10,000	1			
757-58-4	Hexaethyl tetraphosphate			100		P062
759-73-9	N-Nitroso-N-ethylurea			1	313	U176
760-93-0	Methacrylic anhydride	500	1			
764-41-0	2-Butene, 1,4-dichloro-			1		U074
765-34-4	Glycidylaldehyde			10		U126
786-19-6	Carbophenothion	500	1			
814-49-3	Diethyl chlorophosphate	500	1			
814-68-6	Acrylyl chloride	100	1			
815-82-7	Cupric tartrate			100		
823-40-5	Diaminotoluene			10		
824-11-3	Trimethylolpropane phosphite	100/10,000	1			
842-07-9	C.I. Solvent Yellow 14				313	
900-95-8	Stannane, acetoxytriphenyl-	500/10,000	1			
919-86-8	Demeton-S-methyl	500	1			
920-46-7	Methacryloyl chloride	100	1			
924-16-3	N-Nitrosodi-n-butylamine			10	313	U172
930-55-2	N-Nitrosopyrrolidine			1		U180
933-75-5	2,3,6-Trichlorophenol			10		
933-78-8	2,3,5-Trichlorophenol			10		
944-22-9	Fonofos	500	1			
947-02-4	Phosfolan	100/10,000	1			
950-10-7	Mephosfolan	500	1			
950-37-8	Methidathion	500/10,000	1			
959-98-8	alpha - Endosulfan			1		
961-11-5	Tetrachlorvinphos				313	
989-38-8	C.I. Basic Red 1				313	
991-42-4	Norbormide	100/10,000	1			
998-30-1	Triethoxysilane	500	1			
999-81-5	Chlormequat chloride	100/10,000	1			
1024-57-3	Heptachlor epoxide			1		
1031-07-8	Endosulfan sulfate			1		
1031-47-6	Triamiphos	500/10,000	1			

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Section 304 Sec 313	RCRA Code
1066-30-4	Chromic acetate			1,000		
1066-33-7	Ammonium bicarbonate			5,000		
1066-45-1	Trimethyltin chloride	500/10,000	1			
1072-35-1	Lead stearate			5,000		
1111-78-0	Ammonium carbamate			5,000		
1116-54-7	N-Nitrosodiethanolamine			1		U173
1120-71-4	Propane sultone			10	313	U193
1120-71-4	1,3-Propane sultone			10	X	U193
1122-60-7	Nitrocyclohexane	500	1			
1124-33-0	Pyridine, 4-nitro-, 1-oxide	500/10,000	1			
1129-41-5	Metolcarb	100/10,000	1			
1163-19-5	Decabromodiphenyl oxide				313	
1185-57-5	Ferric ammonium citrate			1,000		
1194-65-6	Dichlobenil			100		
1300-71-6	Xylenol			1,000		
1303-28-2	Arsenic pentoxide	100/10,000		1		P011
1303-32-8	Arsenic disulfide			1		
1303-33-9	Arsenic trisulfide			1		
1306-19-0	Cadmium oxide	100/10,000	1			
1309-64-4	Antimony trioxide			1,000		
1310-58-3	Potassium hydroxide			1,000		
1310-73-2	Sodium hydroxide			1,000		
1313-27-5	Molybdenum trioxide				313	
1314-20-1	Thorium dioxide				313	
1314-32-5	Thallic oxide			100		P113
1314-56-3	Phosphorus pentoxide	10	1			
1314-62-1	Vanadium pentoxide	100/10,000		1,000		P120
1314-80-3	Sulfur phosphide			100		U189
1314-84-7	Zinc phosphide	500		100		P122
1314-84-7	Zinc phosphide (conc. <= 10%)	500		100		U249
1314-84-7	Zinc phosphide (conc. > 10%)	500		100		P122
1314-87-0	Lead sulfide			5,000		
1319-72-8	2,4,5-T amines			5,000		
1319-77-3	Cresol (mixed isomers)			1,000	313	U052
1320-18-9	2,4-D Esters			100		
1321-12-6	Nitrotoluene			1,000		
1327-52-2	Arsenic acid			1		P010
1327-53-3	Arsenous oxide	100/10,000		1		P012
1327-53-3	Arsenic trioxide	100/10,000		1		P012
1330-20-7	Xylene (mixed isomers)			1,000	313	U239

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Section 304 Sec 313	RCRA Code
1332-07-6	Zinc borate			1,000		
1332-21-4	Asbestos (friable)			1	313	
1333-83-1	Sodium bifluoride			100		
1335-32-6	Lead subacetate			100		U146
1335-87-1	Hexachloronaphthalene				313	
1336-21-6	Ammonium hydroxide			1,000		
1336-36-3	Polychlorinated biphenyls			1	313	
1336-36-3	PCBs			1	X	
1338-23-4	Methyl ethyl ketone peroxide			10		U160
1338-24-5	Naphthenic acid			100		
1341-49-7	Ammonium bifluoride			100		
1344-28-1	Aluminum oxide				313	
1397-94-0	Antimycin A	1,000/10,000	1			
1420-07-1	Dinoterb	500/10,000	1			
1464-53-5	Diepoxybutane	500		10	313	U085
1464-53-5	2,2'-Bioxirane	500		10	X	U085
1558-25-4	Trichloro(chloromethyl)silane	100	1			
1563-66-2	Carbofuran	10/10,000		10		
1582-09-8	Trifluralin				313	
1600-27-7	Mercuric acetate	500/10,000	1			
1615-80-1	Hydrazine, 1,2-diethyl-			10		U086
1622-32-8	Ethanesulfonyl chloride, 2-chloro-	500	1			
1634-04-4	Methyl tert-butyl ether				313	
1642-54-2	Diethylcarbamazine citrate	100/10,000	1			
1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)			1		
1752-30-3	Acetone thiosemicarbazide	1,000/10,000	1			
1762-95-4	Ammonium thiocyanate			5,000		
1836-75-5	Nitrofen				313	
1863-63-4	Ammonium benzoate			5,000		
1886-71-7	Hexachloropropene			1,000		U243
1897-45-6	Chlorothalonil				313	
1910-42-5	Paraquat	10/10,000	1			
1918-00-9	Dicamba			1,000		
1928-38-7	2,4-D Esters			100		
1928-47-8	2,4,5-T esters			1,000		
1928-61-6	2,4-D Esters			100		
1929-73-3	2,4-D Esters			100		
1937-37-7	C.I. Direct Black 38				313	
1982-47-4	Chloroxuron	500/10,000	1			
2001-95-8	Valinomycin	1,000/10,000	1			

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Sec 313	RCRA Code
2008-46-0	2,4,5-T amines			5,000		
2032-65-7	Methiocarb	500/10,000		10		
2032-65-7	Mercaptodimethur	500/10,000		10		
2074-50-2	Paraquat methosulfate	10/10,000	1			
2097-19-0	Phenylsilatrane	100/10,000	1			
2104-64-5	EPN	100/10,000	1			
2164-17-2	Fluometuron				313	
2223-93-0	Cadmium stearate	1,000/10,000	1			
2231-57-4	Thiocarbazide	1,000/10,000	1			
2234-13-1	Octachloronaphthalene				313	
2238-07-5	Diglycidyl ether	1,000	1			
2275-18-5	Prothoate	100/10,000	1			
2303-16-4	Diallate			100	313	U062
2312-35-8	Propargite			10		
2497-07-6	Oxydisulfoton	500	1			
2524-03-0	Dimethyl phosphorochloridothioate	500	1			
2540-82-1	Formothion	100	1			
2545-59-7	2,4,5-T esters			1,000		
2570-26-5	Pentadecylamine	100/10,000	1			
2587-90-8	Phosphorothioic acid, O,O-dimethyl-5-(2-(m	500	1			
2602-46-2	C.I. Direct Blue 6				313	
2631-37-0	Promecarb	500/10,000	1			
2636-26-2	Cyanophos	1,000	1			
2642-71-9	Azinphos-ethyl	100/10,000	1			
2665-30-7	Phosphonothioic acid, methyl-, O-(4-nitrop	500	1			
2703-13-1	Phosphonothioic acid, methyl-, O-ethyl O-(	500	1			
2757-18-8	Thallous malonate	100/10,000	1			
2763-96-4	Muscimol	500/10,000		1,000		P007
2763-96-4	5-(Aminomethyl)-3-isoxazolol	500/10,000		1,000		P007
2764-72-9	Diquat			1,000		
2778-04-3	Endothion	500/10,000	1			
2832-40-8	C.I. Disperse Yellow 3				313	
2921-88-2	Chlorpyrifos			1		
2944-67-4	Ferric ammonium oxalate			1,000		
2971-38-2	2,4-D Esters			100		
3012-65-5	Ammonium citrate, dibasic			5,000		
3037-72-7	Silane, (4-aminobutyl)diethoxymethyl-	1,000	1			
3118-97-6	C.I. Solvent Orange 7				313	
3164-29-2	Ammonium tartrate			5,000		
3165-93-3	4-Chloro-o-toluidine, hydrochloride			100		U049

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Sec 313	RCRA Code
3251-23-8	Cupric nitrate			100		
3254-63-5	Phosphoric acid, dimethyl 4-(methylthio) p	500	1			
3288-58-2	O,O-Diethyl S-methyl dithiophosphate			5,000		U087
3486-35-9	Zinc carbonate			1,000		
3569-57-1	Sulfoxide, 3-chloropropyl octyl	500	1			
3615-21-2	Benzimidazole, 4,5-dichloro-2-(trifluorome	500/10,000	1			
3689-24-5	Sulfotep	500		100		P109
3689-24-5	Tetraethyldithiopyrophosphate	500		100		P109
3691-35-8	Chlorophacinone	100/10,000	1			
3734-97-2	Amiton oxalate	100/10,000	1			
3735-23-7	Methyl phenkapton	500	1			
3761-53-3	C.I. Food Red 5				313	
3813-14-7	2,4,5-T amines			5,000		
3878-19-1	Fuberidazole	100/10,000	1			
4044-65-9	Bitoscanate	500/10,000	1			
4098-71-9	Isophorone diisocyanate	100	1			
4104-14-7	Phosacetim	100/10,000	1			
4170-30-3	Crotonaldehyde	1,000		100		U053
4301-50-2	Fluenetil	100/10,000	1			
4418-66-0	Phenol, 2,2'-thiobis[4-chloro-6-methyl-	100/10,000	1			
4549-40-0	N-Nitrosomethylvinylamine			10	313	P084
4680-78-8	C.I. Acid Green 3				313	
4835-11-4	Hexamethylenediamine, N,N'-dibutyl-	500	1			
5344-82-1	Thiourea, (2-chlorophenyl)-	100/10,000		100		P026
5836-29-3	Coumatetralyl	500/10,000	1			
5893-66-3	Cupric oxalate			100		
5972-73-6	Ammonium oxalate			5,000		
6009-70-7	Ammonium oxalate			5,000		
6369-96-6	2,4,5-T amines			5,000		
6369-97-7	2,4,5-T amines			5,000		
6484-52-2	Ammonium nitrate (solution)				313	
6533-73-9	Thallous carbonate	100/10,000		100		U215
6533-73-9	Thallium(I) carbonate	100/10,000		100		U215
6923-22-4	Monocrotophos	10/10,000	1			
7005-72-3	4-Chlorophenyl phenyl ether			5,000		
7421-93-4	Endrin aldehyde			1		
7428-48-0	Lead stearate			5,000		
7429-90-5	Aluminum (fume or dust)				313	
7439-92-1	Lead			1*	313	
7439-96-5	Manganese				313	

* No reporting of releases is required if the diameter of the pieces of the solid metal released is equal to or exceeds 100 micrometers (0.004 inches).

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7439-97-6	Mercury			1	313	U151
7440-02-0	Nickel			100*	313	
7440-22-4	Silver			1,000*	313	
7440-23-5	Sodium			10		
7440-28-0	Thallium			1,000*	313	
7440-36-0	Antimony			5,000*	313	
7440-38-2	Arsenic			1*	313	
7440-39-3	Barium				313	
7440-41-7	Beryllium			10*	313	P015
7440-43-9	Cadmium			10*	313	
7440-47-3	Chromium			5,000*	313	
7440-48-4	Cobalt				313	
7440-50-8	Copper			5,000*	313	
7440-62-2	Vanadium (fume or dust)				313	
7440-66-6	Zinc (fume or dust)			1,000*	313	
7440-66-6	Zinc			1,000*		
7446-08-4	Selenium dioxide			10		
7446-09-5	Sulfur dioxide	500	1			
7446-11-9	Sulfur trioxide	100	1			
7446-14-2	Lead sulfate			100		
7446-18-6	Thallous sulfate	100/10,000		100		P115
7446-18-6	Thallium(I) sulfate	100/10,000		100		P115
7446-27-7	Lead phosphate			1		U145
7447-39-4	Cupric chloride			10		
7487-94-7	Mercuric chloride	500/10,000	1			
7488-56-4	Selenium sulfide			10		U205
7550-45-0	Titanium tetrachloride	100	1		313	
7558-79-4	Sodium phosphate, dibasic			5,000		
7580-67-8	Lithium hydride	100	1			
7601-54-9	Sodium phosphate, tribasic			5,000		
7631-89-2	Sodium arsenate	1,000/10,000		1		
7631-90-5	Sodium bisulfite			5,000		
7632-00-0	Sodium nitrite			100		
7637-07-2	Boron trifluoride	500	1			
7645-25-2	Lead arsenate			1		
7646-85-7	Zinc chloride			1,000		
7647-01-0	Hydrochloric acid			5,000	313	
7647-01-0	Hydrogen chloride (gas only)	500		5,000	X	
7647-18-9	Antimony pentachloride			1,000		
7664-38-2	Phosphoric acid			5,000	313	

* No reporting of releases is required if the diameter of the pieces of the solid metal released is equal to or exceeds 100 micrometers (0.004 inches).

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Sec 313	RCRA Code
7664-39-3	Hydrogen fluoride	100		100	313	U134
7664-39-3	Hydrofluoric acid	100		100	X	U134
7664-41-7	Ammonia	500		100	313	
7664-93-9	Sulfuric acid	1,000		1,000	313	
7681-49-4	Sodium fluoride			1,000		
7681-52-9	Sodium hypochlorite			100		
7697-37-2	Nitric acid	1,000		1,000	313	
7699-45-8	Zinc bromide			1,000		
7705-08-0	Ferric chloride			1,000		
7718-54-9	Nickel chloride			100		
7719-12-2	Phosphorus trichloride	1,000		1,000		
7720-78-7	Ferrous sulfate			1,000		
7722-64-7	Potassium permanganate			100		
7722-84-1	Hydrogen peroxide (Conc.> 52%)	1,000	1			
7723-14-0	Phosphorus (yellow or white)	100		1	313	
7723-14-0	Phosphorus	100		1		
7726-95-6	Bromine	500	1			
7733-02-0	Zinc sulfate			1,000		
7738-94-5	Chromic acid			10		
7758-29-4	Sodium phosphate, tribasic			5,000		
7758-94-3	Ferrous chloride			100		
7758-95-4	Lead chloride			100		
7758-98-7	Cupric sulfate			10		
7761-88-8	Silver nitrate			1		
7773-06-0	Ammonium sulfamate			5,000		
7775-11-3	Sodium chromate			10		
7778-39-4	Arsenic acid			1		P010
7778-44-1	Calcium arsenate	500/10,000		1		
7778-50-9	Potassium bichromate			10		
7778-54-3	Calcium hypochlorite			10		
7779-86-4	Zinc hydrosulfite			1,000		
7779-88-6	Zinc nitrate			1,000		
7782-41-4	Fluorine	500		10		P056
7782-49-2	Selenium			100*	313	
7782-50-5	Chlorine	100		10	313	
7782-63-0	Ferrous sulfate			1,000		
7782-82-3	Sodium selenite			100		
7782-86-7	Mercurous nitrate			10		
7783-00-8	Selenious acid	1,000/10,000		10		U204
7783-06-4	Hydrogen sulfide	500		100		U135

* No reporting of releases is required if the diameter of the pieces of the solid metal released is equal to or exceeds 100 micrometers (0.004 inches).

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Sec 313	RCRA Code
7783-07-5	Hydrogen selenide	10	1			
7783-20-2	Ammonium sulfate (solution)				313	
7783-35-9	Mercuric sulfate			10		
7783-46-2	Lead fluoride			100		
7783-49-5	Zinc fluoride			1,000		
7783-50-8	Ferric fluoride			100		
7783-56-4	Antimony trifluoride			1,000		
7783-60-0	Sulfur tetrafluoride	100	1			
7783-70-2	Antimony pentafluoride	500	1			
7783-80-4	Tellurium hexafluoride	100	1			
7784-34-1	Arsenous trichloride	500		1		
7784-40-9	Lead arsenate			1		
7784-41-0	Potassium arsenate			1		
7784-42-1	Arsine	100	1			
7784-46-5	Sodium arsenite	500/10,000		1		
7785-84-4	Sodium phosphate, tribasic			5,000		
7786-34-7	Mevinphos	500		10		
7786-81-4	Nickel sulfate			100		
7787-47-5	Beryllium chloride			1		
7787-49-7	Beryllium fluoride			1		
7787-55-5	Beryllium nitrate			1		
7788-98-9	Ammonium chromate			10		
7789-00-6	Potassium chromate			10		
7789-06-2	Strontium chromate			10		
7789-09-5	Ammonium bichromate			10		
7789-42-6	Cadmium bromide			10		
7789-43-7	Cobaltous bromide			1,000		
7789-61-9	Antimony tribromide			1,000		
7790-94-5	Chlorosulfonic acid			1,000		
7791-12-0	Thallous chloride	100/10,000		100		U216
7791-12-0	Thallium chloride TlCl	100/10,000		100		U216
7791-23-3	Selenium oxychloride	500	1			
7803-51-2	Phosphine	500		100		P096
7803-55-6	Ammonium vanadate			1,000		P119
8001-35-2	Toxaphene	500/10,000		1	313	P123
8001-35-2	Camphechlor	500/10,000		1	X	P123
8001-35-2	Camphene, octachloro-	500/10,000		1	X	P123
8001-58-9	Creosote			1		
8003-19-8	Dichloropropane - Dichloropropene (mixture			100		
8003-34-7	Pyrethrins			1		

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Sec 313	RCRA Code
8014-95-7	Sulfuric acid (fuming)			1,000		
8065-48-3	Demeton	500	1			
10022-70-5	Sodium hypochlorite			100		
10025-73-7	Chromic chloride	1/10,000	1			
10025-87-3	Phosphorus oxychloride	500		1,000		
10025-91-9	Antimony trichloride			1,000		
10026-11-6	Zirconium tetrachloride			5,000		
10026-13-8	Phosphorus pentachloride	500	1			
10028-15-6	Ozone	100	1			
10028-22-5	Ferric sulfate			1,000		
10031-59-1	Thallium sulfate	100/10,000		100		
10034-93-2	Hydrazine sulfate				313	
10039-32-4	Sodium phosphate, dibasic			5,000		
10043-01-3	Aluminum sulfate			5,000		
10045-89-3	Ferrous ammonium sulfate			1,000		
10045-94-0	Mercuric nitrate			10		
10049-04-4	Chlorine dioxide				313	
10049-05-5	Chromous chloride			1,000		
10099-74-8	Lead nitrate			100		
10101-53-8	Chromic sulfate			1,000		
10101-63-0	Lead iodide			100		
10101-89-0	Sodium phosphate, tribasic			5,000		
10102-06-4	Uranyl nitrate			100		
10102-18-8	Sodium selenite	100/10,000		100		
10102-20-2	Sodium tellurite	500/10,000	1			
10102-43-9	Nitric oxide	100		10		P076
10102-44-0	Nitrogen dioxide	100		10		P078
10102-45-1	Thallium(I) nitrate			100		U217
10102-48-4	Lead arsenate			1		
10108-64-2	Cadmium chloride			10		
10124-50-2	Potassium arsenite	500/10,000		1		
10124-56-8	Sodium phosphate, tribasic			5,000		
10140-65-5	Sodium phosphate, dibasic			5,000		
10140-87-1	Ethanol, 1,2-dichloro-, acetate	1,000	1			
10192-30-0	Ammonium bisulfite			5,000		
10196-04-0	Ammonium sulfite			5,000		
10210-68-1	Cobalt carbonyl	10/10,000	1			
10265-92-6	Methamidophos	100/10,000	1			
10294-34-5	Boron trichloride	500	1			
10311-84-9	Dialifor	100/10,000	1			

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Sec 313	RCRA Code
10361-89-4	Sodium phosphate, tribasic			5,000		
10380-29-7	Cupric sulfate, ammoniated			100		
10415-75-5	Mercurous nitrate			10		
10421-48-4	Ferric nitrate			1,000		
10476-95-6	Methacrolein diacetate	1,000	1			
10544-72-6	Nitrogen dioxide			10		
10588-01-9	Sodium bichromate			10		
11096-82-5	Aroclor 1260			1		
11097-69-1	Aroclor 1254			1		
11104-28-2	Aroclor 1221			1		
11115-74-5	Chromic acid			10		
11141-16-5	Aroclor 1232			1		
12002-03-8	Paris green	500/10,000		1		
12002-03-8	Cupric acetoarsenite	500/10,000		1		
12039-52-0	Selenious acid, dithallium(1+) salt			1,000		P114
12054-48-7	Nickel hydroxide			10		
12108-13-3	Manganese, tricarbonyl methylcyclopentadie	100	1			
12122-67-7	Zineb				313	
12125-01-8	Ammonium fluoride			100		
12125-02-9	Ammonium chloride			5,000		
12135-76-1	Ammonium sulfide			100		
12427-38-2	Maneb				313	
12672-29-6	Aroclor 1248			1		
12674-11-2	Aroclor 1016			1		
12771-08-3	Sulfur monochloride			1,000		
13071-79-9	Terbufos	100	1			
13171-21-6	Phosphamidon	100	1			
13194-48-4	Ethoprophos	1,000	1			
13410-01-0	Sodium selenate	100/10,000	1			
13450-90-3	Gallium trichloride	500/10,000	1			
13463-39-3	Nickel carbonyl	1		10		P073
13463-40-6	Iron, pentacarbonyl-	100	1			
13494-80-9	Tellurium	500/10,000	1			
13560-99-1	2,4,5-T salts			1,000		
13597-99-4	Beryllium nitrate			1		
13746-89-9	Zirconium nitrate			5,000		
13765-19-0	Calcium chromate			10		U032
13814-96-5	Lead fluoborate			100		
13826-83-0	Ammonium fluoborate			5,000		
13952-84-6	sec-Butylamine			1,000		

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Sec 313	RCRA Code
14017-41-5	Cobaltous sulfamate			1,000		
14167-18-1	Salcomine	500/10,000	1			
14216-75-2	Nickel nitrate			100		
14258-49-2	Ammonium oxalate			5,000		
14307-35-8	Lithium chromate			10		
14307-43-8	Ammonium tartrate			5,000		
14639-97-5	Zinc ammonium chloride			1,000		
14639-98-6	Zinc ammonium chloride			1,000		
14644-61-2	Zirconium sulfate			5,000		
15271-41-7	Bicyclo[2.2.1]heptane-2-carbonitrile, 5-ch	500/10,000	1			
15699-18-0	Nickel ammonium sulfate			100		
15739-80-7	Lead sulfate			100		
15950-66-0	2,3,4-Trichlorophenol			10		
16071-86-6	C.I. Direct Brown 95				313	
16543-55-8	N-Nitrosonornicotine				313	
16721-80-5	Sodium hydrosulfide			5,000		
16752-77-5	Methomyl	500/10,000		100		P066
16752-77-5	Ethanimidothioic acid, N-[[methylamino)car	500/10,000		100		P066
16871-71-9	Zinc silicofluoride			5,000		
16919-19-0	Ammonium silicofluoride			1,000		
16923-95-8	Zirconium potassium fluoride			1,000		
17702-41-9	Decaborane(14)	500/10,000	1			
17702-57-7	Formparanate	100/10,000	1			
18883-66-4	D-Glucose, 2-deoxy-2-[[(methylnitrosoamino			1		U206
19287-45-7	Diborane	100	1			
19624-22-7	Pentaborane	500	1			
20816-12-0	Osmium tetroxide			1,000	313	P087
20816-12-0	Osmium oxide Os04 (T-4)-			1,000	X	P087
20830-75-5	Digoxin	10/10,000	1			
20830-81-3	Daunomycin			10		U059
20859-73-8	Aluminum phosphide	500		100		P006
21548-32-3	Fosthietan	500	1			
21609-90-5	Leptophos	500/10,000	1			
21908-53-2	Mercuric oxide	500/10,000	1			
21923-23-9	Chlorthiophos	500	1			
22224-92-6	Fenamiphos	10/10,000	1			
23135-22-0	Oxamyl	100/10,000	1			
23422-53-9	Formetanate hydrochloride	500/10,000	1			
23505-41-1	Pirimifos-ethyl	1,000	1			
23950-58-5	Benzamide,3,5-dichloro-N-(1,1-dimethyl-2-p			5,000		U192

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Sec 313	RCRA Code
24017-47-8	Triazofos	500	1			
24934-91-6	Chlormephos	500	1			
25154-54-5	Dinitrobenzene (mixed isomers)			100		
25154-55-6	Nitrophenol (mixed isomers)			100		
25155-30-0	Sodium dodecylbenzenesulfonate			1,000		
25167-82-2	Trichlorophenol			10		
25168-15-4	2,4,5-T esters			1,000		
25168-26-7	2,4-D Esters			100		
25321-14-6	Dinitrotoluene			10		
25321-22-6	Dichlorobenzene (mixed isomers)			100	313	
25321-22-6	Dichlorobenzene			100	X	
25376-45-8	Diaminotoluene (mixed isomers)			10	313	U221
25376-45-8	Toluenediamine			10	X	
25550-58-7	Dinitrophenol			10		
26264-06-2	Calcium dodecylbenzenesulfonate			1,000		
26419-73-8	Carbamic acid, methyl-, O-(((2,4-dimethyl-	100/10,000	1			
26471-62-5	Toluene diisocyanate			100		U223
26628-22-8	Sodium azide (Na(N3))	500		1,000		P105
26638-19-7	Dichloropropane			1,000		
27137-85-5	Trichloro(dichlorophenyl)silane	500	1			
27176-87-0	Dodecylbenzenesulfonic acid			1,000		
27323-41-7	Triethanolamine dodecylbenzene sulfonate			1,000		
27774-13-6	Vanadyl sulfate			1,000		
28300-74-5	Antimony potassium tartrate			100		
28347-13-9	Xylylene dichloride	100/10,000	1			
28772-56-7	Bromadiolone	100/10,000	1			
30525-89-4	Paraformaldehyde			1,000		
30674-80-7	Methacryloyloxyethyl isocyanate	100	1			
32534-95-5	2,4,5-TP esters			100		
33213-65-9	beta - Endosulfan			1		
36478-76-9	Uranyl nitrate			100		
37211-05-5	Nickel chloride			100		
39156-41-7	2,4-Diaminoanisole sulfate				313	
39196-18-4	Thiofanox	100/10,000		100		P045
42504-46-1	Isopropanolamine dodecylbenzene sulfonate			1,000		
50782-69-9	Phosphonothioic acid, methyl-, S-(2-(bis(1	100	1			
52628-25-8	Zinc ammonium chloride			1,000		
52652-59-2	Lead stearate			5,000		
52740-16-6	Calcium arsenite			1		
53467-11-1	2,4-D Esters			100		

CAS Number	Chemical Name	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Sec 313	RCRA Code
53469-21-9	Aroclor 1242			1		
53558-25-1	Pyriminil	100/10,000	1			
55488-87-4	Ferric ammonium oxalate			1,000		
56189-09-4	Lead stearate			5,000		
58270-08-9	Zinc, dichloro(4,4-dimethyl-5((((methylami	100/10,000	1			
61792-07-2	2,4,5-T esters			1,000		
62207-76-5	Cobalt, ((2,2'-(1,2-ethanediylbis(nitrilom	100/10,000	1			
**	Organorhodium Complex (PMN-82-147)	10/10,000	1			

** This chemical was identified from a Premanufacture Review Notice (PMN) submitted to EPA. The submitter has claimed certain information on the submission to be confidential, including specific chemical identity.

Chemical Category	Sec. 302(EHS) TPQ	Section 304 EHS RQ	Section 304 CERCLA RQ	Sec 313	RCRA Code
Antimony Compounds			***	313	
Arsenic Compounds			***	313	
Barium Compounds				313	
Beryllium Compounds			***	313	
Cadmium Compounds			***	313	
Chlordane (Technical Mixture and Metabolites)			***		
Chlorinated Benzenes			***		
Chlorinated Ethanes			***		
Chlorinated Naphthalene			***		
Chlorophenols			***	313	
Chlorinated Phenols			***	X	
Chloroalkyl Ethers			***		
Chromium Compounds			***	313	
Cobalt Compounds				313	
Coke Oven Emissions			1		
Copper Compounds			***	313	
Cyanide Compounds			***	313	
DDT and Metabolites			***		
Dichlorobenzidine			***		
Diphenylhydrazine			***		
Endosulfan and Metabolites			***		
Endrin and Metabolites			***		
Glycol Ethers				313	
Haloethers			***		
Halomethanes			***		
Heptachlor and Metabolites			***		
Lead Compounds			***	313	
Manganese Compounds				313	
Mercury Compounds			***	313	
Nickel Compounds			***	313	
Nitrophenols			***		
Nitrosamines			***		
Phthalate Esters			***		
Polybrominated Biphenyls (PBBs)				313	
Polynuclear Aromatic Hydrocarbons			***		
Selenium Compounds			***	313	
Silver Compounds			***	313	
Thallium Compounds			***	313	
Zinc Compounds			***	313	

*** Indicates that no RQ is assigned to this generic or broad class, although the class is a CERCLA hazardous substance. See 50 Federal Register 13456 (April 4, 1985).

ALPHABETICAL LISTING OF CHEMICAL NAME AND CAS NUMBER

CAS Number	Chemical Name
83-32-9	Acenaphthene
208-96-8	Acenaphthylene
75-07-0	Acetaldehyde
75-87-6	Acetaldehyde, trichloro-
60-35-5	Acetamide
64-19-7	Acetic acid
108-24-7	Acetic anhydride
67-64-1	Acetone
75-86-5	Acetone cyanohydrin
1752-30-3	Acetone thiosemicarbazide
75-05-8	Acetonitrile
98-86-2	Acetophenone
53-96-3	2-Acetylaminofluorene
506-96-7	Acetyl bromide
75-36-5	Acetyl chloride
591-08-2	1-Acetyl-2-thiourea
107-02-8	Acrolein
79-06-1	Acrylamide
79-10-7	Acrylic acid
107-13-1	Acrylonitrile
814-68-6	Acrylyl chloride
124-04-9	Adipic acid
111-69-3	Adiponitrile
116-06-3	Aldicarb
309-00-2	Aldrin
107-18-6	Allyl alcohol
107-11-9	Allylamine
107-05-1	Allyl chloride
7429-90-5	Aluminum (fume or dust)
1344-28-1	Aluminum oxide
20859-73-8	Aluminum phosphide
10043-01-3	Aluminum sulfate
117-79-3	2-Aminoanthraquinone
60-09-3	4-Aminoazobenzene
92-67-1	4-Aminobiphenyl
82-28-0	1-Amino-2-methylanthraquinone
54-62-6	Aminopterin
504-24-5	4-Aminopyridine
78-53-5	Amiton
3734-97-2	Amiton oxalate
61-82-5	Amitrole
7664-41-7	Ammonia
631-61-8	Ammonium acetate
1863-63-4	Ammonium benzoate
1066-33-7	Ammonium bicarbonate
7789-09-5	Ammonium bichromate
1341-49-7	Ammonium bifluoride
10192-30-0	Ammonium bisulfite
1111-78-0	Ammonium carbamate
506-87-6	Ammonium carbonate
12125-02-9	Ammonium chloride
7788-98-9	Ammonium chromate
3012-65-5	Ammonium citrate, dibasic
13826-83-0	Ammonium fluoborate
12125-01-8	Ammonium fluoride
1336-21-6	Ammonium hydroxide
6484-52-2	Ammonium nitrate (solution)
6009-70-7	Ammonium oxalate
5972-73-6	Ammonium oxalate
14258-49-2	Ammonium oxalate
131-74-8	Ammonium picrate
16919-19-0	Ammonium silicofluoride
7773-06-0	Ammonium sulfamate
7783-20-2	Ammonium sulfate (solution)
12135-76-1	Ammonium sulfide
10196-04-0	Ammonium sulfite
14307-43-8	Ammonium tartrate
3164-29-2	Ammonium tartrate
1762-95-4	Ammonium thiocyanate
7803-55-6	Ammonium vanadate
300-62-9	Amphetamine
628-63-7	Amyl acetate
123-92-2	iso-Amyl acetate
626-38-0	sec-Amyl acetate
625-16-1	tert-Amyl acetate
62-53-3	Aniline
88-05-1	Aniline, 2,4,6-trimethyl-
90-04-0	o-Anisidine
104-94-9	p-Anisidine
134-29-2	o-Anisidine hydrochloride
120-12-7	Anthracene
7440-36-0	Antimony
	Antimony Compounds
7783-70-2	Antimony pentafluoride
7647-18-9	Antimony pentachloride
28300-74-5	Antimony potassium tartrate
7789-61-9	Antimony tribromide
10025-91-9	Antimony trichloride
7783-56-4	Antimony trifluoride
1309-64-4	Antimony trioxide
1397-94-0	Antimycin A
86-88-4	Antu
12674-11-2	Aroclor 1016
11104-28-2	Aroclor 1221
11141-16-5	Aroclor 1232
53469-21-9	Aroclor 1242
12672-29-6	Aroclor 1248
11097-69-1	Aroclor 1254
11096-82-5	Aroclor 1260
7440-38-2	Arsenic

CAS Number	Chemical Name
1327-52-2	Arsenic acid
7778-39-4	Arsenic acid
	Arsenic Compounds
1303-32-8	Arsenic disulfide
1303-28-2	Arsenic pentoxide
1327-53-3	Arsenic trioxide
1303-33-9	Arsenic trisulfide
1327-53-3	Arsenous oxide
7784-34-1	Arsenous trichloride
7784-42-1	Arsine
1332-21-4	Asbestos (friable)
492-80-8	Auramine
115-02-6	Azaserine
2642-71-9	Azinphos-ethyl
86-50-0	Azinphos-methyl
151-56-4	Aziridine
75-55-8	Aziridine, 2-methyl
7440-39-3	Barium
	Barium Compounds
542-62-1	Barium cyanide
225-51-4	Benz[c]acridine
98-87-3	Benzal chloride
55-21-0	Benzamide
23950-58-5	Benzamide,3,5-dichloro-N-(1,1-dimethyl-2-p
56-55-3	Benz[a]anthracene
98-16-8	Benzenamine, 3-(trifluoromethyl)-
71-43-2	Benzene
100-14-1	Benzene, 1-(chloromethyl)-4-nitro-
108-38-3	Benzene, m-dimethyl-
95-47-6	Benzene, o-dimethyl-
106-42-3	Benzene, p-dimethyl-
98-05-5	Benzenearsonic acid
122-09-8	Benzeneethanamine, alpha,alpha-dimethyl-
98-09-9	Benzenesulfonyl chloride
108-98-5	Benzenethiol
92-87-5	Benzidine
3615-21-2	Benzimidazole, 4,5-dichloro-2-(trifluorome
205-99-2	Benzo[b]fluoranthene
207-08-9	Benzo(k)fluoranthene
65-85-0	Benzoic acid
98-07-7	Benzoic trichloride
100-47-0	Benzonitrile
191-24-2	Benzo[ghi]perylene
50-32-8	Benzo[a]pyrene
106-51-4	p-Benzoquinone
98-07-7	Benzotrichloride
98-88-4	Benzoyl chloride
94-36-0	Benzoyl peroxide
100-44-7	Benzyl chloride
140-29-4	Benzyl cyanide
7440-41-7	Beryllium
7787-47-5	Beryllium chloride
	Beryllium Compounds
7787-49-7	Beryllium fluoride
13597-99-4	Beryllium nitrate
7787-55-5	Beryllium nitrate
319-84-6	alpha-BHC
319-85-7	beta-BHC
319-86-8	delta-BHC
15271-41-7	Bicyclo[2.2.1]heptane-2-carbonitrile, 5-ch
1464-53-5	2,2'-Bioxirane
92-52-4	Biphenyl
111-91-1	Bis(2-chloroethoxy) methane
111-44-4	Bis(2-chloroethyl) ether
542-88-1	Bis(chloromethyl) ether
108-60-1	Bis(2-chloro-1-methylethyl)ether
534-07-6	Bis(chloromethyl) ketone
103-23-1	Bis(2-ethylhexyl) adipate
117-81-7	Bis(2-ethylhexyl)phthalate
4044-65-9	Bitoscanate
10294-34-5	Boron trichloride
7637-07-2	Boron trifluoride
353-42-4	Boron trifluoride compound with methyl eth
28772-56-7	Bromadiolone
7726-95-6	Bromine
598-31-2	Bromoacetone
75-25-2	Bromoform
74-83-9	Bromomethane
101-55-3	4-Bromophenyl phenyl ether
357-57-3	Brucine
106-99-0	1,3-Butadiene
764-41-0	2-Butene, 1,4-dichloro-
110-19-0	iso-Butyl acetate
105-46-4	sec-Butyl acetate
540-88-5	tert-Butyl acetate
123-86-4	Butyl acetate
141-32-2	Butyl acrylate
71-36-3	n-Butyl alcohol
78-92-2	sec-Butyl alcohol
75-65-0	tert-Butyl alcohol
109-73-9	Butylamine
78-81-9	iso-Butylamine
513-49-5	sec-Butylamine
13952-84-6	sec-Butylamine
75-64-9	tert-Butylamine
85-68-7	Butyl benzyl phthalate
106-88-7	1,2-Butylene oxide
84-74-2	n-Butyl phthalate
123-72-8	Butyraldehyde
107-92-6	Butyric acid

CAS Number	Chemical Name
79-31-2	iso-Butyric acid
75-60-5	Cacodylic acid
7440-43-9	Cadmium
543-90-8	Cadmium acetate
7789-42-6	Cadmium bromide
10108-64-2	Cadmium chloride
	Cadmium Compounds
1306-19-0	Cadmium oxide
2223-93-0	Cadmium stearate
7778-44-1	Calcium arsenate
52740-16-6	Calcium arsenite
75-20-7	Calcium carbide
13765-19-0	Calcium chromate
592-01-8	Calcium cyanide
26264-06-2	Calcium dodecylbenzenesulfonate
7778-54-3	Calcium hypochlorite
156-62-7	Calcium cyanamide
8001-35-2	Camphechlor
8001-35-2	Camphene, octachloro-
56-25-7	Cantharidin
133-06-2	Captan
51-83-2	Carbachol chloride
51-79-6	Carbamic acid, ethyl ester
26419-73-8	Carbamic acid, methyl-, O-(((2,4-dimethyl-
63-25-2	Carbaryl
1563-66-2	Carbofuran
75-15-0	Carbon disulfide
353-50-4	Carbonic difluoride
56-23-5	Carbon tetrachloride
463-58-1	Carbonyl sulfide
786-19-6	Carbophenothion
120-80-9	Catechol
133-90-4	Chloramben
305-03-3	Chlorambucil
57-74-9	Chlordane
	Chlordane (Technical Mixture and Metabolit
470-90-6	Chlorfenvinfos
	Chlorinated Benzenes
	Chlorinated Ethanes
	Chlorinated Naphthalene
	Chlorinated Phenols
7782-50-5	Chlorine
10049-04-4	Chlorine dioxide
24934-91-6	Chlormephos
999-81-5	Chlormequat chloride
494-03-1	Chlornaphazine
59-50-7	p-Chloro-m-cresol
3165-93-3	4-Chloro-o-toluidine, hydrochloride
107-20-0	Chloroacetaldehyde
79-11-8	Chloroacetic acid
532-27-4	2-Chloroacetophenone
	Chloroalkyl Ethers
106-47-8	p-Chloroaniline
108-90-7	Chlorobenzene
510-15-6	Chlorobenzilate
124-48-1	Chlorodibromomethane
75-00-3	Chloroethane
107-07-3	Chloroethanol
627-11-2	Chloroethyl chloroformate
110-75-8	2-Chloroethyl vinyl ether
67-66-3	Chloroform
74-87-3	Chloromethane
107-30-2	Chloromethyl methyl ether
542-88-1	Chloromethyl ether
91-58-7	2-Chloronaphthalene
3691-35-8	Chlorophacinone
95-57-8	2-Chlorophenol
	Chlorophenols
7005-72-3	4-Chlorophenyl phenyl ether
126-99-8	Chloroprene
542-76-7	3-Chloropropionitrile
7790-94-5	Chlorosulfonic acid
1897-45-6	Chlorothalonil
1982-47-4	Chloroxuron
2921-88-2	Chlorpyrifos
21923-23-9	Chlorthiophos
1066-30-4	Chromic acetate
11115-74-5	Chromic acid
7738-94-5	Chromic acid
10025-73-7	Chromic chloride
10101-53-8	Chromic sulfate
7440-47-3	Chromium
	Chromium Compounds
10049-05-5	Chromous chloride
218-01-9	Chrysene
4680-78-8	C.I. Acid Green 3
569-64-2	C.I. Basic Green 4
989-38-8	C.I. Basic Red 1
1937-37-7	C.I. Direct Black 38
2602-46-2	C.I. Direct Blue 6
16071-86-6	C.I. Direct Brown 95
2832-40-8	C.I. Disperse Yellow 3
3761-53-3	C.I. Food Red 5
81-88-9	C.I. Food Red 15
3118-97-6	C.I. Solvent Orange 7
97-56-3	C.I. Solvent Yellow 3
842-07-9	C.I. Solvent Yellow 14
492-80-8	C.I. Solvent Yellow 34
128-66-5	C.I. Vat Yellow 4
7440-48-4	Cobalt

CAS Number	Chemical Name
10210-68-1	Cobalt carbonyl
	Cobalt Compounds
62207-76-5	Cobalt, [(2,2'-(1,2-ethanediylbis(nitrilom
7789-43-7	Cobaltous bromide
544-18-3	Cobaltous formate
14017-41-5	Cobaltous sulfamate
	Coke Oven Emissions
64-86-8	Colchicine
7440-50-8	Copper
	Copper Compounds
544-92-3	Copper cyanide
56-72-4	Coumaphos
5836-29-3	Coumatetralyl
8001-58-9	Creosote
120-71-8	p-Cresidine
108-39-4	m-Cresol
95-48-7	o-Cresol
106-44-5	p-Cresol
1319-77-3	Cresol (mixed isomers)
535-89-7	Crimidine
4170-30-3	Crotonaldehyde
123-73-9	Crotonaldehyde, (E)-
98-82-8	Cumene
80-15-9	Cumene hydroperoxide
135-20-6	Cupferron
142-71-2	Cupric acetate
12002-03-8	Cupric acetoarsenite
7447-39-4	Cupric chloride
3251-23-8	Cupric nitrate
5893-66-3	Cupric oxalate
7758-98-7	Cupric sulfate
10380-29-7	Cupric sulfate, ammoniated
815-82-7	Cupric tartrate
	Cyanide Compounds
57-12-5	Cyanides (soluble salts and complexes)
460-19-5	Cyanogen
506-68-3	Cyanogen bromide
506-77-4	Cyanogen chloride
506-78-5	Cyanogen iodide
2636-26-2	Cyanophos
675-14-9	Cyanuric fluoride
110-82-7	Cyclohexane
108-94-1	Cyclohexanone
66-81-9	Cycloheximide
108-91-8	Cyclohexylamine
131-89-5	2-Cyclohexyl-4,6-Dinitrophenol
50-18-0	Cyclophosphamide
94-75-7	2,4-D
94-75-7	2,4-D Acid
94-11-1	2,4-D Esters
94-79-1	2,4-D Esters
94-80-4	2,4-D Esters
1320-18-9	2,4-D Esters
1928-38-7	2,4-D Esters
1928-61-6	2,4-D Esters
1929-73-3	2,4-D Esters
2971-38-2	2,4-D Esters
25168-26-7	2,4-D Esters
53467-11-1	2,4-D Esters
20830-81-3	Daunomycin
96-12-8	DBCP
72-54-8	DDD
72-55-9	DDE
50-29-3	DDT
	DDT and Metabolites
17702-41-9	Decaborane(14)
1163-19-5	Decabromodiphenyl oxide
117-81-7	DEHP
8065-48-3	Demeton
919-86-8	Demeton-S-methyl
10311-84-9	Dialifor
2303-16-4	Diallate
615-05-4	2,4-Diaminoanisole
39156-41-7	2,4-Diaminoanisole sulfate
101-80-4	4,4'-Diaminodiphenyl ether
496-72-0	Diaminotoluene
823-40-5	Diaminotoluene
95-80-7	2,4-Diaminotoluene
25376-45-8	Diaminotoluene (mixed isomers)
333-41-5	Diazinon
334-88-3	Diazomethane
53-70-3	Dibenz[a,h]anthracene
132-64-9	Dibenzofuran
189-55-9	Dibenz[a,i]pyrene
19287-45-7	Diborane
96-12-8	1,2-Dibromo-3-chloropropane
106-93-4	1,2-Dibromoethane
1918-00-9	Dicamba
1194-65-6	Dichlobenil
117-80-6	Dichlone
25321-22-6	Dichlorobenzene
95-50-1	o-Dichlorobenzene
95-50-1	1,2-Dichlorobenzene
541-73-1	1,3-Dichlorobenzene
106-46-7	1,4-Dichlorobenzene
25321-22-6	Dichlorobenzene (mixed isomers)
91-94-1	3,3'-Dichlorobenzidine
	Dichlorobenzidine
75-27-4	Dichlorobromomethane
75-71-8	Dichlorodifluoromethane

CAS Number	Chemical Name
107-06-2	1,2-Dichloroethane
75-34-3	1,1-Dichloroethane
540-59-0	1,2-Dichloroethylene
75-35-4	1,1-Dichloroethylene
156-60-5	1,2-Dichloroethylene
111-44-4	Dichloroethyl ether
108-60-1	Dichloroisopropyl ether
75-09-2	Dichloromethane
542-88-1	Dichloromethyl ether
149-74-6	Dichloromethylphenylsilane
120-83-2	2,4-Dichlorophenol
87-65-0	2,6-Dichlorophenol
696-28-6	Dichlorophenylarsine
78-87-5	1,2-Dichloropropane
26638-19-7	Dichloropropane
8003-19-8	Dichloropropane - Dichloropropene (mixture
78-99-9	1,1-Dichloropropane
142-28-9	1,3-Dichloropropane
542-75-6	1,3-Dichloropropene
78-88-6	2,3-Dichloropropene
75-99-0	2,2-Dichloropropionic acid
542-75-6	1,3-Dichloropropylene
62-73-7	Dichlorvos
115-32-2	Dicofol
141-66-2	Dicrotophos
60-57-1	Dieldrin
1464-53-5	Diepoxybutane
111-42-2	Diethanolamine
109-89-7	Diethylamine
692-42-2	Diethylarsine
1642-54-2	Diethylcarbamazine citrate
814-49-3	Diethyl chlorophosphate
117-81-7	Di(2-ethylhexyl) phthalate
311-45-5	Diethyl-p-nitrophenyl phosphate
84-66-2	Diethyl phthalate
297-97-2	O,O-Diethyl O-pyrazinyl phosphorothioate
56-53-1	Diethylstilbestrol
64-67-5	Diethyl sulfate
71-63-6	Digitoxin
2238-07-5	Diglycidyl ether
20830-75-5	Digoxin
94-58-6	Dihydrosafrole
55-91-4	Diisopropylfluorophosphate
115-26-4	Dimefox
60-51-5	Dimethoate
119-90-4	3,3'-Dimethoxybenzidine
2524-03-0	Dimethyl phosphorochloridothioate
99-98-9	Dimethyl-p-phenylenediamine
124-40-3	Dimethylamine
60-11-7	4-Dimethylaminoazobenzene
60-11-7	Dimethylaminoazobenzene
121-69-7	N,N-Dimethylaniline
57-97-6	7,12-Dimethylbenz[a]anthracene
119-93-7	3,3'-Dimethylbenzidine
79-44-7	Dimethylcarbamyl chloride
75-78-5	Dimethyldichlorosilane
57-14-7	1,1-Dimethyl hydrazine
57-14-7	Dimethylhydrazine
105-67-9	2,4-Dimethylphenol
131-11-3	Dimethyl phthalate
77-78-1	Dimethyl sulfate
644-64-4	Dimetilan
25154-54-5	Dinitrobenzene (mixed isomers)
99-65-0	m-Dinitrobenzene
528-29-0	o-Dinitrobenzene
100-25-4	p-Dinitrobenzene
534-52-1	4,6-Dinitro-o-cresol
534-52-1	4,6-Dinitro-o-cresol and salts
25550-58-7	Dinitrophenol
51-28-5	2,4-Dinitrophenol
329-71-5	2,5-Dinitrophenol
573-56-8	2,6-Dinitrophenol
25321-14-6	Dinitrotoluene
121-14-2	2,4-Dinitrotoluene
606-20-2	2,6-Dinitrotoluene
610-39-9	3,4-Dinitrotoluene
88-85-7	Dinoseb
1420-07-1	Dinoterb
117-84-0	Di-n-octyl phthalate
117-84-0	n-Dioctylphthalate
123-91-1	1,4-Dioxane
78-34-2	Dioxathion
82-66-6	Diphacinone
122-66-7	1,2-Diphenylhydrazine
	Diphenylhydrazine
152-16-9	Diphosphoramide, octamethyl-
142-84-7	Dipropylamine
85-00-7	Diquat
2764-72-9	Diquat
298-04-4	Disulfoton
514-73-8	Dithiazanine iodide
541-53-7	Dithiobiuret
3288-58-2	O,O-Diethyl S-methyl dithiophosphate
330-54-1	Diuron
27176-87-0	Dodecylbenzenesulfonic acid
94-75-7	2,4-D, salts and esters
316-42-7	Emetine, dihydrochloride
115-29-7	Endosulfan
959-98-8	alpha - Endosulfan
33213-65-9	beta - Endosulfan

CAS Number	Chemical Name
	Endosulfan and Metabolites
1031-07-8	Endosulfan sulfate
145-73-3	Endothall
2778-04-3	Endothion
72-20-8	Endrin
7421-93-4	Endrin aldehyde
	Endrin and Metabolites
106-89-8	Epichlorohydrin
51-43-4	Epinephrine
2104-64-5	EPN
50-14-6	Ergocalciferol
379-79-3	Ergotamine tartrate
1622-32-8	Ethanesulfonyl chloride, 2-chloro-
630-20-6	Ethane, 1,1,1,2-tetrachloro-
16752-77-5	Ethanimidothioic acid, N-[[methylamino)car
10140-87-1	Ethanol, 1,2-dichloro-, acetate
110-80-5	Ethanol, 2-ethoxy-
563-12-2	Ethion
13194-48-4	Ethoprophos
110-80-5	2-Ethoxyethanol
141-78-6	Ethyl acetate
140-88-5	Ethyl acrylate
100-41-4	Ethylbenzene
538-07-8	Ethylbis(2-chloroethyl)amine
51-79-6	Ethyl carbamate
75-00-3	Ethyl chloride
541-41-3	Ethyl chloroformate
107-12-0	Ethyl cyanide
74-85-1	Ethylene
106-93-4	Ethylene dibromide
371-62-0	Ethylene fluorohydrin
111-54-6	Ethylenebisdithiocarbamic acid, salts & es
107-15-3	Ethylenediamine
60-00-4	Ethylenediamine-tetraacetic acid (EDTA)
107-06-2	Ethylene dichloride
107-21-1	Ethylene glycol
151-56-4	Ethyleneimine
75-21-8	Ethylene oxide
96-45-7	Ethylene thiourea
60-29-7	Ethyl ether
97-63-2	Ethyl methacrylate
62-50-0	Ethyl methanesulfonate
542-90-5	Ethylthiocyanate
52-85-7	Famphur
22224-92-6	Fenamiphos
122-14-5	Fenitrothion
115-90-2	Fensulfothion
1185-57-5	Ferric ammonium citrate
2944-67-4	Ferric ammonium oxalate
55488-87-4	Ferric ammonium oxalate
7705-08-0	Ferric chloride
7783-50-8	Ferric fluoride
10421-48-4	Ferric nitrate
10028-22-5	Ferric sulfate
10045-89-3	Ferrous ammonium sulfate
7758-94-3	Ferrous chloride
7720-78-7	Ferrous sulfate
7782-63-0	Ferrous sulfate
4301-50-2	Fluenetil
2164-17-2	Fluometuron
206-44-0	Fluoranthene
86-73-7	Fluorene
7782-41-4	Fluorine
640-19-7	Fluoroacetamide
144-49-0	Fluoroacetic acid
62-74-8	Fluoroacetic acid, sodium salt
359-06-8	Fluoroacetyl chloride
51-21-8	Fluorouracil
944-22-9	Fonofos
50-00-0	Formaldehyde
107-16-4	Formaldehyde cyanohydrin
23422-53-9	Formetanate hydrochloride
64-18-6	Formic acid
2540-82-1	Formothion
17702-57-7	Formparanate
21548-32-3	Fosthietan
76-13-1	Freon 113
3878-19-1	Fuberidazole
110-17-8	Fumaric acid
110-00-9	Furan
109-99-9	Furan, tetrahydro-
98-01-1	Furfural
13450-90-3	Gallium trichloride
18883-66-4	D-Glucose, 2-deoxy-2-[[(methylnitrosoamino
765-34-4	Glycidylaldehyde
	Glycol Ethers
70-25-7	Guanidine, N-methyl-N'-nitro-N-nitroso-
86-50-0	Guthion
	Haloethers
	Halomethanes
76-44-8	Heptachlor
	Heptachlor and Metabolites
1024-57-3	Heptachlor epoxide
118-74-1	Hexachlorobenzene
87-68-3	Hexachloro-1,3-butadiene
87-68-3	Hexachlorobutadiene
77-47-4	Hexachlorocyclopentadiene
58-89-9	Hexachlorocyclohexane (gamma isomer)
67-72-1	Hexachloroethane
1335-87-1	Hexachloronaphthalene

CAS Number	Chemical Name
70-30-4	Hexachlorophene
1888-71-7	Hexachloropropene
757-58-4	Hexaethyl tetraphosphate
4835-11-4	Hexamethylenediamine, N,N'-dibutyl-
680-31-9	Hexamethylphosphoramide
302-01-2	Hydrazine
57-14-7	Hydrazine, 1,1-dimethyl-
1615-80-1	Hydrazine, 1,2-diethyl-
540-73-8	Hydrazine, 1,2-dimethyl-
122-66-7	Hydrazine, 1,2-diphenyl-
10034-93-2	Hydrazine sulfate
122-66-7	Hydrazobenzene
7647-01-0	Hydrochloric acid
74-90-8	Hydrocyanic acid
7664-39-3	Hydrofluoric acid
7647-01-0	Hydrogen chloride (gas only)
7722-84-1	Hydrogen peroxide (Conc.> 52%)
7783-07-5	Hydrogen selenide
7783-06-4	Hydrogen sulfide
74-90-8	Hydrogen cyanide
7664-39-3	Hydrogen fluoride
80-15-9	Hydroperoxide, 1-methyl-1-phenylethyl-
123-31-9	Hydroquinone
193-39-5	Indeno(1,2,3-cd)pyrene
13463-40-6	Iron, pentacarbonyl-
297-78-9	Isobenzan
78-83-1	Isobutyl alcohol
78-84-2	Isobutyraldehyde
78-82-0	Isobutyronitrile
102-36-3	Isocyanic acid, 3,4-dichlorophenyl ester
465-73-6	Isodrin
55-91-4	Isofluorphate
78-59-1	Isophorone
4098-71-9	Isophorone diisocyanate
78-79-5	Isoprene
42504-46-1	Isopropanolamine dodecylbenzene sulfonate
108-23-6	Isopropyl chloroformate
67-63-0	Isopropyl alcohol (mfg-strong acid process
80-05-7	4,4'-Isopropylidenediphenol
119-38-0	Isopropylmethylpyrazolyl dimethylcarbamate
120-58-1	Isosafrole
2763-96-4	5-(Aminomethyl)-3-isoxazolol
143-50-0	Kepone
78-97-7	Lactonitrile
303-34-4	Lasiocarpine
7439-92-1	Lead
	Lead Compounds
301-04-2	Lead acetate
7784-40-9	Lead arsenate
7645-25-2	Lead arsenate
10102-48-4	Lead arsenate
7758-95-4	Lead chloride
13814-96-5	Lead fluoborate
7783-46-2	Lead fluoride
10101-63-0	Lead iodide
10099-74-8	Lead nitrate
7446-27-7	Lead phosphate
7428-48-0	Lead stearate
1072-35-1	Lead stearate
52652-59-2	Lead stearate
56189-09-4	Lead stearate
1335-32-6	Lead subacetate
15739-80-7	Lead sulfate
7446-14-2	Lead sulfate
1314-87-0	Lead sulfide
592-87-0	Lead thiocyanate
21609-90-5	Leptophos
541-25-3	Lewisite
58-89-9	Lindane
14307-35-8	Lithium chromate
7580-67-8	Lithium hydride
121-75-5	Malathion
110-16-7	Maleic acid
108-31-6	Maleic anhydride
123-33-1	Maleic hydrazide
109-77-3	Malononitrile
12427-38-2	Maneb
7439-96-5	Manganese
	Manganese Compounds
12108-13-3	Manganese, tricarbonyl methylcyclopentadie
101-68-8	MBI
101-14-4	MBOCA
51-75-2	Mechlorethamine
148-82-3	Melphalan
950-10-7	Mephosfolan
2032-65-7	Mercaptodimethur
1600-27-7	Mercuric acetate
7487-94-7	Mercuric chloride
592-04-1	Mercuric cyanide
10045-94-0	Mercuric nitrate
21908-53-2	Mercuric oxide
7783-35-9	Mercuric sulfate
592-85-8	Mercuric thiocyanate
10415-75-5	Mercurous nitrate
7782-86-7	Mercurous nitrate
7439-97-6	Mercury
	Mercury Compounds
628-86-4	Mercury fulminate
10476-95-6	Methacrolein diacetate
760-93-0	Methacrylic anhydride

CAS Number	Chemical Name
126-98-7	Methacrylonitrile
920-46-7	Methacryloyl chloride
30674-80-7	Methacryloyloxyethyl isocyanate
10265-92-6	Methamidophos
62-75-9	Methanamine, N-methyl-N-nitroso-
558-25-8	Methanesulfonyl fluoride
67-56-1	Methanol
91-80-5	Methapyrilene
950-37-8	Methidathion
2032-65-7	Methiocarb
16752-77-5	Methomyl
72-43-5	Methoxychlor
109-86-4	2-Methoxyethanol
151-38-2	Methoxyethylmercuric acetate
96-33-3	Methyl acrylate
74-83-9	Methyl bromide
74-87-3	Methyl chloride
80-63-7	Methyl 2-chloroacrylate
71-55-6	Methyl chloroform
79-22-1	Methyl chloroformate
56-49-5	3-Methylcholanthrene
101-14-4	4,4'-Methylenebis(2-chloroaniline)
101-61-1	4,4'-Methylenebis(N,N-dimethyl)benzenamine
101-68-8	Methylenebis(phenylisocyanate)
74-95-3	Methylene bromide
75-09-2	Methylene chloride
101-77-9	4,4'-Methylenedianiline
78-93-3	Methyl ethyl ketone
78-93-3	Methyl ethyl ketone (MEK)
1338-23-4	Methyl ethyl ketone peroxide
60-34-4	Methyl hydrazine
74-88-4	Methyl iodide
108-10-1	Methyl isobutyl ketone
624-83-9	Methyl isocyanate
556-61-6	Methyl isothiocyanate
74-93-1	Methyl mercaptan
502-39-6	Methylmercuric dicyanamide
80-62-6	Methyl methacrylate
298-00-0	Methyl parathion
3735-23-7	Methyl phenkapton
676-97-1	Methyl phosphonic dichloride
1634-04-4	Methyl tert-butyl ether
556-64-9	Methyl thiocyanate
56-04-2	Methylthiouracil
75-79-6	Methyltrichlorosilane
78-94-4	Methyl vinyl ketone
1129-41-5	Metolcarb
7786-34-7	Mevinphos
315-18-4	Mexacarbate
90-94-8	Michler's ketone
50-07-7	Mitomycin C
1313-27-5	Molybdenum trioxide
6923-22-4	Monocrotophos
75-04-7	Monoethylamine
74-89-5	Monomethylamine
2763-96-4	Muscimol
505-60-2	Mustard gas
300-76-5	Naled
91-20-3	Naphthalene
1338-24-5	Naphthenic acid
130-15-4	1,4-Naphthoquinone
134-32-7	alpha-Naphthylamine
91-59-8	beta-Naphthylamine
7440-02-0	Nickel
	Nickel Compounds
15699-18-0	Nickel ammonium sulfate
13463-39-3	Nickel carbonyl
7718-54-9	Nickel chloride
37211-05-5	Nickel chloride
557-19-7	Nickel cyanide
12054-48-7	Nickel hydroxide
14216-75-2	Nickel nitrate
7786-81-4	Nickel sulfate
54-11-5	Nicotine
54-11-5	Nicotine and salts
65-30-5	Nicotine sulfate
7697-37-2	Nitric acid
10102-43-9	Nitric oxide
139-13-9	Nitrilotriacetic acid
100-01-6	p-Nitroaniline
99-59-2	5-Nitro-o-anisidine
98-95-3	*Nitrobenzene*
92-93-3	4-Nitrobiphenyl
1122-60-7	Nitrocyclohexane
1836-75-5	Nitrofen
10102-44-0	Nitrogen dioxide
10544-72-6	Nitrogen dioxide
51-75-2	Nitrogen mustard
55-63-0	Nitroglycerin
25154-55-6	Nitrophenol (mixed isomers)
554-84-7	m-Nitrophenol
100-02-7	p-Nitrophenol
88-75-5	2-Nitrophenol
100-02-7	4-Nitrophenol
	Nitrophenols
79-46-9	2-Nitropropane
	Nitrosamines
924-16-3	N-Nitrosodi-n-butylamine
1116-54-7	N-Nitrosodiethanolamine
55-18-5	N-Nitrosodiethylamine

CAS Number	Chemical Name
62-75-9	N-Nitrosodimethylamine
62-75-9	Nitrosodimethylamine
86-30-6	N-Nitrosodiphenylamine
156-10-5	p-Nitrosodiphenylamine
621-64-7	N-Nitrosodi-n-propylamine
759-73-9	N-Nitroso-N-ethylurea
684-93-5	N-Nitroso-N-methylurea
4549-40-0	N-Nitrosomethylvinylamine
59-89-2	N-Nitrosomorpholine
615-53-2	N-Nitroso-N-methylurethane
16543-55-8	N-Nitrosonornicotine
100-75-4	N-Nitrosopiperidine
930-55-2	N-Nitrosopyrrolidine
1321-12-6	Nitrotoluene
99-08-1	m-Nitrotoluene
88-72-2	o-Nitrotoluene
99-99-0	p-Nitrotoluene
99-55-8	5-Nitro-o-toluidine
991-42-4	Norbormide
2234-13-1	Octachloronaphthalene
	Organorhodium Complex (PMN-82-147)
20816-12-0	Osmium oxide OsO4 (T-4)-
20816-12-0	Osmium tetroxide
630-60-4	Ouabain
23135-22-0	Oxamyl
78-71-7	Oxetane, 3,3-bis(chloromethyl)-
75-21-8	Oxirane
2497-07-6	Oxydisulfoton
10028-15-6	Ozone
30525-89-4	Paraformaldehyde
123-63-7	Paraldehyde
1910-42-5	Paraquat
2074-50-2	Paraquat methosulfate
56-38-2	Parathion
298-00-0	Parathion-methyl
12002-03-8	Paris green
1336-36-3	PCBs
82-68-8	PCNB
19624-22-7	Pentaborane
608-93-5	Pentachlorobenzene
76-01-7	Pentachloroethane
82-68-8	Pentachloronitrobenzene
87-86-5	PCP
87-86-5	Pentachlorophenol
2570-26-5	Pentadecylamine
504-60-9	1,3-Pentadiene
79-21-0	Peracetic acid
127-18-4	Perchloroethylene
594-42-3	Perchloromethylmercaptan
62-44-2	Phenacetin
85-01-8	Phenanthrene
108-95-2	Phenol
64-00-6	Phenol, 3-(1-methylethyl)-, methylcarbamat
4418-66-0	Phenol, 2,2'-thiobis[4-chloro-6-methyl-
58-36-6	Phenoxarsine, 10,10'-oxydi-
696-28-6	Phenyl dichloroarsine
106-50-3	p-Phenylenediamine
59-88-1	Phenylhydrazine hydrochloride
62-38-4	Phenylmercuric acetate
62-38-4	Phenylmercury acetate
90-43-7	2-Phenylphenol
2097-19-0	Phenylsilatrane
103-85-5	Phenylthiourea
298-02-2	Phorate
4104-14-7	Phosacetim
947-02-4	Phosfolan
75-44-5	Phosgene
732-11-6	Phosmet
13171-21-6	Phosphamidon
7803-51-2	Phosphine
2703-13-1	Phosphonothioic acid, methyl-, O-ethyl O-(
50782-69-9	Phosphonothioic acid, methyl-, S-(2-(bis(1
2665-30-7	Phosphonothioic acid, methyl-, O-(4-nitrop
3254-63-5	Phosphoric acid, dimethyl 4-(methylthio) p
7664-38-2	Phosphoric acid
2587-90-8	Phosphorothioic acid, O,O-dimethyl-S-(2-(m
7723-14-0	Phosphorus (yellow or white)
7723-14-0	Phosphorus
10025-87-3	Phosphorus oxychloride
10026-13-8	Phosphorus pentachloride
1314-56-3	Phosphorus pentoxide
7719-12-2	Phosphorus trichloride
	Phthalate Esters
85-44-9	Phthalic anhydride
57-47-6	Physostigmine
57-64-7	Physostigmine, salicylate (1:1)
109-06-8	2-Picoline
88-89-1	Picric acid
124-87-8	Picrotoxin
110-89-4	Piperidine
23505-41-1	Pirimifos-ethyl
	Polybrominated Biphenyls (PBBs)
1336-36-3	Polychlorinated biphenyls
	Polynuclear Aromatic Hydrocarbons
7784-41-0	Potassium arsenate
10124-50-2	Potassium arsenite
7778-50-9	Potassium bichromate
7789-00-6	Potassium chromate
151-50-8	Potassium cyanide
1310-58-3	Potassium hydroxide

CAS Number	Chemical Name
7722-64-7	Potassium permanganate
506-61-6	Potassium silver cyanide
2631-37-0	Promecarb
78-87-5	Propane 1,2-dichloro-
1120-71-4	1,3-Propane sultone
1120-71-4	Propane sultone
2312-35-8	Propargite
107-19-7	Propargyl alcohol
106-96-7	Propargyl bromide
57-57-8	beta-Propiolactone
123-38-6	Propionaldehyde
79-09-4	Propionic acid
123-62-6	Propionic anhydride
107-12-0	Propionitrile
542-76-7	Propionitrile, 3-chloro-
70-69-9	Propiophenone, 4'-amino
114-26-1	Propoxur
109-61-5	Propyl chloroformate
107-10-8	n-Propylamine
115-07-1	Propylene (Propene)
75-55-8	Propyleneimine
75-56-9	Propylene oxide
621-64-7	Di-n-propylnitrosamine
2275-18-5	Prothoate
129-00-0	Pyrene
121-29-9	Pyrethrins
121-21-1	Pyrethrins
8003-34-7	Pyrethrins
110-86-1	Pyridine
504-24-5	Pyridine, 4-amino-
140-76-1	Pyridine, 2-methyl-5-vinyl-
54-11-5	Pyridine, 3-(1-methyl-2-pyrrolidinyl)-,(S)
1124-33-0	Pyridine, 4-nitro-, 1-oxide
53558-25-1	Pyriminil
91-22-5	Quinoline
106-51-4	Quinone
82-68-8	Quintozene
50-55-5	Reserpine
108-46-3	Resorcinol
81-07-2	Saccharin (manufacturing)
81-07-2	Saccharin and salts
94-59-7	Safrole
14167-18-1	Salcomine
107-44-8	Sarin
7783-00-8	Selenious acid
12039-52-0	Selenious acid, dithallium(1+) salt
7782-49-2	Selenium
	Selenium Compounds
7446-08-4	Selenium dioxide
7791-23-3	Selenium oxychloride
7488-56-4	Selenium sulfide
630-10-4	Selenourea
563-41-7	Semicarbazide hydrochloride
3037-72-7	Silane, (4-aminobutyl)diethoxymethyl-
7440-22-4	Silver
	Silver Compounds
506-64-9	Silver cyanide
7761-88-8	Silver nitrate
93-72-1	Silvex (2,4,5-TP)
7440-23-5	Sodium
7631-89-2	Sodium arsenate
7784-46-5	Sodium arsenite
26628-22-8	Sodium azide (Na(N3))
10588-01-9	Sodium bichromate
1333-83-1	Sodium bifluoride
7631-90-5	Sodium bisulfite
124-65-2	Sodium cacodylate
7775-11-3	Sodium chromate
143-33-9	Sodium cyanide (Na(CN))
25155-30-0	Sodium dodecylbenzenesulfonate
7681-49-4	Sodium fluoride
62-74-8	Sodium fluoroacetate
16721-80-5	Sodium hydrosulfide
1310-73-2	Sodium hydroxide
7681-52-9	Sodium hypochlorite
10022-70-5	Sodium hypochlorite
124-41-4	Sodium methylate
7632-00-0	Sodium nitrite
7558-79-4	Sodium phosphate, dibasic
10039-32-4	Sodium phosphate, dibasic
10140-65-5	Sodium phosphate, dibasic
7601-54-9	Sodium phosphate, tribasic
7758-29-4	Sodium phosphate, tribasic
7785-84-4	Sodium phosphate, tribasic
10101-89-0	Sodium phosphate, tribasic
10124-56-8	Sodium phosphate, tribasic
10361-89-4	Sodium phosphate, tribasic
13410-01-0	Sodium selenate
10102-18-8	Sodium selenite
7782-82-3	Sodium selenite
10102-20-2	Sodium tellurite
900-95-8	Stannane, acetoxytriphenyl-
7789-06-2	Strontium chromate
57-24-9	Strychnine
57-24-9	Strychnine, and salts
60-41-3	Strychnine, sulfate
100-42-5	Styrene
96-09-3	Styrene oxide
3689-24-5	Sulfotep
3569-57-1	Sulfoxide, 3-chloropropyl octyl

CAS Number	Chemical Name
7446-09-5	Sulfur dioxide
7664-93-9	Sulfuric acid
8014-95-7	Sulfuric acid (fuming)
12771-08-3	Sulfur monochloride
1314-80-3	Sulfur phosphide
7783-60-0	Sulfur tetrafluoride
7446-11-9	Sulfur trioxide
93-76-5	2,4,5-T acid
2008-46-0	2,4,5-T amines
1319-72-8	2,4,5-T amines
3813-14-7	2,4,5-T amines
6369-96-6	2,4,5-T amines
6369-97-7	2,4,5-T amines
93-79-8	2,4,5-T esters
1928-47-8	2,4,5-T esters
2545-59-7	2,4,5-T esters
25168-15-4	2,4,5-T esters
61792-07-2	2,4,5-T esters
13560-99-1	2,4,5-T salts
77-81-6	Tabun
13494-80-9	Tellurium
7783-80-4	Tellurium hexafluoride
107-49-3	Tepp
13071-79-9	Terbufos
100-21-0	Terephthalic acid
95-94-3	1,2,4,5-Tetrachlorobenzene
1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)
79-34-5	1,1,2,2-Tetrachloroethane
127-18-4	Tetrachloroethylene
58-90-2	2,3,4,6-Tetrachlorophenol
961-11-5	Tetrachlorvinphos
3689-24-5	Tetraethyldithiopyrophosphate
78-00-2	Tetraethyl lead
107-49-3	Tetraethyl pyrophosphate
597-64-8	Tetraethyltin
75-74-1	Tetramethyllead
509-14-8	Tetranitromethane
1314-32-5	Thallic oxide
	Thallium Compounds
563-68-8	Thallium(I) acetate
6533-73-9	Thallium(I) carbonate
7791-12-0	Thallium chloride TlCl
7440-28-0	Thallium
10102-45-1	Thallium(I) nitrate
10031-59-1	Thallium sulfate
7446-18-6	Thallium(I) sulfate
6533-73-9	Thallous carbonate
7791-12-0	Thallous chloride
2757-18-8	Thallous malonate
7446-18-6	Thallous sulfate
62-55-5	Thioacetamide
2231-57-4	Thiocarbazide
139-65-1	4,4'-Thiodianiline
39196-18-4	Thiofanox
74-93-1	Thiomethanol
297-97-2	Thionazin
108-98-5	Thiophenol
79-19-6	Thiosemicarbazide
62-56-6	Thiourea
5344-82-1	Thiourea, (2-chlorophenyl)-
614-78-8	Thiourea, (2-methylphenyl)-
86-88-4	Thiourea, 1-naphthalenyl-
137-26-8	Thiram
1314-20-1	Thorium dioxide
7550-45-0	Titanium tetrachloride
119-93-7	o-Tolidine
108-88-3	Toluene
25376-45-8	Toluenediamine
91-08-7	Toluene-2,6-diisocyanate
584-84-9	Toluene-2,4-diisocyanate
26471-62-5	Toluene diisocyanate
95-53-4	o-Toluidine
106-49-0	p-Toluidine
636-21-5	o-Toluidine hydrochloride
8001-35-2	Toxaphene
32534-95-5	2,4,5-TP esters
110-57-6	Trans-1,4-dichlorobutene
1031-47-6	Triamiphos
68-76-8	Triaziquone
24017-47-8	Triazofos
75-25-2	Tribromomethane
52-68-6	Trichlorfon
1558-25-4	Trichloro(chloromethyl)silane
27137-85-5	Trichloro(dichlorophenyl)silane
76-02-8	Trichloroacetyl chloride
120-82-1	1,2,4-Trichlorobenzene
71-55-6	1,1,1-Trichloroethane
79-00-5	1,1,2-Trichloroethane
79-01-6	Trichloroethylene
115-21-9	Trichloroethylsilane
594-42-3	Trichloromethanesulfenyl chloride
75-69-4	Trichloromonofluoromethane
327-98-0	Trichloronate
25167-82-2	Trichlorophenol
15950-66-0	2,3,4-Trichlorophenol
933-78-8	2,3,5-Trichlorophenol
933-75-5	2,3,6-Trichlorophenol
95-95-4	2,4,5-Trichlorophenol
88-06-2	2,4,6-Trichlorophenol
609-19-8	3,4,5-Trichlorophenol

ATTACHMENT 18-1

MEDIA COVERAGE LOG

INCIDENT	DATE	NAME/LOCATION OF NEWSPAPER, TV, OR RADIO STATION	COMPANY SPOKES-PERSON	COPY OF COVERAGE AVAILABLE? (YES/NO)

Revision Date: 4/25/90

ENVIRONMENTAL PROTECTION AGENCY

40 CFR

4.9 State agencies participating in relocation assistance program.

To maintain adequate records of its acquisition and displacement activities in sufficient detail to demonstrate compliance with this Part 4.

Retention period: 3 years after each owner of a property and each person displaced from the property receives final payment.

7.85 Recipients of EPA assistance in the operation of programs or activities receiving such assistance beginning February 13, 1984.

To keep nondiscrimination compliance information.

Retention period: 3 years after completion of project or until complaint is resolved when any complaint or other action for alleged failure to comply with nondiscrimination provision is brought before the three year period ends.

30.500 Persons awarded EPA grants, and contractors for all subagreements in excess of $10,000.

Grantee shall maintain books, records, documents, and other evidence and accounting procedures necessary to show (a) amount, receipt, and disposition of all assistance received for project, including non-Federal share, and (b) total costs of the project. Contractors of grantees shall maintain books, documents, papers, and records which are pertinent to specific EPA grants.

Retention period: 3 years except that (1) if any litigation, claim, or audit is started before the expiration of the 3-year period, the records shall be retained until all litigations, claims, or audit findings involving the records have been resolved, (2) records for nonexpendable property acquired with Federal funds shall be retained for 3 years after its final disposition, and (3) when records are transferred to or maintained by EPA, 3-year retention requirement is not applicable to the grantee. The 3-year retention period starts (i) from the date of submission of the final financial status report for project grants, or, for grants which are awarded annually, from the date of the submission of the annual financial status report, (ii) from the date of approval of the final payment request for the last project of a construction grant for WWT works, and (iii) for such longer period, if any, as is required by

(i) If a grant is terminated completely or partially, the records relating to the work terminated shall be preserved and made available for a period of 3 years from the date of any resulting final termination settlement.

(ii) Records which relate to (a) appeals under the Subpart L—Disputes, of this Part, (b) litigation on the settlement of claims arising out of the performance of the project for which a grant was awarded, or (c) costs and expenses of the project to which exception has been taken by EPA or any of its duly authorized representatives, shall be retained until any appeals, litigation, claims, or exceptions have been finally resolved.

Retention period: 3 years.

30.800 Persons awarded EPA grants, and contractors for all subagreements in excess of $10,000.

See 30.500.

31.42 State and local governments receiving Federal grants and cooperative agreements.

See 7 CFR 3016.42.

35.929-3 Persons awarded grants to assist in the construction of waste treatment works in compliance with the Clean Water Act.

To maintain records as are necessary to document compliance with regulations upon approval and implementing the user charge system.

Retention period: Not specified.

35.4105 Recipients of technical assistance grants under the Superfund Program.

(a) To keep and preserve full written financial records accurately disclosing the amount and disposition of any funds; whether in cash or in-kind, applied to the technical assistance grant project.

Retention period: 3 years from date of final Financial Status Report or until any audit, litigation, cost-recovery and/or any disputes initiated before the end of the 3-year retention period are settled, whichever is longer

(b) The recipient shall require its contractor(s) to keep such full written financial records to adequately establish compliance with terms and conditions of the subagreement.

Retention period: 3 years from close-out of the subagreement unless audit, litigation, cost-recovery and/or any disputes are initiated

35.6250 Recipients of CERCLA-funded cooperative agreements and Superfund State Contracts. [Added]

(a) To maintain a recordkeeping system that consists of complete site-specific files containing documentation of costs incurred.

(b) To maintain records to comply with the requirements of 40 CFR 35.6700, 35.6705, and 35.6710 and requirements of source documentation described in 40 CFR 31.20(b)(6).

Retention period: 10 years following submission of the final Financial Status Report for the site, or until resolution of all issues arising from litigation, claim, negotiation, audit, cost recovery, or other actions, whichever is later. Written approval must be obtained from the EPA award official before destroying any records.

35.6700 Recipients of CERCLA-funded cooperative agreements and Superfund State Contracts. [Added]

(a) To maintain project records by site and activity.

(b) To maintain property, financial and procurement records.

(c) To maintain time and attendance records and supporting documentation; documentation of compliance with statutes and regulations that apply to the project; and the number of site-specific technical hours spent to complete each pre-remedial product.

Retention period: 10 years following submission of the final Financial Status Report for the site, or until resolution of all issues arising from litigation, claim, negotiation, audit, cost recovery, or other actions, whichever is later. Written approval must be obtained from the EPA award official before destroying any records.

35.6705 Recipients of CERCLA-funded cooperative agreements and Superfund State Contracts. [Added]

To maintain all financial and programmatic records, supporting documents, statistical records, and other records which are required by 40 CFR 35.6700, program regulations, or the cooperative agreement, or are otherwise reasonably considered as pertinent to program regulations or the cooperative agreement.

Retention period: 10 years following submission of the final Financial Status Report for the site, or until resolution of all issues arising from litigation, claim, negotiation, audit, cost recovery, or other actions, whichever is later. Written approval must be obtained from the EPA award official before destroying any records.

39.115 Persons applying for a loan guarantee for construction of treatment work.

(a) To maintain financial reports and records necessary to reflect the planned and actual receipt of revenue for repayment.

(b) To keep accurate books, records, and accounts relating to the loan, the loan guarantee, and the funds and accounts used to pay the amounts due on the loan.

Retention period: (a) 3 years; (b) not specified.

51.19 Owners and operators of stationary sources emitting air pollutants for which a national standard is in effect.

To maintain records of nature and amount of emission, air sampling data, and other information deemed necessary to determine compliance with applicable emission limitations or other control measures. (State Implementation Plans)

Retention period: 2 years.

51.102 States conducting public hearings on air pollution control implementation plans.

To maintain a record of each hearing. The record must contain, at a minimum, a list of witnesses together with the text of each presentation.

Retention period: Not specified.

Part 52 Owners and operators of stationary sources emitting air pollutants for which a national standard is in effect.

See 51.19 and specific State plans.

53.9 Applicants offering analyzers for sale as ambient air monitoring or equivalent methods.

To maintain an accurate and current list of the names and mailing addresses of all ultimate purchasers of such analyzer.

Retention period: 7 years.

57.404 Primary nonferrous smelter owners.

To maintain records of the air quality measurements made, meterological information acquired, emission curtailment ordered (including the identity of the persons making such decisions), and calibration and maintenance performed on SCS (supplementary control system) during the operation of the SCS.

Retention period: Duration of the NSO.

60.7 Owners or operators of any building, structure, facility, or installation emitting air pollutants.

To maintain records of the occurrence and duration of any startup, shutdown, or malfunction in operation of any affected facility,

any malfunction of the air pollution control equipment, or any periods during which a continuous monitoring system or device is inoperative; a file of all measurements, including monitoring and performance testing measurements; and any other records which may be required by applicable subparts.

Retention period: 2 years.

60.23 States adopting plans for control of designated facilities.

To maintain a record of each public hearing for inspection by any interested party.

Retention period: 2 years.

60.49b Owners or operators of industrial-commercial-institutional steam generating facilities. [Amended]

(a) If monitoring of steam generating unit operating condition plan is approved, to maintain records of predicted nitrogen oxide emission rates and the monitored operating conditions, including steam generating unit load, identified in the plan

(b) To maintain records of the amounts of all fuels fired during each day and calculate the annual capacity factor individually for coal, distillate oil, residual oil, natural gas, wood, and municipal-type solid waste for each calendar year.

(c) To maintain records of the nitrogen content of the oil residual combusted in the affected facility and calculate the average fuel nitrogen content on a per calendar quarter basis.

(d) To maintain records of opacity for facilities subject to the opacity standard under 40 CFR 60.43b.

(e) To maintain records on the calendar date, the average hourly nitrogen oxides emission rates measured or predicted and other information as specified in section cited for each steam generating unit operating day for facilities subject to nitrogen oxide standards under 40 CFR 60.44(b).

Retention period: 2 years following date of record.

(f) To maintain records of the following information for each steam generating unit operating day: (1) Calendar date; (2) the number of hours of operation; and (3) a record of the hourly steam load.

60.545 Owners or operators of tread end cementing operation and green tire spraying operation using water-based cements or sprays containing less than 1.0 percent by weight of VOC. [Added]

To maintain records of formulation data or the results of Method 24 analysis conducted to verify the VOC contents of the spray.

Retention period: Not specified.

60.63 Owners or operators of Portland cement plants.

To maintain records of visible emissions.

Retention period: 2 years.

60.113a Owners or operators of volatile organic liquid storage vessels (including petroleum liquid storage vessels).

To maintain records of each gap measurement at the plant.

Retention period: At least 2 years following the date of measurement.

60.115b Owners or operators of volatile organic liquid storage vessels (including petroleum liquid storage vessels.)

(a) To maintain a record of each inspection performed identifying the storage vessel on which the inspection was performed; the date the vessel was inspected; and the observed condition of each component of the control equipment (seals, internal floating roof, and fittings).

Retention period: At least 2 years.

(b) To keep a record of each gap measurement performed as required by 40 CFR 60.113(b).

Retention period: 2 years.

(c) After installing control equipment in accordance with 40 CFR 60.112b(a)(3) or (b)(1) (closed vent system and control device other than a flare), to keep a copy of the operating plan and record of the measured values of the parameters monitored in accordance with 40 CFR 60.113b(c)(2).

60.116b Owners or operators of volatile organic liquid storage vessels (including petroleum liquid storage vessels).

(a) To keep readily accessible records showing the dimension of the storage vessel and an analysis showing the capacity of the storage vessel.

Retention period: For the life of the source.

(b) To maintain a record of the VOL stored, the period of storage, and the maximum true vapor pressure of that VOL during the respective storage period.

Retention period: At least 2 years.

60.153 Owners or operators of sewage treatment plants.

(a) To maintain for incinerators equipped with a wet scrubbing device, records of the measured pressure drop of the gas flow through wet scrubbing.

(b) To maintain records of the measured oxygen content of the incinerator exhaust gas.

(c) To maintain records of the rate of sludge charged to the incinerator, the measured temperatures of the incinerator, the fuel flow to the incinerator, and the total solids and vola-

tile solids content of the sludge charged to the incinerator.

Retention period: 2 years.

60.274a Owners or operators of steel plants that produce carbon, alloy, or specialty steels: Electric arc furnaces, argon-oxygen decarburization vessels, and dust-handling systems.

To maintain data on monitoring, measurement, and monthly operational status. Retention period: 2 years.

60.275a Owners or operators of steel plants that produce carbon, alloy, or specialty steels: Electric arc furnaces, argon-oxygen decarburization vessels, and dust-handling systems.

During performance testing, to maintain records of any 6 minute average that is in excess of the emission limit.

Retention period: Not specified.

60.310 Owners or operators of affected facilities in metal furniture surface coating operations in which organic coatings are applied.

To keep purchase or inventory records and other data necessary to substantiate annual coating usage. Retention period: 2 years.

60.343 Owners or operators of lime manufacturing plants.

To maintain records of any 6-month average that is in excess of the emissions specified in 40 CFR 60.342.

Retention period: Not specified.

60.344 Owners or operators of lime manufacturing plants.

See 60.343.

60.434 Owners or operators of affected facilities using waterborne ink systems or solvent-borne ink systems with solvent recovery system.

To maintain records on the amount of solvent and water used, solvent recovered, and estimated emission percentage for each performance averaging period.

Retention period: 2 years.

60.445 Owners or operators of affected facilities controlled by pressure sensitive tape and label surface coating devices.

(a) To maintain records of all coatings used, the results of the reference test method or the manufacturer's formulation data used for determining, the VOC content of those coatings.

(b) To maintain records of the amount of solvent applied in the coating at each affected facility.

(c) To maintain records of the amount of solvent recovered by the monitoring device.

(d) To maintain records of the amount of solvent applied in the coating at the facility.

(e) To maintain records of the measurements required by sections 60.443 and 60.445.

Retention period: (a)-(c) 1 month; (d) 12 months; and (e) 2 years.

60.455 Owners or operators of affected facilities in surface coating operation in large appliance surface coating operations.

(a) To maintain records of all data and calculations used to determine VOC emissions from each affected facility.

Retention period: 2 years.

(b) Where compliance is achieved through the use of thermal incineration, to maintain records of the incinerator combustion chamber temperature.

(c) If catalytic incineration is used, to maintain source daily records of the gas temperature, both upstream and downstream of the incinerator catalyst bed.

(d) Where compliance is achieved through the use of a solvent recovery system, to maintain the source daily records of the amount of solvent recovered by the system for each affected facility.

Retention period: Not specified.

60.465 Owners or operators of affected facilities in metal surface coating operations.

(a) To maintain records of all data and calculations used to determine monthly VOC emissions from each affected facility and to determine the monthly emission limit, where applicable.

Retention period: 2 years.

(b) Where compliance is achieved through the use of thermal incineration, to maintain source daily records of the gas temperature, both upstream and downstream of the incinerator catalyst bed.

Retention period: Not specified.

60.473 Owners or operators of affected facilities in asphalt processing and asphalt roofing manufacture operations.

To maintain a fine of the monitoring results of the temperature of the gas at the inlet of the control device.

Retention period: 2 years.

60.486 Owners or operators of affected facilities in the VOC in the synthetic

organic chemicals manufacturing industries.

(a) To keep records of equipment leaks (equipment identification information, dates of leaks, and repair methods).

Retention period: 2 years.

(b) To keep records on design requirements for closed vent systems and control devices and equipments and valves.

Retention period: Not specified

60.495 Owners or operators of affected faculties in the beverage can surface coating industries.

(a) To maintain records of all data and calculations used to determine VOC emissions from each affected facility in the initial and monthly performance tests.

Retention period: 2 years.

(b) To maintain daily records of the incinerator combustion chamber temperature where compliance is achieved through the use of thermal incineration.

(c) To maintain daily records of the gas temperature, both upstream and downstream of the incinerator catalyst bed if catalytic incineration is used.

(d) To maintain daily records of the amount of solvent recovered by the system for each affected facility where compliance is achieved through the use of a solvent recovery system.

Retention period: Not specified.

60.505 Owners or operators of bulk gasoline terminals.

(a) To maintain tank truck vapor tightness documentation.

Retention period: Permanent.

(b) To maintain records of each monthly leak inspection and to keep documentation of all notifications to owners or operators of each nonvapor-tight gasoline tank truck loaded at the affected facility.

Retention period: At least 2 years.

(c) To keep records of all replacements or additions of components performed on an existing vapor processing system.

Retention period: At least 3 years.

60.537 Accredited laboratories testing new residential wood heaters. [Added]

To maintain records of all documentation pertaining to each certification test, including the full test report and raw data sheets, technician notes, calculations, and test results for test runs.

Retention period: For at least 5 years.

60.537 Commercial owners who sell used residential wood heaters (stoves).

To maintain records of the names and addresses of the previous owners.

Retention period: At least 5 years.

60.537 Manufacturers of new residential wood heaters.

To maintain records of certification testing data, quality assurance (QA) program results, production volumes and information needed to support a request for a waiver or exemption.

Retention period: For at least 5 years.

60.545 Owners or operators of undertread cementing operations, sidewall cementing operations, green tire spraying operations where organic solvent-sprays are used or Michelin-B operations that use carbon adsorbers.

To maintain continuous records of the organic concentration level of the carbon bed exhaust.

Retention period: 2 years.

60.545 Owners or operators of affected facilities that use catalytic incinerators in the rubber tire manufacturing industries.

To maintain continuous records of the temperature before and after the catalyst bed for catalytic incinerators.

Retention period: 2 years.

60.545 Owners or operators of affected facilities that use thermal incinerators in the rubber tire manufacturing industries.

To maintain continuous records of the thermal incinerator combustion temperature.

Retention period: 2 years.

60.545 Owners or operators of undertread cementing operations, sidewall cementing operations, green tires spraying operations where organic solvent-based sprays are used, Michelin-A operations, Michelin-B operations, or Michelin-C automatic operations seeking to comply with specified kg/mo uncontrolled VOC use limit.

To maintain records of monthly VOC use and the number of days in each compliance period.

Retention period: 2 years.

60.545 Owners or operators of affected facilities in the rubber tire manufacturing industries required to conduct monthly performance tests as required by 40 CFR 60.543(b)(1).

To maintain records of the results of the monthly tests.

Retention period: 2 years.

60.625 Owners or operators of affected facilities in the petroleum dry cleaner operations.

To maintain records of the performance tests for measuring the flow rate of recovery solvent.

Retention period: Not specified.

60.697 Owners or operators of petroleum refinery wastewater systems.

To maintain records of (a) the design and operating specifications for all equipment used to comply to applicable standards in a readily accessible location; (b) each inspection where a water seal is dry or breached, a cap or plug is out of place, emissions are detected, or a problem is identified, including information about the repairs or corrective action taken; (c) for facilities using a thermal incinerator, continuous records must be maintained of the temperature of the gas stream in combustion zone of the incinerator. Also, to maintain records of all 3-hour periods during which the average temperature of the gas stream in the combustion zone of the thermal incinerator is more than 28 degree C (50 degree F) below the temperature; and other such records as specified in cited section

Retention period: 2 years unless otherwise noted.

60.714 Owners or operators of affected coating operations or affected coating mix preparation equipments. [Added]

To maintain records of the monthly weighted average mass of VOC contained in the coating per volume of coating solids applied to each coating.

Retention period: 2 years following the date of the measurements and calculations.

60.724 Owners or operators of facilities that surface coat plastic parts for business machines. [Added]

To maintain at the source, records of all data and calculations used to determine monthly VOC emissions from each coating.

Retention period: For a period of at least 2 years.

60.744 Owners or operators of new, modified and reconstructed facilities that perform polymeric coating of supporting substrates. [Added]

To maintain records of the measurements and calculations required in 40 CFR 60.743 and 60.744.

Retention period: For at least 2 years following the date of the measurements and calculations.

60.747 Owners or operators of new, modified and reconstructed facilities that perform polymeric coating of supporting substrates. [Added]

To maintain records documenting compliance by the methods described in 40 CFR 60.743(a)(1), (a)(2), (a)(4), (b), or (c).

Retention period: At least 2 years.

Part 60, Appendix F Owners or operators of any building, structure, facility, or installation emitting air pollutants.

To retain records of all measurements from the CEM as required by 40 CFR 60.7.

Retention period: At least 2 years.

61.14 Owners or operators of any stationary sources emitting hazardous pollutants for which a national standard is in effect.

To maintain records monitoring data, monitoring system calibration checks, and the occurrence and duration of any period during which the monitoring system is malfunctioning or inoperative.

Retention period: 2 years.

61.25 Owners or operators of underground uranium mines. [Added]

To maintain records documenting the source of input parameters including the results of all measurements upon which they are based, the calculations and/or analytical methods used to derive values for input parameters, and the procedure used to determine compliance. In addition, the documentation should be sufficient to allow an independent auditor to verify the accuracy of the determination made concerning the facility's compliance with the standard.

Retention period: 5 years and records must be made available for inspection by the Administrator or his authorized representative.

61.26 Owners or operators of underground uranium mines. [Revised; record retention requirements now in 61.25]

61.33 Owners or operators of any stationary sources emitting hazardous pollutants for which a national standard is in effect.

To maintain records of emission test results from stack sampling needed to determine total emissions, as specified in the sections cited.

Retention period: 2 years.

61.34 Owners or operators of any stationary sources emitting hazardous pollutants for which a national standard is in effect.

To maintain records of concentrations at all sampling sites and other data needed to determine such concentrations.

Retention period: 2 years.

61.43 Owners or operators of rocket motor test sites.

To maintain records of air sampling test results and other data needed to determine integrated intermittent concentrating.

Retention period: 2 years.

61.44 Owners or operators of rocket motor test sites.

To retain records of beryllium emission test results and other data needed to determine total emissions.

Retention period: 2 years.

61.53 Owners or operators of any stationary sources which process mercury ore to recover mercury, use mercury chlor-alkali cells to produce chlorine gas and alkali metal hydroxide, and incinerate or dry wastewater treatment plant sludge.

To maintain records of emission test results and other data needed to determine total emissions.

Retention period: 2 years.

61.55 Owners or operators of mercury-cell chlor-alkali plants.

(a) To maintain records of the results of the emission monitoring.

Retention period: 2 years.

(b) To maintain at the chlor-alkali plant records of the certifications and calibrations.

Retention period: Certification-For as long as the device is used for this purpose. Calibration-For a minimum of 2 years.

To maintain daily records of all leaks and spills of mercury.

61.67 Owners or operators of plants which produce vinyl chloride.

To maintain records of emission test results and other data needed to determine emissions.

Retention period: 3 years.

61.70 Owners or operators of plants which produce vinyl chloride.

To maintain records of all data needed to determine average emissions.

Retention period: 3 years.

61.71 Owners or operators of plants which produce vinyl chloride.

To maintain records of: (a) The leaks detected by the vinyl chloride monitoring system; (b) leaks detected during routine monitoring with the portable hydrocarbon detector and the action taken to repair the leaks; and (c) emission monitoring. To also keep a daily operating record for each polyvinyl chloride reactor, including pressures and temperatures.

Retention period: 3 years.

61.123 Owners and operators of calciners and nodulizing kilns at elemental phosphorous plants. [Revised; record retention requirements now in 61.124]

61.124 Owners or operators of calciners and nodulizing kilns at elemental phosphorus plants. [Added]

See 40 CFR 61.25.

61.138 Owners or operators of coke by-product recovery plants. [Added]

(a) To maintain records pertaining to the design of control equipment installed to comply with 40 CFR 61.132 through 61.134.

(b) To maintain records pertaining to sources subject to 40 CFR 61.132 and 61.133. Such records shall contain the date of the inspection and the name of the inspector; a brief description of each visible defect in the source or control equipment and the method and date of repair of the defect; the date of attempted and actual repair and method of repair of the leak; and a brief description of any system abnormalities found during the annual maintenance inspection, the annual maintenance inspection, the repairs made, the date of attempted repair, and the date of actual repair.

Retention period: 2 years following each semiannual (and other) inspection and each annual maintenance inspection.

Retention period: 2 years.

61.165 Owners or operators of glass melting furnaces which use commercial arsenic as raw materials.

To maintain records to meet the emission limit requirements.

Retention period: 2 years.

61.176 Owners or operators of copper converters.

To maintain records of the visual inspections, maintenance, and repairs performed on each secondary hood systems.

Retention period: 2 years.

61.185 Owners or operators of arsenic trioxide and metal arsenic production facilities.

To maintain records of all measurements, maintenance and repairs made to the continuous monitoring system or monitoring device, ambient concentrations at all sampling sites, other data needed to determine such concentrations and other information as specified in section cited.

Retention period: 2 years.

61.204 Owners and operators of the phosphogypsum that is produced as a

result of phosphorus fertilizer production and all that is contained in existing phosphogypsum stacks. [Added]

See 40 CFR 61.25.

61.224 Owners and operators of all sites that are used for the disposal of uranium mill tailings. [Added]

See 40 CFR 61.25.

61.246 Owners or operators of sources intended to operate in volatile hazardous air pollutant (VHAP) service. [Added]

(a) To keep records in a log of each leak as specified in 40 CFR 61.242-2, 61.242-3, and 61.242-7.

Retention period: 2 years.

(b) To maintain records, in a log, pertaining to all equipment subject to the requirements in 40 CFR 61.242-1 to 40 CFR 61.242-11 and all other records as specified in cited section.

61.255 Owners or operators of facilities byproduct materials during and following the processing of uranium ores, commonly referred to as uranium mills and their associated tailings. [Added]

See 40 CFR 61.25

61.276 Owners or operators with a storage vessel subject to the national emission standard for benezene emissions. [Added]

(a) To keep readily accessible records showing the dimensions of the storage vessel and an analysis showing the capacity of the storage vessel.

Retention period: As long as the storage vessel is in operation.

(b) To keep records pertaining to closed vent system and control devices in a readily accessible location.

Retention period: 2 years.

62.4622 Owners or operators of stationary sources emitting air pollutants for which a national standard is in effect.

To maintain records of the nature and amounts of emissions from such source and any other information as may be deemed necessary to determine whether such source is in compliance with applicable emission limitations or other control measures that are part of the plan.

Retention period: 2 years.

80.7 Refiners, distributors, and retailers of gasoline.

To maintain information on bulk shipments and annual gallonage sales of unleaded gasoline as specified in section cited.

Retention period: 6 months.

80.27 Distributors, resellers, carriers, retailers, and wholesale purchaser-consumers of gasoline and alcohol blends volatility. [Added]

To maintain each invoice, loading ticket, bill lading, delivery ticket and other documents which accompany the shipment of such gasoline. Such documents shall be available for inspection by the Administrator or authorized representative during such period.

Retention period: 1 year.

82.13 Importers of certain chlorofluorocarbons (CFC's) and brominated compounds (halons) to reduce the risk of stratospheric ozone depletion. [Amended]

To maintain records on (a) the quantity of each controlled substances imported, either alone or in mixtures; (b) the quantity of each controlled substances were imported; (c) the port of entry through which the controlled substances passed; (d) the country from which the imported controlled substances were imported; the port of exit; and other information as specified in cited section.

Retention period: 3 years.

82.13 Producers of certain chlorofluorocarbons (CFC's) and brominated compounds (halons) to reduce the risk of stratospheric ozone depletion.

To maintain (a) dated records of the quantity of each of the controlled substances produced at each facility; (b) dated records of the quantity of controlled substances used as feedstocks in the manufacture of controlled and in the manufacture of non-controlled substances introduced into the production process of new controlled substances at each facility; (c) dated records of the quantity of ACFC-22 and CFC-116 produced within each facility also producing controlled substances; and (d) other records as specified in cited section.

Retention period: 3 years.

85.1507 Certificate holders importing nonconforming motor vehicles and motor vehicle engines into the U.S.

To maintain adequately organized and index records, correspondence and other documents relating to the certification, modification, test, purchase, sale, storage, registration and importation of that vehicle or engine, including but not limited to specified information required in section cited.

Retention period: 6 years from the date of entry of a nonconforming vehicle or engine imported by the certificate holder.

85.1806 Manufacturers of new motor vehicles or new motor vehicle engines who have been notified that such vehicles or engines are not in conformity with applicable emission standards and regulations.

To maintain records to permit the analysis of recall campaigns as specified in the section cited.

Retention period: 5 years.

85.1904 Manufacturers of motor vehicles or motor vehicle engines who have initiated voluntary emissions recalls.

To maintain records relating to notifications and remedial repairs.

Retention period: Not specified.

85.1906 Manufacturers of new motor vehicles or new motor vehicle engines subject to defect reporting requirements.

To maintain information gathered by the manufacturer to compile emissions defect information reports and voluntary emissions recall reports.

Retention period: 5 years from date of manufacture of the affected vehicles.

86.078-7 Manufacturers of new motor vehicles or new motor vehicle engines subject to air pollution control regulations.

To maintain general and specific records including routine emission test records relating to such vehicles as specified in the section cited.

Retention period: 6 years after issuance of all related certificates of conformity; routine emission test records—1 year after issuance of all certificates of conformity to which they relate.

86.090-14 Small-volume manufacturers of light-duty vehicles, light-duty trucks, and heavy-duty engines subject to air pollution controls. [Added]

To maintain records of all the information required by 40 CFR 86-090-21.

86.090-24 Manufacturers of new motor vehicles and new motor vehicle engines subject to air pollution controls. [Added]

To maintain and make available to EPA Administrator upon request, the engineering evaluation, including any test data used to support the deletion of optional equipment from the test vehicles.

86.090-26 Manufacturers of light-duty vehicles subject to air pollution controls. [Added]

(a) To maintain and provide to EPA Administrator, a record of the rationale used in making for engine family, the mileage at which the engine-steam combination is stabilized for emission-data testing determination.

(b) To retain records of all information concerning all emission tests and maintenance, including vehicle alterations to represent other vehicle selections whenever a manufacturer intends to operate and test a vehicle which may be used for emission or durability data.

86.107-90 Manufacturers of petroleum-fueled and methanol-fuel light-duty vehicles and light-duty trucks. [Added]

(a) To maintain permanent records of results at the initiation and termination of each diurnal or hot soak in measuring hydrocarbon (hydrocarbons plus methanol as appropriate).

(b) For the methanol sample to maintain permanent records of the following: (1) The volumes of deionized water introduced into each impinger; (2) the rate and time of sample collection; (3) the volumes of each sample introduced into the gas chromatograph; (4) the flow rate of carrier gas through the carrier; and (5) the chromatogram of the analyzed-sample.

86.142-90 Manufacturers of 1977 and later motor year new light-duty vehicles and new light-duty trucks subject to emission test procedures. [Added]

To maintain for each test: (a) Test number; (b) system or device tested (brief description); (c) date and time of day for each part of the test schedules; (d) instrument operated; (e) driver or operator; (f) vehicle ID number, manufacturer, model year, standard, engine family, evaporative emissions family, basic engine description; and such other information as cited in section.

86.605 Manufacturers of new gasoline-fueled and diesel light-duty vehicles and new gasoline-fueled and diesel light-duty trucks subject to selective enforcement auditing procedures required by air pollution control regulations. [Amended]

To maintain general and individual records relating to vehicle emission tests performed pursuant to test orders as specified in the section cited.

Retention period: 1 year after completion of tests.

86.608-88 Manufacturers of new gasoline-fueled and diesel light-duty vehicles and new gasoline-fueled and dieseled light-duty trucks subject to selective enforcement auditing procedures

required by air pollution control regulations. [Added]

To maintain equivalency documentation if using an equivalent method when measuring the temperature of the test fuel at other than the approximate mid-volume of the fuel tank and when draining the test fuel from other than the lowest point of the tank.

Retention period: 1 year after completion of all testing in response to a test order.

86.1005-84 Manufacturers of new gasoline-fueled and diesel heavy-duty vehicles and new gasoline-fueled and diesel heavy-duty trucks subject to selective enforcement auditing procedures required by air pollution control regulations. [Redesignated as 86.1005-88 and amended]

To maintain general and individual records relating to vehicle emission tests performed pursuant to test orders as specified in the section cited.

Retention period: 1 year after completion of tests.

86.1005-90 Manufacturers of new petroleum-fueled or methanol-fueled heavy duty or engine or light-duty trucks. [Added]

To maintain testing and auditing records as specified in section cited.

Retention period 1 year after completion of all testing in response to a test order.

86.1008-88 Manufacturers of new gasoline-fueled and diesel heavy-duty vehicles and new gasoline-fueled and diesel heavy-duty trucks subject to selective enforcement auditing procedures required by air pollution control regulations. [Added]

See 40 CFR 86.608-88.

86.1008-90 Manufacturers of new petroleum-fueled or methanol-fueled heavy-duty engines or light-duty trucks. [Revised]

To maintain and make available to the EPA Administrator upon request, equivalency test documentation.

86.1242-90 Manufacturers of new gasoline-fueled and methanol-fueled heavy duty vehicles. [Added]

See 40 CFR 86.142-90.

104.25 Manufacturers, importers and processors of 11-aminoun-decanoic acid.

To retain documentation of information contained in significant new use reports.

Retention period: 5 years from date of submission of the report.

112.7 Owners and operators of onshore or offshore facilities engaged in oil activities.

To maintain written procedures developed for prevention of oil pollution and record of inspection required in 40 CFR Part 112.

Retention period: 3 years.

122.21 Persons holding or applying for permits to discharge wastes pursuant to the national pollutant discharge elimination program. [Amended]

To maintain records of all information resulting from monitoring activities and relating to all sludge-related application data and other such information as indicated in section cited.

Retention period: 5 years (or longer as required by 40 CFR Part 403), except for records of monitoring information—3 years.

122.41 Persons holding permits to discharge wastes pursuant to the national pollutant discharge elimination program.

To maintain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete application.

Retention period: 3 years from date of the sample, measurement, report or application.

123.43 state agencies administering national pollutant discharge elimination system permit programs.

To maintain records and information as the Administrator of EPA may reasonably require to ascertain whether the State program complies with the requirements of the Clean Water Act.

Retention period: Not specified.

125.26 Dischargers submitting applications for a compliance extension for facilities installing innovative technology under the national pollutant discharge elimination program.

To keep records of all data used to complete the request for a compliance extension.

Retention period: For the life of the permit containing the compliance extension.

Part 136, App. A Laboratories performing tests for the organic chemical analysis of municipal and industrial wastewater.

To maintain performance records to document the quality of data that is generated.

Retention period: Not specified.

141.33 Owners or operators of public water systems.

To maintain records of (a) bacteriological analyses; (b) chemical analyses; (c) actions taken to correct violations of primary drinking water regulations; (d) copies of written reports, summaries or communications relating to sanitary surveys of the system; and (e) records concerning variances or exemptions granted to the system.

Retention period: (a) 5 years; (b) 10 years; (c) 3 years after last action taken for each violation; (d) 10 years; and (e) 5 years after expiration of variance or exemption.

142.14 State agencies having primary enforcement responsibilities over public water. [Revised]

To maintain records of tests, measurement, analyses, decisions, and determinations performed on each public water system to determine compliance with applicable provisions of State primary drinking water regulations.

Retention period: (a) Records of turbidity measurements—for less than 1 year; (b) records of disinfectant residual measurements and other parameters necessary to document disinfection effectiveness and applicable reporting requirements—not less than 1 year; (c) records of decisions—40 years or until 1 year after the decision is reversed or revised; (d) records of any determination that a public water system supplied by a surface water source or a ground water source under the direct influence of surface water is not required to provide filtration treatment—40 years or until withdrawn; (e) records of analyses for contaminants other than microbiological contaminants (including total coliform, fecal coliform, and hetertrophic plate concentration), other parameters necessary to determine disinfection effectiveness (including temperature and pH measurements) and turbidity—40 years; (f) records of microbiological analyses of repeat or special samples—1 year in the form of actual laboratory reports or in an appropriate summary form; and (g) records of decisions made pursuant to the total coliform provisions of 40 CFR Part 141—5 years.

144.28 Owners or operators of Class I, II, and III wells authorized by underground injection control program.

To maintain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit.

Retention period: 3 years. This period may be extended by request of Director at any time.

144.31 Persons applying for permit to operate underground injection wells.

To keep all data used to complete permit applications and any supplemental information.

Retention period: 3 years.

144.51 Persons holding underground injection control permits.

To retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for the permit.

Retention period: 3 years. This period may be extended by request the State Director at any time.

146.13 Owners and operators of underground wells disposing of fluids.

To retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous, monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for the permit.

Retention period: Not specified.

146.23 Owners and operators of underground wells disposing of fluids.

See 146.13.

146.33 Owners and operators of underground wells disposing of fluids.

See 146.13.

146.72 Owners or operators of Class I hazardous waste wells.

To retain records reflecting the nature, composition, and volume of all injected fluids.

Retention period: 3 years following well closure.

147.2913 Owners and operators of Class II injection wells located on the Osage Mineral Reserve, Oklahoma.

To maintain monitoring records on the injection pressure and rate.

Retention period: 3 years or 3 years after enforcement action has been resolved.

147.2922 Owners/operators of Class II injection wells authorized by permit.

To retain all monitoring records on injection pressure and rate.

Retention period: 3 years or if enforcement action is pending, 3 years after enforcement has been resolved.

157.36 Registrants of pesticide products required to be in child-resistant packagings.

To maintain records on description of the packages, copies of certification, statements required by section 157.34, and other information as specified in the section.

Retention period: As long as the child-resistant packaging is in effect.

160.29 Testing facilities conducting studies that support applications for research or marketing permits for pesticides regulated by EPA.

To maintain a current summary of training and experience and job description for each individual engaged in or supervising the conduct of a study.

Retention period: 5 years.

160.29 Testing facilities conducting studies that support applications for research or marketing permits for pesticides regulated by EPA. [Revised]

To maintain a current summary of training and experience and job description for each individual engaged in or supervising the conduct of a study.

Retention period: 5 years.

160.63 Testing facilities conducting studies that support applications for research or marketing permits for pesticides regulated by EPA. [Revised]

To maintain written records of all inspection, maintenance, testing, calibrating, and/or standardizing operations. Also to maintain written records of nonroutine repairs performed on equipment as a result of failure and malfunction.

Retention period: 2 years.

160.81 Testing facilities conducting studies that support applications for research or marketing permits for pesticides regulated by EPA. [Added]

To maintain historical file of standard operating procedures and all revisions thereof, including the dates of such revisions.

Retention period: In accordance with 40 CFR 160.195.

160.120 Testing facilities conducting studies that support applications for research or marketing permits for pesticides regulated by EPA. [Added]

To maintain with the protocol records of all changes in or revisions of an approved protocol and the reasons therefore.

Retention period: In accordance with 40 CFR 160.195.

160.195 Testing facilities conducting studies that support applications for research or marketing permits for pesticides regulated by EPA. [Added]

(a) To maintain documentation records, raw data, and specimens pertaining to a study and required to be retained.

Retention period: (1) In the case of a study used to support an application for a research or marketing permit approved by EPA, the period during which the sponsor holds any research or marketing permit to which the study is pertinent. (2) A period of at least 5 years following the date on which the results of the study are submitted to the EPA in support of an application for research marketing year. (3) In other situations (e.g., where the study does not result in the submission of the study in support of an application for a research or marketing permit), a period of at least 2 years following the date on which the study is completed, terminated, or discontinued.

(b) Wet specimens, samples of test, control, or reference substances, and specially prepared material which are relatively fragile and differ markedly in stability and quality during storage shall be retained only as long as the quality of the preparation affords evaluation.

(c) To maintain the master schedule sheet, copies of protocols and records of quality assurance inspections in accordance with 40 CFR 160.195(b).

(d) To maintain summaries of training and experience and job description in accordance with 40 CFR 160.195(b).

Retention period: 2 years.

166.6 State agencies using or applying pesticides pursuant to a quarantine-public health exemption.

To maintain records of all such treatments specifying records as contained in cited section.

Retention period: Not specified.

169.2 Producers of pesticides, devices, or active ingredients used in producing pesticides subject to the Federal Insecticide, Fungicide, and Rodenticide Act, including pesticides produced pursuant to an experimental use permit and pesticides, devices, and pesticide active ingredients produced for export.

To maintain records showing product name, EPA Registration Number, Experimental Permit Number if the pesticide is produced under an Experimental Use Permit, amounts per batch and batch identification of all pesticides produced. To also maintain records of produc-

tion, brand names, receipt, shipment, inventories, advertising, guarantees, disposal, tests, research, and such other records as specified in the section cited.

Retention period: Various.

171.11 Certified commercial pesticides applicators.

To maintain records of specified information relating to the use of restricted use pesticides.

Retention period: 2 years.

172.5 Producers of pesticides produced pursuant to an experimental use permits.

To maintain records in accordance with 40 CFR Part 162.

180.31 Persons obtaining an experimental permit for use of a pesticide chemical for which a temporary tolerance is established.

To maintain temporary tolerance records of production, distribution, and performance.

Retention period: 2 years.

205.172 Manufacturers of new motorcycle exhaust systems subject to noise emission standards.

To maintain general and individual records as specified in section.

Retention period: 3 years.

224.1 Persons holding permits to allow dumping of material into the ocean waters.

To maintain complete records of materials dumped, time and locations of dumping, and such other records as required in section cited.

Retention period: Not specified.

233.4 Persons submitting applications for a permit to discharge dredged or fill material into State regulated waters.

To keep records of all data used to complete permit application and any other supplemental information.

Retention period: 3 years.

233.7 Persons holding 404 permits to operate and maintain all facilities and systems of treatment and control (and related appurtenances) pursuant to the Dredge or Fill Program under the Clean Water Act.

To maintain all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit.

Retention period: 3 years.

240.211 Owners and operators of thermal processing facilities and land disposal sites.

To maintain records and monitoring data as required by regulations.

Retention period: Not specified.

240.211-1 Owners and operators of thermal processing facilities and land disposal sites.

See 240.211.

240.211-3 Owners and operators of thermal processing facilities and land disposal sites.

To keep operating records in a daily log.

Retention period: Not specified.

241.212-3 Owners/operators of land disposal sites for solid wastes.

To maintain records on major operational problems, complaints or difficulties; qualitative and quantitative evaluation of the environmental impact of the land disposal site with regard to the effectiveness of gas and leachate control; vector control efforts and other date as required by regulation.

Retention period: Not specified.

259.54 Generators of medical waste, including generators of less than 50 pounds per month. [Added]

(a) To keep a copy of each tracking form signed in accordance with 40 CFR 259.52.

Retention period: For at least 3 years from the date the waste was accepted by the initial transporter.

(b) To retain a copy of all exception reports required to be submitted under 40 CFR 259.55.

(c) To maintain a shipment log at the original generation point.

Retention period: For a period of 3 years from the date the waste was shipped.

(d) To maintain a shipment log at each central collection point and other such records as specified in cited section.

Retention period: For a period of 3 years from the date that regulated medical waste was accepted from each original generation point.

259.76 Transporters of medical waste. [Added]

To retain a copy of each tracking form in accordance with 40 CFR 259.77.

259.77 Transporters of regulated medical waste. [Added]

(a) To keep a copy of the tracking form signed by the generator, himself, the previous transporter (if applicable), and the next party, which may be one of the following: Another

transporter or the owner or operator of an intermediate handling facility, or destination facility.

Retention period: For a period of 3 years from the date the waste was accepted by the next party.

(b) For regulated medical waste that is not accompanied by a generator-initiated tracking form, to retain a copy of all transporter-initiated tracking forms and consolidation logs.

Retention period: For a period of 3 years from the date the waste was accepted by the transporter.

(c) For any regulated medical waste that was received by the transporter accompanied by a tracking form and consolidated by a tracking form and consolidated or remanifested by the transporter to another tracking form, to retain (1) a copy of the generator-initiated tracking form signed by the transporter; (2) a copy of the transporter-initiated tracking form signed by the intermediate handler or destination facility.

Retention period: (1) 3 years from the date the waste was accepted by the transporter; and (2) 3 years from the date the waste was accepted by the intermediate handler or destination facility.

(d) To retain a copy of each transporter report required by 40 CFR 259.78.

Retention period: 3 years after the date of submission.

259.81 Owners or operators of facilities including destination and intermediate facilities receiving regulated medical waste generated in a Covered State. [Added]

(a) To retain a copy of each tracking form in accordance with 40 CFR 259.83.

(b) To retain a copy of the tracking form or shipping papers if signed in lieu of the tracking form.

Retention period: For at least 3 years from the date of acceptance of the regulated medical waste.

259.83 Owners or operators of destination facilities or intermediate handlers receiving regulated medical waste generated in a Covered State. [Added]

(a) To maintain (1) copies of all tracking forms and logs; (2) the name and State permit or identification number of each generator who delivered waste to the destination facility or intermediate handler, if the State does not issue permit or identification numbers then the generator's address; and (3) copies of all discrepancy reports.

(b) To maintain the following information for each shipment of regulated medical waste accepted: (1) The date the waste was accepted; (2) the name and State permit or identification number of the generator who originated shipment. If the State does not issue permit or identification numbers, then the generator's address; (3) the total weight of the regulated medical waste accepted from the originating generator; and (4) the signature of the individual accepting the waste.

Retention period: 3 years from the date the waste was accepted.

259.90 Persons engaged in rail transportation of regulated medical waste generated in a Covered State. [Added]

To retain a copy of the tracking forms and rail shipping papers in accordance with 40 CFR 259.77.

261.4 Generators of waste samples and owners of operators of laboratories or testing facilities conducting treatability studies. [Added]

(a) To maintain copies of shipping documents; a copy of the contract with the facility conducting the treatability study; documentation showing the amount of waste shipped under the exemption; the name, address, and EPA identification number of the laboratory or testing facility that received the waste; the date the shipment was made; and whether or not unused samples and residues were returned to the generator or sample collector, or if sent to a designated facility, the name of the facility and the EPA identification number, and other information as specified in section cited.

Retention period: 3 years.

(b) To keep, on site, a copy of the treatability study contract and all shipping papers associated with the transport of treatability study samples to and from the facility.

Retention period: 3 years.

262.40 Hazardous waste generators.

(a)To keep a copy of each manifest signed.

Retention period: 3 years or until receipt of a signed manifest from facility receiving the hazardous waste.

(b) To keep a copy of each Biennial Report and Exception Report.

Retention period: 3 years from due date of report.

(c) To keep records of any test results, waste analyses, or other determinations that the waste is hazardous.

Retention period: 3 years from the date that the waste was last sent to on-site or off-site treatment, storage, or disposal.

262.57 Primary exporters of hazardous waste.

To maintain copies of each notification of intent to export; each EPA Acknowledgement of Consent; each confirmation of delivery of the hazardous waste from consignee; and each annual report.

Retention period: 3 years.

263.22 Hazardous waste transporters.

To keep a copy of the manifest signed by the generator, transporter, and the next designated transporter or the owner or operator of a designated facility.

Retention period: 3 years from date initial transporter accepted the hazardous waste.

263.22 Hazardous waste transporters (water bulk shipment transporter).

To retain a copy of shipping paper containing all the information for shipments delivered to designated facility by water (bulk shipment).

Retention period: 3 years from date initial transporter accepted the hazardous waste.

263.22 Hazardous waste transporters (initial and final rail transporter).

Initial rail transporter to keep a copy of manifest and shipping paper for shipments by rail within the U.S., final rail transporter to keep a copy of signed manifest (or shipping paper if signed in lieu of manifest by the designated facility) for shipments by rail within the U.S.

Retention period: 3 years from date initial transporter accepted the hazardous waste.

263.22 Hazardous waste transporters (transporter who transmits hazardous waste out of the U.S.)

To keep a copy of the manifest indicating when the hazardous waste left the U.S.

Retention period: 3 years from date initial transporter accepted the hazardous waste.

264.15 Owners and operators of all hazardous facilities.

To keep inspection records of the date and time of the inspection, the name of the inspection, a notation of the observations made, and the date and nature of any repairs or other remedial actions.

Retention period: 3 years.

264.16 Hazardous waste transporters.

To maintain personnel training records.

Retention period: For current personnel, until closure of facility; for former personnel, 3 years from date employee left facility.

264.71 Owners and operators of on-site and off-site hazardous waste treatment, storage, and disposal facilities.

To keep a copy of the manifest and shipping paper (if signed in lieu of the manifest at time of delivery) signed by the owner or operator.

Retention period: 3 years from date of delivery.

264.71 Owners and operators of on-site and off-site hazardous waste treatment, storage, and disposal facilities (hazardous waste from a rail or water bulk shipment) transporter.

To keep a copy of each shipping paper and manifest signed by the owner or operator for shipments delivered by rail or water (bulk shipment).

Retention period: 3 years from date of delivery.

264.73 Owners and operators of on-site and off-site hazardous waste treatment, storage, and disposal facilities.

To keep a written operating record of the facility.

Retention period: Until at least closure of the facility; monitoring data at disposal facilities: Throughout the post-closure period; records for inspections: 3 years.

264.97 Owners and operators of hazardous waste treatment, storage, and disposal facilities.

To maintain in the facility operating records, ground-water monitoring data including actual-levels of constituents.

264.98 Owners and operators of hazardous waste treatment, storage, and disposal facilities.

To maintain records of ground-water analytical data as measured and in a form necessary for the determination of statistical significance under 40 CFR 264.97(h).

264.279 Owners or operators of hazardous waste, storage, and disposal facilities.

To maintain operating records including hazardous waste application dates and rates.

Retention period: 3 years.

264.309 Owners and operators of facilities that dispose of hazardous waste in landfills.

To maintain operating records that include (a) on a map, the exact location and dimensions, including depth, of each cell with respect to permanently survey benchmarks; and (b) the contents of each cell and the approximate location of each hazardous waste type within each cell.

Retention period: 3 years.

264.347 Owners or operators of hazardous waste incinerators.

To keep in the operating log monitoring and inspection data.

Retention period: 3 years.

265.15 Owners or operators of all hazardous waste facilities.

To maintain inspection log or summary of the date and time of the inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs or other remedial actions.

Retention period: 3 years.

265.16 Hazardous waste transporters.

To maintain personnel training records.

Retention period: For current personnel, until closure of facility; for former personnel, 3 years from date employee left facility.

265.71 Owners and operators of on-site and off-site hazardous waste treatment, storage, and disposal facilities.

To keep a copy of the manifest and shipping paper (if signed in lieu of the manifest at time of delivery) signed by the owner or operator.

Retention period: 3 years from date of delivery.

265.71 Owners and operators of on-site and off-site hazardous waste treatment, storage, and disposal facilities (hazardous waste from a rail or water bulk shipment) transporter.

See 264.71.

265.73 Owners and operators of on-site and off-site hazardous waste treatment, storage, and disposal facilities. [Amended]

See 264.73.

265.94 Owners and operators of on-site and off-site hazardous waste treatment, storage, and disposal facilities.

(a) An owner or operator who does not operate a groundwater quality assessment plan must keep records of analyses of groundwater samples, groundwater surface elevation data, and evaluations of the measurements of groundwater samples.

Retention period: Throughout active life of facility and for disposal facilities, throughout post-closure care period as well.

(b) An owner or operator who operates a groundwater quality assessment plan must keep records of the analyses and evaluations specified in the plan.

Retention period: Throughout the active life of the facility and for disposal facilities, throughout the post-closure care period as well.

265.112 Owners and operators of on-site and off-site hazardous waste treatment, storage, and disposal facilities.

To keep a written closure plan at the facility which identifies the steps necessary to completely close the facility at any point during its intended life and at the end of its intended life.

Retention period: Not specified.

265.118 Owners and operators of on- and off-site hazardous waste treatment, storage, and disposal facilities.

To keep a written post-closure planat the facility which identifies the activities which will be carried on after final closure and the frequency of those activities.

Retention period: Not specified.

265.142 Owners and operators of all hazardous waste facilities.

A facility owner or operator must keep a written estimate of facility closure cost at the facility.

Retention period: Not specified.

265.144 Owners and operators of hazardous waste disposal facilities.

An owner or operator must keep a written estimate of annual cost of post-closure monitoring and maintenance of the facility at the facility.

Retention period: Not specified.

265.279 Owners and operators of hazardous waste land treatment facilities.

To keep hazardous waste application dates and rates in the operating records.

Retention period: 3 years.

265.309 Owners and operators of facilities that dispose of hazardous waste in landfills.

To keep (a) on a map, the exact location and dimensions, including depth, of each cell with respect to permanently surveyed benchmarks; and (b) the contents of each cell and the approximate location of each hazardous waste type within each cell in the operating records.

Retention period: 3 years.

268.6 Owners or operators of hazardous waste treatment, storage, and disposal facilities. [Added]

To maintain and keep on site a copy of the monitoring data collected under the monitoring plan that describes the monitoring program installed at and or around the unit to verify continued compliance with the conditions of the variance.

268.7 Owners and operators of hazardous waste treatment, storage, and disposal facilities. [Added]

To maintain on-site a copy of the demonstration (if applicable) and certification required for each waste shipment.

Retention period: For at least 5 years from the date that the waste that is the subject of such documentation was last sent to on-site or off-site disposal. The 5-year retention requirement is automatically extended during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Administrator.

270.10 Applicants applying for the hazardous waste permit.

To keep records of all data used to complete permit applications and any supplemental information.

Retention period: 3 years from the date the application is signed.

270.30 Persons holding RCRA permits.

To maintain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by permit, and records of all data used to complete the application for the permit.

Retention period: 3 years.

280.20 Owners and operators of new underground storage tank systems.

To maintain records that demonstrate compliance with design, construction, installation, and notification performance standards.

Retention period: Remaining life of the tank and piping.

280.31 Owners and operators of steel underground storage tank system with corrosion protection. [Added]

For UST systems using cathodic protection, to maintain records of the operation of the cathodic protection to demonstrate compliance with performance standards. These records must provide (a) the results of the last three inspections to ensure the equipment is running properly and (b) the results of testing for proper operation by a qualified cathodic protection tester.

280.33 Owners and operators of underground storage tank systems.

To maintain records of each repair.

Retention period: For the remaining operating life of the UST.

280.34 Owners and operators of underground storage tank systems.

See 280.20, 280.31, 280.33, 280.45, and 280.74.

280.45 Owners and operators of underground storage tank systems.

(a) To maintain all written performance claims pertaining to any release detection system used, and the manner in which these claims have been justified or tested by the equipment manufacturer or installer.

Retention period: 5 years or for a reasonable period of time determine by the implementing agency, from the date of installation.

(b) To maintain records on the results of any sampling, testing, or monitoring.

Retention period: 1 year, or for a reasonable period of time determined by the implementing agency, except that the results of tank tightness testing must be retained until the next test is conducted.

(c) To maintain written documentation of all calibration, maintenance, and repair of release detection equipment permanently located on-site.

Retention period: 1 year or for a reasonable time period determined by the implementing agency. Any schedules of required calibration and maintenance provided by the release detection equipment must be retained for 5 years from the date of installation.

280.74 Owners and operators of underground storage tank systems.

To maintain records on the results of the site investigation conducted at permanent closure.

Retention period: 3 years after completion of permanent closure or change-in-service in one of the following ways: (a) By the owners and operators who took the UST system out of service; (b) by the current owners and operators of the UST system site; or (c) by mailing these records to the implementing agency if they cannot be maintained at the closed facility.

280.107 Owners and operators of underground storage tanks containing petroleum.

To maintain (a) evidence of all financial assurance mechanisms used to demonstrate financial responsibility; (b) a copy of the instrument worded as specified; (c) when using a financial test or guarantee to maintain a copy of the chief financial officer's letter based on year-end financial statements for the most recent completed financial reporting year and other such records as specified in cited section.

Retention period: Not specified.

281.32 Owners and operators of approved underground storage tank systems.

To maintain records of monitoring, testing, repairs, and closure that are sufficient to demonstrate recent facility compliance status.

Retention period: Records demonstrating compliance with repair and upgrading requirements must be maintained for the remaining operating life of the facility, these records must be readily available when requested by the implementing agency.

281.40 Owners and operators of State approved underground storage tank systems. [Added]

To maintain records on operation.

Retention period: Unspecified.

372.10 Persons subject to the toxic chemical release reporting; community-right-to-know requirements. [Added]

(a) To maintain a copy of each report submitted; and supporting documentation and materials.

Retention period: 3 years from date of the submission of the report under 40 CFR 372.30.

(b) To maintain all supporting materials and documentation used to determine whether a notice is required and used to develop each required notice under 40 CFR 372.45 and a copy of each notice.

Retention period: 3 years from the date of the submission of a notification under 40 CFR 372.45. Records must be maintained at the facility to which the report applies or from which a notification was provided. Such records must be readily available for purposes of inspection by EPA.

403.12 Publicly owned treatment works (POTW's) and industrial users subject to pretreatment requirements.

To maintain records of monitoring activities and results.

Retention period: 3 years.

501.15 Applicants for the State sludge management program. [Added]

To maintain records of all data used to complete permit applications and any supplemental information.

Retention period: 5 years from the date the application is signed or as required by 40 CFR Part 503.

501.15 Persons holding permits under the State Sludge Management Program. [Added]

To retain records of all monitoring information, copies of all reports required by the permit, and records of all data used to complete the application for the permit.

Retention period: At least 5 years from the date of the sample, measurement, report or application, or longer as required by 40 CFR Part 503. This period may be extended by request of the Director at any time.

600.005-81 Manufacturers of new motor vehicles subject to fuel economy regulations.

To maintain general and individual records related to the sections cited.

Retention period: 5 years after the end of the model year to which the records relate.

600.105-78 Manufacturers of new motor vehicles subject to fuel economy regulations.

See 600.005-81.

600.205-77 Manufacturers of new motor vehicles subject to fuel economy regulations.

See 600.005-81.

600.305-77 Manufacturers of new motor vehicles subject to fuel economy regulations.

See 600.005-81.

600.505-78 Manufacturers of new motor vehicles subject to fuel economy regulations.

See 600.005-81.

704.11 Manufacturers, importers, and processors of chemical substances and mixtures. [Added]

To retain (a) a copy of each report submitted by the person in response to the requirements of section 8(a) of the Toxic Substances Control Act (TSCA); (b) materials and documentation sufficient to verify or reconstruct the values submitted in the report; (c) a copy of each notice sent by the person, return receipt requested, to that person's customers for the purpose of notifying their customers of the customer's reporting obligations; and (d) all return receipts signed by the person's customers who received the notice.

Retention period: 3 years.

704.33 Persons who manufacture, import or process P-tert-butylbenzoic acid (P-TBBA), p-tert-butyltoluene (P-TBT) and p-tert-butylbenzaidehyde (P-TBB).

To maintain documentation of information contained in report on data under section 8(a), including information on chemical identity and structure, production, use, exposure, disposal, and health and environmental effects.

Retention period: 5 years from the date of submission of the report.

704.95 Manufacturers and importers of the chemical substances phosphoric acid, (1,

2, ethanediylbis (nitrilo-bis (methylene))) tetrakis-(EDTMPA) and its salts. [Added]

To retain documentation of information contained in reports.

Retention period: 5 years from the date of the submission of the report.

704.105 Persons who propose to manufacture, import, or process hexafluoropropylene oxide (HFPO) for use as an intermediate in the manufacture of fluorinated substances in an enclosed process after Dec. 10, 1987.

To retain documentation of information in the Preliminary Assessment Information Manufacturer's Report.

Retention period: 5 years from date of submission of the reports.

704.142 Persons who manufacture, import, process or propose to manufacture, import, or process HEX-BCH for use as an intermediate in the production of isodrin or endrin, on or after January 2, 1986.

(a) To retain documentation of information contained in the reports.

Retention period: 3 years from the date of the report.

(b) To retain the certification of review to ensure that there has been no reportable event.

Retention period: 3 years from the date of the certification.

710.37 Manufacturers and importers of certain substances included in the Toxic Substances Control Act (TSCA) Inventory.

To maintain records that document any information reported to EPA. For substances that are manufactured or imported at less than 10,000 pounds annually, volume records must be maintained as evidence to support a decision not to submit a report.

Retention period: 4 years beginning with effective date of that reporting period.

717.15 Firms manufacturing or processing chemical substances and mixtures.

To maintain records of significant adverse reactions to human health or the environment alleged to have been caused by chemical substances or mixtures.

Retention period: 30 years for employee health related allegations, and 5 years for all other allegations.

720.78 Manufacturers and importers of new chemical substances subject to the provisions of the Toxic Substances Control Act.

(a) To maintain documentation of information reviewed and evaluated to determine the need to make any notification of risk.

Retention period: 5 years.

(b) To maintain documentation of the nature and method of notification concerning the health and environmental effect of a substance including copies of any labels or written notices used.

Retention period: 5 years.

(c) To maintain documentation of prudent laboratory practices used instead of notification and evaluation.

Retention period: 5 years.

(d) To maintain the names and addresses of any persons other than the manufacturer or importer to whom the substance is distributed, the identity of the substance to the extent known, the amount distributed and copies of notification required under section 720.36(c)(2).

Retention period: 5 years.

(e) Persons manufacturing or importing substance in quantities greater than 100 kilograms per year must maintain records of the identity of the substance to the extent known, the production volume of the substance, and the disposition of the substance.

Retention period: 5 years.

721.17 Manufacturers, importers, and processors of chemical substances which EPA has determined are significant new uses under certain provisions of the Toxic Substances Control Act. [Added]

To maintain documentation of information contained in that person's significant new use notice.

Retention period: For a period of 5 years from the date of the submission of the significant new use notice.

721.125 Manufacturers, importers, and processors of substances; significant new use rules. [Added]

(a) To maintain records documenting the manufacture and importation volume of the substance and the corresponding dates of manufacture and import.

(b) To maintain records documenting volumes of the substance purchased in the United States by processors of the substance, names, and addresses of suppliers, and corresponding dates of purchases.

(c) To maintain records documenting establishing and implementation of a program for the use of any applicable personal protective equipment required under 40 CFR 721.63.

Retention period: 5 years from the date of their creation.

721.40 Manufacturers, importers, or processors submitting a significant new use notice to EPA. [Added]

To maintain documentation of information contained in the significant new use notice.

Retention period: 5 years from the date of the submission of the significant new use notice.

721.47 Persons manufacturing, importing, or processing chemical substances for significant uses in small quantities solely for research and development. [Added]

To retain (a) copies of citations to information reviewed and evaluated to determine the need to make any notification of risk; (b) documentation of the nature and method of notification including copies of any labels or written notices used; (c) documentation of prudent laboratory practices used instead of notification and evaluation; and (d) the names and addresses of any persons other than the manufacture, importer, or processor, to whom the substance is distributed, the identity of the substance, the amount distributed, and copies of the notification required.

Retention period: 5 years.

721.72 Manufacturers, importers, and processors of substances; significant new use rules. [Added]

To maintain records documenting establishment and implementation of a hazard communication program. The hazard communication program will, at a minimum, describe how the requirements of this section for labels, MSDs, and other forms of warning material will be satisfied.

Retention period: 5 years from the date of creation.

721.400 Manufacturers, importers, and processors of disubstatuted diamino anisole. [Redesignated from 721.120]

In addition to the requirements of section 721.40, to maintain records which include the results of any determination that gloves are impervious, the names of persons required to wear gloves, and copies of labels.

Retention period: 5 years from the date of creation of the record.

721.520 Manufacturers, importers, and processors of substituted polyglycidyl benzeneamine (P-83-394). [Redesignated from 721.180]

In addition to the requirements of section 721.40, to maintain records which include the names of persons informed of the hazards associated with the substance, the names of any transferee and the dates of any transfers of containers which are labeled, and the method used to determine that protective gloves are impervious to the substance and the date and results of the determination.

Retention period: 5 years from the date of creation of the record.

721.557 Manufacturers, importers, and processors of mixture of 1,3-benzenediamine, 2-methyl-4,6-bis (methylthio)- and 1,3- benzenediamine, 4-methyl-2,6-bis (methylthio); significant new uses; Toxic Substances Control Act. [Added]

In addition to the requirements of 40 CFR 721.17, to maintain the following records: (a) Any determination that gloves are impervious to the substance; (b) names of persons who have attended safety meetings; the dates of such meetings, and copies of any written information provided; copies of any MSDs used, names and addresses of all persons to whom the PMN substance is sold or transferred including shipment destination address if different, the date of each sale or transfer, and the quantity of substance sold or transferred on such date; copies of any labels used; and other information as specified in cited section.

Retention period: 5 years after the date the records are created.

721.800 Manufacturers, importers, and processors of Dicarboxylic acid monoester. [Redesignated from 721.290]

In addition to the requirements of section 721.40, to maintain records including the names of persons required to wear protective clothing, and the name and address of each person to whom the substance is sold or transferred and the date of such sale or transfer.

Retention period: 5 years from the date of creation of the record.

721.1875 Manufacturers, importers, and processors of Substituted methylpyridine (P-83-24, P-83-49, and P-83-272). [Redesignated from 721.615]

In addition to the requirements of section 721.40, to maintain records including the names of persons required to wear protective clothing and/or equipment, records of respirator fit tests for each person required to wear a respirator, and the names and addresses of persons to whom any of these substances are sold or transferred and the date of such sale or transfer.

Retention period: 5 years from the date of creation of the record.

721.2100 Manufacturers, importers, and processors of derivative of

tetrachloroethylene (P-62-684). [Redesignated from 721.975]

In addition to the requirements of section 721.40 to maintain records including the names of persons required to wear protective equipment, the names and addresses of any person to whom the substance is sold or transferred and the dates of such sale or transfer, records of respirator fit tests for each person required to wear a respirator, and the method for determining that the gloves required under this section are impervious to the substance, the date(s) of such determination, and the results of that determination.

Retention period: 5 years from the date of the creation of the record.

723.50 Manufacturers of new chemical substances manufactured in quantities of 1,000 kilograms or less per year under low volume exemption.

To maintain records of (a) the annual production volume of the new chemical substance under the exemption and (b) documentation of information in the exemption notices and compliance with the terms of the regulations.

Retention period: 5 years.

723.175 Manufacturers and processors of new chemical substances used in or for the manufacture of processing of instant photographic and peel-apart film articles under instant photographic chemical exemption.

To keep records on annual production volume, exposure monitoring, worker's training and exposure, and method of treatment.

Retention period: 30 years.

723.250 Manufacturers of new polymers under polymer exemption.

To maintain records of production volume for the first 3 years of manufacture, the date of commencement of manufacture, and documentation of this information and any other information provided in the limited pre-manufacture notice.

Retention period: 5 years.

760.218 Disposal facilities, generators and commercial stores of PCB waste. [Added]

To keep a copy of each Certificate of Disposal.

Retention period: See 40 CFR 761.180.

761.30 Owners or operators of PCB Transformers in use or stored for reuse.

To maintain records of inspections and maintenance history, including leaks, repairs, replacement, cleanup and containment.

Retention period: 3 years after disposal of transformer.

761.30 Owners or operators of railroad transformers using PCBs. [Amended]

(a) To maintain records of concentration of PCBs in dielectric fluid after servicing railroad transformer for purposes of reducing PCB concentration in dielectric fluid.

Retention period: Until January 1, 1991.

(b) To maintain at the facility documentation to support the reason for the emergency installation of a PCB transformers. Documentation must be completed within 30 days after installation of the PCB Transformer.

761.30 Owners or operators of heat transfer systems that ever contained PCBs in heat fluid in concentrations greater than 50 ppm.

To maintain records of data obtained from required sampling of PCB concentration in heat transfer fluid.

Retention period: 5 years after PCB concentration in fluid reaches 50 ppm.

761.30 Owners or operators of hydraulic systems that ever contained PCBs at concentrations above 50 ppm.

To maintain records of data obtained from required test sampling of PCB concentration in hydraulic fluid.

Retention period: 5 years after PCB concentration in fluid reaches 50 ppm.

761.60 Owners or operators of high efficiency boilers used to dispose of mineral oil dielectric fluid and other liquids containing between 50 and 500 ppm PCBs.

To maintain records of quantities of mineral oil dielectric fluid burned each month, and data from monitoring of combustion.

Retention period: 5 years.

761.75 Owners or operators of facilities used to dispose of PCBs.

To maintain records of all disposal operations.

Retention period: 5 years.

761.80 Processors and distributors of PCBs and PCB items.

To maintain records of activities.

Retention period: 5 years.

761.80 Processors and distributors of PCB in small quantities for research and development having class exemption.

To maintain records of PCB activities.

Retention period: 5 years.

761.125 Owners of spilled PCBs.

(a) At the completion of cleanup, to document the cleanup with records and certification of decontamination.

Retention period: 5 years.

(b) If cleanup is delayed because of adverse weather conditions, lack of access due to physical impossibility or emergency operating conditions, to maintain records documenting the fact that circumstances precluded rapid response.

Retention period: Not specified.

761.180 Owners or operators of facilities used to dispose of PCBs. [Amended]

To maintain annual records on disposal, storage, chemical waste landfills, incineration, high efficiency boilers, and other documentation as specified in section.

Retention period: 3 years; chemical waste landfill data 20 years.

761.193 Persons importing, manufacturing, processing, distributing in commerce or using chemicals containing inadvertently generated PCBs.

To maintain records of actual monitoring of PCB concentrations.

Retention period: 3 years after a process ceases operation or importing ceases, or for 7 years, whichever is shorter.

761.209 Transporters of PCB waste. [Added]

To maintain a copy of the manifest signed by the generator, transporter, and the next designated transporter, if applicable, or the owner or operator of the designated commercial storage or disposal facility.

Retention period: 3 years from the date the PCB waste was accepted by the initial transporter. Record retention period may be extended automatically during the course of any outstanding enforcement action regarding the regulated activity.

761.209 Generators of PCB waste. [Added]

To keep a copy of each manifest signed until a signed copy from the designated commercial storage or disposal facility which received the PCB waste is received.

Retention period: 3 years from the date the PCB waste was accepted by the initial transporter. Record retention period may be extended automatically during the course of any outstanding enforcement action regarding the regulated activity.

761.209 Water (bulk shipment) transporters of PCB waste. [Added]

To retain a copy of the shipping papers for shipments of PCB waste delivered to designated commercial storage or disposal facility by water (bulk shipment).

Retention period: 3 years from the date the PCB waste was accepted by the initial transporter. Record retention period may be extended automatically during the course of any outstanding enforcement action regarding the regulated activity.

761.209 Initial rail transporters of PCB waste. [Added]

To maintain a copy of the manifest and the shipping paper required to accompany the PCB waste.

Retention period: 3 years from the date the PCB waste was accepted by the initial transporter. Record retention period may be extended during the course of any outstanding enforcement action regarding the regulated activity.

761.209 Final rail transporters of PCB waste. [Added]

To keep a copy of the signed manifest, or the required shipping paper if signed by the designated facility in lieu of the manifest.

Retention period: 3 years from the date the PCB waste was accepted by the initial transporter. Record retention period may be extended automatically during the course of any outstanding enforcement action regarding the regulated activity.

763.93 Local educational agencies identifying asbestos-containing materials in schools.

To maintain in its administrative office a complete updated copy of the management plan. In addition, to maintain records on response actions, operations and maintenance, and training and periodic surveillance as part of the management plan.

Retention period: 3 years.

763.94 Local educational agencies identifying asbestos-containing materials in schools.

To maintain records on response actions, operations and maintenance, training and periodic surveillance, and management plans.

Retention period: 3 years.

763.114 Local education agencies identifying friable-asbestos-containing materials in schools.

To maintain results of inspections and analyses; copies of Notice to School Employees; blueprint, diagram or written description of the buildings and other information as specified in the section.

Retention period: Not specified.

763.121 Employers of employees covered by the EPA asbestos abatement worker protection rule.

(a) To maintain records of objective data for exempted data when relying on objective data that demonstrate that products made from or

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APPENDIX A

TON and ASSOCIATES

FIGURE 01
BORING LOG

PRELIMINARY

Project Name H. R. Textron
Project No. 84-602 Field Log of Boring No. B-3 Sheet 1 of 2

BORING LOCATION: Solvent Sump		ELEVATION AND DATUM: 960 ft. m.s.l.	
DRILLING AGENCY: Calif. Test Drilling	DRILLER: T. Ziedeman	DATE STARTED: 5-23-84	DATE FINISHED: 5-23-84
DRILLING EQUIPMENT: 8" hollow stem continuous flight auger		COMPLETION DEPTH (FT): -	ROCK DEPTH (FT): -
DIAMETER AND TYPE OF WELL CASING: -		NO. OF SAMPLES: DIST.	UNDIST. CORE
TYPE OF PERFORATION: -		WATER DEPTH (FT): FIRST	COMPL. 24 HRS.
TYPE OF PERFORATION BACKFILL: -		LOGGED BY: S.M.S.	CHECKED BY: M.H.T.
TYPE OF SEAL: Bentonite/sand mixture, wetted			

DEPTH (FEET)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Observation Well	OVA* (ppm)	SAMPLES: No.	SAMPLES: Type	SAMPLES: Blow Count	SAMPLES: Drilling Rate/Time	REMARKS
	Asphalt Dark, slightly damp, fine silty sand (SM)								* x 10^2 Cuttings description
15	Dry, loose, light gray, well-graded coarse SAND (SW)			6	1				High chemical odor Donned gloves, tyvex coveralls, respirator
22	Moist, sticky, brown, SAND (SC)			7	2				Very high chemical concentration based on odor and OVA.
33	Slightly damp, slightly sticky, brown coarse to medium-grained CLAYEY SAND (SC) with fine gravels			10	3				Volatile organic concentrations exceed dynamic range of OVA.

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PRELIMINARY

Project Name H.R. Textron

Project No. 84-602 Field Log of Boring No. B-3 Sheet 2 of 2

DEPTH (FEET)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Observation Well	GRAPHIC LOG: OVA (ppm)	SAMPLES: No.	SAMPLES: Type	SAMPLES: Blow Count	SAMPLES: Drilling Rate/Time	REMARKS
40									
43	Dry, loose, coarse, light brown, slightly gravelly, silty SAND (SP)			.01	4		100/11		
45	Bottom of hole: 43 feet. Entire boring plugged with wetted mixture of sand and Bentonite. Drill cuttings stored in sealed class 17-H steel drums for proper disposal								
50									
55									
60									
65									
70									
75									
80									

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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.

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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 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.

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Field Drilling Record

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

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

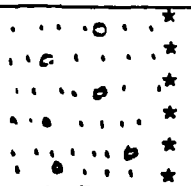
Boring #: TH 1 Date: 4-29-86 Field Geologist: George Pavlov

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.

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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.

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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 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.

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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.

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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.

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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 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

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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.

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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 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	--	--		Drilled 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.

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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 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.

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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 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	200/4 - 100/4		Light Yellowish gray silty fine Sand intermixed with gravelly particles from 3 mm to 40 mm, loose, slightly damp. HNU = 0.5 ppm.

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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

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 Logged by DER Sampled by DER
0							SP	ALLUVIUM: BROWN - DARK BROWN SAND, MEDIUM TO COARSE, MOIST, GRAVEL TO 2"
5								
10		27	①	80/6"				
15								
20		15,000	②	40			SM	19' AS ABOVE, BECOMING SILTY SAND 20' VERY STRONG ORGANIC ODOR, BROWN SILTY SAND, FINE TO COARSE, VERY WET, GRAVEL TO ½"
25							SM	26' AS ABOVE, BECOMING FINER, SILTIER SAND, STRONG ORGANIC ODOR
30								

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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

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
								Logged by DER Sampled by DER
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

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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

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
								Logged by DER Sampled by DER
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								

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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

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 Logged by DER Sampled by DER
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								Privileged and Company Private Attorney Client Communication and Work Product
50		<20	⑩	80/10"				TOTAL DEPTH = 50 FEET ⑩ DENOTES UNDISTURBED SAMPLE NO ODOR OF CONTAMINATION NO WATER ENCOUNTERED

HYDROGEOLOGIC LOG OF BOREHOLE AND MONITOR WELL CONSTRUCTION DETAILS

LB-3

PROJECT 40841189-05 HR TEXTRON SURFACE ELEV. _____ DATUM _____

LOCATION LA (COUNTY) PACOIMA (CITY OR TWP) 10445 GLENOAKS BLVD (SECTION / STREET)

DRILLER SPECTRUM DRILLING TYPE OF RIG CME 55

SAMPLER(S) CALIF. MODIF. SPLIT SPOON/CONTINUOUS DRIVE WT. 140 LBS DROP 30 IN. HOLE DIA. 6 IN.

INSPECTOR GK/BAL DRILLING DATE 1/06/87 DRILLING METHOD HSA

WATER AND WELL DATA

DEPTH OF WATER-Encountered GROUNDWATER NOT ENCOUNTERED Completion

WELL CASING-Type I.D.

WELL SCREEN-Type Slot Size

SCREEN PACKING-Type Size

ANNULAR SPACE SEAL Method

Privileged and Company Private Attorney Client Communication and Work Product

WELL DETAIL	Interval	Sample No.	Type (USCS)	Std. Pene. Rte. / 6" Intervals	Pid Reading (PPM)	Laboratory Tests	Graphic Log	Depth	DESCRIPTION OF MATERIALS (color, texture, density, moisture, classification)
									Texture Proportions: And (50-40%) With (40-25%) Some (25-10%) Trace (10-0%)
SAMPLED INTERVAL CROSS HATCHED AREA DENOTES FOOTAGE RECOVERED. NOTE: FOR EACH SAMPLE INTERVAL NUMBERED, 2 CHEMICAL SAMPLES WERE COLLECTED. DESIGNATES SAMPLE A & B. SAMPLE A: TO ANALYTICAL TECHNOLOGIES, INC SAMPLE B: ANALYZED BY CHEMICAL RESEARCH LABORATORIES ON SITE WITH MOBILE LAB.	GR							0	@.5' SILT: BROWN TO DARK BROWN, LOOSE TO EASILY FRIABLE, SCATTERED PEBBLES, GRANULES AND COBBLES.
	1	1A 1B	SM	10/12/18	1/100				@3' SAND: FROSTED, PINK, WHITE QUARTZ AND FELDSPARS, FINE TO VERY COARSE, SCATTERED GRANULES AND PEBBLES, OCCASIONAL COBBLES, FAIR SORT, CLEAN: UNCONSOLIDATED, FAIR AMOUNT MUSCOVITE MICA FLAKES, NO ODOR.
	2		SP	13/17/11	0/0			5	
	NR		SP	20/40/40	0/0				@8' SAND: AS ABOVE. ATTEMPTED TO SAMPLE 3 TIMES WITH NO RECOVERY OTHER THAN APPROXIMATELY 1" OF SAND & ROCKS.
	3		SM/SP/CL/SM/ML	10/12/16	.5/2			10	@10' SAND: VARICOLORED QUARTZ AND FELDSPARS SOME BLACK MAFICS, FINE TO PEBBLY, OCCASIONAL COBBLES, SUBANGULAR-ROUNDED, MOSTLY SUBROUNDED, GOOD SORT, UNCONSOLIDATED, CLEAN, DRY.
									@13' CLAY/SANDY SILT: REDDISH BROWN, LOW TO MODERATE PLASTICITY, SILTY, DRY. SILT IS VERY SANDY WITH SCATTERED GRANULES AND PEBBLES, SLIGHT ODOR.
	4		CL/SM-CL/CL	6/7/8	.5/50			15	@16' SAND/SILTY SAND/SANDY SILT/CLAY: LIGHT REDDISH BROWN SAND, FINE TO GRANULES GRADING DOWNWARDS TO A SILTY SAND AND THEN SANDY SILT WITH A DARK REDDISH BROWN, LOW PLASTICITY CLAY OVERLYING & UNDERLYING THE SAND, NO ODOR.
								20	@18' SILTY CLAY: DARK REDDISH BROWN, MASSIVE, FIRM, MODERATE PLASTICITY, GRAVELLY W/ SCATTERED COBBLES, NO ODOR, ABUNDANT MICA FLAKES
	5		CL	10/15/24	.5/10				@20' SANDY SILTY CLAY GRADING TO A SILTY CLAY GRADING TO A DENSE, FIRM, MASSIVE DARK REDDISH BROWN CLAY WITH SCATTERED COARSE & VERY COARSE GRAINS. SANDY/SILTY CLAY & SILTY CLAY ARE EASILY FRIABLE, VERY ABUNDANT MICA FLAKES, NO ODOR.
								25	@23' CLAY: DARK REDDISH BROWN, DENSE, FIRM, MASSIVE, SCATTERED COARSE AND VERY COARSE FELDSPAR AND QUARTZ GRAINS, LOW PLASTICITY, NO ODOR.

HYDROGEOLOGIC LOG OF BOREHOLE AND MONITOR WELL CONSTRUCTION DETAILS

LB-3 (CONT'D)

PROJECT HR TEXTRON/PACOIMA #40841189-05 SURFACE ELEV. _____ DATUM _____

Privileged and Company Private Attorney Client Communication and Work Product

WELL DETAIL	SOIL OR ROCK SAMPLE: Interval	Sample No.	Type (USCS)	Std. Pene. Rte. 6" Intervals	Pid Reading (PPM)	Laboratory Tests	Graphic Log	Depth	DESCRIPTION OF MATERIALS (color, texture, density, moisture, classification)
			CL					25	@25' CLAY: DARK REDDISH BROWN, DENSE, FIRM, LOW PLASTICITY CLAY WITH SCATTERED MEDIUM TO VERY COARSE QUARTZ AND FELDSPAR GRAINS, GRADING TO A SILTY CLAY AT BASE, NO ODOR, TRACE MICA FLAKES, DRY.
		6	SM	11/14/20	.4/18				@28' SILTY SAND: LIGHT REDDISH BROWN TO RED OVERALL COLOR, VERY FINE TO VERY COARSE, SCATTERED GRANULES PRIMARILY COARSE TO MEDIUM, FAIR SORT, SLIGHT CONSOLIDATION, EASILY FRIABLE, SILTY TO SOME CLAY IN PARTS, NO MICA, NO ODOR.
			SP					30	@31' SAND: REDDISH BROWN OVERALL COLOR, FROSTED, MILKY WHITE + VARI-COLORED QUARTZ W/ SOME FELDSPARS, VERY FINE TO GRANULES, PRIMARILY COARSE, SUBROUNDED TO ROUNDED, GOOD SORT, UNCONSOLIDATED, CLEAN TO SLIGHTLY SILTY, TRACE MAFICS, NO ODOR.
		7	SP	14/17/20	0/1				@33' SAND: LIGHT REDDISH BROWN TO RED OVERALL COLOR, FROSTED, MILKY WHITE QUARTZ W/SOME FELDSPARS, FINE TO VERY COARSE, PRIMARILY MEDIUM TO COARSE, SUBANGULAR TO SUBROUNDED, SOME ANGULAR, GOOD SORT, LOOSE AND UNCONSOLIDATED, DRY, NO ODOR.
								35	@35' SAND: AS ABOVE, CLEAN W/ SLIGHT SILT IN SPOTS, UNCONSOLIDATED, DRY.
		8	SP	50 F/5"	NA				@38' SAND: AS ABOVE EXCEPT BECOMING INCREASINGLY COARSER W/DEPTH, SCATTERED GRANULES, PEBBLES AND OCCASIONAL COBBLES, LOOSE AND UNCONSOLIDATED, DRY, NO ODOR.
								40	@40' SAND: LIGHT REDDISH BROWN, FINE TO COBBLY QUARTZ AND GRANITIC FRAGMENTS, LOOSE AND UNCONSOLIDATED POOR SORT, DRY, NO ODOR
		9	SP	70 F/6"	0/NA				@43' SAND: LIGHT REDDISH BROWN, FINE TO PEBBLY, SOME COBBLES OF QUARTZ, FELDSPARS, MAFICS AND GRANITIC FRAGMENTS, UNCONSOLIDATED, CLEAN, POOR SORT, DRY.
								45	@46' CLAY: YELLOWISH BROWN SILTY CLAY UNDERLYING COBBLY, POORLY SORTED SAND, GRADES TO A DENSE, MASSIVE, FIRM, LOW PLASTICITY CLAY HAVING A DARK REDDISH BROWN COLOR, OCCASIONAL SCATTERED VERY COARSE + GRANULAR GRAINS.
		10	SM-SP/CL	30/50/50	1/NA				@48' CLAY: REDDISH BROWN, DENSE, FIRM, AS ABOVE.
								50	@50' SAND: RECOVERY APPROX 6". CLAY AS ABOVE OVERLYING A LIGHT REDDISH BROWN, FINE TO VERY COARSE, FAIR SORTED, SILTY SAND, UNCONSOLIDATED, DRY, NO ODOR, PREDOMINANTLY COARSE.
		11	SP	40/50	0/NA				@53' SAND: LIGHT RED OVERALL COLOR, FROSTED, MILKY, WHITE, PINK, RED, SOME GREEN QUARTZ AND FELDSPARS, FINE TO VERY COARSE, SCATTERED TRACE GRANULES AND PEBBLES, GOOD SORT, UNCONSOLIDATED, CLEAN, NO ODOR
								55	

LEIGHTON AND ASSOCIATES

HYDROGEOLOGIC LOG OF BOREHOLE AND MONITOR WELL CONSTRUCTION DETAILS

LB-3 (CONT'D)

PROJECT HR TEXTRON/PACOIMA #40641189-05 SURFACE ELEV. _____ DATUM _____

Privileged and Company Private Attorney Client Communication and Work Product

WELL DETAIL	SOIL OR ROCK SAMPLE: Interval	Sample No.	Type (USCS)	Std. Pene. Rte. 6" Intervals	PID Reading (PPM) /BM	Laboratory Tests	Graphic Log	Depth	DESCRIPTION OF MATERIALS (color, texture, density moisture, classification; Texture Proportions: And (50-40%), With (40-25%), Some (25-10%), Trace (10-0%))
								55	@55' SAND: YELLOWISH BROWN OVERALL COLOR, FROSTED, CLEAR WHITE AND VARI-COLORED QUARTZ, FELDSPAR AND MAFIC FRAGMENTS, FINE TO VERY COARSE WITH SCATTERED PEBBLES SUBANGULAR TO ROUNDED, PRIMARILY SUBROUNDED, GOOD SORT, LOOSE AND UNCONSOLIDATED, VERY ABUNDANT BIOTITE FLAKES, NO ODOR, DRY.
		12	SP	45/50 F/4"	NA				@58' SAND: PREDOMINANTLY AS ABOVE EXCEPT ONLY SCATTERED TRACES OF GRANULES AND PEBBLES, UNCONSOLIDATED, CLEAN, NO ODOR, DRY.
								60	@60' SAND: YELLOWISH BROWN OVERALL COLOR, FROSTED, CLEAR WHITE, SOME YELLOW AND PINK, QUARTZ ALSO VARI-COLORED LITHIC FRAGMENTS - SCHISTS & GRANITES, FINE TO VERY COARSE WITH ABUNDANT TO SCATTERED PEBBLES, GOOD SORT, UNCONSOLIDATED & LOOSE, CLEAN, NO ODOR, DRY.
		13	SP	40/50 F/4"	0/NA				@63' SAND: AS ABOVE WITH COBBLES. SOME BROKEN PIECES OF ROCK. VERY LOOSE AND UNCONSOLIDATED, CLEAN, NO ODOR, DRY.
								65	@66' SAND: LIGHT YELLOWISH BROWN OVERALL COLOR, FROSTED, MILKY, CLEAR, QUARTZ, VARI-COLORED LITHIC FRAGMENTS AND MAFICS, FINE TO VERY COARSE WITH SOME PEBBLES AND ABUNDANT GRANULES, POOR SORT, LOOSE AND UNCONSOLIDATED, CLEAN, NO ODOR, DRY.
		14	SP	70 F/5"	NA				
								70	@70' SAND: PREDOMINANTLY AS ABOVE, PRIMARILY COARSE AND VERY COARSE WITH GRANULES AND SCATTERED PEBBLES, LOOSE AND UNCONSOLIDATED, GOOD SORT, CLEAN, NO ODOR, DRY.
		15	SP	70 F/4"	NA				@73' SAND: LIGHT GRAY TO GRAY, FROSTED, MILKY, CLEAR LIGHT GRAY, SOME PINK, TRACE GREEN AND WHITE QUARTZ WITH ABUNDANT GRANITIC FRAGMENTS AND TRACE MAFICS, FINE TO GRANULES, SCATTERED PEBBLES AND COBBLES, ANGULAR TO SUBROUNDED, POOR TO FAIR SORT, CLEAN, LOOSE AND UNCONSOLIDATED, NO ODOR. SAND FROM COZE AT 75' THE SAME EXCEPT LIGHT YELLOW BROWN OVERALL COLOR: VERY PEBBLY & COBBLY
								75	
		16	SM/SP/SM	70 F/4"	0/1				@78' SILT/SAND: DARK BROWN TO BROWN FINELY SANDY SILT - LOOSE OVERLYING WHITISH GRAY SAND HAVING VARIOUS LITHIC FRAGMENTS, FINE TO COBBLY, POOR SORT, CLEAN, UNCONSOLIDATED, VERY DRY, NO ODOR.
								80	@80' SILT/SAND: DARK BROWN SANDY SILT - LOOSE & UNCONSOLIDATED OVERLYING A WHITE TO YELLOW BROWN SAND COMPOSED OF FROSTED CLEAR AND WHITE QUARTZ AND FELDSPARS AND AREAS OF IN-SITU DECOMPOSED GRANITES LEAVING ONLY ABUNDANT BIOTITE & QUARTZ FRAGMENTS, FINE TO COBBLY, PRIMARILY VERY COARSE, POOR SORT, UNCONSOLIDATED & LOOSE, DRY, NO ODOR.
SAMPLE 17 NO B SAMPLE FOR CRL MOBILE LAB.		17	SP	80 F/4"	NA				@83' SAND: LIGHT TO DARK GRAY OVERALL COLOR, FROSTED, WHITE CLEAR & VARI-COLORED QUARTZ AND FELDSPARS, SOME MAFICS, VERY FINE TO VERY COARSE WITH SCATTERED GRANULES AND PEBBLES, POOR TO FAIR SORT, UNCONSOLIDATED - LOOSE, DRY, NO ODOR.
								85	

HYDROGEOLOGIC LOG OF BOREHOLE AND MONITOR WELL CONSTRUCTION DETAILS

LB-3 (CONT'D)

PROJECT HR TEXTRON # 40841189-05 SURFACE ELEV. _____ DATUM _____

Privileged and Company Private Attorney Client Communication and Work Product

WELL DETAIL	SOIL OR ROCK SAMPLE: Interval	Sample No.	Type (USCS)	Std. Pene. Rte. 6" Intervals	PID Reading (PPM)/OVA	Laboratory Tests	Graphic Log	Depth	DESCRIPTION OF MATERIALS (color, texture, density, moisture, classification; Texture Proportions: And (50-40%), With (40-25%), Some (25-10%), Trace (10-0%))
					0			85	@85' SAND: LIGHT GRAY TO GRAY OVERALL COLOR, FINE TO PEBBLY, SCATTERED COBBLES, FROSTED, CLEAR, WHITE AND VARI-COLORED QUARTZ AND FELDSPARS, MOSTLY QUARTZ W/ SOME MAFICS, ANGULAR TO SUBROUNDED W/ PEBBLES + GRANULES TENDING TO BE ROUNDED, FAIR SORT, LOOSE + UNCONSOLIDATED, ABUNDANT BIOTITE FLAKES, DRY, NO ODOR.
					7.2				
	18		SP/SM/SP	80 F/4"	0				
					7.2			90	@95' SILT/SAND: DARK BROWN, LOOSE SANDY SILT, DRY OVERLYING SAND AS ABOVE, NO ODOR.
									@90' SAND: LIGHT YELLOWISH BROWN AND LIGHT GRAY, PRIMARILY FROSTED, MILKY, WHITE AND CLEAR QUARTZ WITH FELDSPARS AND TRACE MAFICS, FINE TO PEBBLY, SCATTERED COBBLES, MOSTLY VERY COARSE TO COARSE, ANGULAR TO SUBROUNDED, FAIR SORT, LOOSE AND UNCONSOLIDATED, DRY, NO ODOR, SOME BIOTITE FLAKES.
	19		SP/SM/SP	80 F/3"					@93' SILT: DARK BROWN TO BROWN, SANDY, LOOSE & CRUMBLY, VERY DRY.
								95	@96' SAND: LIGHT YELLOW BROWN AND GRAY, FROSTED, WHITE, MILKY, CLEAR, SOME PINK: YELLOW QUARTZ AND FELDSPARS SOME MAFIC FRAGMENTS, FINE TO COBBLY, PRIMARILY COARSE TO VERY COARSE, ANGULAR TO SUBROUNDED, TR ROUNDED, POOR SORT, LOOSE + UNCONSOLIDATED, DRY, NO ODOR.
SAMPLE NO. 20 ONLY 3" RECOVERY DUE TO COBBLE. RETRIEVED ENOUGH FOR SZOB. SAMPLE TO CRL MOBILE LAB.	20		SP/SM/SP	70 F/3"					
								100	@100' SAND: LIGHT BROWN TO LIGHT YELLOW BROWN BECOMING LIGHT GRAY AT BASE, FROSTED, MILKY, WHITE, CLEAR, PINK: GRAY QUARTZ AND FELDSPARS, SOME RUST STAINING, VERY FINE TO PEBBLY, SCATTERED COBBLES, MOSTLY MEDIUM, POOR SORT, LOOSE AND UNCONSOLIDATED, SOME MICA, DRY, NO ODOR.
SAMPLE 21 ONLY ABLE TO SAMPLE AND RECOVER 3". UNABLE TO COLLECT FULL SAMPLES FOR ANALYSIS SO WILL TAKE SAMPLE FROM CONTINUOUS SAMPLER AND TRANSFER TO RINGS.	21		SP	80 F/3"	0				
					0			105	@104' SAND: LIGHT YELLOW BROWN TO GRAY, VARIOUS COLORED QUARTZ AND FELDSPARS WITH VERY ABUNDANT PEBBLE SIZED GRANITE/METAMORPHIC AND MAFIC FRAGMENTS, FINE TO COBBLY, PRIMARILY MEDIUM TO COARSE, VERY POOR SORT, LOOSE AND UNCONSOLIDATED, VERY DRY, SOME MUSCOVITE AND MICA, NO ODOR.
SAMPLE 22 RECOVERED ONLY ENOUGH SAMPLE TO FILL 1 RING. WILL COLLECT RING FROM CONTINUOUS SAMPLER FOR CRL MOBILE LAB	22		SP	70 F/5"					
	23		SP	SAMPLE 23 FROM CORE BARREL, SAMPLE FROM REJECTED FORMATION.				110	@109' SAND: LIGHT YELLOWISH BROWN TO GRAY, FROST, WHITE, CLEAR, MILKY, SOME PINK + LIGHT AND DARK GRAY QUARTZ, FINE TO PEBBLY PRIMARILY VERY COARSE TO COARSE, POOR SORT, UNCONSOLIDATED, CLEAN, NO ODOR
									REFUSAL @ 110' HIT BOULDER AT 110' AND UNABLE TO PENETRATE TO DRILL DEEPER. ABLE TO TAKE CHEMICAL SAMPLE FROM THE 2' OF CONTINUOUS CORE AT 108'-110'.
								115	

HYDROGEOLOGIC LOG OF BOREHOLE AND MONITOR WELL CONSTRUCTION DETAILS

LB-4

PROJECT HR TEXTRON/PACOIMA 40841169-05 SURFACE ELEV. _____ DATUM _____

LOCATION LOS ANGELES (COUNTY) PACOIMA (CITY OR TWP.) 10445 GLENOAKS BLVD. (STREET) SECTION _____

DRILLER SPECTRUM EXPLORATION TYPE OF RIG CME-55

SAMPLER(S) CALIF. MODIF. SPLIT SPOON/CONTINUOUS CORE DRIVE WT. 140 lbs DROP 30 IN. HOLE DIA. 6 IN.

INSPECTOR BAL/GK DRILLING DATE 1/13/88-1/12/88 DRILLING METHOD HSA

WATER AND WELL DATA

DEPTH OF WATER-Encountered WATER NOT ENCOUNTERED

WELL CASING-Type _____ Completion _____

WELL SCREEN-Type _____ I.D. _____

SCREEN PACKING-Type _____ Slot Size _____

ANNULAR SPACE SEAL _____ Size _____

Method _____

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Client Communication
and Work Product

WELL DETAIL

SAMPLED INTERVAL

CROSS-HATCHED AREA DENOTES FOOTAGE RECOVERED.

NOTE:

FOR EACH SAMPLED INTERVAL DESIGNATED W/A NUMBER, 2 RINGS WERE COLLECTED FOR ANALYSIS AND LABELED A & B.

SAMPLE A: TO ANALYTICAL TECHNOLOGIES, INC.

SAMPLE B: ANALYZED IN CHEMICAL RESEARCH MOBILE LAB AT [illegible]

SOIL OR ROCK SAMPLE: Interval	Sample No.	Type (USCS)	Std. Pene. Rte. 6" Intervals	PID Reading (PPM)/OVA	Laboratory Tests	Graphic Log	Depth	DESCRIPTION OF MATERIALS (color, texture, density, moisture, classification)
							0	PAVEMENT
	1	SP	11/14/21	0/0				@.5' SAND: LIGHT YELLOWISH BROWN, FROSTED, CLEAR, WHITE AND VARI-COLORED QUARTZ AND FELDSPARS, FINE TO PEBBLY, POOR SORT, UNCONSOLIDATED AND LOOSE, DRY, NO ODOR, UNDERLAIN BY BROWN SILT AND LIGHT BROWN SANDY SILT.
	2	SM/SP	9/15/18	0/.2			5	@4' SAND: LIGHT YELLOWISH BROWN OVERALL COLOR, FROSTED, WHITE, MILKY, CLEAR, PINK & YELLOW QUARTZ AND FELDSPARS, TRACE MAFICS, VERY FINE TO PEBBLY, PRIMARILY COARSE TO GRANULAR, ANGULAR TO SUB-ROUNDED W/ PEBBLES AND GRANULES, TENDING TO BE ROUNDED, POOR SORT, UNCONSOLIDATED: LOOSE, DRY, NO ODOR.
	3	SP/CL/SP	25/30/14	0/2.2			10	@8' SAND/CLAY: SAND AS ABOVE OVERLYING A DARK REDDISH BROWN, LOW PLASTICITY, MODERATELY DENSE SILTY CLAY W/ SCATTERED PEBBLES, DRY, NO ODOR.
	4	SM	8/15/15	0/.6				@11' CLAY/SANDY SILT: REDDISH BROWN, LOW PLASTICITY, DRY, MASSIVE CLAY OVERLYING AN OCRE TO YELLOW-RED COLORED, SANDY SILT, EASILY FRIABLE TO LOOSE, SCATTERED GRANULES AND PEBBLES, DRY, NO ODOR.
		SM					15	@13' SANDY SILT: LIGHT YELLOW BROWN TO OCHRE, VERY FINELY SANDY, WITH SCATTERED GRANULES AND PEBBLES, VERY EASILY FRIABLE TO LOOSE, DRY, NO ODOR.
	5	CL/SM	12/16/18	0/5.2				@16' SANDY SILT: AS ABOVE WITH SCATTERED TRACE PEBBLES AND GRANULES, OCCASIONAL VERY THIN LAYERS OR STREAKS OF ABUNDANT GRANULES, DRY, NO ODOR.
		SM						@18' SANDY SILT: BECOMING DARK YELLOWISH BROWN TO BROWN, EASILY FRIABLE, SANDY, DRY, NO ODOR.
		CL/SM	18/20/50	.03/2			20	@20 CLAY/SANDY SILT: DARK BROWN TO DARK REDDISH BROWN, MASSIVE, DENSE, DRY CLAY WITH SCATTERED TRACE GRANULES AND PEBBLES, OVERLYING A DARK BROWN TO BROWN, EASILY FRIABLE TO FIRM FRIABLE, MASSIVE, FAIRLY SANDY, DRY SILT, NO ODOR.
	6	CL						@23' CLAY: DARK REDDISH BROWN TO BROWN, MASSIVE, DENSE & FIRM, LOW PLASTICITY, DRY, SCATTERED COARSE TO GRANULES, NO ODOR.
							25	

HYDROGEOLOGIC LOG OF BOREHOLE AND MONITOR WELL CONSTRUCTION DETAILS

LB-4 (CONT'D)

PROJECT HR TEXTRON/PACOIMA 40841189- SURFACE ELEV. _____ DATUM _____

Privileged and Company Private Attorney Client Communication and Work Product

WELL DETAIL	SOIL OR ROCK SAMPLE: Interval	Sample No.	Type (USCS)	Std. Pene. Rte. 6" Intervals	Pid Reading (PPM) OVA	Laboratory Tests	Graphic Log	Depth	DESCRIPTION OF MATERIALS (color, texture, density, moisture, classification; Texture Proportions: And (50-40%), With (40-25%), Some (25-10%), Trace (10-0%))
			CL					25	@25' CLAY: DARK REDDISH BROWN, MASSIVE, FIRM TO EASILY FRIABLE, VERY SANDY TO SILTY IN PARTS, SCATTERED COARSE TO GRANULES, LOW TO MODERATE PLASTICITY, GRADES TO A VERY SANDY SILT W/DEPTH, DRY, NO ODOR.
		7	SP/SM/SM/CL	9/13/14	.4/10.4			30	@28' SANDY SILT: DARK REDDISH BROWN, EASILY FRIABLE TO LOOSE, VERY FINELY SANDY, SOME MICA, DRY TO SLIGHTLY MOIST, NO ODOR.
									@32' SILTY SAND: LIGHT REDDISH BROWN TO LT BROWN, VERY FINE TO FINE W/SOME MEDIUM AND SCATTERED COARSE TO GRANULES, VERY SILT, MAY GRADE TO SANDY SILT, EASILY FRIABLE TO LOOSE, DRY, NO ODOR.
		8	SM	16/28/28	.4/6.5				
			SP					35	@34' SILTY SAND: AS ABOVE EXCEPT BECOMING INCREASINGLY SANDIER AT BASE WITH GRANULES AND PEBBLES SCATTERED, DRY, NO ODOR.
SAMPLE 9 ONLY RECOVERED ABOUT 4" OF SAMPLE. SAMPLE TO CRL MOBILE LAB ONLY. NO "A" SAMPLE		9	SP	60 F/6"	NA				@37' SAND: WHITE LIGHT BROWN TO REDDISH BROWN OVERALL COLOR, FROSTED, MILKY, WHITE, SOME CLEAR AND PINK QUARTZ W/SOME FELDSPARS, FINE TO PEBBLY, SCATTERED COBBES, GOOD TO POOR SORT, LOOSE AND UNCONSOLIDATED, SOME MICA FLAKES, DRY, NO ODOR, SLIGHT SILT MATRIX.
			SP		.4/NA			40	@40' SAND: LIGHT REDDISH BROWN TO BROWN, WHITE, FROSTED, MILKY, SOME CLEAR: PINK FELDSPARS AND QUARTZ, FINE TO COBBLY, PRIMARILY COARSE AND VERY COARSE, CONTAINS LAYERS COMPOSED OF IN-SITU DECOMPOSED GRANITES WITH ABUNDANT BIOTITE MICA FLAKES, ANGULAR TO SUBROUNDED, COBBLES TENDING TO BE ROUNDED, VERY POOR SORT, LOOSE AND UNCONSOLIDATED, SLIGHTLY SILTY TO CLEAN, DRY, NO ODOR.
SAMPLE 10 ONLY RECOVERED ENOUGH SAMPLE FOR SAMPLE "B" TO CRL MOBILE LAB. WILL TAKE A SAMPLE FROM TOP OF CONTINUOUS SAMPLER FOR SAMPLE "A" TO ATI.		10	SP	50 F/5"	NA				
			SP		.6/18			45	@45' SAND/CLAY: SAND AS ABOVE EXCEPT ONLY SCATTERED PEBBLES AND COBBLES, FAIR SORT, LOOSE & UNCONSOLIDATED, DRY OVERLYING A DARK REDDISH BROWN, MASSIVE, DENSE, LOW PLASTICITY CLAY W/SCATTERED GRANULES AND PEBBLES, DRY, NO ODOR.
			CL CL						@48' CLAY: DARK REDDISH BROWN, FIRM, DENSE, LOW PLASTICITY CLAY, SANDY W/SCATTERED PEBBLES AND OCCASONAL COBBLE, DRY, NO ODOR.
		11	SM	60 F/6"	NA				
					.2/1.2			50	@51' CLAY/SILTY SAND: CLAY AS ABOVE OVERLYING A DARK REDDISH BROWN, FROSTED, WHITE & MILKY QUARTZ AND FELDSPATHIC SILTY SAND, FINE TO GRANULES, PRIMARILY COARSE, FAIR SORT, LOOSE AND UNCONSOLIDATED TO SLIGHT CONSOLIDATION WHEN VERY SILTY, DRY, NO ODOR.
		12	SP	60 F/6"	NA				@54' SAND: LIGHT REDDISH BROWN TO BROWN, FROSTED, MILKY, WHITE, SOME CLEAR: PINK QUARTZ & FELDSPARS, MEDIUM TO GRANULES & PEBBLES, SCATTERED COBBLES, POOR SORT, UNCONSOLIDATED, DRY, NO ODOR.
			SP					55	

HYDROGEOLOGIC LOG OF BOREHOLE AND MONITOR WELL CONSTRUCTION DETAILS

LB-4 (CONT'D)

PROJECT HR TEXTRON/PACOIMA 40841189-05 SURFACE ELEV. _____ DATUM _____

Privileged and Company Private Attorney Client Communication and Work Product

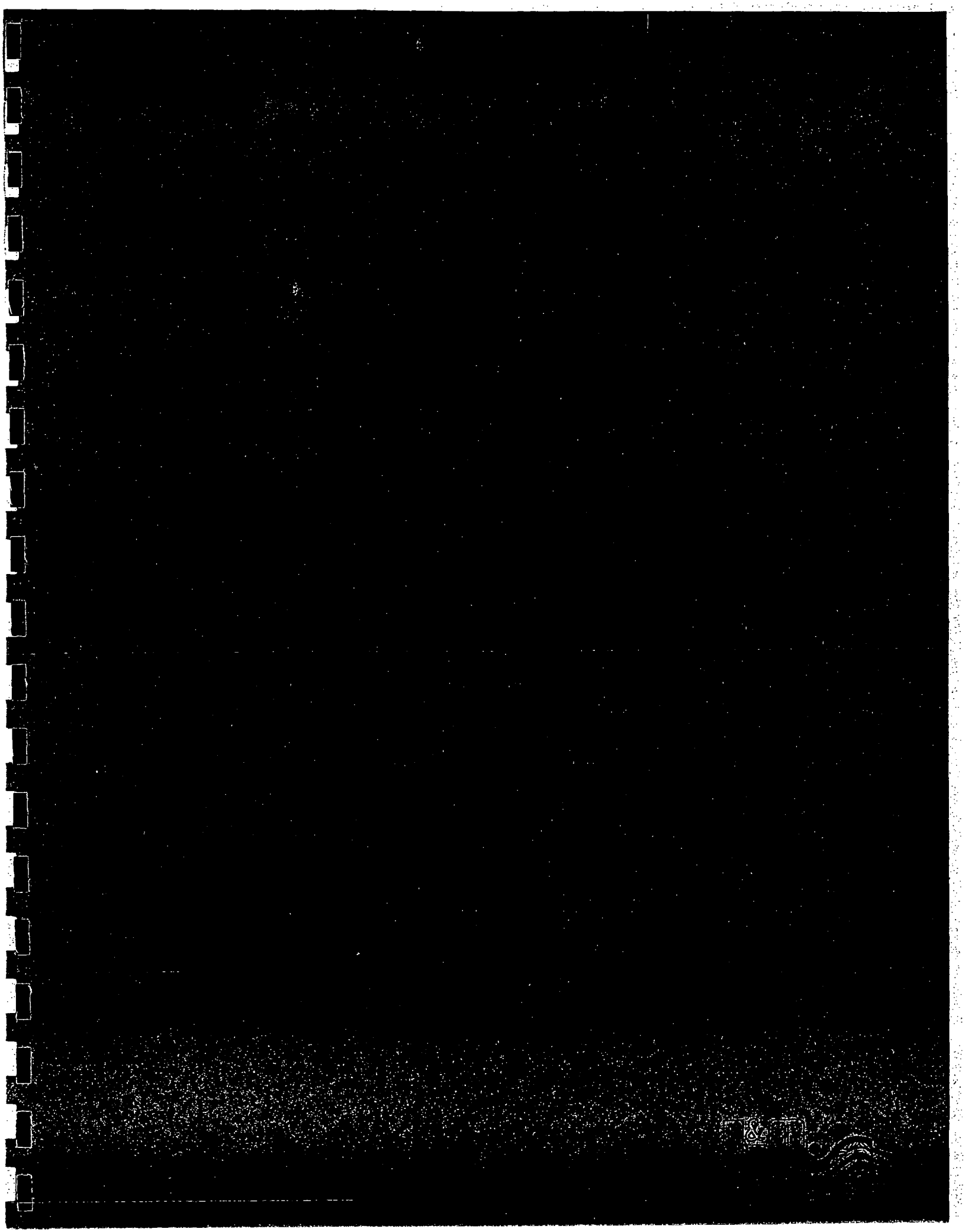
WELL DETAIL	SOIL OR ROCK SAMPLE: Interval	Sample No.	Type (USCS)	Std. Pene. Rte. 6" Intervals	PID Reading (PPM)	Laboratory Tests	Graphic Log	Depth	DESCRIPTION OF MATERIALS (color, texture, density, moisture, classification; Texture Proportions: And (50-40%), With (40-25%), Some (25-10%), Trace (10-0%))
			SP					55	@55' SAND: LIGHT BROWN TO LT REDDISH BROWN, MILKY, WHITE, FROSTED, SOME CLEAR; WHITE FELDSPARS AND QUARTZ, TRACE MAFICS, FINE TO PEBBLY, PRIMARILY VERY COARSE AND GRANULAR, SUBANGULAR TO ROUNDED, POOR TO FAIR SORT, LOOSE AND UNCONSOLIDATED, CLEAN TO VERY SLIGHTLY SILTY, DRY, NO ODOR.
		13	SP	30/50/F/5"	NA				@58' SAND: AS ABOVE, SCATTERED COBBLES, LOOSE AND UNCONSOLIDATED, DRY.
			SP					60	@60' SAND: LIGHT BROWN TO LIGHT REDDISH BROWN, FROSTED, WHITE, MILKY, SOME LIGHT GRAY, PINK: CLEAR QUARTZ AND FELDSPAR, COARSE TO PEBBLY, SCATTERED COBBLES, SOME MEDIUM, PRIMARILY VERY COARSE, SUBANGULAR TO ROUNDED, PRIMARILY SUBROUNDED, FAIR TO POOR SORT, LOOSE AND UNCONSOLIDATED, CLEAN W/TRACE SILT, INTERLAYER OF IN-SITU DECOMPOSED GRANITE W/ ABUNDANT BIOTITE FLAKES AND SCATTERED MUSCOVITE, DRY, NO ODOR.
SAMPLE 14 NO RECOVERY. REFUSAL. SAMPLES COLLECTED FROM CONTINUOUS SAMPLE BARREL + PLACED IN RINGS.		14	SP	80/REF.	NA				
			SP					65	@65' SAND: LIGHT REDDISH BROWN TO LIGHT BROWN OVERALL COLOR, WHITE, MILKY, FROSTED, SOME CLEAR AND PINK, TRACE CHLORITE, QUARTZ + FELDSPARS, FINE TO COBBLY, MOSTLY COARSE TO VERY COARSE, ANGULAR TO ROUNDED, PRIMARILY SUBANGULAR WITH GRAVELS + PEBBLES TENDING TO BE ROUNDED, POOR SORT, LOOSE AND UNCONSOLIDATED, SOME BIOTITE AND MUSCOVITE, SLIGHTLY SILTY TO CLEAN, DRY, NO ODOR.
		15	SM/SP	60 F/5"	NA				
			SP		.4/2.0			70	
			SP						@71' SAND/SILTY SAND: PREDOMINANTLY AS ABOVE EXCEPT SILTY AT THE TOP AND BECOMING CLEANER AT THE BASE, VERY FELDSPATHIC W/SCATTERED SPOTS OF DECOMPOSED GRANITE COBBLES, DRY, LOOSE.
SAMPLE 16 3" RECOVERY. ONLY ENOUGH SAMPLE FOR "A" SAMPLE TO ATI. "B" SAMPLE FOR CRL COLLECTED FROM TOP OF CONTINUOUS CORE BARREL		16	SP	60 F/5"	NA				
			SP					75	@75' SAND: LIGHT REDDISH BROWN TO LIGHT BROWN, WHITE, MILKY, SOME CLEAR AND FROSTED; TRACE PINK FELDSPARS AND QUARTZ, APPEARS HIGHLY WEATHERED AND DECOMPOSED, OCCASIONAL PEBBLE OF MAFICS AND CHLORITE, FINE TO COBBLY, PRIMARILY COARSE TO GRANULAR, POOR SORT, LOOSE AND UNCONSOLIDATED, SLIGHTLY SILTY, DRY, NO ODOR.
SAMPLE 17 RECOVERED ONLY 1 RING OF SAMPLE. THIS RING COLLECTED AS SAMPLE "A" FOR ATI AND ~~WAS COLLECTED FOR "B" FROM CONTINUOUS CORE.~~		17	SP/SM/SP	60 F/4"	NA				
			SP		.2/2.0			80	@78' SAND: LIGHT BROWN TO LIGHT REDDISH BROWN, WHITE, MILKY, FROSTED, SOME CLEAR QUARTZ AND FELDSPARS MIXED WITH DIORITE GRANITE COBBLES AND DECOMPOSED GRANITES, VERY FINE TO COBBLY, PRIMARILY COARSE, POOR TO FAIR SORT, UNCONSOLIDATED TO SLIGHTLY CONSOLIDATED WHEN SILTY, SOME SILT IN PARTS, DRY, NO ODOR.
		18	SP	60 F/6"	1/5.8				@83' SAND: LIGHT BROWN OVERALL COLOR, WHITE, FROSTED MILKY, SOME CLEAR QUARTZ + FELDSPARS MIXED WITH GRANITE + METAMORPHIC FRAGMENTS, OCCASIONAL IN-SITU DECOMPOSED DIORITE W/ ABUNDANT BIOTITE FLAKES, MEDIUM TO COBBLY, PRIMARILY VERY COARSE, DRY.
			SP					85	

HYDROGEOLOGIC LOG OF BOREHOLE AND MONITOR WELL CONSTRUCTION DETAILS

LB-4 (CONT'D)

PROJECT HR TEXTRON/PACOIMA 40841159-05 SURFACE ELEV. _____ DATUM _____

WELL DETAIL	SOIL OR ROCK SAMPLE: Interval	Sample No.	Type (USCS)	Std. Pene. Rte. 6" Intervals	PID Reading (PPM)/GM	Laboratory Tests	Graphic Log	Depth	DESCRIPTION OF MATERIALS (color, texture, density, moisture, classification; Texture Proportions: And (50-40%), With (40-25%), Some (25-10%), Trace (10-0%))
Privileged and Company Private Attorney Client Communication and Work Product			SP					85	@85' SAND: AS ABOVE CONTINUED. SCATTERED COBBLES, POOR SORT, SLIGHT SILTY MATRIX + SLIGHTLY CONSOLIDATED BUT EASILY FRIABLE WHEN SILTY, SCATTERED MUSCOVITE FLAKES, DRY, NO ODOR.
		19	SP	60 F/6"	.4 / 2			90	@88' SAND: LIGHT BROWN TO BROWN, WHITE, CLEAR MILKY, SOME FROSTED, PINK: CLEAR QUARTZ AND FELDSPARS MIXED WITH FRAGMENTS OF DIORITE GRANITE WHICH HAVE DECOMPOSED AND LEFT ONLY BIOTITE AND FELDSPAR FRAGMENTS, FINE TO PEBBLY, SCATTERED COBBLES, MOSTLY COARSE, POOR TO FAIR SORT, SILTY, LOOSE TO VERY EASILY FRIABLE, DRY, NO ODOR.
		20	SP/SM	40 / 50	.4 / 1.6				@93' SAND: AS ABOVE WITH SILTY MATRIX, DRY, NO ODOR.
			SP					95	@96' SAND: LIGHT GRAY TO GRAY OVERALL COLOR, WHITE, MILKY, FROSTED, SOME LIGHT GRAY, PINK AND CLEAR QUARTZ AND FELDSPARS, SOME IRON STAINING NOTED, FINE TO COBBLY, PRIMARILY COARSE, POOR SORT, SLIGHTLY CONSOLIDATED BUT EASILY FRIABLE, ABUNDANT IN-SITU DECOMPOSED GRANITE, DRY, NO ODOR.
		21	SP	50 F/6"	.2 / 2.1			100	@100' SAND: LIGHT BROWN TO LIGHT GRAY, FROSTED, WHITE, MILKY, SOME PINK, CLEAR AND RUST STAINED, QUARTZ AND FELDSPARS, PRIMARILY DECOMPOSED COBBLES OF GRANODIORITE AND DIORITES LEAVING AREAS RICH IN BIOTITE AND MUSCOVITE FLAKES + FRAGMENTS OF FELDSPARS, POOR TO FAIR SORT, EASILY FRIABLE TO LOOSE, DRY, NO ODOR.
		22	SP	50 F/6"	.6 / 4.2				
SAMPLE 23A SAMPLE COLLECTED FROM CONTINUOUS SAMPLER AT 106' FOR ATI. NO "B" SAMPLE. NOTE: POWDERED AND DRY CEMENT INSIDE AUGER! AROUND CORE BARREL + ALSO 2"-4" ON TOP OF SAMPLE IN CORE BARREL.		23A		SAMPLE 23A TAKEN FROM CORE BARREL AFTER IT WAS UNSTUCK. SAMPLE POSSIBLY DISTURBED & PARTIAL SLOUGH.				105	@105' SAND/GRAVEL: LIGHT GRAY AND BROWN, FROSTED, WHITE, MILKY, SOME CLEAR, LIGHT GRAY AND PINK QUARTZ AND FELDSPARS, MEDIUM TO VERY ABUNDANT PEBBLES, OCCASIONAL COBBLE, MOSTLY PEBBLE: VERY COARSE, CEMENT (POWDERED AND DRY) AT TOP OF CORE, VERY POOR SORT AND FAIRLY WELL CONSOLIDATED, TIGHT, HARD FRIABLE, DRY, NO ODOR.
								110	REFUSAL: UNABLE TO CORE, SAMPLE OR DRILL PAST 105' DUE TO BOULDERS AND DENSELY COMPACTED MATERIAL.
									TOTAL DEPTH OF BORING: 108'
								115	



RECEIVED
FEB 0 8 1985
LEIGHTON & ASSOC.

BROWN AND CALDWELL BC
ANALYTICAL LABORATORIES

LOG NO: P85-01-392

Received: 04 FEB 85
Reported: 01 FEB 85

Leighton & Associates
25530 Avenue Stanford
Valencia, CA 91355

ATTN: Dale Radford

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
1-392-1	TANK 2 SAMPLE #3 @ 8'	30 JAN 85
1-392-2	TANK 2 SAMPLE #4 @ 8'	30 JAN 85

PARAMETER	01-392-1	01-392-2
Purgeable Priority Pollutants		
Extraction	01.30.85	01.30.85
,1-Trichloroethane, mg/kg	210	120
1,1-Dichloroethane, mg/kg	2	0.6
1,1-Dichloroethylene, mg/kg	<0.6	0.3
Acrolein, mg/kg	<6	<3
Acrylonitrile, mg/kg	<6	<3
Tetrachloroethylene, mg/kg	11	14
Trichloroethylene, mg/kg	0.6	0.9
Toluene, mg/kg	<0.6	2
Other Purgeable Priority Pollutants,	<0.6	<0.3
Semi-Quantified Results **		
A C_9H_{16} Compound, mg/kg	20	20
Cyclohexane Compound, mg/kg	20	20
Ethyl Methyl Cyclohexane, mg/kg	100	100
Trimethyl Cyclohexane, mg/kg	30	30
Xylene Isomers, mg/kg	---	4

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

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Private Attorney
Client Communication
and Work Product

RECEIVED
FEB 0 8 1985
LEIGHTON & ASSOC.

LOG NO: P85-01-392

Received: 04 FEB 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
1-392-1	TANK 2 SAMPLE #3 @ 8'	30 JAN 85
-392-2	TANK 2 SAMPLE #4 @ 8'	30 JAN 85

PARAMETER	01-392-1	01-392-2
l and Grease, mg/kg	18,000	11,000
Hydrocarbons, mg/kg	14,000	9100

Edward Wilson, Laboratory Director

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Private Attorney
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and Work Product

RECEIVED
FEB 0 8 1985
LEIGHTON & ASSOC.

BROWN AND CALDWELL
ANALYTICAL LABORATORIES

LOG NO: P85-01-409

Received: 31 JAN 85
Reported: 07 FEB 85

Leighton & Associates
25530 Avenue Stanford
Valencia, CA 91355

ATTN: Dale Radford

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
85-409-1	TANK 2, TUBE 5-(12')	31 JAN 85

PARAMETER	01-409-1
Purgeable Priority Pollutants	
Extraction	01/31/85
1,1,1-Trichloroethane, mg/kg	230
Chloroform, mg/kg	<20
Acrylonitrile, mg/kg	<20
Tetrachloroethylene, mg/kg	8
Other Purgeable Priority Pollutants,	<2
Semi-Quantified Results **	
A C9H16 Compound, mg/kg	30
Methyl Ethyl Cyclohexane, mg/kg	100
Cyclohexane Compound, mg/kg	10
Alkyl Cyclohexane, mg/kg	20

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

Oil and Grease, mg/kg	11,000
Hydrocarbons, mg/kg	7300

Edward Wilson, Laboratory Director

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Private Attorney
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and Work Product

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

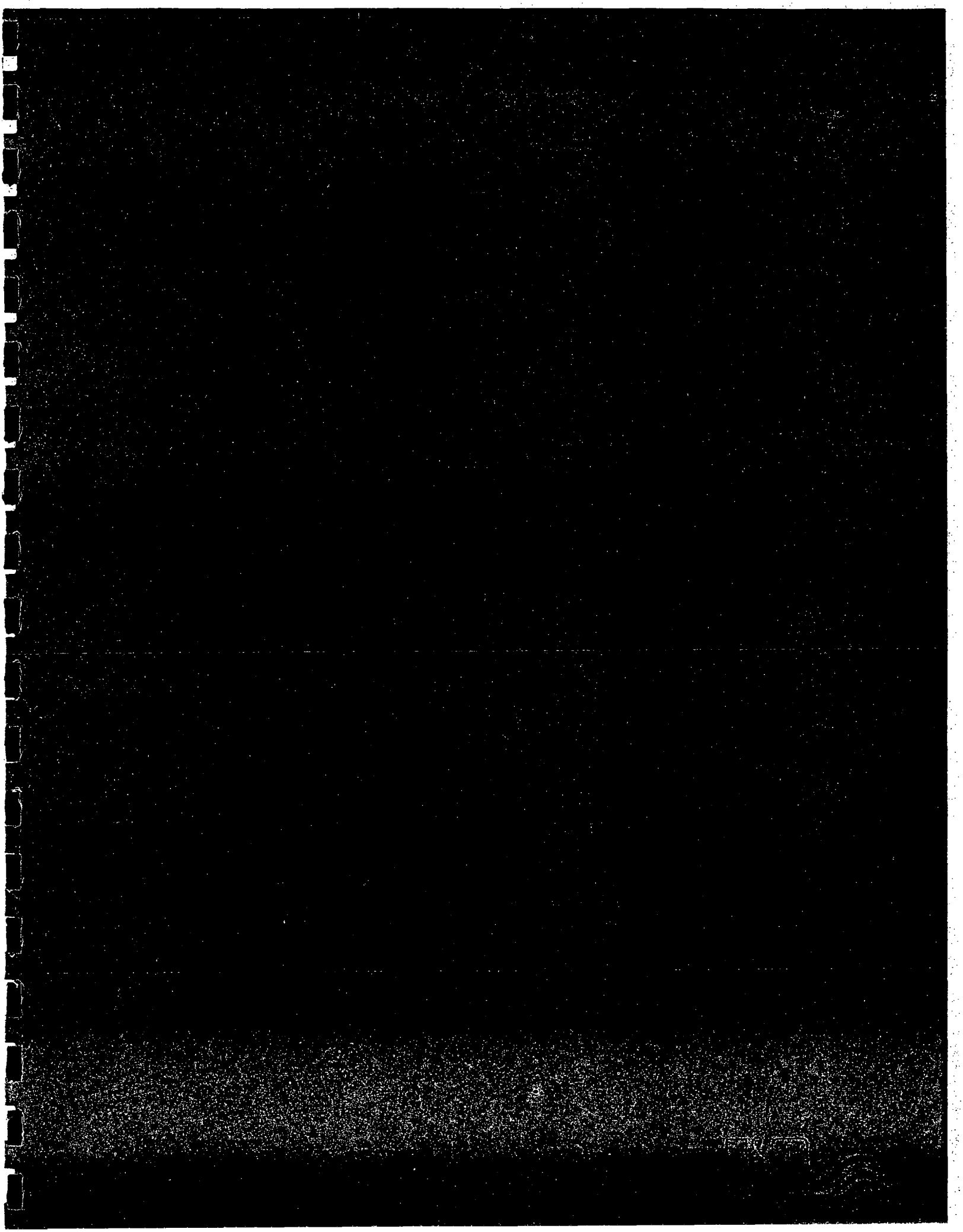
LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
05-105-1	#3 at 12'	06 MAY 85
05-105-2	#4 at 12'	06 MAY 85

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.

FOR
Edward Wilson, Laboratory Director

Privileged and Company Private Attorney Client Communication and Work Product



AnalyticalTechnologies, Inc. Corporate Offices. 5550 Morehouse Drive San Diego, CA 92121 (619) 458-9141

RECEIVED
2/4 1988
LEIGHTON & ASSOC.

ATI I.D. 712229

January 4, 1988

Leighton & Associates, Inc.
25020 Avenue Stanford, Suite 190
Valencia, California 91355

Privileged and Company Private Attorney Client Communication and Work Product

Project Name: HR Textron

Project No.: 40841189-04

Attention: Mimi Maki

On December 22, 1987, Analytical Technologies, Inc. received thirteen soils, one field blank, and one trip blank. The samples were analyzed with EPA methodology or equivalent methods as specified in the attached analytical schedule. Please see the attached sheet for the sample cross reference.

The remaining results, sample cross reference, and the quality control data are enclosed.

Carolyn A. Sites
GC/MS Supervisor

Richard M. Amano
Laboratory Manager

CAS:mag

Analytical Technologies, Inc.

ATI I.D. 712229

ANALYTICAL SCHEDULE

CLIENT: LEIGHTON & ASSOC.-VALENCIA
PROJECT NAME: HR TEXTRON

PROJECT NO.: 40841189-04

ANALYSIS	TECHNIQUE	REFERENCE/METHOD
CYANIDE	COLORIMETRIC	EPA 335.3
OIL & GREASE	IR	EPA 413.2 (MODIFIED)
PETROLEUM HYDROCARBONS	IR	EPA 418.1 (MODIFED)
PHENOLS	COLORIMETRIC	EPA 420.2
PHOSPHATE	COLORIMETRIC	EPA 365.1
ANTIMONY	AA/GF	EPA 7041
ARSENIC	AA/GF	EPA 7060
BERYLLIUM	ICAP	EPA 6010
CADMIUM	AA/GF	EPA 7131
CHROMIUM	ICAP	EPA 6010
COPPER	ICAP	EPA 6010
LEAD	AA/GF	EPA 7421
MERCURY	COLD VAPOR/AA	EPA 7471
NICKEL	ICAP	EPA 6010
SELENIUM	AA/GF	EPA 7740
SILVER	ICAP	EPA 6010
THALLIUM	AA/GF	EPA 7841
ZINC	ICAP	EPA 6010
FUEL HYDROCARBONS	GC/FID	EPA 8015 (MODIFIED)
PESTICIDES & POLY-CHLORINATED BIPHENYLS	GC/ECD	EPA 8080
VOLATILE ORGANICS	GC/MS	EPA 8240
BASE/NEUTRAL & ACID EXTRACTABLE COMPOUNDS	GC/MS	EPA 625, 8270

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Analytical Technologies, Inc.

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-04
PROJECT NAME : HR TEXTRON
DATE RECEIVED : 12/22/87
REPORT DATE : 01/04/88
ATI I.D. : 712229

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	4 @ 14.0'	SOIL	12/22/87
02	7 @ 14.0'	SOIL	12/22/87
03	11 @ 11.0'	SOIL	12/22/87
04	1 @ 11.0'	SOIL	12/22/87
05	2 @ 11.0'	SOIL	12/22/87
06	3 @ 14.0'	SOIL	12/22/87
07	5 @ 11.0'	SOIL	12/22/87
08	6 @ 11.0'	SOIL	12/22/87
09	8 @ 14.0'	SOIL	12/22/87
10	9 @ 16.0'	SOIL	12/22/87
11	10 @ 11.0'	SOIL	12/22/87
12	12 @ 14.0'	SOIL	12/22/87
13	13 @ 14.0'	SOIL	12/22/87
14	FIELD BLANK	WATER	12/22/87

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----- TOTALS -----

MATRIX	# SAMPLES
WATER	1
SOIL	13

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 712229

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-04
PROJECT NAME : HR TEXTRON

DATE RECEIVED : 12/22/87
REPORT DATE : 01/04/88

PARAMETER	UNITS	01	02	03
CYANIDE, TOTAL	MG/KG	<0.10	<0.10	<0.10
OIL AND GREASE, IR	MG/KG	3120	4010	1130
PETROLEUM HYDROCARBONS, IR	MG/KG	1360	2280	367
PHENOLICS, TOTAL	MG/KG	<0.5	<0.5	<0.5
PHOSPHATE, ORTHO	MG/KG	<10	<10	15

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Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-04
PROJECT NAME : HR TEXTRON ATI I.D. : 712229

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
CYANIDE, TOTAL	MG/KG	71222903	<0.10	<0.10	0	4.0	4.0	100
OIL AND GREASE, IR	MG/KG	71222901	3120	3070	2	**	**	**
PETROLEUM HYDROCARBONS	MG/KG	71222901	1360	1180	14	**	**	**
PHENOLICS, TOTAL	MG/KG	71219801	0.9	0.9	0	18.3	19.9	87
PHOSPHATE, ORTHO	MG/KG	71222903	15	14	7	70	50	111

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$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

** Due to the necessary dilution of the sample, result was not attainable

AnalyticalTechnologies,Inc. METALS RESULTS

ATI I.D. : 712229

'LIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-04
PROJECT NAME : HR TEXTRON

DATE RECEIVED : 12/22/87
REPORT DATE : 12/30/87

PARAMETER	UNITS	01	02	03
SILVER	MG/KG	<2.5	<2.5	<2.5
ARSENIC	MG/KG	<1.0	<1.0	<1.0
BERYLLIUM	MG/KG	<0.5	<0.5	<0.5
CADMIUM	MG/KG	<0.2	<0.2	<0.2
CHROMIUM	MG/KG	5.8	9.2	2.2
COPPER	MG/KG	5.8	3.1	4.1
MERCURY	MG/KG	<0.25	<0.25	<0.25
NICKEL	MG/KG	3.0	1.2	0.78
LEAD	MG/KG	1.9	31.0	2.3
ANTIMONY	MG/KG	<1.0	<1.0	<1.0
SELENIUM	MG/KG	<1.0	<1.0	<1.0
THALLIUM	MG/KG	<1.0	<1.0	<1.0
ZINC	MG/KG	18.3	10.9	13.5

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AnalyticalTechnologies,Inc. METALS - QUALITY CONTROL

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-04
PROJECT NAME : HR TEXTRON ATI I.D. : 712229

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
SILVER	MG/KG	71222903	<2.5	<2.5	0	38.0	47.2	81
ARSENIC	MG/KG	71222903	<1.0	1.1	0	29.4	28.3	104
BERYLLIUM	MG/KG	71222903	<0.5	<0.5	0	79.3	94.3	84
CADMIUM	MG/KG	71222903	<0.2	<0.2	0	9.2	9.4	98
CHROMIUM	MG/KG	71222903	2.2	2.2	0	42.9	47.2	86
COPPER	MG/KG	71222903	4.1	3.7	10	42.3	47.2	81
MERCURY	MG/KG	71222903	<0.25	<0.25	0	2.5	2.3	109
NICKEL	MG/KG	71222903	0.8	1.1	32	38.2	47.2	79
LEAD	MG/KG	71222903	2.3	2.0	14	79.8	94.3	82
ANTIMONY	MG/KG	71222903	<1.0	<1.0	0	14.0	27.9	50
SELENIUM	MG/KG	71222903	<1.0	<1.0	0	22.8	28.3	81
THALLIUM	MG/KG	71222903	<1.0	<1.0	0	20.7	28.3	73
ZINC	MG/KG	71222903	13.5	13.5	0	51.2	47.2	80

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

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Analytical Technologies Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 71222901

TEST : ORGANOCHLORINE PESTICIDES AND PCB'S (EPA 8080)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 12/22/87
PROJECT #	: 40841189-04	DATE RECEIVED	: 12/22/87
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 12/22/87
CLIENT I.D.	: 4 @ 14.0'	DATE ANALYZED	: 12/24/87
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
ALDRIN	<0.005
ALPHA - BHC	<0.005
BETA - BHC	<0.005
GAMMA - BHC	<0.005
DELTA - BHC	<0.005
CHLORDANE	<0.05
4,4'-DDD	<0.01
4,4'-DDE	<0.01
4,4'-DDT	<0.01
DIELDRIN	<0.01
ENDOSULFAN I	<0.01
ENDOSULFAN II	<0.01
ENDOSULFAN SULFATE	<0.01
ENDRIN	<0.01
ENDRIN ALDEHYDE	<0.01
ENDRIN KETONE	<0.01
HEPTACHLOR	<0.005
HEPTACHLOR EPOXIDE	<0.005
METHOXYCHLOR	<0.05
TOXAPHENE	<0.1
AROCLOR 1016	<0.05
AROCLOR 1221	<0.05
AROCLOR 1232	<0.05
AROCLOR 1242	<0.05
AROCLOR 1248	<0.05
AROCLOR 1254	<0.1
AROCLOR 1260	0.11
SURROGATE PERCENT RECOVERIES	
DBC (%)	80

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Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 71222902

TEST : ORGANOCHLORINE PESTICIDES AND PCB'S (EPA 8080)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 12/22/87
PROJECT #	: 40841189-04	DATE RECEIVED	: 12/22/87
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 12/22/87
CLIENT I.D.	: 7 @ 14.0'	DATE ANALYZED	: 12/23/87
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
ALDRIN	<0.025
ALPHA - BHC	<0.025
BETA - BHC	<0.025
GAMMA - BHC	<0.025
DELTA - BHC	<0.025
CHLORDANE	<0.25
4,4'-DDD	<0.05
4,4'-DDE	<0.05
4,4'-DDT	<0.05
DIELDRIN	<0.05
ENDOSULFAN I	<0.05
ENDOSULFAN II	<0.05
ENDOSULFAN SULFATE	<0.05
ENDRIN	<0.05
ENDRIN ALDEHYDE	<0.05
ENDRIN KETONE	<0.05
HEPTACHLOR	<0.025
HEPTACHLOR EPOXIDE	<0.025
METHOXYCHLOR	<0.25
TOXAPHENE	<0.5
AROCLOR 1016	<0.25
AROCLOR 1221	<0.25
AROCLOR 1232	<0.25
AROCLOR 1242	<0.25
AROCLOR 1248	<0.25
AROCLOR 1254	<0.5
AROCLOR 1260	<0.5
SURROGATE PERCENT RECOVERIES	
DBC (%)	61

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Analytical Technologies Inc. GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 71222903

TEST : ORGANOCHLORINE PESTICIDES AND PCB'S (EPA 8080)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 12/22/87
PROJECT #	: 40841189-04	DATE RECEIVED	: 12/22/87
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 12/22/87
CLIENT I.D.	: 11 @ 11.0'	DATE ANALYZED	: 12/24/87
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
ALDRIN	<0.005
ALPHA - BHC	<0.005
BETA - BHC	<0.005
GAMMA - BHC	<0.005
DELTA - BHC	<0.005
CHLORDANE	<0.05
4,4'-DDD	<0.01
4,4'-DDE	<0.01
4,4'-DDT	<0.01
DIELDRIN	<0.01
ENDOSULFAN I	<0.01
ENDOSULFAN II	<0.01
ENDOSULFAN SULFATE	<0.01
ENDRIN	<0.01
ENDRIN ALDEHYDE	<0.01
ENDRIN KETONE	<0.01
HEPTACHLOR	<0.005
HEPTACHLOR EPOXIDE	<0.005
METHOXYCHLOR	<0.05
TOXAPHENE	<0.1
AROCLOR 1016	<0.05
AROCLOR 1221	<0.05
AROCLOR 1232	<0.05
AROCLOR 1242	<0.05
AROCLOR 1248	<0.05
AROCLOR 1254	<0.1
AROCLOR 1260	<0.1
SURROGATE PERCENT RECOVERIES	
DBC (%)	117

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GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : ORGANOCHLORINE PESTICIDES AND PCB'S (EPA 8080)

		ATI I.D.	: 712229
CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE EXTRACTED	: 12/22/87
PROJECT #	: 40841189-04	DATE ANALYZED	: 12/24/87
PROJECT NAME	: HR TEXTRON	UNITS	: MG/KG
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
ALDRIN	<0.005
ALPHA - BHC	<0.005
BETA - BHC	<0.005
GAMMA - BHC	<0.005
DELTA - BHC	<0.005
CHLORDANE	<0.05
4,4'-DDD	<0.01
4,4'-DDE	<0.01
4,4'-DDT	<0.01
DIELDRIN	<0.01
ENDOSULFAN I	<0.01
ENDOSULFAN II	<0.01
ENDOSULFAN SULFATE	<0.01
ENDRIN	<0.01
ENDRIN ALDEHYDE	<0.01
ENDRIN KETONE	<0.01
HEPTACHLOR	<0.005
HEPTACHLOR EPOXIDE	<0.005
METHOXYCHLOR	<0.05
TOXAPHENE	<0.1
AROCLOR 1016	<0.05
AROCLOR 1221	<0.05
AROCLOR 1232	<0.05
AROCLOR 1242	<0.05
AROCLOR 1248	<0.05
AROCLOR 1254	<0.1
AROCLOR 1260	<0.1

SURROGATE PERCENT RECOVERIES

DBC (%)	97

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QUALITY CONTROL DATA

ATI I.D. : 712229

TEST : ORGANOCHLORINE PESTICIDES AND PCB'S (EPA 8080)

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-04
PROJECT NAME : HR TEXTRON

REF. I.D. : 71222903
DATE ANALYZED : 12/23/87
SAMPLE MATRIX : SOIL
UNITS : MG/KG

COMPOUNDS	SAMPLE RESULT	* CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
GAMMA BHC	<0.005	0.0067	0.0015	22.5	0.0024	36.0	33
HEPTACHLOR	<0.005	0.0067	0.0060	90	0.0044	65	23
ALDRIN	<0.005	0.0067	0.0022	33.0	0.0028	42.0	17
DIELDRIN	<0.01	0.0167	0.0069	38.9	0.0051	30.5	17
ENDRIN	<0.01	0.0167	0.0042	29.2	0.0035	21.0	13
DDT	<0.01	0.0167	0.012	71.9	0.012	71.9	0

* Irregular spike recoveries due to low level of spike.

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

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GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 71222901

TEST : FUEL HYDROCARBONS (MODIFIED EPA METHOD 8015)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 12/22/87
PROJECT #	: 40841189-04	DATE RECEIVED	: 12/22/87
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 12/28/87
CLIENT I.D.	: 4 @ 14.0'	DATE ANALYZED	: 12/29/87
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	300
HYDROCARBON RANGE	C20-C24
HYDROCARBONS QUANTITATED USING	DIESEL

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GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 71222902

TEST : FUEL HYDROCARBONS (MODIFIED EPA METHOD 8015)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 12/22/87
PROJECT #	: 40841189-04	DATE RECEIVED	: 12/22/87
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 12/28/87
CLIENT I.D.	: 7 @ 14.0'	DATE ANALYZED	: 12/29/87
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	870
HYDROCARBON RANGE	C20-C24
HYDROCARBONS QUANTITATED USING	DIESEL

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GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 71222903

TEST : FUEL HYDROCARBONS (MODIFIED EPA METHOD 8015)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 12/22/87
PROJECT #	: 40841189-04	DATE RECEIVED	: 12/22/87
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 12/28/87
CLIENT I.D.	: 11 @ 11.0'	DATE ANALYZED	: 12/29/87
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	-
HYDROCARBONS QUANTITATED USING	-

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GCMS - RESULTS

ATI I.D. : 71222914

TEST : SEMI-VOLATILE ORGANICS

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 12/22/87
PROJECT #	: 40841189-04	DATE RECEIVED	: 12/22/87
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 12/23/87
CLIENT I.D.	: FIELD BLANK	DATE ANALYZED	: 12/24/87
SAMPLE MATRIX	: WATER	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYL PHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10

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GCMS - RESULTS

ATI I.D. : 71222914

TEST : SEMI-VOLATILE ORGANICS

COMPOUNDS	RESULTS
DIETHYPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE(1)	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRANCENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10
CHRYSENE	<10
DI-N-OCTYL PHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZ(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10
SURROGATE PERCENT RECOVERIES	
NITROBENZENE-D5 (%)	77
2-FLUOROBIPHENYL (%)	111
TERPHENYL (%)	151
PHENOL-D5 (%)	38
2-FLUOROPHENOL (%)	60
2,4,6-TRIBROMOPHENOL (%)	78

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ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 71222914

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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GCMS - RESULTS

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TEST : SEMI-VOLATILE ORGANICS

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	ATI I.D.	: 712229
PROJECT #	: 40841189-04	DATE EXTRACTED	: 12/23/87
PROJECT NAME	: HR TEXTRON	DATE ANALYZED	: 12/24/87
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<10
PHENOL	<10
ANILINE	<10
BIS(2-CHLOROETHYL)ETHER	<10
2-CHLOROPHENOL	<10
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
BENZYL ALCOHOL	<10
1,2-DICHLOROBENZENE	<10
2-METHYLPHENOL	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10
4-METHYLPHENOL	<10
N-NITROSO-DI-N-PROPYLAMINE	<10
HEXACHLOROETHANE	<10
NITROBENZENE	<10
ISOPHORONE	<10
2-NITROPHENOL	<10
2,4-DIMETHYLPHENOL	<10
BENZOIC ACID	<50
BIS(2-CHLOROETHOXY)METHANE	<10
2,4-DICHLOROPHENOL	<10
1,2,4-TRICHLOROBENZENE	<10
NAPHTHALENE	<10
4-CHLOROANILINE	<10
HEXACHLOROBUTADIENE	<10
4-CHLORO-3-METHYLPHENOL	<10
2-METHYLNAPHTHALENE	<10
HEXACHLOROCYCLOPENTADIENE	<10
2,4,6-TRICHLOROPHENOL	<10
2,4,5-TRICHLOROPHENOL	<50
2-CHLORONAPHTHALENE	<10
2-NITROANILINE	<50
DIMETHYL PHTHALATE	<10
ACENAPHTHYLENE	<10
3-NITROANILINE	<50
ACENAPHTHENE	<10
2,4-DINITROPHENOL	<50
4-NITROPHENOL	<50
DIBENZOFURAN	<10
2,4-DINITROTOLUENE	<10
2,6-DINITROTOLUENE	<10
DIETHYPHTHALATE	<10
4-CHLOROPHENYL-PHENYLETHER	<10

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GCMS - RESULTS

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ATI I.D. : 712229

TEST : SEMI-VOLATILE ORGANICS

COMPOUNDS	RESULTS
FLUORENE	<10
4-NITROANILINE	<50
4,6-DINITRO-2-METHYLPHENOL	<50
N-NITROSODIPHENYLAMINE(1)	<10
4-BROMOPHENYL-PHENYLETHER	<10
HEXACHLOROBENZENE	<10
PENTACHLOROPHENOL	<50
PHENANTHRENE	<10
ANTHRANCENE	<10
DI-N-BUTYLPHTHALATE	<10
FLUORANTHENE	<10
BENZIDINE	<100
PYRENE	<10
BUTYLBENZYLPHTHALATE	<10
3,3-DICHLOROBENZIDINE	<20
BENZO(a)ANTHRACENE	<10
BIS(2-ETHYLHEXYL)PHTHALATE	12
CHRYSENE	<10
DI-N-OCTYL PHTHALATE	<10
BENZO(b)FLUORANTHENE	<10
BENZO(k)FLUORANTHENE	<10
BENZO(a)PYRENE	<10
INDENO(1,2,3-cd)PYRENE	<10
DIBENZ(a,h)ANTHRACENE	<10
BENZO(g,h,i)PERYLENE	<10

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	85
2-FLUOROBIPHENYL (%)	107
TERPHENYL (%)	118
PHENOL-D5 (%)	35
2-FLUOROPHENOL (%)	55
2,4,6-TRIBROMOPHENOL (%)	73

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GCMS - RESULTS

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ADDITIONAL MAJOR COMPOUNDS

TEST : SEMI-VOLATILE ORGANICS

CLIENT : LEIGHTON & ASSOC.-VALENCIA ATI I.D : 712229

COMPOUNDS	RESULTS
NONE DETECTED	N/A

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QUALITY CONTROL DATA

ATI I.D. : 712229

TEST : SEMI-VOLATILE ORGANICS

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-04
PROJECT NAME : HR TEXTRON

REF. I.D. : 71222914
DATE ANALYZED : 12/28/87
SAMPLE MATRIX : WATER
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,2,4-TRICHLOROBENZENE	<10	150	175	117	141	94	22
ACENAPHTHENE	<10	100	106	106	95	95	11
2,4-DINITROTOLUENE	<10	100	74	74	73	73	1
PYRENE	<10	100	186	186	174	174	7
N-NITROSO-DI-N-PROPYLAMINE	<10	100	87	87	77	77	12
1,4-DICHLOROBENZENE	<10	100	82	82	60	60	31
PENTACHLOROPHENOL	<50	200	233	116	236	118	2
PHENOL	<10	200	81	40	91	45	12
2-CHLOROPHENOL	<10	200	186	93	206	103	10
4-CHLORO-3-METHYLPHENOL	<10	200	169	84	182	91	8
4-NITROPHENOL	<50	200	41	20	43	22	10

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

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GCMS - RESULTS

ATI I.D. : 71222901

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 12/22/87
PROJECT #	: 40841189-04	DATE RECEIVED	: 12/22/87
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 12/23/87
CLIENT I.D.	: 4 @ 14.0'	DATE ANALYZED	: 12/24/87
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	0.06
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	0.28
TOLUENE	0.06
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	90
BFB (%)	97
TOLUENE-D8 (%)	101

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ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 71222901

ADDITIONAL MAJOR COMPOUNDS	RESULTS
915-HYDROCARBON C10	0.10
986-HYDROCARBON C10	0.10

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GCMS - RESULTS

ATI I.D. : 71222902

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 12/22/87
PROJECT #	: 40841189-04	DATE RECEIVED	: 12/22/87
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 12/23/87
CLIENT I.D.	: 7 @ 14.0'	DATE ANALYZED	: 12/24/87
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	0.09
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	0.19
TOLUENE	0.06
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	90
BFB (%)	97
TOLUENE-D8 (%)	97

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ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 71222902

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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GCMS - RESULTS

ATI I.D. : 71222903

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 12/22/87
PROJECT #	: 40841189-04	DATE RECEIVED	: 12/22/87
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 12/23/87
CLIENT I.D.	: 11 @ 11.0'	DATE ANALYZED	: 12/24/87
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	0.20
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	92
BFB (%)	99
TOLUENE-D8 (%)	100

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ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 71222903

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 8240)

		ATI I.D.	: 712229
CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE EXTRACTED	: 12/23/87
PROJECT #	: 40841189-04	DATE ANALYZED	: 12/24/87
PROJECT NAME	: HR TEXTRON	UNITS	: MG/KG
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	TR
ACETONE	TR
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	TR
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	89
BFB (%)	97
TOLUENE-D8 (%)	99

TR - Compound detected at an unquantifiable trace level

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Analytical Technologies, Inc.

GCMS - RESULTS

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ADDITIONAL MAJOR COMPOUNDS

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT : LEIGHTON & ASSOC.-VALENCIA ATI I.D : 712229

COMPOUNDS	RESULTS
366-PENTANE	0.50

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QUALITY CONTROL DATA

ATI I.D. : 712229

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-04
PROJECT NAME : HR TEXTRON

REF. I.D. : 71224509
DATE ANALYZED : 12/24/87
SAMPLE MATRIX : SOIL
UNITS : MG/KG

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<0.05	2.5	2.5	100	N/A	N/A	N/A
TRICHLOROETHENE	<0.05	2.5	2.9	117	N/A	N/A	N/A
CHLOROBENZENE	<0.05	2.5	2.8	114	N/A	N/A	N/A
TOLUENE	<0.05	2.5	2.8	113	N/A	N/A	N/A
BENZENE	<0.05	2.5	2.6	106	N/A	N/A	N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

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GCMS - RESULTS

ATI I.D. : 71222901

TEST : SEMI-VOLATILE ORGANICS (EPA 8270)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 12/22/87
PROJECT #	: 40841189-04	DATE RECEIVED	: 12/22/87
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 12/22/87
CLIENT I.D.	: 4 @ 14.0'	DATE ANALYZED	: 12/23/87
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<0.17
PHENOL	<0.17
ANILINE	<0.17
BIS(2-CHLOROETHYL)ETHER	<0.17
2-CHLOROPHENOL	<0.17
1,3-DICHLOROBENZENE	<0.17
1,4-DICHLOROBENZENE	<0.17
BENZYL ALCOHOL	<0.17
1,2-DICHLOROBENZENE	<0.17
2-METHYLPHENOL	<0.17
BIS(2-CHLOROISOPROPYL)ETHER	<0.17
4-METHYLPHENOL	<0.17
N-NITROSO-DI-N-PROPYLAMINE	<0.17
HEXACHLOROETHANE	<0.17
NITROBENZENE	<0.17
ISOPHORONE	<0.17
2-NITROPHENOL	<0.17
2,4-DIMETHYLPHENOL	<0.17
BENZOIC ACID	<0.85
BIS(2-CHLOROETHOXY)METHANE	<0.17
2,4-DICHLOROPHENOL	<0.17
1,2,4-TRICHLOROBENZENE	<0.17
NAPHTHALENE	<0.17
4-CHLOROANILINE	<0.17
HEXACHLOROBUTADIENE	<0.17
4-CHLORO-3-METHYLPHENOL	<0.17
2-METHYLNAPHTHALENE	<0.17
HEXACHLOROCYCLOPENTADIENE	<0.17
2,4,6-TRICHLOROPHENOL	<0.17
2,4,5-TRICHLOROPHENOL	<0.85
2-CHLORONAPHTHALENE	<0.17
2-NITROANILINE	<0.85
DIMETHYL PHTHALATE	<0.17
ACENAPHTHYLENE	<0.17
3-NITROANINLINE	<0.85
ACENAPHTHENE	<0.17
2,4-DINITROPHENOL	<0.85
4-NITROPHENOL	<0.85
DIBENZOFURAN	<0.17
,4-DINITROTOLUENE	<0.17
2,6-DINITROTOLUENE	<0.17

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GCMS - RESULTS

ATI I.D. : 71222901

TEST : SEMI-VOLATILE ORGANICS (EPA 8270)

COMPOUNDS	RESULTS
DIETHYLPHTHALATE	<0.17
4-CHLOROPHENYL-PHENYLETHER	<0.17
FLUORENE	<0.17
4-NITROANILINE	<0.85
4,6-DINITRO-2-METHYLPHENOL	<0.85
N-NITROSODIPHENYLAMINE (1)	<0.17
4-BROMOPHENYL-PHENYLETHER	<0.17
HEXACHLOROBENZENE	<0.17
PENTACHLOROPHENOL	<0.85
PHENANTHRENE	<0.17
ANTHRACENE	<0.17
DI-N-BUTYLPHTHALATE	<0.17
FLUORANTHENE	<0.17
BENZIDINE	<1.7
PYRENE	<0.17
BUTYLBENZYLPHTHALATE	<0.17
3,3-DICHLOROBENZIDINE	<0.34
BENZO(a)ANTHRACENE	<0.17
BIS(2-ETHYLHEXYL)PHTHALATE	<0.17
CHRYSENE	<0.17
DI-N-OCTYLPHTHALATE	<0.17
BENZO(b)FLUORANTHENE	<0.17
BENZO(k)FLUORANTHENE	<0.17
BENZO(a)PYRENE	<0.17
INDENO(1,2,3-cd)PYRENE	<0.17
DIBENZO(a,h)ANTHRACENE	<0.17
BENZO(g,h,i)PERYLENE	<0.17

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	60
2-FLUOROBIPHENYL (%)	78
TERPHENYL (%)	40
PHENOL-D5 (%)	64
2-FLUOROPHENOL (%)	68
2,4,6-TRIBROMOPHENOL (%)	75

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ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 71222901

ADDITIONAL MAJOR COMPOUNDS	RESULTS
1248-BRANCHED METHYL PHENOL	0.6
2258-UNKNOWN	1
2323-ALKANE	0.9
2354-BRANCHED ALKANE	0.9
2361-BRANCHED ALKENE	0.8
TOTAL HYDROCARBONS C18-C29	40

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GCMS - RESULTS

ATI I.D. : 71222902

TEST : SEMI-VOLATILE ORGANICS (EPA 8270)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 12/22/87
PROJECT #	: 40841189-04	DATE RECEIVED	: 12/22/87
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 12/22/87
CLIENT I.D.	: 7 @ 14.0'	DATE ANALYZED	: 12/23/87
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<0.17
PHENOL	<0.17
ANILINE	<0.17
BIS(2-CHLOROETHYL)ETHER	<0.17
2-CHLOROPHENOL	<0.17
1,3-DICHLOROBENZENE	<0.17
1,4-DICHLOROBENZENE	<0.17
BENZYL ALCOHOL	<0.17
1,2-DICHLOROBENZENE	<0.17
2-METHYLPHENOL	<0.17
BIS(2-CHLOROISOPROPYL)ETHER	<0.17
4-METHYLPHENOL	<0.17
N-NITROSO-DI-N-PROPYLAMINE	<0.17
HEXACHLOROETHANE	<0.17
NITROBENZENE	<0.17
ISOPHORONE	<0.17
2-NITROPHENOL	<0.17
2,4-DIMETHYLPHENOL	<0.17
BENZOIC ACID	<0.85
BIS(2-CHLOROETHOXY)METHANE	<0.17
2,4-DICHLOROPHENOL	<0.17
1,2,4-TRICHLOROBENZENE	<0.17
NAPHTHALENE	<0.17
4-CHLOROANILINE	<0.17
HEXACHLOROBUTADIENE	<0.17
4-CHLORO-3-METHYLPHENOL	<0.17
2-METHYLNAPHTHALENE	<0.17
HEXACHLOROCYCLOPENTADIENE	<0.17
2,4,6-TRICHLOROPHENOL	<0.17
2,4,5-TRICHLOROPHENOL	<0.85
2-CHLORONAPHTHALENE	<0.17
2-NITROANILINE	<0.85
DIMETHYL PHTHALATE	<0.17
ACENAPHTHYLENE	<0.17
3-NITROANINLINE	<0.85
ACENAPHTHENE	<0.17
2,4-DINITROPHENOL	<0.85
4-NITROPHENOL	<0.85
DIBENZOFURAN	<0.17
2,4-DINITROTOLUENE	<0.17
2,6-DINITROTOLUENE	<0.17

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GCMS - RESULTS

ATI I.D. : 71222902

TEST : SEMI-VOLATILE ORGANICS (EPA 8270)

COMPOUNDS	RESULTS
DIETHYLPHTHALATE	<0.17
4-CHLOROPHENYL-PHENYLETHER	<0.17
FLUORENE	<0.17
4-NITROANILINE	<0.85
4,6-DINITRO-2-METHYLPHENOL	<0.85
N-NITROSODIPHENYLAMINE (1)	<0.17
4-BROMOPHENYL-PHENYLETHER	<0.17
HEXACHLOROBENZENE	<0.17
PENTACHLOROPHENOL	<0.85
PHENANTHRENE	<0.17
ANTHRACENE	<0.17
DI-N-BUTYLPHTHALATE	<0.17
FLUORANTHENE	<0.17
BENZIDINE	<1.7
PYRENE	<0.17
BUTYLBENZYLPHTHALATE	<0.17
3,3-DICHLOROBENZIDINE	<0.34
BENZO(a)ANTHRACENE	<0.17
BIS(2-ETHYLHEXYL)PHTHALATE	<0.17
CHRYSENE	<0.17
DI-N-OCTYLPHTHALATE	<0.17
BENZO(b)FLUORANTHENE	<0.17
BENZO(k)FLUORANTHENE	<0.17
BENZO(a)PYRENE	<0.17
INDENO(1,2,3-cd)PYRENE	<0.17
DIBENZO(a,h)ANTHRACENE	<0.17
BENZO(g,h,i)PERYLENE	<0.17
SURROGATE PERCENT RECOVERIES	
NITROBENZENE-D5 (%)	67
2-FLUOROBIPHENYL (%)	71
TERPHENYL (%)	58
PHENOL-D5 (%)	58
2-FLUOROPHENOL (%)	61
2,4,6-TRIBROMOPHENOL (%)	67

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ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 71222902

ADDITIONAL MAJOR COMPOUNDS	RESULTS
2216-ALKANE	1
2260-UNKNOWN	1
2279-ALKANE	1
2355-ALKANE	2
2414-ALKANE	1
TOTAL HYDROCARBONS C18-C29	60

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GCMS - RESULTS

ATI I.D. : 71222903

TEST : SEMI-VOLATILE ORGANICS (EPA 8270)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 12/22/87
PROJECT #	: 40841189-04	DATE RECEIVED	: 12/22/87
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 12/22/87
CLIENT I.D.	: 11 @ 11.0'	DATE ANALYZED	: 12/23/87
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<0.17
PHENOL	<0.17
ANILINE	<0.17
BIS(2-CHLOROETHYL)ETHER	<0.17
2-CHLOROPHENOL	<0.17
1,3-DICHLOROBENZENE	<0.17
1,4-DICHLOROBENZENE	<0.17
BENZYL ALCOHOL	<0.17
1,2-DICHLOROBENZENE	<0.17
2-METHYLPHENOL	<0.17
BIS(2-CHLOROISOPROPYL)ETHER	<0.17
4-METHYLPHENOL	<0.17
N-NITROSO-DI-N-PROPYLAMINE	<0.17
HEXACHLOROETHANE	<0.17
NITROBENZENE	<0.17
ISOPHORONE	<0.17
2-NITROPHENOL	<0.17
2,4-DIMETHYLPHENOL	<0.17
BENZOIC ACID	<0.85
BIS(2-CHLOROETHOXY)METHANE	<0.17
2,4-DICHLOROPHENOL	<0.17
1,2,4-TRICHLOROBENZENE	<0.17
NAPHTHALENE	<0.17
4-CHLOROANILINE	<0.17
HEXACHLOROBUTADIENE	<0.17
4-CHLORO-3-METHYLPHENOL	<0.17
2-METHYLNAPHTHALENE	<0.17
HEXACHLOROCYCLOPENTADIENE	<0.17
2,4,6-TRICHLOROPHENOL	<0.17
2,4,5-TRICHLOROPHENOL	<0.85
2-CHLORONAPHTHALENE	<0.17
2-NITROANILINE	<0.85
DIMETHYL PHTHALATE	<0.17
ACENAPHTHYLENE	<0.17
3-NITROANINLINE	<0.85
ACENAPHTHENE	<0.17
2,4-DINITROPHENOL	<0.85
4-NITROPHENOL	<0.85
DIBENZOFURAN	<0.17
2,4-DINITROTOLUENE	<0.17
2,6-DINITROTOLUENE	<0.17

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AnalyticalTechnologies, Inc.

GCMS - RESULTS

ATI I.D. : 71222903

TEST : SEMI-VOLATILE ORGANICS (EPA 8270)

COMPOUNDS	RESULTS
DIETHYLPHTHALATE	<0.17
4-CHLOROPHENYL-PHENYLETHER	<0.17
FLUORENE	<0.17
4-NITROANILINE	<0.85
4,6-DINITRO-2-METHYLPHENOL	<0.85
N-NITROSODIPHENYLAMINE (1)	<0.17
4-BROMOPHENYL-PHENYLETHER	<0.17
HEXACHLOROBENZENE	<0.17
PENTACHLOROPHENOL	<0.85
PHENANTHRENE	<0.17
ANTHRACENE	<0.17
DI-N-BUTYLPHTHALATE	TR
FLUORANTHENE	<0.17
BENZIDINE	<1.7
PYRENE	<0.17
BUTYLBENZYLPHTHALATE	<0.17
3,3-DICHLOROBENZIDINE	<0.34
BENZO(a)ANTHRACENE	<0.17
BIS(2-ETHYLHEXYL)PHTHALATE	1.1
CHRYSENE	<0.17
DI-N-OCTYLPHTHALATE	<0.17
BENZO(b)FLUORANTHENE	<0.17
BENZO(k)FLUORANTHENE	<0.17
BENZO(a)PYRENE	<0.17
INDENO(1,2,3-cd)PYRENE	<0.17
DIBENZO(a,h)ANTHRACENE	<0.17
BENZO(g,h,i)PERYLENE	<0.17
SURROGATE PERCENT RECOVERIES	
NITROBENZENE-D5 (%)	47
2-FLUOROBIPHENYL (%)	59
TERPHENYL (%)	96
PHENOL-D5 (%)	48
2-FLUOROPHENOL (%)	50
2,4,6-TRIBROMOPHENOL (%)	69

TR - Compound detected at an unquantifiable trace level

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ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 71222903

ADDITIONAL MAJOR COMPOUNDS	RESULTS
1940-DIMETHYL ALKENE	1
1558-PHTHALATE	0.3

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GCMS - RESULTS

REAGENT BLANK

TEST : SEMI-VOLATILE ORGANICS (EPA 8270)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	ATI I.D.	: 712229
PROJECT #	: 40841189-04	DATE EXTRACTED	: 12/22/87
PROJECT NAME	: HR TEXTRON	DATE ANALYZED	: 12/23/87
CLIENT I.D.	: REAGENT BLANK	UNITS	: MG/KG
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
N-NITROSODIMETHYLAMINE	<0.17
PHENOL	<0.17
ANILINE	<0.17
BIS(2-CHLOROETHYL)ETHER	<0.17
2-CHLOROPHENOL	<0.17
1,3-DICHLOROBENZENE	<0.17
1,4-DICHLOROBENZENE	<0.17
BENZYL ALCOHOL	<0.17
1,2-DICHLOROBENZENE	<0.17
2-METHYLPHENOL	<0.17
BIS(2-CHLOROISOPROPYL)ETHER	<0.17
4-METHYLPHENOL	<0.17
N-NITROSO-DI-N-PROPYLAMINE	<0.17
HEXACHLOROETHANE	<0.17
NITROBENZENE	<0.17
ISOPHORONE	<0.17
2-NITROPHENOL	<0.17
2,4-DIMETHYLPHENOL	<0.17
BENZOIC ACID	<0.85
BIS(2-CHLOROETHOXY)METHANE	<0.17
2,4-DICHLOROPHENOL	<0.17
1,2,4-TRICHLOROBENZENE	<0.17
NAPHTHALENE	<0.17
4-CHLOROANILINE	<0.17
HEXACHLOROBUTADIENE	<0.17
4-CHLORO-3-METHYLPHENOL	<0.17
2-METHYLNAPHTHALENE	<0.17
HEXACHLOROCYCLOPENTADIENE	<0.17
2,4,6-TRICHLOROPHENOL	<0.17
2,4,5-TRICHLOROPHENOL	<0.85
2-CHLORONAPHTHALENE	<0.17
2-NITROANILINE	<0.85
DIMETHYL PHTHALATE	<0.17
ACENAPHTHYLENE	<0.17
3-NITROANINLINE	<0.85
ACENAPHTHENE	<0.17
2,4-DINITROPHENOL	<0.85
4-NITROPHENOL	<0.85
DIBENZOFURAN	<0.17
2,4-DINITROTOLUENE	<0.17
2,6-DINITROTOLUENE	<0.17
DIETHYLPHTHALATE	<0.17
4-CHLOROPHENYL-PHENYLETHER	<0.17

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GCMS - RESULTS

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ATI I.D. : 712229

TEST : SEMI-VOLATILE ORGANICS (EPA 8270)

COMPOUNDS	RESULTS
FLUORENE	<0.17
4-NITROANILINE	<0.85
4,6-DINITRO-2-METHYLPHENOL	<0.85
N-NITROSODIPHENYLAMINE (1)	<0.17
4-BROMOPHENYL-PHENYLETHER	<0.17
HEXACHLOROBENZENE	<0.17
PENTACHLOROPHENOL	<0.85
PHENANTHRENE	<0.17
ANTHRACENE	<0.17
DI-N-BUTYLPHTHALATE	<0.17
FLUORANTHENE	<0.17
BENZIDINE	<1.7
PYRENE	<0.17
BUTYLBENZYLPHTHALATE	<0.17
3,3-DICHLOROBENZIDINE	<0.34
BENZO(a)ANTHRACENE	<0.17
BIS(2-ETHYLHEXYL)PHTHALATE	TR
CHRYSENE	<0.17
DI-N-OCTYLPHTHALATE	<0.17
BENZO(b)FLUORANTHENE	<0.17
BENZO(k)FLUORANTHENE	<0.17
BENZO(a)PYRENE	<0.17
INDENO(1,2,3-cd)PYRENE	<0.17
DIBENZO(a,h)ANTHRACENE	<0.17
BENZO(g,h,i)PERYLENE	<0.17

SURROGATE PERCENT RECOVERIES

NITROBENZENE-D5 (%)	64
2-FLUOROBIPHENYL (%)	78
TERPHENYL (%)	123
PHENOL-D5 (%)	64
2-FLUOROPHENOL (%)	71
2,4,6-TRIBROMOPHENOL (%)	72

TR - Compound detected at an unquantifiable trace level -

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Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ADDITIONAL MAJOR COMPOUNDS

TEST : SEMI-VOLATILE ORGANICS (EPA 8270)

CLIENT : LEIGHTON & ASSOC.-VALENCIA ATI I.D : 712229

COMPOUNDS	RESULTS
NONE DETECTED	N/A

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QUALITY CONTROL DATA

ATI I.D. : 712229

TEST : SEMI-VOLATILE ORGANICS (EPA 8270)

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-04
PROJECT NAME : HR TEXTRON

REF. I.D. : 71222903
DATE ANALYZED : 12/23/87
SAMPLE MATRIX : SOIL
UNITS : MG/KG

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,2,4-TRICHLOROBENZENE	0.17	5	3.9	77	3.9	78	1
ACENAPHTHENE	<0.17	3.3	1.8	54	1.7	51	6
2,4-DINITROTOLUENE	<0.17	3.3	1.3	38	1.2	37	3
PYRENE	<0.17	3.3	1.7	52	2.0	62	18
N-NITROSO-DI-N-PROPYLAMINE	<0.17	3.3	1.8	55	1.7	51	8
1,4-DICHLOROBENZENE	<0.17	3.3	1.8	53	1.7	53	0
PENTACHLOROPHENOL	<0.85	6.6	3.7	56	3.8	58	4
PHENOL	<0.17	6.6	2.8	43	2.6	40	7
2-CHLOROPHENOL	<0.17	6.6	3.2	48	2.9	45	6
4-CHLORO-3-METHYLPHENOL	<0.17	6.6	4.2	64	3.9	60	6
4-NITROPHENOL	<0.85	6.6	1.9	29	2.6	39	28

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

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Project No.	Client and Site Location
40841189-04	MR Textron, 10445 Glenoaks Blvd., Pacoima, CA

Samplers (Signature): Mike Reust

Sample Number	Date	Time	Depth Below Grade (ft)	Sample Type	Suspect Contamination	No. of Containers	EPA Test Method No.	EPA Priority Pollutant Scan	MBAS / Phosphate	REMARKS
1	12/22/87	955	11.0'	SOIL		1				no odor
2		955	11.0'			1				no odor
3		1010	14.0'			1				slight odor, Tan SW w/gravel
4		1010	14.0'			1		✓	✓	Strong odor, Grey SW w/gravel
5		1035	11.0'			1				no odor
6		1035	11.0'			1				slight odor
7		1050	14.0'			1		✓	✓	mod. - strong odor
8		1050	14.0'			1				mod. - strong odor
9		1100	16.0'			1				mod. - strong
10		1110	11.0'			1				slight - mod. odor
11		1110	11.0'			1		✓	✓	slight - mod. odor
12		1130	14.0'			1				slight
13	↓	1130	14.0'	↓		1				slight
Field Blank		1125	—	Water		1		✓	✓	
Trip Blank	↓	1125	—	↓		1		✓	✓	

Sampling pit 1

Sampling pit 2

Sampling pit 3

Call & Send Results to:
Leighton & Associates, Inc.
25020 Avenue Stanford, Suite 190
Valencia, CA 91355
Attention: Mimi Maki
Phone No. (805) 257-0150

Sample Integrity:

Samples Intact: Yes ✓ No —

Samples Properly Cooled: Yes ✓ No —

Samples Accepted: Yes ✓ No —

If not, why:

Samples Placed in Lab Refrigerator

Yes — No — L&A Rep. Initials —

Relinquished by:	Date / Time	Received by:
Mike Reust	12/23/87 1:30 PM	REDI-EXPRESS
Relinquished by:	Date / Time	Received by:
Relinquished by:	Date / Time	Received for Lab by:

Privileged and Company Private Attorney Client Communication and Work Product

Leighton and Associates, Inc.

Laboratory Name: ATI

Certification No.:

Project No.	Client and Site Location
40841189-04	HR Textron, 10445 Glenoaks Blvd. Pacoima, CA

Samplers (Signature): Mike Reust

Call & Send Results to:
Leighton & Associates, Inc.
25020 Avenue Stanford, Suite 190
Valencia, CA 91355
Attention: Mimi Maki
Phone No. (805) 257-0150

	Sample Number	Date	Time	Depth Below Grade (ft)	Sample Type	Suspect Contamination	No. of Containers	EPA Test Method No.	EPA Priority Pollutant Scan	MBAS / Phosphate								REMARKS	
Ø4	1	12/22/87	955	11.0'	SOIL		1											no odor	Sampling pit 1.
Ø5	2		955	11.0'			1											no odor	
Ø6	3		1010	14.0'			1											slight odor, Tan SW w/gravel	
Ø1	4		1010	14.0'			1		✓	✓								strong odor, Grey SW w/gravel	
Ø7	5		1035	11.0'			1											no odor	Sampling pit 2
Ø8	6		1035	11.0'			1											slight odor	
Ø2	7		1050	14.0'			1		✓	✓								mod.-strong odor	
Ø9	8		1050	14.0'			1											mod.-strong odor	
1Ø	9		1100	16.0'			1											mod.-strong	
11	10		1110	11.0'			1											slight - mod. odor	Sampling pit 3
Ø3	11		1110	11.0'			1		✓	✓								slight - mod. odor	
12	12		1130	14.0'			1											slight	
13	13		1130	14.0'			1											slight	
14	Field Blank		1125	—	Water		1		✓	✓									
15	Trip Blank		1125	—			1		✓	✓									

Sample Integrity:

Samples Intact: Yes ✓ No ____

Samples Properly Cooled: Yes ✓ No ____

Samples Accepted: Yes ✓ No ____

If not, why: ____

Samples Placed in Lab Refrigerator
Yes ____ No ____ L&A Rep. Initials ____

Relinquished by:	Date / Time	Received by:
Mike Reust	12/22/87 1:30 PM	[signature] REDI-EXPRESS
[signature]	12-22-87 10:55 PM	Received by: 12/22/87 11:00 PM [signature]
		Received for Lab by:

Privileged and Company Private Attorney Client Communication and Work Product

Leighton and Associates, Inc.

Laboratory Name: ATI

Certification No.: ____

Analytical Technologies, Inc. Corporate Offices: 225 W. 30th Street National City, CA 92050 619 477-4173

I.D. #01-001159

July 2, 1984

The Earth Technology Corporation
3777 Long Beach Boulevard
P.O. Box 7765
Long Beach, California 90807

Attention: Mike H. Tiller

Re: Additional Soil Analyses (ATI #01-001096)

On June 18, 1984 additional test parameters were requested on soil composite #3. The composite sample was extracted with methylene chloride and analyzed using GC/FID. Stoddard solvent was a suspected contaminant and confirmed by the GC scan. No other major peaks were present.

Listed below is the analytical result.

	Soil Composite #3
Stoddard Solvent	2400 ug/g

Carolyn A. Sites
Carolyn A. Sites
Client Service Specialist

Reviewed by _____
Mark King
Laboratory Supervisor

CAS;cs

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Analytical Technologies, Inc. Corporate Offices: 225 W 30th Street National City, CA 92050 619 477-4173

I.D. #01-001096

June 14, 1984

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JUN 18 1984

Earth Technology Corporation
3777 Long Beach Boulevard
P.O. Box 7765
Long Beach, CA 90807

Attention: Patrick M. Cobb

Re: Project #87-602

On May 25, 1984 Analytical Technologies, Inc. received a total of eleven (11) soil samples which were composited as follows:

Composite #1	84-602-1-1-1
	-1-2-1
	-1-3-1
	-1-4-1
Composite #2	84-602-2-1-1
	-2-2-1
	-2-3-1
Composite #3	84-602-3-1-1
	-3-2-1
	-3-3-1
	-3-4-1

All three composite samples were analyzed for volatile organics and base/neutral organics in accordance with EPA methods 8240 and 8270, respectively. Composite #3 was also analyzed for oil and grease (EPA method 413.2), pH, aluminum, iron and copper.

Inductively coupled plasma spectrometry was used to determine the metal concentrations.

Attached are the analytical results and quality control data.

Carolyn A. Sites

Carolyn A. Sites
Client Service Specialist

Reviewed by _____
Mark King
Laboratory Supervisor

CAS:dm

Attachments

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I.D. #01-001096

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JUN 18 1984

DATA SUMMARY

Earth Technology
Soil Composites

Received: 5/25/84
Reported: 6/14/84

SOIL COMPOSITE #3 (µg/g)

pH (units)	5.90
Aluminum	7,260
Copper	8.0
Iron	10,500
Oil & Grease	23,400
Manganese	164

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ANALYTICAL TECHNOLOGIES, INC.

I.D. #01-001096

Date Received: 5/25/84
Date Reported: 6/12/84

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PRIORITY POLLUTANTS IDENTIFIED/QUANTITATED

Sample I.D.	Compounds Identified
Soil Composite #1	None Detected
Soil Composite #2	None Detected
Soil Composite #3	Tetrachloroethylene 0.4 µg/g

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ANALYTICAL TECHNOLOGIES, INC. I.D.

EPA PRIORITY POLLUTANTS TESTED FOR
BY GC/MS METHOD NO._____

VOLATILE ORGANIC COMPOUNDS (soil)	LIMIT OF DETECTION (µg/g)
Bromomethane	0.2
Chloromethane	0.2
Bromodichloromethane	0.1
Chlorodibromomethane	0.1
Methylene Chloride	0.1
Bromoform	0.1
Chloroform	0.1
Carbon Tetrachloride	0.1
Trichlorofluoromethane	0.2
Chloroethane	0.2
1,1-dichloroethane	0.1
1,2-dichloroethane	0.1
1,1,1-trichloroethane	0.1
1,1,2-trichloroethane	0.1
1,1,2,2-tetrachloroethane	0.1
Vinyl Chloride	0.2
1,1-dichloroethene	0.1
trans-1,2-dichloroethene	0.1
Trichloroethene	0.1
Tetrachloroethene	0.1
2-chloroethyl vinyl ether	0.3
1,2-dichloropropane	0.1
cis & trans-1,3-dichloropropene	0.1
Benzene	0.1
Chlorobenzene	0.1
Toluene	0.1
Ethyl benezene	0.1
Acrolein	0.2
Acrylonitrile	0.2

ND = Not Determined

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ANALYTICAL TECHNOLOGIES, INC. I.D.

EPA PRIORITY POLLUTANTS TESTED FOR

BY GC/MS METHOD NO. 8270

BASE/NEUTRAL COMPOUNDS (soil)	LIMIT OF DETECTION (µg/g)
Acenaphthene	0.19
Acenaphthylene	0.35
Benzidine	4.4
Chrysene	0.25
Isophorone	0.22
Phenanthrene	0.54
Anthracene	0.19
Benzo (a) anthracene	0.78
Dibenzo (a,h) anthracene	0.25
Fluorene	0.19
Fluoranthene	0.22
Benzo (b) fluoranthene	0.25
Benzo (k) fluoranthene	0.25
Pyrene	0.19
Benzo (a) pyrene	0.25
Indeno (1,2,3-cd) pyrene	0.37
Benzo (g,h,i) perylene	0.41
Hexachlorobenzene	0.19
Nitrobenzene	0.19
1,2-Dichlorobenzene	0.19
1,3-Dichlorobenzene	0.19
1,4-Dichlorobenzene	0.44
1,2,4-Trichlorobenzene	0.19
3,3-Dichlorobenzidine	1.65
2,4-Dinitrotoluene	0.57
2,6-Dinitrotoluene	0.25
N-Nitrosodimethylamine	0.25
N-Nitrosodiphenylamine	0.19
N-Nitrosodi -n-propylamine	0.25

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ANALYTICAL TECHNOLOGIES, INC. I.D.

EPA PRIORITY POLLUTANTS TESTED FOR

BY GC/MS METHOD NO. 8270

BASE/NEUTRAL COMPOUNDS (soil)	LIMIT OF DETECTION (ug/g)
Diethyl phthalate	2.2
Dimethyl phthalate	0.16
Di-n-Butyl phthalate	0.25
Di-n-Octyl phthalate	0.25
Butyl Benzyl phthalate	0.25
Bis (2-ethylhexyl) phthalate	0.25
Bis (2-chloroethyl) ether	0.57
Bis (2-chloroisopropyl) ether	0.57
4-Chlorophenyl phenyl ether	0.42
Bis (2-chloroethoxy) methane	0.53
4-Bromophenylphenyl ether	0.19
Hexachloroethane	0.16
Hexachlorobutadiene	0.09
Hexachlorocyclopentadiene	0.25
Naphthalene	0.16
2-Chloronaphthalene	0.19
1,2-Diphenylhydrazine	0.25

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RESULTS OF EPA QUALITY CONTROL SAMPLES
WP 1278, VOLATILE ORGANICS

I.D. #01-001096

PARAMETER	EPA DATA [1] X	S	95% C.I.[3]	SAMPLE RESULTS [2]
1,2-dichloroethane (13)	13.7	2.5	8.7-18.7	7.8
Chloroform (12)	68.3	14.9	38.5-98.1	59.9
1,1,1-trichloroethane (14)	8.1	4.2	MDL-16.5	7.9
1,1,2-trichloroethene (20)	10.7	8.1	MDL-26.8	9.5
Carbon Tetrachloride (15)	13.2	3.7	5.8-20.6	12.6
1,1,2,2-Tetrachloroethene (26)	9.6	2.4	4.8-14.4	8.8
Bromodichloromethane (16)	11.2	2.7	5.8-16.6	11.3
Dibromochloromethane (24)	9.2	2.7	4.0-14.4	8.2
Bromoform (25)	14.0	3.0	8.0-20.0	14.4

[1] Results of EPA Interlaboratory comparison Studies.
[2] Results of QC Materials Run Concurrently with Samples.
[3] 95 Percent Confidence Interval.

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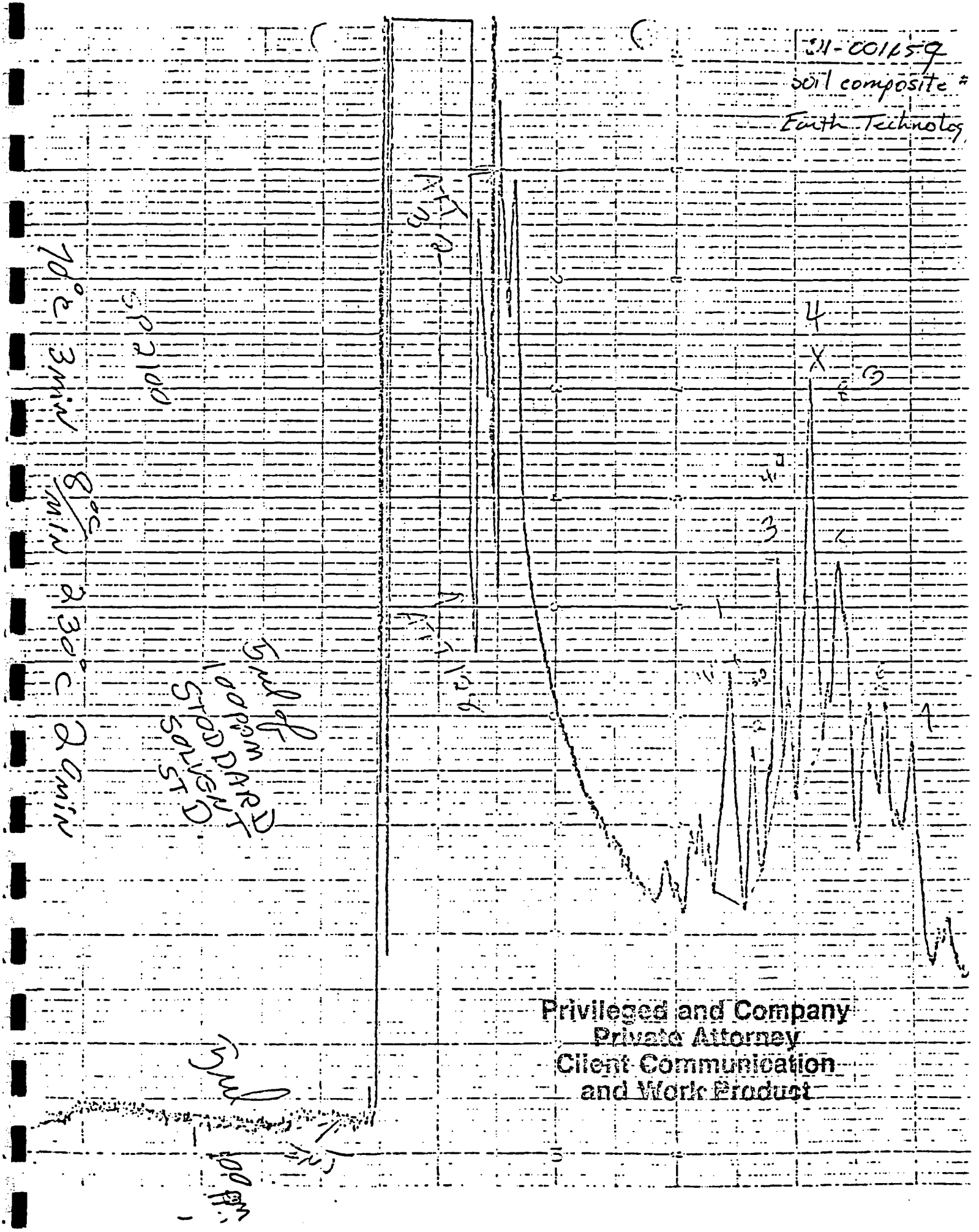
21-00159
soil composite #
Earth Technolog
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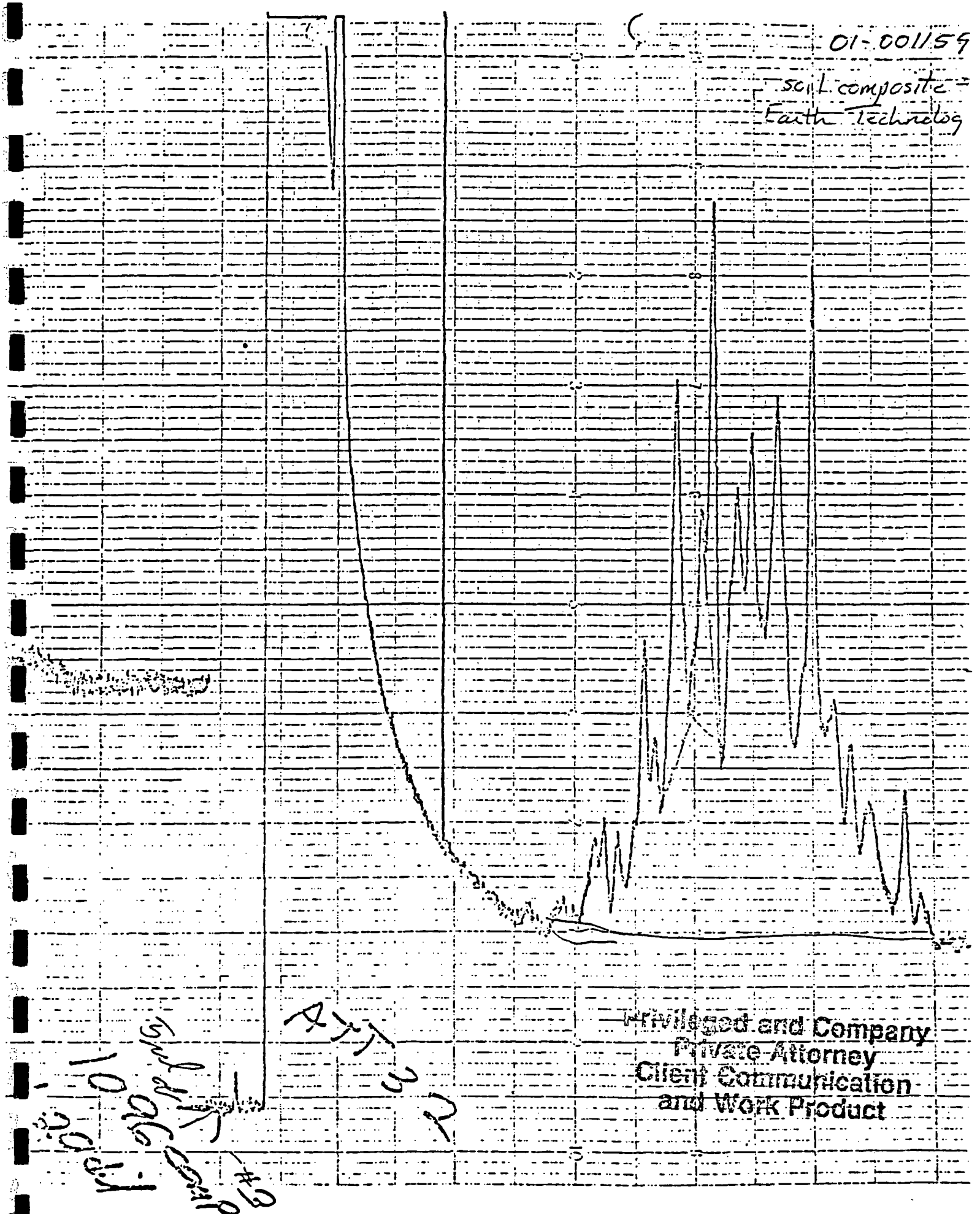
01-001159

soil composite -
Earth Technolog



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ANALYTICAL TECHNOLOGIES, INC.

CLIENT Earth Technology

ATI # 01-001096

QUALITY CONTROL DATA

	DUPLICATES				MATRIX SPIKES			
Parameter	Sample I.D.	1st Result	2nd Result	R.P.D.	Sample I.D.	Result	True	% Recovery
Aluminum	1096	7,450	7,070	5.2	1096	34,700	34,300	102
Copper	1096	8.9	7.1	22.5	1096	34.9	36.5	80
Iron	1096	10,660	10,300	3.4	ATI 1089	7,860	8,370	91
Oil & Grease	EPA WP 179		Observed	95% C.I.*				
			28,700	26,100 to 79,300				

*95% C.I. = 95% confidence interval

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JUN 18 1984

Analytical Technologies, Inc.
Corporate Offices:
225 W. 30th Street
National City, CA 92050
619-477-4173

Chain of Custody Record

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PROJECT NO.	PROJECT NAME
84-602	

SAMPLERS: (Signature)

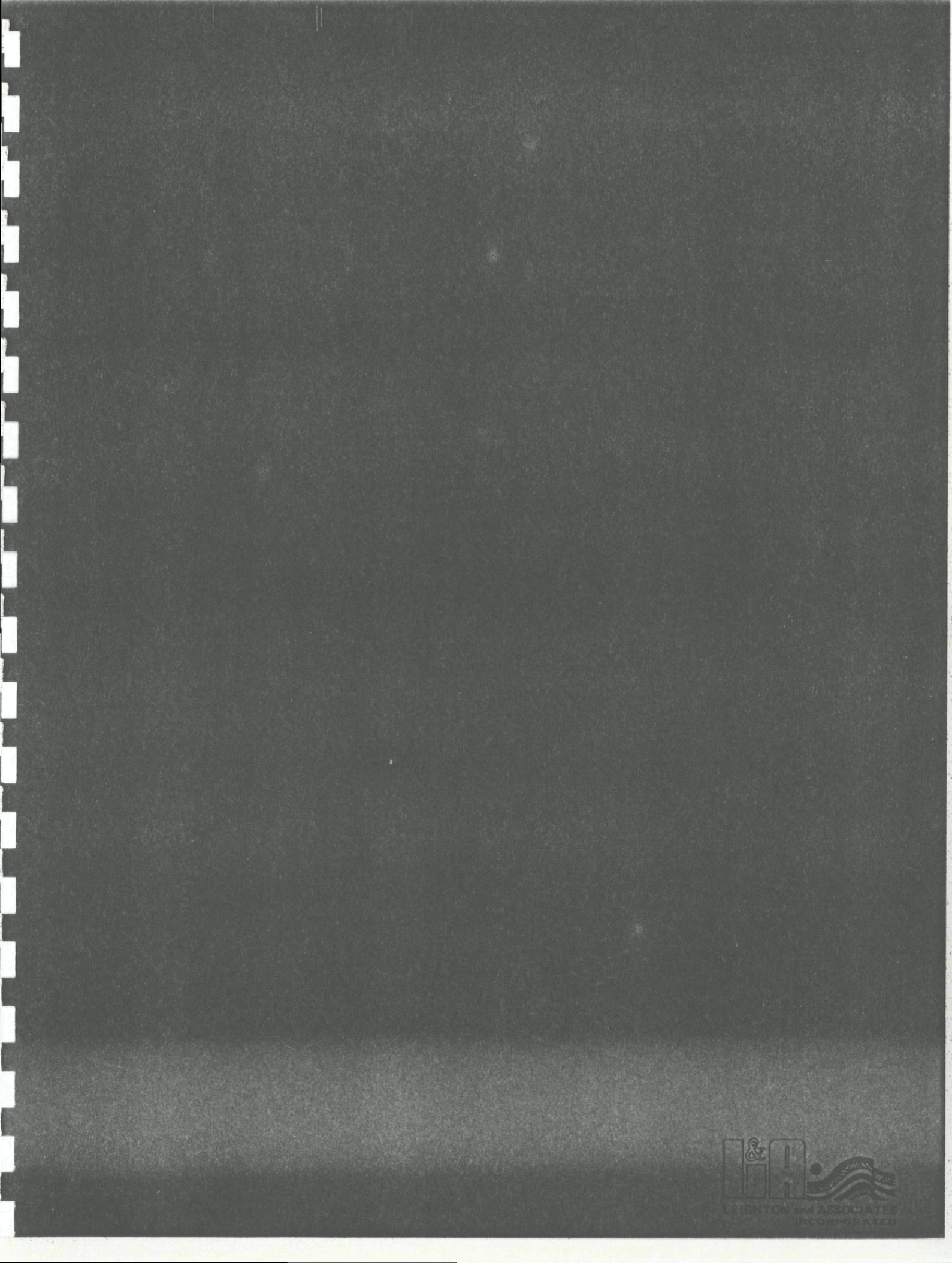
STATION NUMBER	DATE	TIME	STATION LOCATION	SAMPLE TYPES: General Inorganic	Metals	Nutrients	Oil & Grease	Cyanide	Organics	Solids-Inorganics	Volatile Organics	Fuel	Oil	Industrial Hygiene	OTHER	NUMBER OF CONTAINERS	REMARKS
84-602-1-1-1	5/22/84	1:00p														1	composite
84-602-1-2-1	5/22/84	1:30p														1	VOA and
84-602-1-3-1	5/22/84	1:45p														1	B/N only cans
84-602-1-4-1	5/22/84	2:15p														1	
84-602-2-1-1	5/22/84	12:45p														1	composite
84-602-2-2-1	5/22/84	1:00p														1	VOA & B/N only
84-602-2-3-1	5/22/84	1:15p														1	
84-602-2-4-1	5/22/84	1:30p														1	

TOTAL NUMBER OF CONTAINERS

RECEIVED
JUN 18 1984

REMARKS

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
	24 May 84 2:30p				
METHOD OF SHIPMENT:		SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME


LEIGHTON AND ASSOCIATES

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

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Private Attorney
Client Communication
and Work Product

Privileged and Company
Private Attorney
Client Communication
and Work Product

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

G NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
5-380-1	LB-1 @ 10'	30 MAY 85
-380-2	LB-1 @ 20'	30 MAY 85
-380-3	LB-1 @ 30'	30 MAY 85
05-380-4	LB-1 @ 40'	30 MAY 85
5 0-5	LB-1 @ 50'	30 MAY 85
-380-6	LB-2 @ 10'	30 MAY 85

ARAMETER	05-380-1	05-380-2	05-380-3	05-380-4	05-380-5	05-380-6
rgeable 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
rolein, 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
oluene, mg/kg	<0.3	3	3	1	<0.3	<0.3
ther Purgeable Priority Pollutants,	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
mi-Quantified Results **						
A C9 unsaturated hydrocarbon, mg/kg	---	30	30	40	---	---
imethyl Cyclooctane, mg/kg	---	---	20	20	---	---
Dimethylcyclohexane, mg/kg	---	8	9	8	---	---
Trimethylcyclohexane, mg/kg	---	60	50	60	---	---

Privileged and Company
Private Attorney
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and Work Product

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

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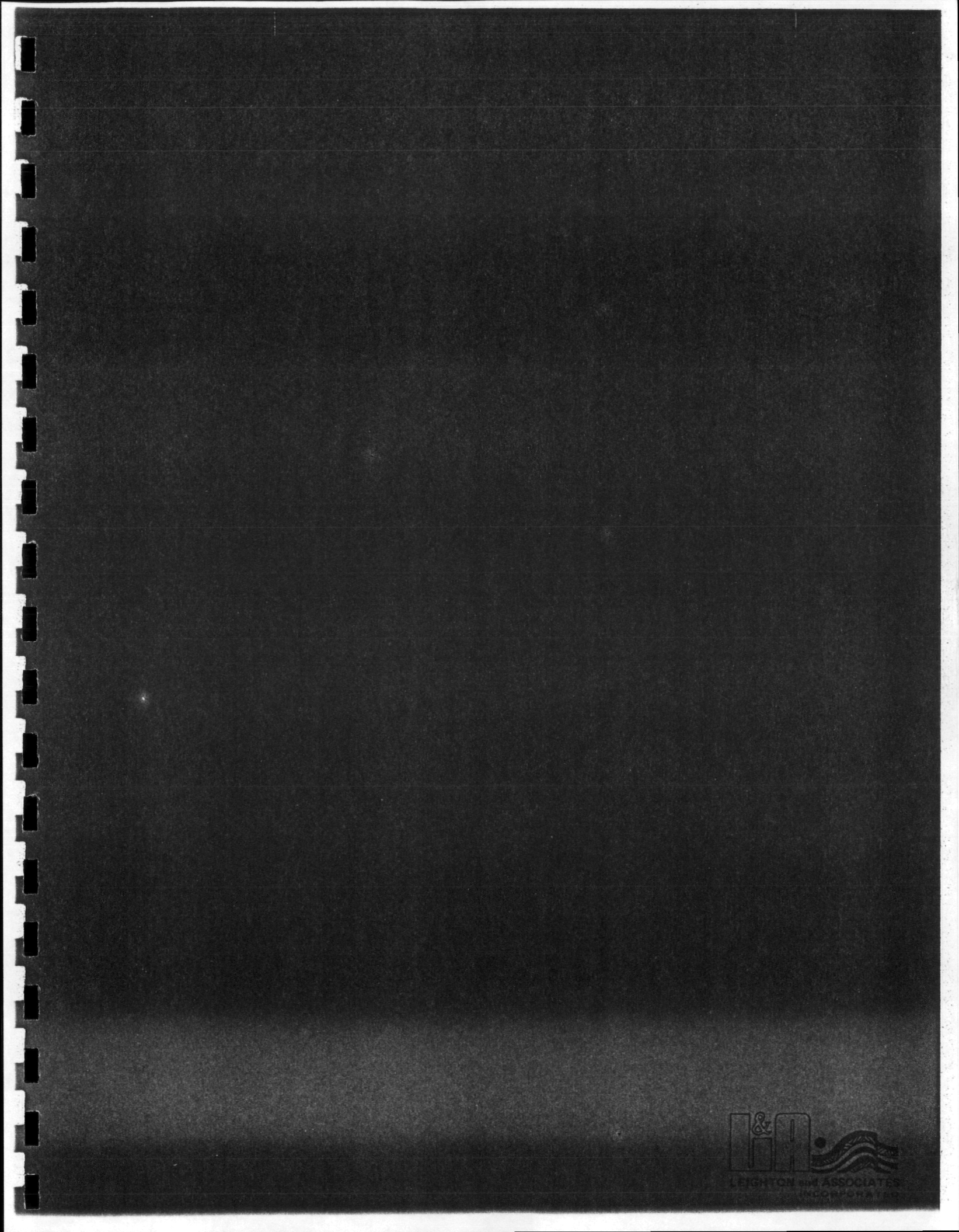
Private Attorney
Client Communication
and Work Product


LEIGHTON and ASSOCIATES
INCORPORATED

RECEIVED
NOV 19 1986
LEIGHTON & ASSOC.

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

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

BS:dsh

cc: Mimi Mackey, Leighton & Associates

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Private Attorney
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WEST COAST
ANALYTICAL
SERVICE, INC.
ANALYTICAL CHEMISTS

Enviropro, Inc.
11927 Estrada Lane
Northridge, CA 91326

ATTN. Mike Uziel

May 16, 1986

Job Number: 3021

LABORATORY REPORT

Samples: Twenty-one (21) soil samples
Date Received: 5-7-86
Purchase Order No.: Project 12102

The samples were analyzed for volatile organic compounds using GCMS according to EPA Method 624. Results of this analysis are given on the enclosed Organics Analysis Data Results sheets.

The samples were also analyzed for total and petroleum hydrocarbons using infrared spectroscopy according to EPA Methods 413.2 and 418.1, respectively. Results of these analyses are given in the table on the following page.

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Client Communication
and Work Product

David R. Pierce
Senior Chemist

D. J. Northington, Ph.D.
Technical Director

WEST COAST
ANALYTICAL
SERVICE, INC.
ANALYTICAL CHEMISTS

Enviropro, Inc.
Job no. 3021
May 16, 1986

LABORATORY REPORT

	parts per million	
	Total Hydrocarbons	Petroleum Hydrocarbons
TH1-6.5	37	37
TH1-11	20	20
TH1-12.5	20	20
TH1-15.5	14	14
TH1-20	30	30
TH1-30	TR<10	TR<10
TH1-40	23	23
TH2-10	21	21
TH2-15	26	26
TH2-20	15	15
TH2-30	20	20
TH2-40	26	26
TH2-45	29	29
TH2-55	26	26
TH2-65	21	21
TH2-75	23	23
TH2-85	18	18
TH2-95	120	120
TH2-105	37	37
TH2-115	33	33
TH2-120	56	56

TR - Trace.

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WEST COAST
ANALYTICAL
SERVICE, INC.
ANALYTICAL CHEMISTS

Enviropro, Inc.
11927 Estrada Lane
Northridge, CA 91326

ATTN: Mike Uziel

May 29, 1986

Job Number: 3082

LABORATORY REPORT

Samples: Three (3) soil samples
Date Received: 5-16-86
Purchase Order No.: Project 12102

The samples were analyzed for volatile organic compounds using GCMS according to EPA Method 624. Results of this analysis are given on the enclosed Organics Analysis Data Results sheets.

The samples were also analyzed for total and petroleum hydrocarbons using infrared spectroscopy according to EPA Methods 413.2 and 418.1, respectively. Results of these analyses are given in the table below.

	parts per million	
	Total Hydrocarbons	Petroleum Hydrocarbons
TV1-5.0	23	23
TV1-6.5'	1600	1600
TV1-11'	42	42

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and Work Product

David R. Pierce
Senior Chemist

D. J. Northington, Ph.D.
Technical Director

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TV1-5
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/16/86	GCMS FILENAME	3082V1
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	05/28/86	DATE ANALYZED	05/28/86
STANDARD ID:	VOA265	INSTRUMENT ID	5100
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	CHLORODIBROMOMETHANE	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.

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WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TV1-5
ANALYSIS TYPE. EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED	05/16/86	GCMS FILENAME	3082V1
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED	05/28/86	DATE ANALYZED	05/28/86
STANDARD ID	VOA265	INSTRUMENT ID	5100
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.

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WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TV1-6.5
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/16/86	GCMS FILENAME	30B2V3
DILUTION FILE:	30B2V4	LEVEL:	LOW
MATRIX:	SOIL	DATE PREPARED	05/28/86
DATE ANALYZED:	05/28/86	STANDARD ID:	VOA265
INSTRUMENT ID:	5100		
SAMPLE AMOUNT:	0.10G		
DILUTION AMOUNT:	1.0G:1ML.5UL		

CAS #	COMPOUND	CONC: UG/KG (PPB)		DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND		300.
74-83-9	BROMOMETHANE	ND		300.
75-01-4	VINYL CHLORIDE	ND		300.
75-00-3	CHLOROETHANE	ND		300
75-09-2	METHYLENE CHLORIDE	ND		500.
67-64-1	ACETONE	ND		500.
75-15-0	CARBON DISULFIDE	ND		50.
75-35-4	1,1-DICHLOROETHENE	10000.		50.
75-34-3	1,1-DICHLOROETHANE	460.		50.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND		50.
67-66-3	CHLOROFORM	ND		50.
107-06-2	1,2-DICHLOROETHANE	ND		50.
78-93-3	2-BUTANONE	ND		500.
71-55-6	1,1,1-TRICHLOROETHANE	43000.	*	50.
16-23-5	CARBON TETRACHLORIDE	ND		50.
108-05-4	VINYL ACETATE	ND		300.
75-27-4	BROMODICHLOROMETHANE	ND		50.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND		50.
78-87-5	1,2-DICHLOROPROPANE	ND		50.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND		50.
79-01-6	TRICHLOROETHENE	2900.		50.
124-48-1	CHLORODIBROMOMETHANE	ND		50.
79-00-5	1,1,2-TRICHLOROETHANE	220.		50.
71-43-2	BENZENE	ND		50.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND		50.
110-75-8	2-CHLOROETHYLVINYLETHER	ND		500.
75-25-2	BROMOFORM	ND		50.
119-78-6	2-HEXANONE	ND		300.
108-10-1	4-METHYL-2-PENTANONE	ND		300.
127-18-4	TETRACHLOROETHENE	5300.		50.
108-88-3	TOLUENE	61.		50
108-90-7	CHLOROBENZENE	ND		50.
100-41-4	ETHYLBENZENE	ND		50.
100-42-5	STYRENE	ND		50.
95-47-6	TOTAL XYLENES	ND		50.
107-02-8	ACROLEIN	ND		500.
107-13-1	ACRYLONITRILE	ND		500.
109-99-9	TETRAHYDROFURAN	ND		50.
75-69-4	TRICHLOROFLUOROMETHANE	ND		50.

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WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TV1-6.5
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/16/86	GCMS FILENAME	3082V3
DILUTION FILE:	3082V4	LEVEL:	LOW
MATRIX:	SOIL	DATE PREPARED	05/28/86
DATE ANALYZED:	05/28/86	STANDARD ID	VOA265
INSTRUMENT ID:	5100		
SAMPLE AMOUNT:	0.10G		
DILUTION AMOUNT:	1.0G:1ML,5UL		

CAS #	COMPOUND	CONC: UG/KG (PPB)	DETECTION LIMIT
76-13-1	FREON-TF	ND	50.
106-93-4	ETHYLENE DIBROMIDE	ND	50.
123-91-1	1,4-DIOXANE	ND	50.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	50.
108-41-8	M-CHLOROTOLUENE	ND	50.
541-73-1	1,3-DICHLOROBENZENE	ND	50.
106-46-7	1,4-DICHLOROBENZENE	ND	50.
95-50-1	1,2-DICHLOROBENZENE	ND	50

* - COMPOUNDS REPORTED FROM THE DILUTION ANALYSIS

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WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE TV1-6.5

TENTATIVELY IDENTIFIED COMPOUNDS

	COMPOUND NAME	FRACTION	CONCENTRATION UG/KG (PPB)
1	C8 - C11 ALIPHATIC HYDROCARBONS	VOA	200000. ✓

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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 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.

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WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH1-6.5
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME	3021V5
LEVEL:	LOW	MATRIX	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID	5101
SAMPLE AMOUNT:	1.02G		

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	CHLORDETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	79.	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLORDETHENE	ND	5.
75-34-3	1,1-DICHLORDETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLORDETHENE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLORDETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLORDETHANE	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-TETRACHLORDETHANE	ND	5.
78-87-5	1,2-DICHLORDPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLORDPROPENE	ND	5.
79-01-6	TRICHLORDETHENE	ND	5.
124-48-1	DIBROMDCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLORDETHANE	ND	5.
71-43-2	BENZENE	12.	5.
10061-01-5	CIS-1,3-DICHLORDPROPENE	ND	5.
110-75-8	2-CHLORDETHYLVINYLETHER	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	TETRACHLORDETHENE	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	TRICHLORDFLUOROMETHANE	ND	5.

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WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: ENVIROPRO
SAMPLE: TH1-6.5
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	05/07/86	GCMS FILENAME:	3021V5
LEVEL:	LOW	MATRIX	SOIL
DATE PREPARED:	05/14/86	DATE ANALYZED:	05/14/86
STANDARD ID:	VOA135,136	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.026		

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.

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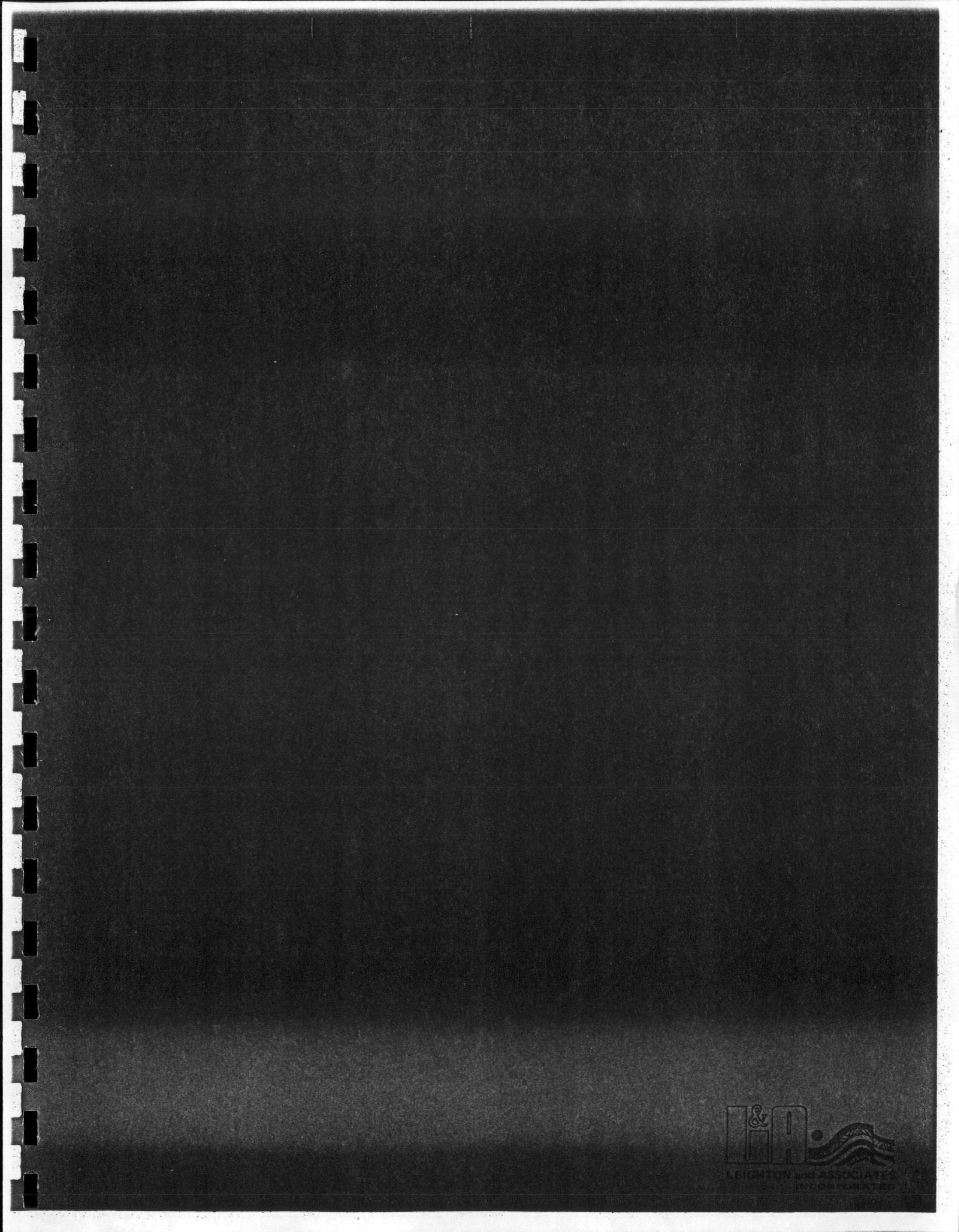
L&A
LEIGHTON and ASSOCIATES
INCORPORATED

Analytical**Technologies,** Inc. Corporate Offices 5550 Morehouse Drive San Diego, CA 92121 (619) 458-9141

ATI I.D. 801069

January 22, 1988

Leighton & Associates, Inc.
25020 Avenue Stanford, Suite 190
Valencia, California 91355

Project Name: HR/Textron/Pacoima

Project No.: 40841189-05

Attention: Mimi Maki

On January 7, 1988, Analytical Technologies, Inc. received ten soils and two water samples. The samples were analyzed with EPA methodology or equivalent methods as specified in the attached analytical schedule. Please see the attached sheet for the sample cross reference.

The results, sample cross reference, and the quality control data are enclosed.

Carolyn A. Sites
GC/MS Supervisor

Richard M. Amano
Laboratory Manager

CAS:mag

Privileged and Company Private Attorney Client Communication and Work Product

Analytical Technologies, Inc.

ATI I.D. 801069

ANALYTICAL SCHEDULE

CLIENT: LEIGHTON & ASSOC.-VALENCIA
PROJECT NAME: HR/TEXTRON/PACOIMA

PROJECT NO.: 40841189-05

ANALYSIS	TECHNIQUE	REFERENCE/METHOD
PETROLEUM HYDROCARBONS	IR	EPA 418.1 (MODIFIED)
OIL & GREASE	IR	EPA 413.2 (MODIFIED)
CHROMIUM	ICAP	EPA 6010
LEAD	AA/GF	EPA 7421
VOLATILE ORGANIC COMPOUNDS	GC/MS	EPA 624, 8240
PESTICIDES & POLY-CHLORINATED BIPHENYLS	GC/ECD	EPA 8080

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Analytical Technologies, Inc.

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR/TEXTRON/PACOIMA
ATI I.D. : 801069

DATE RECEIVED : 01/07/88
REPORT DATE : 01/22/88

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	LB3-S3A	SOIL	01/06/88
02	LB3-S5A	SOIL	01/06/88
03	LB3-S7A	SOIL	01/06/88
04	LB3-S9A	SOIL	01/06/88
05	LB3-S11A	SOIL	01/06/88
06	LB3-S13A	SOIL	01/06/88
07	LB3-S15A	SOIL	01/07/88
08	LB3-S17A	SOIL	01/07/88
09	LB3-S19A	SOIL	01/07/88
10	LB3-S21A	SOIL	01/07/88
11	TRIP BLANK	WATER	01/07/88
12	FIELD BLANK	WATER	01/07/88
13	LB3-S3A (WET)		01/06/88
14	LB3-S5A (WET)		01/06/88
15	LB3-S7A (WET)		01/06/88
16	LB3-S9A (WET)		01/06/88
17	LB3-S11A (WET)		01/06/88
18	LB3-S13A (WET)		01/06/88
19	LB3-S15A (WET)		01/07/88
20	LB3-S17A (WET)		01/07/88
21	LB3-S19A (WET)		01/07/88
22	LB3-S21A (WET)		01/07/88
23	LB3-S23	SOIL	01/08/88
24	TRIP BLANK	WATER	01/08/88
25	LB3-S23 (WET)		01/08/88

----- TOTALS -----

MATRIX	# SAMPLES
WATER	3
SOIL	11

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ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 801069

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR/TEXTRON/PACOIMA

DATE RECEIVED : 01/07/88
REPORT DATE : 01/22/88

PARAMETER	UNITS	01	02	03	04	05
OIL AND GREASE, IR 413.2	MG/KG	7	1	7	3	4
PETROLEUM HYDROCARBONS, IR 418.1	MG/KG	6	3	4	3	3

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Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 801069

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR/TEXTRON/PACOIMA

DATE RECEIVED : 01/07/88
REPORT DATE : 01/22/88

PARAMETER	UNITS	06	07	08	09	10
OIL AND GREASE, IR	MG/KG	3	9	19	25	5
PETROLEUM HYDROCARBONS, IR	MG/KG	4	7	23	9	3

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Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 801069

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR/TEXTRON/PACOIMA

DATE RECEIVED : 01/07/88
REPORT DATE : 01/22/88

PARAMETER	UNITS	12
OIL AND GREASE, IR	MG/L	<0.05
PETROLEUM HYDROCARBONS, IR	MG/L	<0.05

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GENERAL CHEMISTRY RESULTS

ATI I.D. : 801069

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR/TEXTRON/PACOIMA

DATE RECEIVED : 01/07/88
REPORT DATE : 01/22/88

PARAMETER	UNITS	23
OIL AND GREASE, IR	MG/KG	8
PETROLEUM HYDROCARBONS, IR	MG/KG	5

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GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR/TEXTRON/PACOIMA ATI I.D. : 801069

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
OIL AND GREASE, IR	MG/KG	80106910	5	5	0	45	34	118
OIL AND GREASE, IR	MG/KG	80108119	8	12	40	51	34	121
OIL AND GREASE, IR	MG/L	80102601	<0.05	0.07	0	8.8	11.5	77
PETROLEUM HYDROCARBONS	MG/L	80102601	<0.05	<0.05	0	8.2	11.5	71
PETROLEUM HYDROCARBONS	MG/KG	80106910	3	5	50	28	34	74
PETROLEUM HYDROCARBONS	MG/KG	80108119	6	5	18	42	34	107

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

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METALS RESULTS

ATI I.D. : 801069

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR/TEXTRON/PACOIMA

DATE RECEIVED : 01/07/88
REPORT DATE : 01/22/88

PARAMETER	UNITS	13	14	15	16	17
CHROMIUM	MG/L	<0.1	<0.1	<0.1	<0.1	<0.1
LEAD	MG/L	<0.02	<0.02	<0.02	<0.02	<0.02

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METALS RESULTS

ATI I.D. : 801069

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR/TEXTRON/PACOIMA

DATE RECEIVED : 01/07/88
REPORT DATE : 01/22/88

PARAMETER	UNITS	18	19	20	21	22
CHROMIUM	MG/L	<0.1	0.1	0.2	<0.1	<0.1
LEAD	MG/L	<0.02	<0.02	0.03	<0.02	<0.02

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METALS RESULTS

ATI I.D. : 801069

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR/TEXTRON/PACOIMA

DATE RECEIVED : 01/07/88
REPORT DATE : 01/22/88

PARAMETER	UNITS	25
CHROMIUM	MG/L	<0.1
LEAD	MG/L	<0.02

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METALS - QUALITY CONTROL

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR/TEXTRON/PACOIMA ATI I.D. : 801069

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
CHROMIUM	MG/L	80106925	<0.1	<0.1	0	45.9	50.0	92
LEAD	MG/L	80106925	<0.02	<0.02	0	0.62	1.0	62

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

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GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80106901

TEST : ORGANOCHLORINE PESTICIDES AND PCB'S (EPA 8080)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/06/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/07/88
PROJECT NAME	: HR/TEXTRON/PACOIMA	DATE EXTRACTED	: 01/12/88
CLIENT I.D.	: LB3-S3A	DATE ANALYZED	: 01/20/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
ALDRIN	<0.005
ALPHA - BHC	<0.005
BETA - BHC	<0.005
GAMMA - BHC	<0.005
DELTA - BHC	<0.005
CHLORDANE	<0.05
4,4'-DDD	<0.01
4,4'-DDE	<0.01
4,4'-DDT	<0.01
DIELDRIN	<0.01
ENDOSULFAN I	<0.01
ENDOSULFAN II	<0.01
ENDOSULFAN SULFATE	<0.01
ENDRIN	<0.01
ENDRIN ALDEHYDE	<0.01
ENDRIN KETONE	<0.01
HEPTACHLOR	<0.005
HEPTACHLOR EPOXIDE	<0.005
METHOXYCHLOR	<0.05
TOXAPHENE	<0.1
AROCLOR 1016	<0.05
AROCLOR 1221	<0.05
AROCLOR 1232	<0.05
AROCLOR 1242	<0.05
AROCLOR 1248	<0.05
AROCLOR 1254	<0.05
AROCLOR 1260	<0.05
SURROGATE PERCENT RECOVERIES	
DBC (%)	68

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GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80106902

TEST : ORGANOCHLORINE PESTICIDES AND PCB'S (EPA 8080)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/06/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/07/88
PROJECT NAME	: HR/TEXTRON/PACOIMA	DATE EXTRACTED	: 01/12/88
CLIENT I.D.	: LB3-S5A	DATE ANALYZED	: 01/20/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
ALDRIN	<0.005
ALPHA - BHC	<0.005
BETA - BHC	<0.005
GAMMA - BHC	<0.005
DELTA - BHC	<0.005
CHLORDANE	<0.05
4,4'-DDD	<0.01
4,4'-DDE	<0.01
4,4'-DDT	<0.01
DIELDRIN	<0.01
ENDOSULFAN I	<0.01
ENDOSULFAN II	<0.01
ENDOSULFAN SULFATE	<0.01
ENDRIN	<0.01
ENDRIN ALDEHYDE	<0.01
ENDRIN KETONE	<0.01
HEPTACHLOR	<0.005
HEPTACHLOR EPOXIDE	<0.005
METHOXYCHLOR	<0.05
TOXAPHENE	<0.1
AROCLOR 1016	<0.05
AROCLOR 1221	<0.05
AROCLOR 1232	<0.05
AROCLOR 1242	<0.05
AROCLOR 1248	<0.05
AROCLOR 1254	<0.05
AROCLOR 1260	<0.05
SURROGATE PERCENT RECOVERIES	
DBC (%)	66

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GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : ORGANOCHLORINE PESTICIDES AND PCB'S (EPA 8080)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	ATI I.D.	: 801069
PROJECT #	: 40841189-05	DATE EXTRACTED	: 01/12/88
PROJECT NAME	: HR/TEXTRON/PACOIMA	DATE ANALYZED	: 01/16/88
CLIENT I.D.	: REAGENT BLANK	UNITS	: MG/KG
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
ALDRIN	<0.005
ALPHA - BHC	<0.005
BETA - BHC	<0.005
GAMMA - BHC	<0.005
DELTA - BHC	<0.005
CHLORDANE	<0.05
4,4'-DDD	<0.01
4,4'-DDE	<0.01
4,4'-DDT	<0.01
DIELDRIN	<0.01
ENDOSULFAN I	<0.01
ENDOSULFAN II	<0.01
ENDOSULFAN SULFATE	<0.01
ENDRIN	<0.01
ENDRIN ALDEHYDE	<0.01
ENDRIN KETONE	<0.01
HEPTACHLOR	<0.005
HEPTACHLOR EPOXIDE	<0.005
METHOXYCHLOR	<0.05
TOXAPHENE	<0.1
AROCLOR 1016	<0.05
AROCLOR 1221	<0.05
AROCLOR 1232	<0.05
AROCLOR 1242	<0.05
AROCLOR 1248	<0.05
AROCLOR 1254	<0.05
AROCLOR 1260	<0.05

SURROGATE PERCENT RECOVERIES

DBC (%)	112

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QUALITY CONTROL DATA

ATI I.D. : 801069

TEST : ORGANOCHLORINE PESTICIDES AND PCB'S (EPA 8080)

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR/TEXTRON/PACOIMA

REF. I.D. : 80106901
DATE ANALYZED : 01/20/88
SAMPLE MATRIX : SOIL
UNITS : MG/KG

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
GAMMA BHC	<0.005	0.027	0.019	70	0.020	74	6
HEPTACHLOR	<0.005	0.027	0.019	70	0.019	70	0
ALDRIN	<0.005	0.027	0.020	74	0.020	74	0
DIELDRIN	<0.01	0.066	0.057	86	0.056	85	1
ENDRIN	<0.01	0.066	0.058	88	0.058	88	0
DDT	<0.01	0.066	0.068	103	0.066	100	3

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

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GCMS - RESULTS

ATI I.D. : 80106901

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/06/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/07/88
PROJECT NAME	: HR/TEXTRON/PACOIMA	DATE EXTRACTED	: 01/12/88
CLIENT I.D.	: LB3-S3A	DATE ANALYZED	: 01/12/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES	
1,2-DICHLOROETHANE-D4 (%)	100
BFB (%)	90
TOLUENE-D8 (%)	89

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ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80106901

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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GCMS - RESULTS

ATI I.D. : 80106902

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/06/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/07/88
PROJECT NAME	: HR/TEXTRON/PACOIMA	DATE EXTRACTED	: 01/12/88
CLIENT I.D.	: LB3-S5A	DATE ANALYZED	: 01/12/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	0.13
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

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SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	107
BFB (%)	100
TOLUENE-D8 (%)	100

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ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80106902

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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GCMS - RESULTS

ATI I.D. : 80106903

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/06/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/07/88
PROJECT NAME	: HR/TEXTRON/PACOIMA	DATE EXTRACTED	: 01/12/88
CLIENT I.D.	: LB3-S7A	DATE ANALYZED	: 01/12/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	118
BFB (%)	105
TOLUENE-D8 (%)	101

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ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80106903

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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GCMS - RESULTS

ATI I.D. : 80106904

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/06/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/07/88
PROJECT NAME	: HR/TEXTRON/PACOIMA	DATE EXTRACTED	: 01/12/88
CLIENT I.D.	: LB3-S9A	DATE ANALYZED	: 01/12/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05
SURROGATE PERCENT RECOVERIES	
1,2-DICHLOROETHANE-D4 (%)	113
BFB (%)	95
TOLUENE-D8 (%)	97

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ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80106904

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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GCMS - RESULTS

ATI I.D. : 80106905

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/06/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/07/88
PROJECT NAME	: HR/TEXTRON/PACOIMA	DATE EXTRACTED	: 01/12/88
CLIENT I.D.	: LB3-S11A	DATE ANALYZED	: 01/12/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	116
BFB (%)	95
TOLUENE-D8 (%)	96

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ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80106905

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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and Work Product

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	ATI I.D.	: 801069
PROJECT #	: 40841189-05	DATE EXTRACTED	: 01/12/88
PROJECT NAME	: HR/TEXTRON/PACOIMA	DATE ANALYZED	: 01/12/88
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	TR
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
TRANS-1,2-DICHLOROETHENE	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLORETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYL BENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

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SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	83
BFB (%)	101
TOLUENE-D8 (%)	100

TR - Compound detected at an unquantifiable trace level

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ADDITIONAL MAJOR COMPOUNDS

TEST : VOLATILE ORGANICS

CLIENT : LEIGHTON & ASSOC.-VALENCIA ATI I.D : 801069

COMPOUNDS	RESULTS
NONE DETECTED	N/A

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QUALITY CONTROL DATA

ATI I.D. : 801069

TEST : VOLATILE ORGANICS

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR/TEXTRON/PACOIMA

REF. I.D. : 80104803
DATE ANALYZED : 01/14/88
SAMPLE MATRIX : WATER
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<1	45	39	87	37	82	5
TRICHLOROETHENE	9	50	52	86	52	86	0
CHLOROBENZENE	<1	50	52	104	54	108	4
TOLUENE	<1	50	50	100	49	98	2
BENZENE	<1	50	50	100	52	104	4

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

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GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 8240)

		ATI I.D.	: 801069
CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE EXTRACTED	: 01/12/88
PROJECT #	: 40841189-05	DATE ANALYZED	: 01/12/88
PROJECT NAME	: HR/TEXTRON/PACOIMA	UNITS	: MG/KG
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	TR
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	108
BFB (%)	101
TOLUENE-D8 (%)	101

TR - Compound detected at an unquantifiable trace level

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GCMS - RESULTS

REAGENT BLANK

ADDITIONAL MAJOR COMPOUNDS

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT : LEIGHTON & ASSOC.-VALENCIA ATI I.D : 801069

COMPOUNDS	RESULTS
NONE DETECTED	N/A

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GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 8240)

		ATI I.D.	: 801069
CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE EXTRACTED	: 01/12/88
PROJECT #	: 40841189-05	DATE ANALYZED	: 01/13/88
PROJECT NAME	: HR/TEXTRON/PACOIMA	UNITS	: MG/KG
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	TR
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	106
BFB (%)	101
TOLUENE-D8 (%)	104

TR - Compound detected at an unquantifiable trace level

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GCMS - RESULTS

REAGENT BLANK

ADDITIONAL MAJOR COMPOUNDS

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT : LEIGHTON & ASSOC.-VALENCIA ATI I.D : 801069

COMPOUNDS	RESULTS
NONE DETECTED	N/A

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QUALITY CONTROL DATA

ATI I.D. : 801069

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR/TEXTRON/PACOIMA

REF. I.D. : 80106908
DATE ANALYZED : 01/13/88
SAMPLE MATRIX : SOIL
UNITS : MG/KG

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<0.05	2.2	1.7	77	2.0	91	16
TRICHLOROETHENE	<0.05	2.5	2.3	92	2.5	100	8
CHLOROBENZENE	<0.05	2.5	2.5	100	2.7	108	8
TOLUENE	<0.05	2.5	2.4	96	2.5	100	4
BENZENE	<0.05	2.5	2.4	96	2.6	104	8

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

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GCMS - RESULTS

ATI I.D. : 80106911

TEST : VOLATILE ORGANICS

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/07/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/07/88
PROJECT NAME	: HR/TEXTRON/PACOIMA	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK	DATE ANALYZED	: 01/12/88
SAMPLE MATRIX	: WATER	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
TRANS-1,2-DICHLOROETHENE	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLORETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYL BENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1
SURROGATE PERCENT RECOVERIES	
1,2-DICHLOROETHANE-D4 (%)	69
BFB (%)	105
TOLUENE-D8 (%)	97

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ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80106911

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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GCMS - RESULTS

ATI I.D. : 80106924

TEST : VOLATILE ORGANICS

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/08/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/08/88
PROJECT NAME	: HR/TEXTRON/PACOIMA	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK	DATE ANALYZED	: 01/12/88
SAMPLE MATRIX	: WATER	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
TRANS-1,2-DICHLOROETHENE	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLORETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYL BENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	68
BFB (%)	103
TOLUENE-D8 (%)	103

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ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80106924

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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GCMS - RESULTS

ATI I.D. : 80106906

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/06/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/07/88
PROJECT NAME	: HR/TEXTRON/PACOIMA	DATE EXTRACTED	: 01/12/88
CLIENT I.D.	: LB3-S13A	DATE ANALYZED	: 01/12/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	110
BFB (%)	92
TOLUENE-D8 (%)	95

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Analytical Technologies, Inc.

ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80106906

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 80106907

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/07/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/07/88
PROJECT NAME	: HR/TEXTRON/PACOIMA	DATE EXTRACTED	: 01/12/88
CLIENT I.D.	: LB3-S15A	DATE ANALYZED	: 01/12/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
?-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	109
BFB (%)	92
TOLUENE-D8 (%)	89

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ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80106907

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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and Work Product

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 80106908

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/07/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/07/88
PROJECT NAME	: HR/TEXTRON/PACOIMA	DATE EXTRACTED	: 01/12/88
CLIENT I.D.	: LB3-S17A	DATE ANALYZED	: 01/12/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	121
BFB (%)	99
TOLUENE-D8 (%)	100

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ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80106908

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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GCMS - RESULTS

ATI I.D. : 80106909

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/07/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/07/88
PROJECT NAME	: HR/TEXTRON/PACOIMA	DATE EXTRACTED	: 01/12/88
CLIENT I.D.	: LB3-S19A	DATE ANALYZED	: 01/13/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	112
BFB (%)	110
TOLUENE-D8 (%)	109

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Private Attorney
Client Communication
and Work Product

Analytical Technologies, Inc.

ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80106909

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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Private Attorney
Client Communication
and Work Product

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 80106910

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/07/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/07/88
PROJECT NAME	: HR/TEXTRON/PACOIMA	DATE EXTRACTED	: 01/12/88
CLIENT I.D.	: LB3-S21A	DATE ANALYZED	: 01/13/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05
SURROGATE PERCENT RECOVERIES	
1,2-DICHLOROETHANE-D4 (%)	107
BFB (%)	99
TOLUENE-D8 (%)	102

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Client Communication
and Work Product

Analytical Technologies, Inc.

ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80106910

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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Private Attorney
Client Communication
and Work Product

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 80106923

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/08/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/08/88
PROJECT NAME	: HR/TEXTRON/PACOIMA	DATE EXTRACTED	: 01/13/88
CLIENT I.D.	: LB3-S23	DATE ANALYZED	: 01/13/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	112
BFB (%)	99
TOLUENE-D8 (%)	101

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Analytical Technologies, Inc.

ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80106923

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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Project No.	Client and Site Location
4084118-05	HR TEXTRON/PACOIMA

Samplers (Signature): Gary A. Kepos / Bruce A. Lewis

Sample Number	Date	Time	Depth Below Grade (ft)	Sample Type	Suspect Contamination	No. of Containers
LB3-S1A	1/6/88	9:20 A	.5	SOIL	SEE ANAL	1
LB3-S2A		10:00 A	3			1
LB3-S3A		10:30 A	13			1
LB3-S4A		11:00 A	18			1
LB3-S5A		11:30 A	23			1
LB3-S6A		12:00 P	28			1
LB3-S7A		12:30 P	33			1
LB3-S8A		1:30 P	38			1
LB3-S9A		2:00 P	43			1
LB3-S10A		3:00 P	48			1
LB3-S11A		3:40 P	53			1
LB3-S12A		4:10 P	58			1
LB3-S13A		5:00 P	63			1
LB3-S14A	1/7/88	8:55 A	68			1
LB3-S15A	1/7/88	9:40 A	73			1

EPA Test Method No.: EPA 8240 (volatiles); Soluble lead & zinc; 418.1 (tph); 4312 (oil & grease); 8080 Pesticides; 365.1; 6010 - ANALYSIS; Two highest hits plus with highest hits

Call & Send Results to:
Leighton & Associates, Inc.
25020 W. Ave Stanford
Ste 190; Valencia, CA
Attention: Mimi Maki
Phone No (805) 257-0150

REMARKS:
ALL SAMPLES COLLECTED IN 2½" x 3" STAINLESS STEEL RINGS, SEALED WITH TEFLON, CAPPED AND TAPED SHUT

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min. will call in MTTN
WET Analysis

Sample Integrity:
Samples Intact: Yes X No ___
Samples Properly Cooled: Yes X No ___
Samples Accepted: Yes X No ___
If not, why: ___

Samples Placed in Lab Refrigerator
Yes X No ___ L&A Rep. Initials BAL GK

Relinquished by:	Date / Time	Received by:
Gary A. Kepos	1/7/88 3:20 P	
Relinquished by:	Date / Time	Received by:
Relinquished by:	Date / Time	Received for Lab by:

Leighton and Associates, Inc.

Laboratory Name: ANALYTICAL RESEARCH
Certification No.: ___

Project No.	Client and Site Location
40891189-05	HR TEXTRON/PACOIMA

Samplers (Signature): Gary A. KEPES / Bruce A. Lewis

Call & Send Results to: Leighton & Associates, Inc. 25020 W. AVE. STANFORD Ste 190; VALENCIA, CA
Attention: MIMI MAKI
Phone No (805) 257-0150

Sample Number	Date	Time	Depth Below Grade (ft)	Sample Type	Suspect Contamination	No. of Containers	EPA Test Method No.	EPA 8240	8120	418.1	413.2	8080	365.1	Soluble lead & chromium			REMARKS
LB3-S16A	1/07/88	10:15 A	78	SOIL	SEE	1											
LB3-S17A	1/07/88	10:30 A	83		ANAL	1		X		X	X		X				
LB3-S18A		10:55 A	88			1											
LB3-S19A		11:45 P	93			1		X		X	X		X				
LB3-S21A		1:30 P	103			1		X		X	X		X				
LB3-S22A		2:00 P	108			1		X		X	X		X				Not Tested by Lab. - although requested.
																	Mimi will call in Morn!
																	WR.T Analysis
																	TRIP BLANK IN 5 40ml VOA
																	FIELD BLANK IN 40 1 QT MASON
																	JARS, SEALED WITH TEFLON, LID PUT
TRIP BLANK	1/06/88	5:30pm	—	WTR		5 40ML VOA	X										ON; TAPED CLOSED
FIELD BLANK	1/07/88	12:45	—	WTR		4 1 QT MASON				X	X						

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Sample Integrity:

Samples Intact: Yes X No ____

Samples Properly Cooled: Yes X No ____

Samples Accepted: Yes X No ____

If not, why:

Samples Placed in Lab Refrigerator
Yes X No ____ L&A Rep. Initials BAL GK

Relinquished by:	Date / Time	Received by:
Gary A. Kepes	1/7/88 3:20 P	[illegible]
Relinquished by:	Date / Time	Received by:
Relinquished by:	Date / Time	Received for Lab by:

Leighton and Associates, Inc.

Laboratory Name: ANALYTICAL RESEARCH

Certification No.:

Analytical**Technologies,** Inc. Corporate Offices: 5550 Morehouse Drive San Diego, CA 92121 (619) 458-9141

ATI I.D. 801081

January 25, 1988

Leighton & Associates
25020 Avenue Stanford, Suite 190
Valencia, California 91355

Project Name: HR Textron

Project No.: 40841189-05

Attention: Mimi Maki

On January 11, 1988, Analytical Technologies, Inc. received eight soil samples, a trip blank, and a field blank for analyses. On January 12, 1988, three additional soil samples, a trip blank, and a field blank were received. Three additional soil samples and one water sample were received for analyses on January 14, 1988. The samples were analyzed with EPA methodology or equivalent methods as specified in the attached analytical schedule. Please see the attached sheet for the sample cross reference.

The results, sample cross reference, and the quality control data are enclosed.

Carolyn A. Sites
GC/MS Supervisor

CAS:bc

Richard M. Amano
Laboratory Manager

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Analytical Technologies, Inc.

ATI I.D. 801081

ANALYTICAL SCHEDULE

CLIENT: LEIGHTON & ASSOCIATES
PROJECT NAME: HR TEXTRON

PROJECT NO.: 40841189-05

ANALYSIS	TECHNIQUE	REFERENCE/METHOD
PETROLEUM HYDROCARBONS	IR	EPA 418.1, 418.1 (MODIFIED)
OIL & GREASE	IR	EPA 413.2, 413.2 (MODIFIED)
SOLUBLE CHROMIUM	ICAP	EPA 6010
SOLUBLE LEAD	AA/GF	EPA 7421
CHLORINATED PESTICIDES & POLYCHLORINATED BIPHENYLS	GC/ECD	EPA 8080
VOLATILE ORGANIC COMPOUNDS	GC/MS	EPA 624, 8240

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Analytical Technologies, Inc.

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR TEXTRON
DATE RECEIVED : 01/11/88
REPORT DATE : 01/25/88
ATI I.D. : 801081

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	LB4-S2A	SOIL	01/08/88
02	LB4-S4A	SOIL	01/08/88
03	LB4-S6A	SOIL	01/08/88
04	LB4-S8A	SOIL	01/11/88
05	LB4-S10A	SOIL	01/11/88
06	LB4-S12A	SOIL	01/11/88
07	LB4-S14A	SOIL	01/11/88
08	LB4-S16A	SOIL	01/11/88
09	TRIP BLANK (1/08/88)	WATER	01/08/88
10	FIELD BLANK (1/11/88)	WATER	01/11/88
11	LB4-S2A (WET)		01/08/88
12	LB4-S4A (WET)		01/08/88
13	LB4-S6A (WET)		01/08/88
14	LB4-S8A (WET)		01/11/88
15	LB4-S10A (WET)		01/11/88
16	LB4-S12A (WET)		01/11/88
17	LB4-S14A (WET)		01/11/88
18	LB4-S16A (WET)		01/11/88
19	LB4-S18A	SOIL	01/11/88
20	LB4-S20A	SOIL	01/12/88
21	LB4-S22A	SOIL	01/12/88
22	TRIP BLANK (1/12/88)	WATER	01/12/88
23	FIELD BLANK (1/12/88)	WATER	01/12/88
24	LB4-S18A (WET)		01/11/88
25	LB4-S20A (WET)		01/12/88
26	LB4-S22A (WET)		01/12/88
27	LB4-S23A	SOIL	01/12/88
28	BIN-S1	SOIL	01/13/88
29	BIN-S2	SOIL	01/13/88
30	SCF	WATER	01/13/88

----- TOTALS -----

MATRIX	# SAMPLES
WATER	5
SOIL	14

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ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 801081

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR TEXTRON

DATE RECEIVED : 01/11/88
REPORT DATE : 01/25/88

PARAMETER	UNITS	01	02	03	04	05
OIL AND GREASE, IR 413.1	MG/KG	3	3	2	1	4
PETROLEUM HYDROCARBONS, IR 418.1	MG/KG	4	3	2	1	3

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Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 801081

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR TEXTRON

DATE RECEIVED : 01/11/88
REPORT DATE : 01/25/88

PARAMETER	UNITS	06	07	08	19	20
OIL AND GREASE, IR	MG/KG	4	3	7	8	3
PETROLEUM HYDROCARBONS, IR	MG/KG	3	3	5	6	3

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Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 801081

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR TEXTRON

DATE RECEIVED : 01/11/88
REPORT DATE : 01/25/88

PARAMETER	UNITS	21	27	28	29
OIL AND GREASE, IR	MG/KG	4	2	260	130
PETROLEUM HYDROCARBONS, IR	MG/KG	3	2	210	130

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Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 801081

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR TEXTRON

DATE RECEIVED : 01/11/88
REPORT DATE : 01/25/88

PARAMETER	UNITS	10	23	30
OIL AND GREASE, IR	MG/L	0.08	<0.05	-
PETROLEUM HYDROCARBONS, IR	MG/L	0.08	<0.05	<0.16

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Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR TEXTRON ATI I.D. : 801081

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
OIL AND GREASE, IR	MG/KG	80108119	8	12	40	51	34	121
OIL AND GREASE, IR	MG/KG	80112602	1	1	0	36	35	100
OIL AND GREASE, IR	MG/L	80108110	0.08	0.1	22	3.0	6.5	45
OIL AND GREASE, IR	MG/L	80108123	<0.05	<0.05	0	5.3	6.5	82
PETROLEUM HYDROCARBONS	MG/L	80108110	0.08	0.08	0	2.9	6.5	43
PETROLEUM HYDROCARBONS	MG/L	80108123	<0.05	<0.05	0	5.3	6.5	82
PETROLEUM HYDROCARBONS	MG/KG	80108119	6	5	18	42	34	107
PETROLEUM HYDROCARBONS	MG/KG	80109703	8	7	13	43	35	101
PETROLEUM HYDROCARBONS	MG/KG	80108129	130	120	8	**	**	**

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$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

** Due to the necessary dilution of the sample, result was not attainable

Analytical Technologies, Inc.

METALS RESULTS

ATI I.D. : 801081

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR TEXTRON

DATE RECEIVED : 01/11/88
REPORT DATE : 01/25/88

PARAMETER	UNITS	11	12	13	14	15
CHROMIUM	MG/L	<0.1	<0.1	<0.1	<0.1	<0.1
LEAD	MG/L	<0.02	<0.02	0.02	<0.02	0.03

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Analytical Technologies, Inc.

METALS RESULTS

ATI I.D. : 801081

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR TEXTRON

DATE RECEIVED : 01/11/88
REPORT DATE : 01/25/88

PARAMETER	UNITS	16	17	18	24	25
CHROMIUM	MG/L	<0.1	0.4	0.2	0.3	0.2
LEAD	MG/L	<0.02	0.05	0.04	0.05	0.04

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Analytical Technologies, Inc.

METALS RESULTS

ATI I.D. : 801081

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR TEXTRON

DATE RECEIVED : 01/11/88
REPORT DATE : 01/25/88

PARAMETER	UNITS	26
CHROMIUM	MG/L	0.2
LEAD	MG/L	<0.02

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Analytical Technologies, Inc.

METALS - QUALITY CONTROL

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR TEXTRON ATI I.D. : 801081

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
CHROMIUM	MG/L	80108125	0.2	0.1	67	39.1	50.0	78
LEAD	MG/L	80108125	0.04	<0.02	0	0.33	0.50	66

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$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80108102

TEST : ORGANOCHLORINE PESTICIDES AND PCB'S (EPA 8080)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/08/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/11/88
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 01/13/88
CLIENT I.D.	: LB4-S4A	DATE ANALYZED	: 01/19/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
ALDRIN	<0.005
ALPHA - BHC	<0.005
BETA - BHC	<0.005
GAMMA - BHC	<0.005
DELTA - BHC	<0.005
CHLORDANE	<0.05
4,4'-DDD	<0.01
4,4'-DDE	<0.01
4,4'-DDT	<0.01
DIELDRIN	<0.01
ENDOSULFAN I	<0.01
ENDOSULFAN II	<0.01
ENDOSULFAN SULFATE	<0.01
ENDRIN	<0.01
ENDRIN ALDEHYDE	<0.01
ENDRIN KETONE	<0.01
HEPTACHLOR	<0.005
HEPTACHLOR EPOXIDE	<0.005
METHOXYCHLOR	<0.05
TOXAPHENE	<0.1
AROCLOR 1016	<0.05
AROCLOR 1221	<0.05
AROCLOR 1232	<0.05
AROCLOR 1242	<0.05
AROCLOR 1248	<0.05
AROCLOR 1254	<0.05
AROCLOR 1260	<0.05
SURROGATE PERCENT RECOVERIES	
DBC (%)	95

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and Work Product

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80108103

TEST : ORGANOCHLORINE PESTICIDES AND PCB'S (EPA 8080)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/08/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/11/88
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 01/13/88
CLIENT I.D.	: LB4-S6A	DATE ANALYZED	: 01/19/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
ALDRIN	<0.005
ALPHA - BHC	<0.005
BETA - BHC	<0.005
GAMMA - BHC	<0.005
DELTA - BHC	<0.005
CHLORDANE	<0.05
4,4'-DDD	<0.01
4,4'-DDE	<0.01
4,4'-DDT	<0.01
DIELDRIN	<0.01
ENDOSULFAN I	<0.01
ENDOSULFAN II	<0.01
ENDOSULFAN SULFATE	<0.01
ENDRIN	<0.01
ENDRIN ALDEHYDE	<0.01
ENDRIN KETONE	<0.01
HEPTACHLOR	<0.005
HEPTACHLOR EPOXIDE	<0.005
METHOXYCHLOR	<0.05
TOXAPHENE	<0.1
AROCLOR 1016	<0.05
AROCLOR 1221	<0.05
AROCLOR 1232	<0.05
AROCLOR 1242	<0.05
AROCLOR 1248	<0.05
AROCLOR 1254	<0.05
AROCLOR 1260	<0.05
SURROGATE PERCENT RECOVERIES	
DBC (%)	96

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GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : ORGANOCHLORINE PESTICIDES AND PCB'S (EPA 8080)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	ATI I.D.	: 801081
PROJECT #	: 40841189-05	DATE EXTRACTED	: 01/13/88
PROJECT NAME	: HR TEXTRON	DATE ANALYZED	: 01/19/88
CLIENT I.D.	: REAGENT BLANK	UNITS	: MG/KG
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
ALDRIN	<0.005
ALPHA - BHC	<0.005
BETA - BHC	<0.005
GAMMA - BHC	<0.005
DELTA - BHC	<0.005
CHLORDANE	<0.05
4,4'-DDD	<0.01
4,4'-DDE	<0.01
4,4'-DDT	<0.01
DIELDRIN	<0.01
ENDOSULFAN I	<0.01
ENDOSULFAN II	<0.01
ENDOSULFAN SULFATE	<0.01
ENDRIN	<0.01
ENDRIN ALDEHYDE	<0.01
ENDRIN KETONE	<0.01
HEPTACHLOR	<0.005
HEPTACHLOR EPOXIDE	<0.005
METHOXYCHLOR	<0.05
TOXAPHENE	<0.1
AROCLOR 1016	<0.05
AROCLOR 1221	<0.05
AROCLOR 1232	<0.05
AROCLOR 1242	<0.05
AROCLOR 1248	<0.05
AROCLOR 1254	<0.05
AROCLOR 1260	<0.05

SURROGATE PERCENT RECOVERIES

DBC (%)	106

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ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80108121

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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Client Communication
and Work Product

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GCMS - RESULTS

ATI I.D. : 80108127

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/12/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/14/88
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 01/19/88
CLIENT I.D.	: LB4-S23A	DATE ANALYZED	: 01/21/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES	
1,2-DICHLOROETHANE-D4 (%)	106
BFB (%)	106
TOLUENE-D8 (%)	110

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ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80108127

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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GCMS - RESULTS

ATI I.D. : 80108128

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/13/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/14/88
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 01/19/88
CLIENT I.D.	: BIN-S1	DATE ANALYZED	: 01/21/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	0.37
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	103
BFB (%)	103
TOLUENE-D8 (%)	106

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ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80108128

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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GCMS - RESULTS

ATI I.D. : 80108129

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/13/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/14/88
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 01/19/88
CLIENT I.D.	: BIN-S2	DATE ANALYZED	: 01/21/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

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SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	113
BFB (%)	121
TOLUENE-D8 (%)	130

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ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80108129

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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GCMS - RESULTS

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TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	ATI I.D.	: 801081
PROJECT #	: 40841189-05	DATE EXTRACTED	: 01/13/88
PROJECT NAME	: HR TEXTRON	DATE ANALYZED	: 01/13/88
CLIENT I.D.	: REAGENT BLANK	UNITS	: MG/KG
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	TR
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES	
1,2-DICHLOROETHANE-D4 (%)	121
BFB (%)	99
TOLUENE-D8 (%)	104

TR - Compound detected at an unquantifiable trace level

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GCMS - RESULTS

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ADDITIONAL MAJOR COMPOUNDS

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT : LEIGHTON & ASSOC.-VALENCIA ATI I.D : 801081

COMPOUNDS	RESULTS
NONE DETECTED	N/A

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GCMS - RESULTS

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TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	ATI I.D.	: 801081
PROJECT #	: 40841189-05	DATE EXTRACTED	: 01/13/88
PROJECT NAME	: HR TEXTRON	DATE ANALYZED	: 01/14/88
CLIENT I.D.	: REAGENT BLANK	UNITS	: MG/KG
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	TR
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	TR
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES	
1,2-DICHLOROETHANE-D4 (%)	106
BFB (%)	99
TOLUENE-D8 (%)	103

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TR - Compound detected at an unquantifiable trace level

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GCMS - RESULTS

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ADDITIONAL MAJOR COMPOUNDS

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT : LEIGHTON & ASSOC.-VALENCIA ATI I.D : 801081

COMPOUNDS	RESULTS
160-METHYL PROPANE	0.4
243-ISOPROPANOL	0.1
544-HEXANE	0.2

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GCMS - RESULTS

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TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	ATI I.D.	: 801081
PROJECT #	: 40841189-05	DATE EXTRACTED	: 01/13/88
PROJECT NAME	: HR TEXTRON	DATE ANALYZED	: 01/15/88
CLIENT I.D.	: REAGENT BLANK	UNITS	: MG/KG
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	TR
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
.,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES

',2-DICHLOROETHANE-D4 (%)	107
BFB (%)	113
TOLUENE-D8 (%)	116

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TR - Compound detected at an unquantifiable trace level

Analytical Technologies, Inc.

GCMS - RESULTS

REAGENT BLANK

ADDITIONAL MAJOR COMPOUNDS

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT : LEIGHTON & ASSOC.-VALENCIA ATI I.D : 801081

COMPOUNDS	RESULTS
151 METHYL PROPANE	0.2

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GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	ATI I.D.	: 801081
PROJECT #	: 40841189-05	DATE EXTRACTED	: 01/14/88
PROJECT NAME	: HR TEXTRON	DATE ANALYZED	: 01/15/88
CLIENT I.D.	: REAGENT BLANK	UNITS	: MG/KG
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	TR
ACETONE	TR
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	TR
.,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES	
',2-DICHLOROETHANE-D4 (%)	111
BFB (%)	107
TOLUENE-D8 (%)	111

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TR - Compound detected at an unquantifiable trace level

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GCMS - RESULTS

REAGENT BLANK

ADDITIONAL MAJOR COMPOUNDS

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT : LEIGHTON & ASSOC.-VALENCIA ATI I.D : 801081

COMPOUNDS	RESULTS
102 ACETONITRILE	0.2
144 METHYL PROPANE	0.3
379 PENTANE	0.2

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GCMS - RESULTS

REAGENT BLANK

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	ATI I.D.	: 801081
PROJECT #	: 40841189-05	DATE EXTRACTED	: 01/19/88
PROJECT NAME	: HR TEXTRON	DATE ANALYZED	: 01/21/88
CLIENT I.D.	: REAGENT BLANK	UNITS	: MG/KG
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	TR
ACETONE	TR
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	1.0
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	0.06
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	111
BFB (%)	101
TOLUENE-D8 (%)	108

TR - Compound detected at an unquantifiable trace level

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GCMS - RESULTS

REAGENT BLANK

ADDITIONAL MAJOR COMPOUNDS

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT : LEIGHTON & ASSOC.-VALENCIA ATI I.D : 801081

COMPOUNDS	RESULTS
142-METHYL PROPANE	0.1
537-BRANCHED HYDROCARBON C6	0.1

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GCMS - RESULTS

ATI I.D. : 80108106

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/11/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/11/88
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 01/13/88
CLIENT I.D.	: LB4-S12A	DATE ANALYZED	: 01/14/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
`,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05
SURROGATE PERCENT RECOVERIES	
1,2-DICHLOROETHANE-D4 (%)	111
BFB (%)	102
TOLUENE-D8 (%)	101

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ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80108106

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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Private Attorney
Client Communication
and Work Product

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 80108107

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/11/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/11/88
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 01/13/88
CLIENT I.D.	: LB4-S14A	DATE ANALYZED	: 01/15/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05
SURROGATE PERCENT RECOVERIES	
1,2-DICHLOROETHANE-D4 (%)	101
BFB (%)	104
TOLUENE-D8 (%)	104

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ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80108107

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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and Work Product

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 80108108

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/11/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/11/88
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 01/13/88
CLIENT I.D.	: LB4-S16A	DATE ANALYZED	: 01/14/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	106
BFB (%)	99
TOLUENE-D8 (%)	100

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ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80108108

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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GCMS - RESULTS

ATI I.D. : 80108119

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/11/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/12/88
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 01/13/88
CLIENT I.D.	: LB4-S18A	DATE ANALYZED	: 01/15/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES	
1,2-DICHLOROETHANE-D4 (%)	103
BFB (%)	98
TOLUENE-D8 (%)	100

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ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80108119

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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GCMS - RESULTS

ATI I.D. : 80108120

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/12/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/12/88
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 01/13/88
CLIENT I.D.	: LB4-S20A	DATE ANALYZED	: 01/15/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	109
BFB (%)	106
TOLUENE-D8 (%)	107

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ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80108120

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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GCMS - RESULTS

ATI I.D. : 80108121

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/12/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/12/88
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 01/13/88
CLIENT I.D.	: LB4-S22A	DATE ANALYZED	: 01/15/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05
SURROGATE PERCENT RECOVERIES	
1,2-DICHLOROETHANE-D4 (%)	110
BFB (%)	101
TOLUENE-D8 (%)	105

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ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80108130

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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Analytical Technologies, Inc.

GCMS - RESULTS

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TEST : VOLATILE ORGANICS

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	ATI I.D.	: 801081
PROJECT #	: 40841189-05	DATE EXTRACTED	: 01/15/88
PROJECT NAME	: HR TEXTRON	DATE ANALYZED	: 01/15/88
CLIENT I.D.	: REAGENT BLANK	UNITS	: UG/L
		DILUTION FACTOR	: N/A

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	TR
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
TRANS-1,2-DICHLOROETHENE	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLORETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYL BENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1

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SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	91
BFB (%)	101
TOLUENE-D8 (%)	102

TR - Compound detected at an unquantifiable trace level

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GCMS - RESULTS

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ADDITIONAL MAJOR COMPOUNDS

TEST : VOLATILE ORGANICS

CLIENT : LEIGHTON & ASSOC.-VALENCIA ATI I.D : 801081

COMPOUNDS	RESULTS
154-METHYL PROPANE	2

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QUALITY CONTROL DATA

ATI I.D. : 801081

TEST : VOLATILE ORGANICS

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR TEXTRON

REF. I.D. : 80106809
DATE ANALYZED : 01/15/88
SAMPLE MATRIX : SOIL
UNITS : UG/L

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<1	45	31	62	34	68	9
TRICHLOROETHENE	<1	50	44	88	47	94	7
CHLOROBENZENE	<1	50	47	94	49	98	4
TOLUENE	<1	50	46	92	46	92	0
BENZENE	<1	50	48	96	48	96	0

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$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

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GCMS - RESULTS

ATI I.D. : 80108101

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/08/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/11/88
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 01/13/88
CLIENT I.D.	: LB4-S2A	DATE ANALYZED	: 01/13/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	110
BFB (%)	92
TOLUENE-D8 (%)	95

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GCMS - RESULTS

ATI I.D. : 80108102

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/08/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/11/88
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 01/13/88
CLIENT I.D.	: LB4-S4A	DATE ANALYZED	: 01/13/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	103
BFB (%)	90
TOLUENE-D8 (%)	90

Privileged and Company
Private Attorney
Client Communication
and Work Product

Analytical Technologies, Inc.

ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80108101

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

Privileged and Company
Private Attorney
Client Communication
and Work Product

Analytical Technologies, Inc.

ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80108102

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

Privileged and Company
Private Attorney
Client Communication
and Work Product

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 80108103

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/08/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/11/88
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 01/13/88
CLIENT I.D.	: LB4-S6A	DATE ANALYZED	: 01/13/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	110
BFB (%)	92
TOLUENE-D8 (%)	91

Privileged and Company Private Attorney Client Communication and Work Product

Analytical Technologies, Inc.

ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80108103

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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Private Attorney
Client Communication
and Work Product

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 80108104

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/11/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/11/88
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 01/13/88
CLIENT I.D.	: LB4-S8A	DATE ANALYZED	: 01/14/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	<0.50
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	94
BFB (%)	100
TOLUENE-D8 (%)	99

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Analytical Technologies, Inc.

ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80108105

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

Privileged and Company
Private Attorney
Client Communication
and Work Product

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 80108105

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/11/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/11/88
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: 01/13/88
CLIENT I.D.	: LB4-S10A	DATE ANALYZED	: 01/14/88
SAMPLE MATRIX	: SOIL	UNITS	: MG/KG
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<0.50
BROMOMETHANE	<0.50
VINYL CHLORIDE	<0.05
CHLOROETHANE	<0.05
METHYLENE CHLORIDE	<0.3
ACETONE	TR
CARBON DISULFIDE	<0.05
1,1-DICHLOROETHENE	<0.05
1,1-DICHLOROETHANE	<0.05
TRANS-1,2-DICHLOROETHENE	<0.05
CHLOROFORM	<0.05
1,2-DICHLOROETHANE	<0.05
2-BUTANONE (MEK)	<0.50
1,1,1-TRICHLOROETHANE	<0.05
CARBON TETRACHLORIDE	<0.05
VINYL ACETATE	<0.50
BROMODICHLOROMETHANE	<0.05
1,1,2,2-TETRACHLOROETHANE	<0.05
1,2-DICHLOROPROPANE	<0.05
TRANS-1,3-DICHLOROPROPENE	<0.05
TRICHLOROETHENE	<0.05
DIBROMOCHLOROMETHANE	<0.05
1,1,2-TRICHLORETHANE	<0.05
BENZENE	<0.05
CIS-1,3-DICHLOROPROPENE	<0.05
2-CHLOROETHYLVINYLETHER	<0.50
BROMOFORM	<0.3
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
TETRACHLOROETHENE	<0.05
TOLUENE	<0.05
CHLOROBENZENE	<0.05
ETHYL BENZENE	<0.05
STYRENE	<0.05
TOTAL XYLENES	<0.05

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-D4 (%)	98
BFB (%)	97
TOLUENE-D8 (%)	97

TR - Compound detected at an unquantifiable trace level

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and Work Product

Analytical Technologies, Inc.

ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80108104

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 801081

TEST : ORGANOCHLORINE PESTICIDES AND PCB'S (EPA 8080)

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR TEXTRON

REF. I.D. : 80108102
DATE ANALYZED : 01/17/88
SAMPLE MATRIX : SOIL
UNITS : MG/KG

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
GAMMA BHC	<0.005	0.027	0.019	70	0.021	78	11
HEPTACHLOR	<0.005	0.027	0.020	74	0.022	81	9
ALDRIN	<0.005	0.027	0.021	78	0.023	85	9
DIELDRIN	<0.01	0.066	0.062	94	0.060	91	3
ENDRIN	<0.01	0.066	0.057	86	0.055	83	4
DDT	<0.01	0.066	0.074	112	0.067	102	9

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$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 80108109

TEST : VOLATILE ORGANICS

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/08/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/11/88
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK (1/08/88)	DATE ANALYZED	: 01/15/88
SAMPLE MATRIX	: WATER	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
TRANS-1,2-DICHLOROETHENE	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLORETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYL BENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1
SURROGATE PERCENT RECOVERIES	
1,2-DICHLOROETHANE-D4 (%)	88
BFB (%)	103
TOLUENE-D8 (%)	103

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Analytical Technologies, Inc.

ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80108109

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 80108122

TEST : VOLATILE ORGANICS

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/12/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/12/88
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK (1/12/88)	DATE ANALYZED	: 01/15/88
SAMPLE MATRIX	: WATER	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	<10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
TRANS-1,2-DICHLOROETHENE	<1
CHLOROFORM	<1
1,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLORETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYL BENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1
SURROGATE PERCENT RECOVERIES	
1,2-DICHLOROETHANE-D4 (%)	90
BFB (%)	102
TOLUENE-D8 (%)	102

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Analytical Technologies, Inc.

ADDITIONAL MAJOR COMPOUNDS

ATI I.D. : 80108122

ADDITIONAL MAJOR COMPOUNDS	RESULTS
NONE DETECTED	N/A

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Analytical Technologies, Inc.

GCMS - RESULTS

ATI I.D. : 80108130

TEST : VOLATILE ORGANICS

CLIENT	: LEIGHTON & ASSOC.-VALENCIA	DATE SAMPLED	: 01/13/88
PROJECT #	: 40841189-05	DATE RECEIVED	: 01/14/88
PROJECT NAME	: HR TEXTRON	DATE EXTRACTED	: N/A
CLIENT I.D.	: SCF	DATE ANALYZED	: 01/15/88
SAMPLE MATRIX	: WATER	UNITS	: UG/L
		DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
CHLOROMETHANE	<10
BROMOMETHANE	<10
VINYL CHLORIDE	<1
CHLOROETHANE	<1
METHYLENE CHLORIDE	<5
ACETONE	10
CARBON DISULFIDE	<1
1,1-DICHLOROETHENE	<1
1,1-DICHLOROETHANE	<1
TRANS-1,2-DICHLOROETHENE	<1
CHLOROFORM	2
,2-DICHLOROETHANE	<1
2-BUTANONE (MEK)	<10
1,1,1-TRICHLOROETHANE	<1
CARBON TETRACHLORIDE	<1
VINYL ACETATE	<10
BROMODICHLOROMETHANE	<1
1,1,2,2-TETRACHLOROETHANE	<1
1,2-DICHLOROPROPANE	<1
TRANS-1,3-DICHLOROPROPENE	<1
TRICHLOROETHENE	<1
DIBROMOCHLOROMETHANE	<1
1,1,2-TRICHLORETHANE	<1
BENZENE	<1
CIS-1,3-DICHLOROPROPENE	<1
2-CHLOROETHYLVINYLETHER	<10
BROMOFORM	<5
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
TETRACHLOROETHENE	<1
TOLUENE	<1
CHLOROBENZENE	<1
ETHYL BENZENE	<1
STYRENE	<1
TOTAL XYLENES	<1
SURROGATE PERCENT RECOVERIES	
1,2-DICHLOROETHANE-D4 (%)	85
BFB (%)	105
TOLUENE-D8 (%)	102

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Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 801081

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR TEXTRON

REF. I.D. : 80108119
DATE ANALYZED : 01/15/88
SAMPLE MATRIX : SOIL
UNITS : MG/KG

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<0.05	2.3	1.9	83	1.8	78	5
TRICHLOROETHENE	<0.05	2.5	2.7	108	2.6	104	4
CHLOROBENZENE	<0.05	2.5	2.7	108	2.5	100	8
TOLUENE	<0.05	2.5	2.7	108	2.4	96	12
BENZENE	<0.05	2.5	2.4	96	2.3	92	4

Privileged and Company
Private Attorney
Client Communication
and Work Product

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

Analytical Technologies, Inc.

QUALITY CONTROL DATA

ATI I.D. : 801081

TEST : VOLATILE ORGANICS (EPA 8240)

CLIENT : LEIGHTON & ASSOC.-VALENCIA
PROJECT # : 40841189-05
PROJECT NAME : HR TEXTRON

REF. I.D. : 80108101
DATE ANALYZED : 01/14/88
SAMPLE MATRIX : SOIL
UNITS : MG/KG

COMPOUNDS	SAMPLE RESULT	CONC. SPIKED	SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<0.05	2.3	1.9	83	1.7	74	11
TRICHLOROETHENE	<0.05	2.5	2.7	108	2.5	100	8
CHLOROBENZENE	<0.05	2.5	2.8	112	2.6	105	7
TOLUENE	<0.05	2.5	2.7	108	2.5	100	7
BENZENE	<0.05	2.5	2.6	105	2.3	92	12

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$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

CHAIN-OF-CU. JDY RECORD

Project No.	Client and Site Location
40841189-05	HR TEXTRON

Samplers (Signature): Gary A. Hopes / Bruce A. Lewis

Call & Send Results for: Leighton & Associates, Inc. 25020 W. STANFORD STE 190 VALENCIA, CA 91355
Attention: MIMI MAK-1
Phone No. (805) 257-0150

	Sample Number	Date	Time	Depth Below Grade (ft)	Sample Type	Suspect Contamination	No. of Containers	EPA Test Method No. 8240	Sol. Pb & chrom/STLC	418.1	413.2	8080	8270 (see note)		HOLD	REMARKS
	LB4-S1A	1/08/88		.5	Soil	See	1								X	Note: on samples w/ the
01	LB4-S2A			3		Anal	1	X	X	X	X					two Highest 418.1 and 8240
	LB4-S3A			8			1								X	RUN 8270 → call MIMI M.
02	LB4-S4A			13			1	X	X	X	X	X				if any questions
	LB4-S5A			18			1								X	
03	LB4-S6A	1/08/88		23			1	X	X	X	X	X				
	LB4-S7A	1/11/88		28			1								X	
04	LB4-S8A	1/11/88		33			1	X	X	X	X					NOTE
05	LB4-S10A	1/11/88		43			1	X	X	X	X					PLEASE Replace
	LB4-S11A	1/11/88		48			1								X	OUR COOLER!
06	LB4-S12A	1/11/88		53			1	X	X	X	X					
	LB4-S13A	1/11/88		58			1								X	
07	LB4-S14A			63			1	X	X	X	X					
	LB4-S15A			68			1								X	
08	LB4-S16A	1/11/88	2:25	73	Soil		1	X	X	X	X					

Sample Integrity:

Samples Intact: Yes ✓ No ____

Samples Properly Cooled: Yes ✓ No ____

Samples Accepted: Yes ✓ No ____

If not, why: ____

Samples Placed in Lab Refrigerator
Yes ✓ No ____ L&A Rep. Initials GK/BAL

Relinquished by:	Date / Time	Received by:
Gary A. Hopes	1/11/88 2:55	Ron Navarro
Ron Navarro	1/11/88 6:30 pm	Dolly Adamos 1/11/88 6:35 PM
		Received for Lab by:

Privileged and Company Private Attorney Client Communication and Work Product

Leighton and Associates, Inc.

Laboratory Name: ATI

Certification No.:

CHAIN-OF-CU DY RECORD

2/2

Project No. 40841189-05

Client and Site Location: HR TEXTRON

Samplers (Signature): Gary A. Kepes / Bruce A. Lewis

Call & Send Results to: Leighton & Associates, Inc. 25020 W. Stanford Ste 190 Valencia, CA 91355

Attention: MIMI MURI

Phone No. (805) 257-0150

	Sample Number	Date	Time	Depth Below Grade (ft)	Sample Type	Suspect Contamination	No. of Containers	EPA Test Method No.	8240	Sol Ph & chrom/STLC	418.1	413.2	8270 (see note)	8080		HOLD	REMARKS
	LB4-S17A	1/11/88	2:50	78	Soil	See Anal.	1									X	
																	Note: ON samples w/the two highest 418.1 and/or 8240 ALSO RUN 8270 → call MIMI M. if any quest
																	PLEASE REPLACE OUR L+A COOLER
09	TRIPBLANK	1/08/88	3:00	—	WTR	See ANAL	4 40ML VOA	X	X	X	X	X	X	X			
10	FIELDBLANK	1/11/88	1245	—	WTR	See ANAL	4 1QT Mason	X	X	X	X	X	X	X			
											**						

Sample Integrity:

Samples Intact: Yes ✓ No ___

Samples Properly Cooled: Yes ✓ No ___

Samples Accepted: Yes ✓ No ___

If not, why: ___

Samples Placed in Lab Refrigerator Yes ✓ No ___ L&A Rep. Initials GK/BAL

Relinquished by:	Date / Time	Received by:
Gary A. Kepes	1/11/88 2:55	Ron Navarro
Ron Navarro	1/11/88 6:30 pm	Dorly Adamos 1/11/88 6:35 Pm
		Received for Lab by:

Leighton and Associates, Inc.

Laboratory Name: ATI

Certification No.:

Privileged and Company Private Attorney Client Communication and Work Product

CHAIN-OF-C[illegible]DY RECORD

801091

Project No.	Client and Site Location
40841189-05	HR TEXTRON

Samplers (Signature): Gary A. Kepes / Bruce A. Lewis

Call & Send Results to: Leighton & Associates, Inc. 25020 W. Stanford Ste 190 Valencia, CA 91355
Attention: Mimi Mak
Phone No (805) 257-0150

	Sample Number	Date	Time	Depth Below Grade (ft)	Sample Type	Suspect Contamination	No. of Containers	EPA Test Method No.	8240	SL3b & Chrom/STK	418.1	413.2	8270		HOLD	REMARKS
19	LB4-S18A	1/11/88		83	SoiL	SEE	1		X	X	X	X				
	LB4-S19A	↓		88		ANAL	1								X	
20	LB4-S20A	1/12/88		93			1		X	X	X	X				
	LB4-S21A			98			1								X	
21	LB4-S22A	↓		103	↓		1		X	X	X	X	X	→		no 8270 per liq 1/13
22	TRIP Blank	1/12/88		—	WTR	SEE	4 (40 ml VOA)	X	X	X	X	X	X			
23	FIELD Blank	1/12/88		—	WTR	ANAL	4 (1 qt Mason)	X	X	X	X	X	X			

NOTE: Report all QA/QC from all samples run for this job! → Run samples w/in Holding Period → call LMM → Mimi M if any questions

Sample Integrity:
Samples Intact: Yes ✓ No ___
Samples Properly Cooled: Yes ✓ No ___
Samples Accepted: Yes ✓ No ___
If not, why: ___

Samples Placed in Lab Refrigerator
Yes ✓ No ___ L&A Rep. Initials GK/BAL

Relinquished by:	Date / Time	Received by:
Gary A Kepes	1/12/88 1500	[illegible]
[illegible]	1-12-88 6:05 PM	Dolly Adamos 1/12/88 6:05 PM
		Received for Lab by:

Leighton and Associates, Inc.

Laboratory Name: ATI

Certification No.:

Privileged and Company Private Attorney Client Communication and Work Product

1-05 HR TEXTRON/PACOIMA

Samplers (Signature): Bruce A. Lewis

Leighton & Associ[illegible] Inc.
25020 W. AVENUE STANFORD
STE 140/VALENCIA, CA 91355
Attention: MIMI MAK
Phone No (805) 257-0150
(818) 991-6030

	Sample Number	Date	Time	Depth Below Grade (ft)	Sample Type	Suspect Contamination	No. of Containers	Test Method No. EPA 418.1	8240	EPA 4132	REMARKS
27	LB4-S23A	1/12/88	4:30 P	109'	SOIL	OIL/GREASE	1	X	X	X	ALL SOIL SAMPLES PLACED IN 25" x
											3" long STAINLESS STEEL RINGS, TEFLON
28	BIN-S1	1/13/88	3:00 P	—	SOIL		1	X	X	X	TAPED, TAPED. SCF (STEAM CLEANING FLUID)
29	BIN-S2	1/13/88	3:00 P	—	SOIL		1	X	X	X	SAMPLES COLLECTED IN 4 40ml VOA
											VIALS. ALL SAMPLES PLACED on ICE
30	SCF	1/13/88	3:00 P	—	WATER		4	X	X		AND COOLED TO 4°C.

Sample Integrity:
Samples Intact: Yes X No ___
Samples Properly Cooled: Yes X No ___
Samples Accepted: Yes X No ___
If not, why: ___

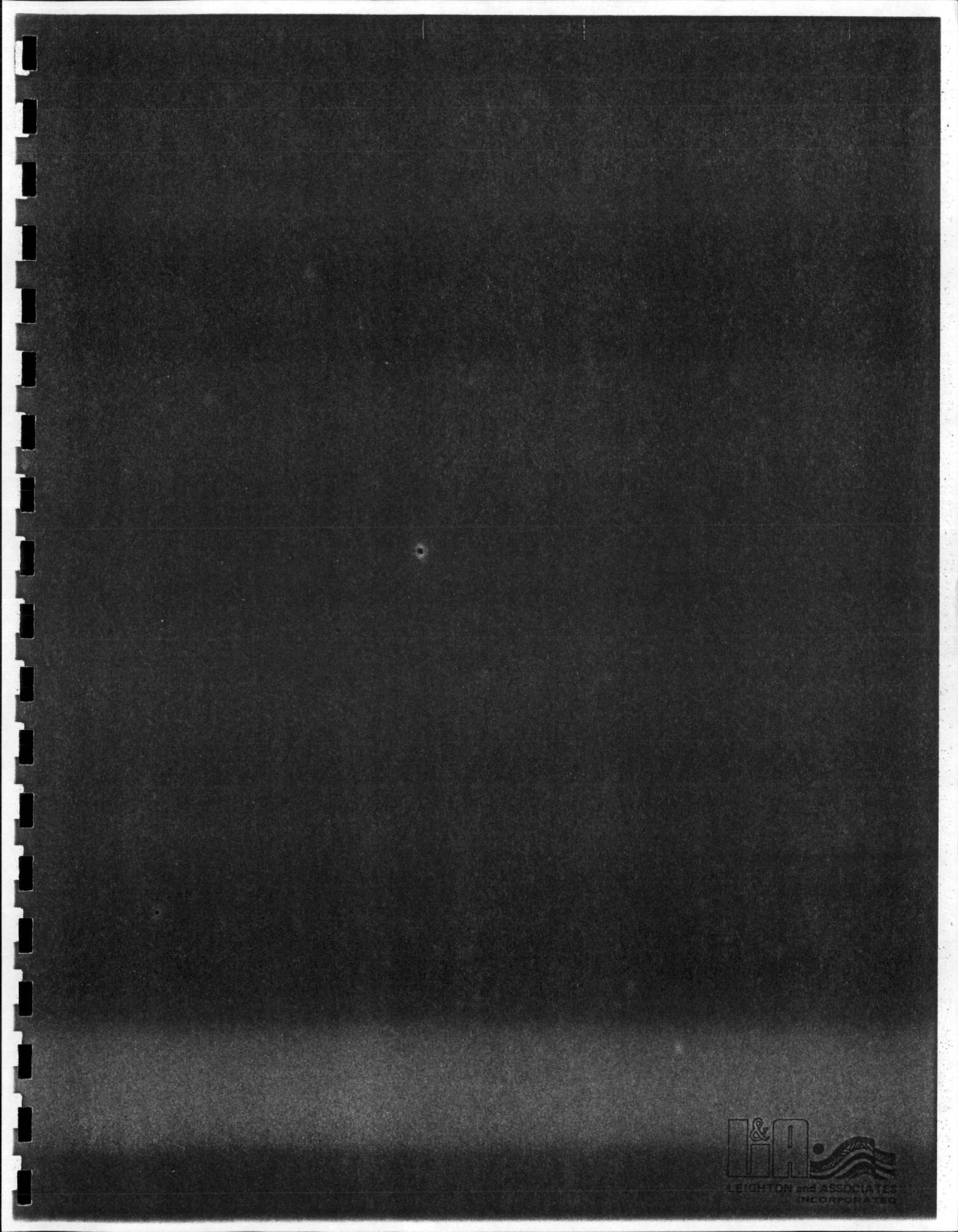
Samples Placed in Lab Refrigerator
Yes X No ___ L&A Rep. Initials BAL

Relinquished by:	Date / Time	Received by:
Bruce A. Lewis	1/13/88 4:20 P	Marianne Make
Marianne Make	1/14/88 12:30 P	[illegible]
[illegible]	1-14-88 5:05 PM	Kathy Adams 1/14/88 5:20 PM

Leighton and Associates, Inc.

Laboratory Name: ATI
Certification No.:

Privileged and Company Private Attorney Client Communication and Work Product


L&A
LEIGHTON and ASSOCIATES
INCORPORATED

Chemical Research Laboratories, Inc.
7440 Lincoln Way • Garden Grove, CA 92641
(714) 898-6370 • (213) 598-0458

January 12, 1988

CRL-MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Nils J. Cornejo

ANALYSIS NO.: 800702-001/013
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/07/88
DATE SAMPLE REC'D: 01/07/88
PROJECT: Hr. Textron 10445
Glenoaks Pacoima

Enclosed with this letter is the report on the chemical and physical analyses on the samples from ANALYSIS NO: 800702-001/013 shown above.

The samples were received by CRL in a chilled state, intact, and with the chain-of-custody record attached.

Please note that ND( ) means not detected at the detection limit expressed within the parentheses.

Privileged and Company
Private Attorney
Client Communication
and Work Product

REVIEWED AND APPROVED

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MOBILE DIVISION
11631 Seaboard Circle • Stanton, CA 90680
(714) 891-0405 • FAX: (714) 893-6709 • (800) LAB-1CRL

LABORATORY REPORT

TO:
Leighton & Associates
25020 West Avenue , Ste. 190
Valencia, CA 91355
ATTN: Ms. Mimi Maki
PROJECT:
HR Textron, 10445 Glenoaks, Pacoima

ANALYSIS NO.: 010688-1/13
DATE SAMPLED: 1/06/88
DATE REC'D: 1/06/88
BATCH: 280
MATRIX: Soil

Results (mg/kg)

Sample Identification	Total Petroleum Hydrocarbons (EPA8015 - Diesel)	Total Recoverable Hydrocarbons (EPA418.1)
LB3 S1B .5'	*ND(10.)	---
LB3 S2B 3'	ND(10.)	---
LB3 S3B 13'	ND(10.)	ND(1.)
LB3 S4B 18'	ND(10.)	---
LB3 S5B 23'	ND(10.)	---
LB3 S6B 28'	ND(10.)	---
LB3 S7B 33'	ND(10.)	---
LB3 S8B 38'	ND(10.)	---
LB3 S9B 43'	ND(10.)	ND(1.)
LB3 S10B 48'	ND(10.)	ND(1.)
LB3 S11B 53'	ND(10.)	2.
LB3 S12B 58'	ND(10.)	2.
LB3 S13B 63'	ND(10.)	2.

* ND - means not detected at detection limit ( )

Note: Samples were received intact and with the chain of custody.

Walter Bey
Reviewed and approved

1-14-88
Date

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LABORATORY REPORT

TO:
Leighton & Associates
25020 West Avenue, Ste. 190
Valencia, CA 91355
ATTN: Ms. Mimi Maki
PROJECT:
HR Textron, 10445 Glenoaks, Pacoima

ANALYSIS NO.: 010688-1/13
DATE SAMPLED: 1/06/87
DATE REC'D: 1/06/87
BATCH: 280
MATRIX: Soil

Results (mg/kg)

Aromatic Volatile Organics (EPA8020)

Compound	LB3 S1B .5'	LB3 S2B 3'	LB3 S3B 13'
Benzene	*ND(.05)	ND(.05)	ND(.05)
Toluene	ND(.05)	ND(.05)	ND(.05)
Ethylbenzene	ND(.05)	ND(.05)	ND(.05)
Total Xylenes	ND(.05)	ND(.05)	ND(.05)
Chlorobenzene	ND(.05)	ND(.05)	ND(.05)
P-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)
M-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)
O-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)

	LB3 S4B 18'	LB3 S5B 23'	LB3 S6B 28'
Benzene	ND(.05)	ND(.05)	ND(.05)
Toluene	ND(.05)	ND(.05)	ND(.05)
Ethylbenzene	ND(.05)	ND(.05)	ND(.05)
Total Xylenes	ND(.05)	ND(.05)	ND(.05)
Chlorobenzene	ND(.05)	ND(.05)	ND(.05)
P-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)
M-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)
O-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)

* ND - not detected at the detection limit expresed within the parentheses.

Note: Samples were received intact and with the chain of custody.

Walter Berg
Reviewed and approved

1-14-88
Date

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LABORATORY REPORT

TO:
Leighton & Associates
25020 West Avenue, Ste. 190
Valencia, CA 91355
ATTN: Ms. Mimi Maki
PROJECT:
HR Textron, 10445 Glenoaks, Pacoima

ANALYSIS NO.: 010688-1/13
DATE SAMPLED: 1/06/87
DATE REC'D: 1/06/87
BATCH: 280
MATRIX: Soil

Results (mg/kg)

Aromatic Volatile Organics (EPA8020)

Compound	LB3 S7B 33'	LB3 S8B 38'	LB3 S9B 43'
Benzene	*ND(.05)	ND(.05)	ND(.05)
Toluene	ND(.05)	ND(.05)	ND(.05)
Ethylbenzene	ND(.05)	ND(.05)	ND(.05)
Total Xylenes	ND(.05)	ND(.05)	ND(.05)
Chlorobenzene	ND(.05)	ND(.05)	ND(.05)
P-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)
M-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)
O-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)

	LB3 S10B 48'	LB3 S11B 53	LB3 S12B 58'
Benzene	ND(.05)	ND(.05)	ND(.05)
Toluene	ND(.05)	ND(.05)	ND(.05)
Ethylbenzene	ND(.05)	ND(.05)	ND(.05)
Total Xylenes	ND(.05)	ND(.05)	ND(.05)
Chlorobenzene	ND(.05)	ND(.05)	ND(.05)
P-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)
M-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)
O-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)

* ND - not detected at the detection limit expresed within the parentheses.

Note: Samples were received intact and with the chain of custody.

Walter Berger
Reviewed and approved

1-14-88
Date

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MOBILE DIVISION
11631 Seaboard Circle • Stanton, CA 90680
(714) 891-0405 • FAX: (714) 893-6709 • (800) LAB-1CRL

LABORATORY REPORT

TO:	**ANALYSIS NO.:**	010688-1/13
Leighton & Associates	**DATE SAMPLED:**	1/06/87
25020 West Avenue, Ste. 190	**DATE REC'D:**	1/06/87
Valencia, CA 91355	**BATCH:**	280
ATTN: Ms. Mimi Maki	**MATRIX:**	Soil
PROJECT:		
HR Textron, 10445 Glenoaks, Pacoima		

Results (mg/kg)

Aromatic Volatile Organics (EPA8020)

Compound	LB3 S13B 63'
Benzene	*ND(.05)
Toluene	ND(.05)
Ethylbenzene	ND(.05)
Total Xylenes	ND(.05)
Chlorobenzene	ND(.05)
P-Dichlorobenzene	ND(.05)
M-Dichlorobenzene	ND(.05)
O-Dichlorobenzene	ND(.05)

* ND - not detected at the detection limit expresed within the parentheses.

Note: Samples were received intact and with the chain of custody.

Walter Berger
Reviewed and approved

1-14-88
Date

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Client Communication
and Work Product

LABORATORY REPORT

CRL-MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Nils J. Cornejo

Sample ID: 010688-1 LB3 51B .5

ANALYSIS NO.: 800702-001
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/07/88
DATE SAMPLE REC'D: 01/07/88
DATE ANALYZED: 01/07/88
SAMPLE TYPE: Solid
PROJECT: Hr. Textron 10445
Glenoaks Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	120.	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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Client Communication
and Work Product

LABORATORY REPORT

CRL-MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Nils J. Cornejo

Sample ID: 010688-2 LB3 52B 3'

ANALYSIS NO.: 800702-002
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/07/88
DATE SAMPLE REC'D: 01/07/88
DATE ANALYZED: 01/07/88
SAMPLE TYPE: Solid
PROJECT: Hr. Textron 10445
Glenoaks Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL-MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Nils J. Cornejo

Sample ID: 010688-3 LB3 53B 13'

ANALYSIS NO.: 800702-003
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/07/88
DATE SAMPLE REC'D: 01/07/88
DATE ANALYZED: 01/07/88
SAMPLE TYPE: Solid
PROJECT: Hr. Textron 10445
Glenoaks Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	150.	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL-MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Nils J. Cornejo

Sample ID: 010688-4 LB3 54B 18'

ANALYSIS NO.: 800702-004
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/07/88
DATE SAMPLE REC'D: 01/07/88
DATE ANALYZED: 01/07/88
SAMPLE TYPE: Solid
PROJECT: Hr. Textron 10445
Glenoaks Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	150.	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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and Work Product

LABORATORY REPORT

CRL-MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Nils J. Cornejo

Sample ID: 010688-5 LB3 55B 23'

ANALYSIS NO.: 800702-005
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/07/88
DATE SAMPLE REC'D: 01/07/88
DATE ANALYZED: 01/07/88
SAMPLE TYPE: Solid
PROJECT: Hr. Textron 10445
Glenoaks Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	80.	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL-MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Nils J. Cornejo

Sample ID: 010688-6 LB3 56B 28'

ANALYSIS NO.: 800702-006
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/07/88
DATE SAMPLE REC'D: 01/07/88
DATE ANALYZED: 01/07/88
SAMPLE TYPE: Solid
PROJECT: Hr. Textron 10445
Glenoaks Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	100.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL-MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Nils J. Cornejo

Sample ID: 010688-7 LB3 57B 33'

ANALYSIS NO.: 800702-007
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/07/88
DATE SAMPLE REC'D: 01/07/88
DATE ANALYZED: 01/07/88
SAMPLE TYPE: Solid
PROJECT: Hr. Textron 10445
Glenoaks Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	100.	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL-MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Nils J. Cornejo

Sample ID: 010688-8 LB3 58B 38'

ANALYSIS NO.: 800702-008
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/07/88
DATE SAMPLE REC'D: 01/07/88
DATE ANALYZED: 01/07/88
SAMPLE TYPE: Solid
PROJECT: Hr. Textron 10445
Glenoaks Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	90.	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL-MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Nils J. Cornejo

Sample ID: 010688-9 LB3 59B 43'

ANALYSIS NO.: 800702-009
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/07/88
DATE SAMPLE REC'D: 01/07/88
DATE ANALYZED: 01/07/88
SAMPLE TYPE: Solid
PROJECT: Hr. Textron 10445
Glenoaks Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	100.	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL-MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Nils J. Cornejo

Sample ID: 010688-10 LB3 510B 48'

ANALYSIS NO.: 800702-010
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/07/88
DATE SAMPLE REC'D: 01/07/88
DATE ANALYZED: 01/07/88
SAMPLE TYPE: Solid
PROJECT: Hr. Textron 10445
Glenoaks Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	100.	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL-MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Nils J. Cornejo

Sample ID: 010688-11 LB3 511B 53'

ANALYSIS NO.: 800702-011
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/07/88
DATE SAMPLE REC'D: 01/07/88
DATE ANALYZED: 01/07/88
SAMPLE TYPE: Solid
PROJECT: Hr. Textron 10445
Glenoaks Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL-MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Nils J. Cornejo

Sample ID: 010688-12 LB3 512B 58'

ANALYSIS NO.: 800702-012
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/07/88
DATE SAMPLE REC'D: 01/07/88
DATE ANALYZED: 01/07/88
SAMPLE TYPE: Solid
PROJECT: Hr. Textron 10445
Glenoaks Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL-MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Nils J. Cornejo

Sample ID: 010688-13 LB3 513B 63'

ANALYSIS NO.: 800702-013
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/07/88
DATE SAMPLE REC'D: 01/07/88
DATE ANALYZED: 01/07/88
SAMPLE TYPE: Solid
PROJECT: Hr. Textron 10445
Glenoaks Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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CHEMICAL RESEARCH LABORATORIES, INC.

11631 Seaboard Circle • Stanton, CA 90680
(714) 891-0405 • FAX: (714) 893-6709 • (800) LAB-1CRL

- ORANGE COUNTY
- VENTURA
- SANTA MARIA
- BAKERSFIELD
- L.A. COUNTY
- MOBILE LAB

CHAIN OF CUSTODY RECORD

Date 1/6/88 Page 1 of 2

CLIENT: Leighton & Associates

ADDRESS: 25020 West Ave Ste. 190
Valencia CA. 91355
Attn: Mimi Maki

PROJECT MANAGER: Mimi Maki

PHONE NUMBER: (805) 259-0150

PROJECT NAME: HR Textron 10445 Glenoaks, Pacoima

SAMPLERS: (Signature) (805) 259-0150 Gary A. Kepes

SAMPLE NUMBER	LOCATION DESCRIPTION	DATE	TIME	SAMPLE TYPE: WATER Comp.	WATER Grab.	AIR	SOLID	NO. OF CNTNRS	TESTS REQUIRED
1	LBJ 51B .5'	1/6/88	9:45				soil	1-sleeve	8015-DSC 8020 8010 418.1 D.H.
2	LBJ 52B 3'	"	10101				"	"	" " "
3	LBJ 53B 13'	"	1105				"	"	" " " 418.1
4	LBJ 54B 18'	"	1135				"	"	" " "
5	LBJ 55B 23'	"	1150				"	"	" " "
6	LBJ 56B 28'	"	1220				"	"	" " "
7	LBJ 57B 33'	"	1248				"	"	" " "

Relinquished by: (Signature)

Received by: (Signature)

Relinquished by: (Signature)

Received by: (Signature)

Relinquished by: (Signature) 5:45 pm
Gary A. Kepes 1/6/88

Received by Mobile Laboratory for field analysis: (Signature) Dan Kammen

Dispatched by: (Signature)

Date/Time

Received for Laboratory by:

Date/Time

CRL will store sample for 30 days at no charge. Storage after 30 days is charged at $10 per month per sample. Disposal of sample is charged at $10 per sample. Please indicate the disposition of your sample.

1. Client retrieved _____ by _____
2. Lab Disposal _____ by _____
3. Store for _____ days. by _____
4. Other _____ by _____

Date/Time

Date/Time

Date/Time 1/6/88 As Sampled

Method of Shipment:

Special Instructions:

I hereby authorize the performance of the above indicated work.

Privileged and Company Private Attorney Client Communication and Work Product

SOURCE: Adapted from U.S. EPA, 1985

CCR-100

DISTRIBUTION: White with report, Yellow to CRL, Pink to Courier, Gold to Sample Control

[redacted] CH[redacted]CAL [redacted]SEA[redacted]CH L[redacted]ORA[redacted]RIES, INC.

11631 Seaboard Circle • Stanton, CA 90680
(714) 891-0405 • FAX: (714) 893-6709 • (800) LAB-1CRL

- O[redacted]E COUNTY
- VE[redacted]RA
- SANTA MARIA
- BAKERSFIELD
- L.A. COUNTY
- MOBILE LAB

CHAIN OF CUSTODY [redacted]ECORD

Date 1/6/88 Page 2 of 2

CLIENT Leighton & Associates

ADDRESS 25020 West Ave Ste 190
Valencia CA 91355
Attn: Mimi Maki

PROJECT MANAGER Mimi Maki

PHONE NUMBER (805) 257-0150

PROJECT NAME AR Textron 10445 Glenoaks Pacoima

SAMPLERS: (Signature) Gary H. Kepes

SAMPLE NUMBER	LOCATION DESCRIPTION	DATE	TIME	SAMPLE TYPE WATER Comp.	SAMPLE TYPE WATER Grab.	SAMPLE TYPE AIR	SOLID	NO. OF CNTNRS	TESTS REQUIRED			
8	LB3 S8B 38'	1/6/88	1345				soil	1-sleeve	8015-DSL	8020	8010	~~418.1~~ D.K.
9	LB3 S9B 43'	"	1445				"	"	"	"	"	418.1
10	LB3 S10B 48'	"	1505				"	"	"	"	"	"
11	LB3 S11B 53'	"	1543				"	"	"	"	"	"
12	LB3 S12B 58'	"	1610				"	"	"	"	"	"
13	LB3 S13B 63'	"	1655				"	"	"	"	"	"

Relinquished by: (Signature)	Received by: (Signature)	CRL will store sample for 30 days at no charge. Storage after 30 days is charged at $10 per month per sample. Disposal of sample is charged at $10 per sample. Please indicate the disposition of your sample.	Date/Time
Relinquished by: (Signature)	Received by: (Signature)	1. Client retrieved _____ by _____ 2. Lab Disposal _____ by _____	Date/Time
Relinquished by: (Signature) Gary H. Kepes 5:45pm 1/06/88	Received by Mobile Laboratory for field analysis: (Signature) D. Kummerer	3. Store for _____ days. by _____ 4. Other _____ by _____	Date/Time 1/6/88 AS Sampled
Dispatched by: (Signature)	Date/Time	Received for Laboratory by:	Date/Time

Method of Shipment:

Special Instructions:

I hereby authorize the performance of the above indicated work.

Privileged and Company Private Attorney Client Communication and Work Product

SOURCE: Adapted from U.S. EPA, 1985

CCR-100

DISTRIBUTION: White with report, Yellow to CRL, Pink to Courier, Gold to Sample Control

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Privileged and Company
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January 15, 1988

CRL MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Walter Berger

ANALYSIS NO.: 800808-001/007
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/08/88
DATE SAMPLE REC'D: 01/08/88
PROJECT: HR Textron 10445 Glenoaks
Pacoima

Enclosed with this letter is the report on the chemical and physical analyses on the samples from ANALYSIS NO: 800808-001/007 shown above.

The samples were received by CRL in a chilled state, intact, and with the chain-of-custody record attached.

Please note that ND( ) means not detected at the detection limit expressed within the parentheses.

REVIEWED AND APPROVED

This report pertains only to the samples investigated and does not necessarily apply to other apparently identical or similar materials. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purposes without authorization is prohibited.

Chemical Research Laboratories, Inc.
MOBILE DIVISION
11631 Seaboard Circle • Stanton, CA 90680
(714) 891-0405 • FAX: (714) 893-6709 • (800) LAB-1CRL

LABORATORY REPORT

TO:
Leighton & Associates
25020 West Avenue, Ste. 190
Valencia, CA 91355
ATTN: Ms. Mimi Maki
PROJECT:
HR Textron, 10445 Glenoaks, Pacoima

ANALYSIS NO.: 010788-1/7
DATE SAMPLED: 1/07/88
DATE REC'D: 1/07/88
BATCH: 281
MATRIX: Soil

Results (mg/kg)

Aromatic Volatile Organics (EPA8020)

Compound	LB3 S21B 103'
Benzene	*ND(.05)
Toluene	ND(.05)
Ethylbenzene	ND(.05)
Total Xylenes	ND(.05)
Chlorobenzene	ND(.05)
P-Dichlorobenzene	ND(.05)
M-Dichlorobenzene	ND(.05)
O-Dichlorobenzene	ND(.05)

Privileged and Company Private Attorney Client Communication and Work Product

* ND - not detected at the detection limit expresed within the parentheses.

Note: Samples were received intact and with the chain of custody.

Reviewed and approved

1-14-88
Date

This report pertains only to the samples investigated and does not necessarily apply to other apparently identical or similar materials. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purposes without authorization is prohibited.

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LABORATORY REPORT

CRL MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Walter Berger

Sample ID: 010788-1 LB3 S14B 68'

ANALYSIS NO.: 800808-001
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/08/88
DATE SAMPLE REC'D: 01/08/88
DATE ANALYZED: 01/11/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445 Glenoaks Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	150.	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	700.	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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Chemical Research Laboratories, Inc.
7440 Lincoln Way • Garden Grove, CA 92641
(714) 898-6370 • (213) 598-0458

Privileged and Company
Private Attorney
Client Communication
and Work Product

LABORATORY REPORT

CRL MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Walter Berger

Sample ID: 010788-2 LB3 S15B 73'

ANALYSIS NO.: 800808-002
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/08/88
DATE SAMPLE REC'D: 01/08/88
DATE ANALYZED: 01/11/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445 Glenoaks
Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	150.	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Walter Berger

Sample ID: 010788-3 LB3 S16B 78'

ANALYSIS NO.: 800808-003
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/08/88
DATE SAMPLE REC'D: 01/08/88
DATE ANALYZED: 01/11/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445 Glenoaks Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	150.	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Walter Berger

Sample ID: 010788-4 LB3 S18B 88'

ANALYSIS NO.: 800808-004
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/08/88
DATE SAMPLE REC'D: 01/08/88
DATE ANALYZED: 01/11/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445 Glenoaks Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Walter Berger

Sample ID: 010788-5 LB3 S19B 93'

ANALYSIS NO.: 800808-005
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/08/88
DATE SAMPLE REC'D: 01/08/88
DATE ANALYZED: 01/11/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445 Glenoaks Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Walter Berger

Sample ID: 010788-6 LB3 S20B 98'

ANALYSIS NO.: 800808-006
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/08/88
DATE SAMPLE REC'D: 01/08/88
DATE ANALYZED: 01/11/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445 Glenoaks
Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Walter Berger

Sample ID: 010788-7 LB3 S21B 103'

ANALYSIS NO.: 800808-007
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/08/88
DATE SAMPLE REC'D: 01/08/88
DATE ANALYZED: 01/11/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445 Glenoaks Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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[redacted] CHEMICAL RESEARCH LABORATORIES, INC.

11631 Seaboard Circle • Stanton, CA 90680
(714) 891-0405 • FAX: (714) 893-6709 • (800) LAB-1CRL

[redacted] COUNTY
• VENTURA
• SANTA MARIA
• BAKERSFIELD
• L.A. COUNTY
• MOBILE LAB

CHAIN OF CUSTODY RECORD

Date 1/7/87 Page 1 of 1

CLIENT Leighton & Associates

ADDRESS 25020 West Ave Ste 190
Valencia CA 91355
Attn: Mimi Maki

PROJECT MANAGER Mimi Maki

PHONE NUMBER (805) 257-0150

PROJECT NAME HR Tarzana 10445 Glenoaks, Pacoima

SAMPLERS: (Signature) Danny A. Kopes

SAMPLE NUMBER	LOCATION DESCRIPTION	DATE	TIME	SAMPLE TYPE: WATER Comp.	WATER Grab.	AIR	SOLID	NO. OF CNTNRS	TESTS REQUIRED
1	LB3 S14B 68'	1/7/87	0855				soil	1-sleeve	418.1 8020 8010
2	LB3 S15B 73'	"	0940				"	"	" " "
3	LB3 S16B 78'	"	1015				"	"	" " "
4	LB3 S18B 88'	"	1055				"	"	" " "
5	LB3 S19B 93'	"	1145				"	"	" " "
6	LB3 S20B 98'	"	1310				"	"	" " "
7	LB3 S21B 103'	"	1425				"	"	" " "

Relinquished by: (Signature)

Received by: (Signature)

Date/Time

Relinquished by: (Signature)

Received by: (Signature)

Date/Time

Relinquished by: (Signature) 4:15 PM 1/07/87
Danny A. Kopes

Received by Mobile Laboratory for field analysis: (Signature) DT Hammann

CRL will store sample for 30 days at no charge. Storage after 30 days is charged at $10 per month per sample. Disposal of sample is charged at $10 per sample. Please indicate the disposition of your sample.

1. Client retrieved _____ by _____
2. Lab Disposal _____ by _____
3. Store for _____ days. by _____
4. Other _____ by _____

Date/Time 1/7/87 As Sampled

Dispatched by: (Signature)

Date/Time

Received for Laboratory by:

Date/Time

Method of Shipment:

Special Instructions:

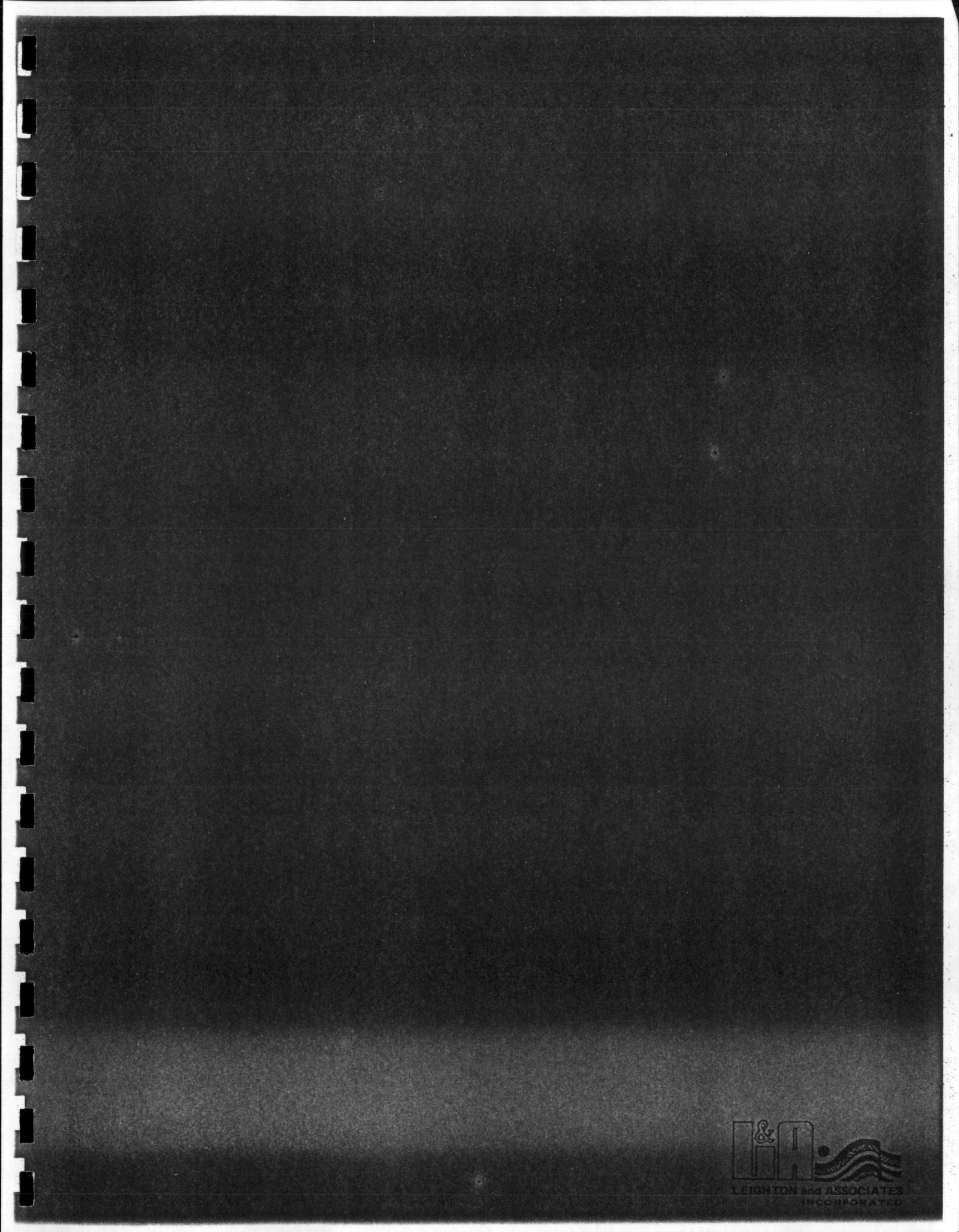
I hereby authorize the performance of the above indicated work.

Privileged and Company Private Attorney Client Communication and Work Product

SOURCE: Adapted from U.S. EPA, 1985

CCR-100

DISTRIBUTION: White with report, Yellow to CRL, Pink to Courier, Gold to Sample Control


L&A
LEIGHTON and ASSOCIATES
INCORPORATED

Chemical Research Laboratories, Inc.
SOUTHERN CALIFORNIA DIVISION
7440 Lincoln Way • Garden Grove, CA 92641
(714) 898-6370 • FAX: (714) 891-5917 • (800) LAB-1CRL

Privileged and Company Private Attorney Client Communication and Work Product

January 15, 1988

CRL MOBILE LABORATORIES
11631 Seaboard Circle,
Stanton, CA 90680
ATTN: Mr. Walter Berger

ANALYSIS NO.: 801105-001/007
ANALYSES: EPA Method 8010
DATE SAMPLED: 1/8/88
DATE SAMPLE REC'D: 1/11/88
PROJECT: HR Textron 10445
Glenoaks, Pacoima

Enclosed with this letter is the report on the chemical and physical analyses on the samples from ANALYSIS NO: 801105-001/007 shown above.

The samples were received by CRL in a chilled state, intact, and with the chain-of-custody record attached.

Please note that ND( ) means not detected at the detection limit expressed within the parentheses.

REVIEWED AND APPROVED

This report pertains only to the samples investigated and does not necessarily apply to other apparently identical or similar materials. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purposes without authorization is prohibited.

Chemical Research Laboratories, Inc.
MOBILE DIVISION
11631 Seaboard Circle • Stanton, CA 90680
(714) 891-0405 • FAX: (714) 893-6709 • (800) LAB-1CRL

LABORATORY REPORT

TO:
Leighton & Associates
25020 West Avenue., Ste. 190
Valencia, CA 91355
ATTN: Ms. Mimi Maki
PROJECT:
HR Textron, 10445 Glenoaks, Pacoima

ANALYSIS NO.: 010888-1/7
DATE SAMPLED: 1/08/88
DATE REC'D: 1/08/88
BATCH: 282
MATRIX: Soil

Results (mg/kg)

Sample Identification	Total Recoverable Hydrocarbons (EPA418.1)
LB3 S23A 110'	2.
LB4 S1B 0.5'	2.
LB4 S2B 3'	*ND(1.)
LB4 S3B 8'	ND(1.)
LB4 S4B 13'	1.
LB4 S5B 18'	ND(1.)
LB4 S6B 23'	ND(1.)

Privileged and Company Private Attorney Client Communication and Work Product

* ND - Not detected at the detection limit expressed within the parentheses.

Note: Samples were received intact and with the chain of custody.

Walter Berger
Reviewed and approved

1-15-88
Date

This report pertains only to the samples investigated and does not necessarily apply to other apparently identical or similar materials. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purposes without authorization is prohibited.

Privileged and Company
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Chemical Research Laboratories, Inc.
MOBILE DIVISION
11631 Seaboard Circle • Stanton, CA 90680
(714) 891-0405 • FAX: (714) 893-6709 • (800) LAB-1CRL

LABORATORY REPORT

TO:
Leighton & Associates
25020 West Avenue, Ste. 190
Valencia, CA 91355
ATTN: Ms. Mimi Maki
PROJECT:
HR Textron, 10445 Glenoaks, Pacoima

ANALYSIS NO.: 010888-1/7
DATE SAMPLED: 1/08/88
DATE REC'D: 1/08/88
BATCH: 282
MATRIX: Soil

Results (mg/kg)

Aromatic Volatile Organics (EPA8020)

Compound	LB3 S23A 110'	LB4 S1B 0.5'	LB4 S2B 3'
Benzene	*ND(.05)	ND(.05)	ND(.05)
Toluene	ND(.05)	ND(.05)	ND(.05)
Ethylbenzene	ND(.05)	ND(.05)	ND(.05)
Total Xylenes	ND(.05)	ND(.05)	ND(.05)
Chlorobenzene	ND(.05)	ND(.05)	ND(.05)
P-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)
M-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)
O-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)

	LB4 S3B 8'	LB4 S4B 13'	LB4 S5B 18'
Benzene	ND(.05)	ND(.05)	ND(.05)
Toluene	ND(.05)	ND(.05)	ND(.05)
Ethylbenzene	ND(.05)	ND(.05)	ND(.05)
Total Xylenes	ND(.05)	ND(.05)	ND(.05)
Chlorobenzene	ND(.05)	ND(.05)	ND(.05)
P-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)
M-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)
O-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)

* ND - not detected at the detection limit expresed within the parentheses.

Note: Samples were received intact and with the chain of custody.

Walter Berg
Reviewed and approved

1-15-88
Date

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MOBILE DIVISION
11631 Seaboard Circle • Stanton, CA 90680
(714) 891-0405 • FAX: (714) 893-6709 • (800) LAB-1CRL

LABORATORY REPORT

TO:
Leighton & Associates
25020 West Avenue, Ste. 190
Valencia, CA 91355
ATTN: Ms. Mimi Maki
PROJECT:
HR Textron, 10445 Glenoaks, Pacoima

ANALYSIS NO.: 010888-1/7
DATE SAMPLED: 1/08/88
DATE REC'D: 1/08/88
BATCH: 282
MATRIX: Soil

Results (mg/kg)

Aromatic Volatile Organics (EPA8020)

Compound	LB4 S6B 23'
Benzene	*ND(.05)
Toluene	ND(.05)
Ethylbenzene	ND(.05)
Total Xylenes	ND(.05)
Chlorobenzene	ND(.05)
P-Dichlorobenzene	ND(.05)
M-Dichlorobenzene	ND(.05)
O-Dichlorobenzene	ND(.05)

Privileged and Company Private Attorney Client Communication and Work Product

* ND - not detected at the detection limit expresed within the parentheses.

Note: Samples were received intact and with the chain of custody.

Walter Berg
Reviewed and approved

1-15-88
Date

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SOUTHERN CALIFORNIA DIVISION
7440 Lincoln Way • Garden Grove, CA 92641
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LABORATORY REPORT

CRL MOBILE LABORATORIES
11631 Seaboard Circle,
Stanton, CA 90680
ATTN: Mr. Walter Berger

SAMPLE ID.: 010888-1 LB3 523A 110'

ANALYSIS NO.: 801105-001
ANALYSES: EPA Method 8010
DATE SAMPLED: 1/8/88
DATE SAMPLE REC'D: 1/11/88
DATE ANALYZED: 1/12/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445
Glenoaks, Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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Privileged and Company Private Attorney Client Communication and Work Product

LABORATORY REPORT

CRL MOBILE LABORATORIES
11631 Seaboard Circle,
Stanton, CA 90680
ATTN: Mr. Walter Berger

SAMPLE ID.: 010888-2 LB4 51B .5'

ANALYSIS NO.: 801105-002
ANALYSES: EPA Method 8010
DATE SAMPLED: 1/8/88
DATE SAMPLE REC'D: 1/11/88
DATE ANALYZED: 1/12/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445
Glenoaks, Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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SOUTHERN CALIFORNIA DIVISION
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Privileged and Company
Private Attorney
Client Communication
and Work Product

LABORATORY REPORT

CRL MOBILE LABORATORIES
11631 Seaboard Circle,
Stanton, CA 90680
ATTN: Mr. Walter Berger

SAMPLE ID.: 010888-3 LB4 52B 3.0'

ANALYSIS NO.: 801105-003
ANALYSES: EPA Method 8010
DATE SAMPLED: 1/8/88
DATE SAMPLE REC'D: 1/11/88
DATE ANALYZED: 1/12/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445
Glenoaks, Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL MOBILE LABORATORIES
11631 Seaboard Circle,
Stanton, CA 90680
ATTN: Mr. Walter Berger

SAMPLE ID.: 010888-4 LB4 53B 8'

ANALYSIS NO.: 801105-004
ANALYSES: EPA Method 8010
DATE SAMPLED: 1/8/88
DATE SAMPLE REC'D: 1/11/88
DATE ANALYZED: 1/12/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445
Glenoaks, Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL MOBILE LABORATORIES
11631 Seaboard Circle,
Stanton, CA 90680
ATTN: Mr. Walter Berger

SAMPLE ID.: 010888-5 LB4 54B 13'

ANALYSIS NO.: 801105-005
ANALYSES: EPA Method 8010
DATE SAMPLED: 1/8/88
DATE SAMPLE REC'D: 1/11/88
DATE ANALYZED: 1/12/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445
Glenoaks, Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL MOBILE LABORATORIES
11631 Seaboard Circle,
Stanton, CA 90680
ATTN: Mr. Walter Berger

SAMPLE ID.: 010888-6 LB4 55B 18'

ANALYSIS NO.: 801105-006
ANALYSES: EPA Method 8010
DATE SAMPLED: 1/8/88
DATE SAMPLE REC'D: 1/11/88
DATE ANALYZED: 1/12/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445
Glenoaks, Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL MOBILE LABORATORIES
11631 Seaboard Circle,
Stanton, CA 90680
ATTN: Mr. Walter Berger

SAMPLE ID.: 010888-7 LB4 56B 23'

ANALYSIS NO.: 801105-007
ANALYSES: EPA Method 8010
DATE SAMPLED: 1/8/88
DATE SAMPLE REC'D: 1/11/88
DATE ANALYZED: 1/12/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445
Glenoaks, Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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- O[illegible]E COUNTY
- VE[illegible]RA
- SANTA MARIA
- BAKERSFIELD
- L.A. COUNTY
- MOBILE LAB

CHAIN OF CUSTOD[illegible] [illegible]ECORD

Date 1/8/88 Page 1 of 1

CLIENT Leighton & Associates

ADDRESS 25020 West Ave. Ste. 190
Valencia CA. 91355
Attn: Mimi Maki

PROJECT MANAGER Mimi Maki

PHONE NUMBER (805) 257-0150

PROJECT NAME HR Textron 10445 Glenoaks Pacoima

SAMPLERS: (Signature) Garry H. Kepes

SAMPLE NUMBER	LOCATION DESCRIPTION	DATE	TIME	SAMPLE TYPE WATER Comp.	SAMPLE TYPE WATER Grab.	SAMPLE TYPE AIR	SOLID	NO. OF CNTNRS	TESTS REQUIRED		
1	LB3 S23A 110'	1/8/88	1050				soil	1-sleeve	418.1	8020	8010
2	LB4 S1B 0.5'	"	1530				"	"	"	"	"
3	LB4 S2B 3.0'	"	1550				"	"	"	"	"
4	LB4 S3B 8'	"	1612				"	"	"	"	"
5	LB4 S4B 13'	"	1634				"	"	"	"	"
6	LB4 S5B 18'	"	1651				"	"	"	"	"
7	LB4 S6B 23'	"	1711				"	"	"	"	"

Relinquished by: (Signature)

Received by: (Signature)

Date/Time

Relinquished by: (Signature)

Received by: (Signature)

Date/Time

Relinquished by: (Signature) 545pm Garry H Kepes 1/08/88

Received by Mobile Laboratory for field analysis: (Signature) [signature]

Date/Time 1/8/88 As Sampled

CRL will store sample for 30 days at no charge. Storage after 30 days is charged at $10 per month per sample. Disposal of sample is charged at $10 per sample. Please indicate the disposition of your sample.

1. Client retrieved _____ by _____
2. Lab Disposal _____ by _____
3. Store for _____ days. by _____
4. Other _____ by _____

Dispatched by: (Signature)

Date/Time

Received for Laboratory by:

Date/Time

Method of Shipment:

Special Instructions:

I hereby authorize the performance of the above indicated work.

Privileged and Company Private Attorney Client Communication and Work Product

SOURCE: Adapted from U.S. EPA, 1985

CCR-100

DISTRIBUTION: White with report, Yellow to CRL, Pink to Courier, Gold to Sample Control

Chemical Research Laboratories, Inc.
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Privileged and Company Private Attorney Client Communication and Work Product

January 18, 1988

CRL MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Mr. Walter Berger

ANALYSIS NO.: 801203-001/012
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/11/88
DATE SAMPLE REC'D: 01/12/88
PROJECT: HR Textron 10445
Geloaks-Pacoima

Enclosed with this letter is the report on the chemical and physical analyses on the samples from ANALYSIS NO: 801203-001/012 shown above.

The samples were received by CRL in a chilled state, intact, and with the chain-of-custody record attached.

Please note that ND( ) means not detected at the detection limit expressed within the parentheses.

REVIEWED AND APPROVED

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Chemical Research Laboratories, Inc.
MOBILE DIVISION
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LABORATORY REPORT

TO:
Leighton & Associates
25020 West Avenue., Ste. 190
Valencia, CA 91355
ATTN: Ms. Mimi Maki
PROJECT:
HR Textron, 10445 Glenoaks, Pacoima

ANALYSIS NO.: 011188-1/12
DATE SAMPLED: 1/11/88
DATE REC'D: 1/11/88
BATCH: B071
MATRIX: Soil

Results (mg/kg)

Sample Identification	Total Recoverable Hydrocarbons (EPA418.1)
LB4 S7B 28'	*ND(1.)
LB4 S8B 33'	1.
LB4 S9B 38'	2.
LB4 S10B 43'	16.
LB4 S11B 48'	4.
LB4 S12B 53'	4.
LB4 S13B 58'	3.
LB4 S14B 63'	ND(1.)
LB4 S15B 68'	5.
LB4 S16B 73'	2.
LB4 S18B 83'	2.
LB4 S19B 88'	1.

* ND - Not detected at the detection limit expressed within the parentheses.

Note: Samples were received intact and with the chain of custody.

Walter Berg
Reviewed and approved

1-15-88
Date

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Chemical Research Laboratories, Inc.
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LABORATORY REPORT

TO:
Leighton & Associates
25020 West Avenue, Ste. 190
Valencia, CA 91355
ATTN: Ms. Mimi Maki
PROJECT:
HR Textron, 10445 Glenoaks, Pacoima

ANALYSIS NO.: 011188-1/12
DATE SAMPLED: 1/11/88
DATE REC'D: 1/11/88
BATCH: B071
MATRIX: Soil

Results (mg/kg)

Aromatic Volatile Organics (EPA8020)

Compound	LB4 S7B 28'	LB4 S8B 33'	LB4 S9B 38'
Benzene	*ND(.05)	ND(.05)	ND(.05)
Toluene	ND(.05)	ND(.05)	ND(.05)
Ethylbenzene	ND(.05)	ND(.05)	ND(.05)
Total Xylenes	ND(.05)	ND(.05)	ND(.05)
Chlorobenzene	ND(.05)	ND(.05)	ND(.05)
P-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)
M-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)
O-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)

	LB4 S10B 43'	LB4 S11B 48'	LB4 S12B 53'
Benzene	ND(.05)	ND(.05)	ND(.05)
Toluene	ND(.05)	ND(.05)	ND(.05)
Ethylbenzene	ND(.05)	ND(.05)	ND(.05)
Total Xylenes	ND(.05)	ND(.05)	ND(.05)
Chlorobenzene	ND(.05)	ND(.05)	ND(.05)
P-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)
M-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)
O-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)

* ND - not detected at the detection limit expresed within the parentheses.

Note: Samples were received intact and with the chain of custody.

Walter Bee
Reviewed and approved

1-15-88
Date

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MOBILE DIVISION
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LABORATORY REPORT

TO:
Leighton & Associates
25020 West Avenue, Ste. 190
Valencia, CA 91355
ATTN: Ms. Mimi Maki
PROJECT:
HR Textron, 10445 Glenoaks, Pacoima

ANALYSIS NO.: 011188-1/12
DATE SAMPLED: 1/11/88
DATE REC'D: 1/11/88
BATCH: B071
MATRIX: Soil

Results (mg/kg)

Aromatic Volatile Organics (EPA8020)

Compound	LB4 S13B 58'	LB4 S14B 63'	LB4 S15B 68'
Benzene	*ND(.05)	ND(.05)	ND(.05)
Toluene	ND(.05)	ND(.05)	ND(.05)
Ethylbenzene	ND(.05)	ND(.05)	ND(.05)
Total Xylenes	ND(.05)	ND(.05)	ND(.05)
Chlorobenzene	ND(.05)	ND(.05)	ND(.05)
P-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)
M-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)
O-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)

	LB4 S16B 73'	LB4 S18B 83'	LB4 S19B 88'
Benzene	ND(.05)	ND(.05)	ND(.05)
Toluene	ND(.05)	ND(.05)	ND(.05)
Ethylbenzene	ND(.05)	ND(.05)	ND(.05)
Total Xylenes	ND(.05)	ND(.05)	ND(.05)
Chlorobenzene	ND(.05)	ND(.05)	ND(.05)
P-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)
M-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)
O-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)

* ND - not detected at the detection limit expresed within the parentheses.

Note: Samples were received intact and with the chain of custody.

Walter Berg
Reviewed and approved

1-15-88
Date

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LABORATORY REPORT

CRL MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Mr. Walter Berger

Sample ID: B011188-1 LB4 S7B 28'

ANALYSIS NO.: 801203-001
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/11/88
DATE SAMPLE REC'D: 01/12/88
DATE ANALYZED: 01/12/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445
Geloaks-Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Mr. Walter Berger

Sample ID: B011188-2 LB4 S8B 33'

ANALYSIS NO.: 801203-0021
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/11/88
DATE SAMPLE REC'D: 01/12/88
DATE ANALYZED: 01/12/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445
Geloaks-Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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Chemical Research Laboratories, Inc.
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(714) 898-6370 • (213) 598-0458

Privileged and Company Private Attorney Client Communication and Work Product

LABORATORY REPORT

CRL MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Mr. Walter Berger

Sample ID: B011188-3 LB4 S9B 38'

ANALYSIS NO.: 801203-003
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/11/88
DATE SAMPLE REC'D: 01/12/88
DATE ANALYZED: 01/12/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445
Geloaks-Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Mr. Walter Berger

Sample ID: B011188-4 LB4 S10B 43'

ANALYSIS NO.: 801203-004
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/11/88
DATE SAMPLE REC'D: 01/12/88
DATE ANALYZED: 01/12/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445
Geloaks-Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Mr. Walter Berger

Sample ID: B011188-5 LB4 S11B 48'

ANALYSIS NO.: 801203-005
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/11/88
DATE SAMPLE REC'D: 01/12/88
DATE ANALYZED: 01/12/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445
Geloaks-Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Mr. Walter Berger

Sample ID: B011188-6 LB4 S12B 53'

ANALYSIS NO.: 801203-006
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/11/88
DATE SAMPLE REC'D: 01/12/88
DATE ANALYZED: 01/12/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445
Geloaks-Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Mr. Walter Berger

Sample ID: B011188-7 LB4 S13B 58'

ANALYSIS NO.: 801203-007
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/11/88
DATE SAMPLE REC'D: 01/12/88
DATE ANALYZED: 01/13/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445
Geloaks-Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Mr. Walter Berger

Sample ID: B011188-8 LB4 S14B 63'

ANALYSIS NO.: 801203-008
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/11/88
DATE SAMPLE REC'D: 01/12/88
DATE ANALYZED: 01/13/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445
Geloaks-Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Mr. Walter Berger

Sample ID: B011188-9 LB4 S15B 68'

ANALYSIS NO.: 801203-009
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/11/88
DATE SAMPLE REC'D: 01/12/88
DATE ANALYZED: 01/13/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445
Geloaks-Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Mr. Walter Berger

Sample ID: B011188-10 LB4 S16B 73'

ANALYSIS NO.: 801203-010
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/11/88
DATE SAMPLE REC'D: 01/12/88
DATE ANALYZED: 01/13/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445
Geloaks-Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Mr. Walter Berger

Sample ID: B011188-11 LB4 S18B 83'

ANALYSIS NO.: 801203-011
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/11/88
DATE SAMPLE REC'D: 01/12/88
DATE ANALYZED: 01/13/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445
Geloaks-Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Mr. Walter Berger

Sample ID: B011188-12 LB4 S19B 88'

ANALYSIS NO.: 801203-012
ANALYSES: EPA Method 8010
DATE SAMPLED: 01/11/88
DATE SAMPLE REC'D: 01/12/88
DATE ANALYZED: 01/13/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445
Geloaks-Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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[redacted] CAL RESEARCH LABORATORIES, INC. [redacted]

11631 Seaboard Circle • Stanton, CA 90680
(714) 891-0405 • FAX: (714) 893-6709 • (800) LAB-1CRL

- [redacted] GE COUNTY
- V[redacted] JRA
- SANTA MARIA
- BAKERSFIELD
- L.A. COUNTY
- MOBILE LAB

CHAIN OF CUSTOD[redacted] ECORD

Date 1/11/88 Page 1 of 2

CLIENT Leighton & Associates

ADDRESS

Attn: Mimi Maki

PROJECT MANAGER Mimi Maki

PHONE NUMBER

PROJECT NAME HR Textron 10445 Glenoaks Pacoima

SAMPLERS: (Signature) Gary A. Kepas

SAMPLE NUMBER	LOCATION DESCRIPTION	DATE	TIME	SAMPLE TYPE WATER Comp.	WATER Grab.	AIR	SOLID	NO. OF CNTNRS	TESTS REQUIRED
1	LBY S7B 28'	1/11/88	1000				soil	1-sleeve	8020 418.1 8010
2	LBY S8B 33'	"	0915				"	"	" " "
3	LBY S9B 38'	"	1045				"	"	" " "
4	LBY S10D 43'	"	1100				"	"	" " "
5	LBY S11B 48'	"	1121				"	"	" " "
6	LBY S12B 53'	"	1145				"	"	" " "
7	LBY S13B 58'	"	1250				"	"	" " "

Relinquished by: (Signature)

Received by: (Signature)

CRL will store sample for 30 days at no charge. Storage after 30 days is charged at $10 per month per sample. Disposal of sample is charged at $10 per sample. Please indicate the disposition of your sample.

1. Client retrieved _____ by _____
2. Lab Disposal _____ by _____
3. Store for _____ days. by _____
4. Other _____ by _____

Date/Time

Relinquished by: (Signature)

Received by: (Signature)

Date/Time

Relinquished by: (Signature) 1725 Gary A Kepas 1/11/88

Received by Mobile Laboratory for field analysis: (Signature) Pat Kammen

Date/Time 1/11/88 KS Sampled

Dispatched by: (Signature)

Date/Time

Received for Laboratory by:

Date/Time

Method of Shipment:

Special Instructions:

I hereby authorize the performance of the above indicated work.

Privileged and Company Private Attorney Client Communication and Work Product

SOURCE: Adapted from U.S. EPA, 1985

CCR-100

DISTRIBUTION: White with report, Yellow to CRL, Pink to Courier, Gold to Sample Control

[redacted] ANALYTICAL RESEARCH LABORATORIES, INC.

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- [redacted] ORANGE COUNTY
- VENTURA
- SANTA MARIA
- BAKERSFIELD
- L.A. COUNTY
- MOBILE LAB

CHAIN OF CUSTODY RECORD

Date 1/11/88 Page 1 of 2

CLIENT Leighton & Associates

ADDRESS

Attn: Mimi Maki

PROJECT NAME

HR Test from 10445 Glenoaks Pacoima

PROJECT MANAGER

Mimi Maki

PHONE NUMBER

SAMPLERS: (Signature) Gary D. Hopps

SAMPLE NUMBER	LOCATION DESCRIPTION	DATE	TIME	SAMPLE TYPE: WATER Comp.	WATER Grab	AIR	SOLID	NO. OF CNTNRS	TESTS REQUIRED
8	LBY S14B 63'	1/11/88	1340				Soil	1-sleeve	8020 418.1 8010
9	LBY S15B 68'	1/11/88	1405				"	"	" " "
10	LBY S16B 73'	"	1440				"	"	" " "
11	LBY S18B 88'	"	1630				"	"	" " "
12	LBY S19B 88'	"	1650				"	"	" " "

Relinquished by: (Signature) — Received by: (Signature) — Date/Time

Relinquished by: (Signature) — Received by: (Signature) — Date/Time

Relinquished by: (Signature) 1725 Gary D. Hopps 1/11/88 — Received by Mobile Laboratory for field analysis: (Signature) — Date/Time

Dispatched by: (Signature) — Received for Laboratory by: — Date/Time

CRL will store sample for 30 days at no charge. Storage after 30 days is charged at $10 per month per sample. Disposal of sample is charged at $10 per sample. Please indicate the disposition of your sample.

1. Client retrieved _____ by _____
2. Lab Disposal _____ by _____
3. Store for _____ days. by _____
4. Other _____ by _____

Date/Time: 1/11/88 As Sampled

Method of Shipment:

Special Instructions:

I hereby authorize the performance of the above indicated work.

Privileged and Company Private Attorney Client Communication and Work Product

SOURCE: Adapted from U.S. EPA, 1985

CCR-100

DISTRIBUTION: White with report, Yellow to CRL, Pink to Courier, Gold to Sample Control

Chemical Research Laboratories, Inc.
SOUTHERN CALIFORNIA DIVISION
7440 Lincoln Way • Garden Grove, CA 92641
(714) 898-6370 • FAX: (714) 891-5917 • (800) LAB-1CRL

Privileged and Company Private Attorney Client Communication and Work Product

January 19, 1988

CRL-MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Mr. Nils J. Cornejo

ANALYSIS NO.: 801220-001/003
ANALYSES: EPA Method 8010
DATE SAMPLED: 1/12/88
DATE SAMPLE REC'D: 1/12/88
PROJECT: HR Textron 10445 Glenoaks, Pacoima

Enclosed with this letter is the report on the chemical and physical analyses on the samples from ANALYSIS NO: 801220-001/003 shown above.

The samples were received by CRL in a chilled state, intact, and with the chain-of-custody record attached.

Please note that ND( ) means not detected at the detection limit expressed within the parentheses.

REVIEWED AND APPROVED

This report pertains only to the samples investigated and does not necessarily apply to other apparently identical or similar materials. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purposes without authorization is prohibited.

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MOBILE DIVISION
11631 Seaboard Circle • Stanton, CA 90680
(714) 891-0405 • FAX: (714) 893-6709 • (800) LAB-1CRL

LABORATORY REPORT

TO:
Leighton & Associates
25020 West Avenue., Ste. 190
Valencia, CA 91355
ATTN: Ms. Mimi Maki
PROJECT:
HR Textron, 10445 Glenoaks, Pacoima

ANALYSIS NO.: 011288-1/3
DATE SAMPLED: 1/12/88
DATE REC'D: 1/12/88
BATCH: 283
MATRIX: Soil

Results (mg/kg)

Sample Identification	Total Recoverable Hydrocarbons (EPA418.1)
LB4 S20B 93'	3.
LB4 S21B 98'	3.
LB4 S22B 103'	*ND(1.)

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* ND - Not detected at the detection limit expressed within the parentheses.

Note: Samples were received intact and with the chain of custody.

Walter Berg
Reviewed and approved

1-15-88
Date

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LABORATORY REPORT

TO:
Leighton & Associates
25020 West Avenue, Ste. 190
Valencia, CA 91355
ATTN: Ms. Mimi Maki
PROJECT:
HR Textron, 10445 Glenoaks, Pacoima

ANALYSIS NO.: 011288-1/3
DATE SAMPLED: 1/12/88
DATE REC'D: 1/12/88
BATCH: 283
MATRIX: Soil

Results (mg/kg)

Aromatic Volatile Organics (EPA8020)

Compound	LB4 S20B 93'	LB4 S21B 98'	LB4 S22B 103'
Benzene	*ND(.05)	ND(.05)	ND(.05)
Toluene	ND(.05)	ND(.05)	ND(.05)
Ethylbenzene	ND(.05)	ND(.05)	ND(.05)
Total Xylenes	ND(.05)	ND(.05)	ND(.05)
Chlorobenzene	ND(.05)	ND(.05)	ND(.05)
P-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)
M-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)
O-Dichlorobenzene	ND(.05)	ND(.05)	ND(.05)

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* ND - not detected at the detection limit expresed within the parentheses.

Note: Samples were received intact and with the chain of custody.

Walter Dey
Reviewed and approved

1-15-88
Date

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LABORATORY REPORT

CRL-MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Mr. Nils J. Cornejo

SAMPLE ID.: 011288-1 LB4 S20B 93'

ANALYSIS NO.: 801220-001
ANALYSES: EPA Method 8010
DATE SAMPLED: 1/12/88
DATE SAMPLE REC'D: 1/12/88
DATE ANALYZED: 1/13/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445 Glenoaks, Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL-MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Mr. Nils J. Cornejo

SAMPLE ID.: 011288-2 LB4 S21B 98'

ANALYSIS NO.: 801220-002
ANALYSES: EPA Method 8010
DATE SAMPLED: 1/12/88
DATE SAMPLE REC'D: 1/12/88
DATE ANALYZED: 1/13/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445 Glenoaks, Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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LABORATORY REPORT

CRL-MOBILE LABORATORIES
11631 Seaboard Circle
Stanton, CA 90680
ATTN: Mr. Nils J. Cornejo

SAMPLE ID.: 011288-3 LB4 S22B 103'

ANALYSIS NO.: 801220-003
ANALYSES: EPA Method 8010
DATE SAMPLED: 1/12/88
DATE SAMPLE REC'D: 1/12/88
DATE ANALYZED: 1/13/88
SAMPLE TYPE: Solid
PROJECT: HR Textron 10445 Glenoaks, Pacoima

EPA METHODS 601/8010 VOLATILE POLLUTANTS DATA SHEET

	(ug/kg)		(ug/kg)
Chloromethane	ND(50.)	1,2-Dichloropropane	ND(50.)
Bromomethane	ND(50.)	Trans-1,3-Dichloropropene	ND(50.)
Vinyl Chloride	ND(50.)	Trichloroethene	ND(50.)
Chloroethane	ND(50.)	Dibromochloromethane	ND(50.)
Methylene Chloride	ND(50.)	1,1,2-Trichloroethane	ND(50.)
1,1-Dichloroethene	ND(50.)	Cis-1,3-Dichloropropene	ND(50.)
1,1-Dichloroethane	ND(50.)	2-Chloroethylvinylether	ND(50.)
Trans-1,2-Dichloroethene	ND(50.)	Bromoform	ND(50.)
Chloroform	ND(50.)	Tetrachloroethene	ND(50.)
1,2-Dichloroethane	ND(50.)	1,1,2,2-Tetrachloroethane	ND(50.)
1,1,1-Trichloroethane	ND(50.)	Chlorobenzene	ND(50.)
Carbon Tetrachloride	ND(50.)	Bromodichloromethane	ND(50.)
1,2-Dichlorobenzene	ND(50.)	1,3-Dichlorobenzene	ND(50.)
Trichlorofluoromethane	ND(50.)	1,4-Dichlorobenzene	ND(50.)

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[redacted] L [redacted] EA [redacted] LA [redacted] RA [redacted] IES [redacted] C. [redacted]

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- O[redacted]E C[redacted]
- VE[redacted]RA
- SANTA MARIA
- BAKERSFIELD
- L.A. COUNTY
- MOBILE LAB

[redacted] CH[redacted] OF [redacted] ST[redacted] [redacted]RD [redacted]

Date 1/12/88 Page 1 of ____

CLIENT Leighton & Associates

ADDRESS 25020 West Ave Ste. 190
Valencia CA. 91355
Attn: Mimi Maki

PROJECT MANAGER Mimi Maki

PHONE NUMBER (805) 257-0150

PROJECT NAME HR Textron 10445 Glenoaks Pacoima

SAMPLERS: (Signature) Gary H. Kopes

SAMPLE NUMBER	LOCATION DESCRIPTION	DATE	TIME	SAMPLE TYPE WATER Comp.	WATER Grab.	AIR	SOLID	NO. OF CNTNRS	TESTS REQUIRED
1	LBY 520B 93'	1/12/88	0840				soil	1-sleeve	8020 418.1 6020
2	LBY 521B 98'	"	0910				"	"	" " "
3	LBY 522B 103'	"	0945				"	"	" " "

Relinquished by: (Signature)

Received by: (Signature)

Date/Time

Relinquished by: (Signature)

Received by: (Signature)

Date/Time

Relinquished by: (Signature) Gary H. Kopes 1500 1/12/88

Received by Mobile Laboratory for field analysis: (Signature) [signature]

Date/Time 1/12/88 As Sampled

CRL will store sample for 30 days at no charge. Storage after 30 days is charged at $10 per month per sample. Disposal of sample is charged at $10 per sample. Please indicate the disposition of your sample.

1. Client retrieved ____ by ____
2. Lab Disposal ____ by ____
3. Store for ____ days. by ____
4. Other ____ by ____

Dispatched by: (Signature)

Date/Time

Received for Laboratory by:

Date/Time

Method of Shipment:

Special Instructions:

I hereby authorize the performance of the above indicated work.

Privileged and Company Private Attorney Client Communication and Work Product

SOURCE: Adapted from U.S. EPA, 1985

CCR-100

DISTRIBUTION: White with report, Yellow to CRL, Pink to Courier, Gold to Sample Control