ATTACHMENT E-17
Corrective Action Plan for the UST Area

(Submitted on CD)

APPENDIX C-11

THE TORRINGTON COMPANY
SYLVANIA, GEORGIA

CORRECTIVE ACTION PLAN
FOR
UNDERGROUND STORAGE TANK AREA

May 10, 1991

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SUBMITTED TO:

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PREFACE TO CAP FOR UST AREA

The following Corrective Action Plan (CAP) for the Underground Storage Tank (UST) area has been prepared using the CAP guidance and format which was developed by the Georgia EPD's UST Division for petroleum contamination. However, in addition to meeting these requirements, it has been verified that this document also includes all other informational requirements per Georgia EPD's Land Protection Division's requirements per 40 CFR 270.17(c)(8)(i) and 264.100 for corrective action programs.

In order to aid the reviewer in verifying that appropriate information has been included, a copy of EPD's checklist is included for Section C-8, Corrective Action Program. The location within the CAP where each requirements is addressed is on this checklist.

EPD CHECKLIST - UST AREA

Subject Requirement	40 CFR Section Nos.	Location in Report	Comments
E-8 Corrective Action Program E-8a Characterization of Contamination o Identification of hazardous constituents detected in groundwater	270.14(c)(8)(i)	Introduction	
o Concentrations of hazardous constituents		Sec. II	
E-8b Concentration Limits E-8b(1) Concentration Limits Established Under 264.94(a) E-8b(2) Alternative Concentration Limits o Proposed alternate concentration limits	270.14(c)(8)(ii) 264.100(a) 264.97(a) 265.94(b)	Sec. VI	TPH is not regulated under RCRA. For VOCs elsewhere at the site, the concentration limits have been established at background.
o Justification for proposed alternate limits, including assessment of potential adverse effects on groundwater quality and on the quality of hydraulically connected surface waters, and assessment of the potential for health risks caused by human exposure to waste constituents		NA	Therefore, "background" is proposed as the clean-up level for all organic constituents
E-8c Corrective Action Plan A corrective action program must prevent hazardous constituents from exceeding their respective concentration limits at the compliance point, and between the compliance point and the downgradient facility property boundary. The corrective action plan must consist of detailed engineering plans and report, and must address the following: o Identification of compliance point	270.14(c)(8)(iii) 264.100	Sec. IV Sec. VII	
o Plans for removing and handling of hazardous wastes (if proposed)		Sec. IV	
o Design and construction plans and specifications for any proposed features to contain groundwater or redirect its flow (e.g., drains, engineered barriers, wells)		Sec. IV	
o A description of the treatment technologies to be employed to remove hazardous constituents from contaminated groundwater		Sec. V	
o Description of the operation and maintenance plans for the corrective action measures		Sec. V	
o Description of any additional hydrogeologic data collected for use in designing the corrective action measures		Table 2	
o Schedule for implementation of the corrective action measures		Sec. VIII	

Subject Requirement	40 CFR Section Nos.	Location in Report	Comments
E-8d Groundwater Monitoring Program In conjunction with a corrective action program, a groundwater monitoring program must be implemented to determine compliance with the concentration limits established under 264.94, and to determine the effectiveness of the corrective action program	270.14(c)(8) 264.100(d)	Sec. VII	
E-8d(1) Description of Monitoring System o Number of wells	270.14(c)(8) 270.14(c)(7)(v)	Sec. VII	
o Locations		Sec. VII	
o Depths and screened intervals		Attachment III	
o Casing descriptions		Attachment III	
o Other well construction details		Sec. VII	
o Description of how the groundwater monitoring program will demonstrate the adequacy of the corrective action		Sec. VII	
E-8d(2) Description of Sampling and Analysis Procedures o Sampling frequency	270.14(c)(8) 270.14(c)(7)(v)	Sec. VII	
o Sample collection		Sec. C-5b, Vol II of existing permit application (August 12, 1988)	
o Sample preservation and shipment		Same as above	
o Analytical procedures		Same as above	
o Chain-of-custody control		Same as above	
o Procedures for determining groundwater elevations		Same as above	
o Procedures for annual determination of groundwater flow rate and direction		Sec. C-7a(6) of existing permit application (August 12, 1988)	

Subject Requirement	40 CFR Section Nos.	Location in Report	Comments
E-8d(3) Monitoring Data and Statistical Analysis Procedures o Procedure for establishing background concentration values	270.14(c)(8) 270.14(c)(7)(vi)	Sec. C-7a(6), Vol V (CCSI/DCSI)	
o Statistical procedures for comparing compliance point data to the concentration limits		Sec. C-7a(6), Vol V (CCSI/DCSI)	
o Statistical procedures for evaluating effectiveness of the corrective action program between the compliance point and the property boundary		Sec. C-7a(6), Vol V (CCSI/DCSI)	
E-8d(4) Reporting Requirements o Semi-annual report to Regional Administrator evaluating the effectiveness of the corrective action program	264.100(g)	Sec. IX	

SECTION I

INTRODUCTION

The Torrington Company facility located in Sylvania, Georgia was issued a Post-Closure Permit (Permit HW-056D) for Post-Closure care of four hazardous waste surface impoundments under RCRA (December 27, 1988). The post-closure care permit requires that groundwater contaminated with cyanide and volatile organic compounds (VOCs) be remediated at the facility.

As part of the post-closure care activities, several areas designated as Solid Waste Management Units (SWMUs) were identified as requiring investigation and possibly corrective action. The SWMUs initially listed in the permit included the underground storage tank (UST) area. In addition to this area being regulated by RCRA, the UST area is also subject to Georgia EPD's Underground Storage Tank (UST) Program regulations.

As both VOCs (RCRA regulated wastes), and TPH contamination (regulated by the UST Program), have been identified in soil and groundwater at the UST area, it was previously agreed to that the Hazardous Waste Management Program would assume primary responsibility for any corrective action that would be required.

RFI -- The facility has proceeded with the investigation of all SWMUs through the conduct of a RCRA Facility Investigation (RFI). SWMU investigations were conducted in a phased sampling approach and centered on determining the extent of VOC contamination at the various SWMUs.

The most recent and final RFI report submitted to EPD was titled "Draft Report, The Phase II SWMU Investigation, for The Torrington Company, Sylvania, Georgia" and was submitted to Georgia

EPD on September 20, 1989. The results of this investigation confirmed the presence of VOC contamination in the perched water table and in soil at the UST area.

The conclusions of the assessment report were that corrective action was recommended. However, no groundwater remediation was planned for the perched water table. Collection and treatment of VOC contaminated groundwater was planned as the remedial alternative for the uppermost aquifer as part of the overall site remediation for VOC contaminated groundwater.

Underground Storage Tank Closure -- Recent activities (Fall of 1989) subject to UST regulations include the assessment and removal of three remaining underground storage tanks at the UST area. The tanks removed include a waste oil tank, a quench oil tank, and a maintenance oil tank. A 1,1,1-trichloroethane tank had previously been removed on September 24, 1985.

In compliance with the State of Georgia UST regulations, the following assessment reports were developed concerning the removal of the tanks and the assessment of remaining TPH contamination. The reports were submitted to both EPD's UST Program and to the Hazardous Waste Management Program.

- "Phase II Results for Sampling in the UST Area", Atlanta Environmental Management, Inc., August 10, 1989
- "Underground Storage Tank Assessment", Atlanta Environmental Management, Inc., October 17, 1989
- "Closure of Underground Storage Tanks", Atlanta Environmental Management, Inc., January 31, 1990

Recommended Corrective Action -- The final report on the closure of the tank area recommended that 1) no corrective action was needed to address the TPH contamination in soil and groundwater, 2) remediation of VOC contaminated groundwater in the

perched water table should be addressed via the installation of an intercepter trench with a tie-in to the facility's VOC treatment system, and 3) no additional soil removal was needed.

The Torrington Company proposes to proceed with the necessary corrective measures to collect and treat the contaminated groundwater in the perched water table at the UST area. Due to the thin saturated thickness (typically 0-5 feet) of the perched water table in the UST area and the low permeability of the aquifer materials, a withdrawal well system is not a viable alternative for remediation in this area. The best suited remedial alternative for the perched water zone is the installation of an intercepter trench. The objective of this trench is to contain the plume of contaminated groundwater by acting as a hydraulic barrier at the downgradient edge of the plume; thus, preventing the plume from spreading into clean areas.

The following corrective action plan for addressing VOC and TPH groundwater contamination at the UST area is in agreement with this approach for dealing with the remaining contamination at the UST area. This report is, therefore, provided to the Land Protection Branch for their review and approval. Detailed specifications on the location and the design of the trench are included. Plan certification, in accordance with EPD's "Requirements for Underground Storage Tank (UST) Release: Corrective Action Plan (CAP) Content", is included as Attachment 1.

SECTION II

UST CHARACTERIZATION

Soil Characterization/Tank Closure Activities

Extensive investigations have been conducted in the UST area. Prior to tank removal, several phases of assessment activities were conducted to determine if the tanks had leaked, and if so, to determine the extent of contaminated soil. A base map of the UST area showing the location of the tanks prior to their removal is included as Figure 1.

Soil Assessment, Prior to Tank Closure -- A Phase I characterization was conducted at the area on June 4, 1989. All of the samples collected as part of the Phase I effort were analyzed for total petroleum hydrocarbons (TPH). Samples were collected from the approximate corner locations of each tank from depths of 9.5 to 10 feet, at the base of the clayey sand (SC) which comprises the perched water table. TPH concentrations for these samples ranged from 62 to 85,000 ppm.

Phase II sampling was then conducted to determine the horizontal extent of the contamination indicated in the Phase I sampling activities. In addition to TPH, these samples were also analyzed for the presence of VOCs which had previously been detected in the UST area. Soil samples collected during Phase II activities indicated TPH concentrations from 14 to 440 ppm and VOC contamination from non-detectable to 0.990 ppm.

As part of the Phase II work, the vertical extent of VOC contamination in soil was also measured in several deep borings. These samples were scanned using a photo ionization detector (PID) to determine clean margins. Samples were scanned on intervals of one to two feet. The use of a PID was an acceptable field screening technique since the contaminants of concern, VOCs, have

high vapor pressures. The screening data is included in Table 1. The vertical extent of the TPH contamination was determined to be limited to the perched water table above the confining clay unit at the UST area.

Data collected from the sampling activities outlined above provided sufficient information to characterize both TPH and VOC contamination in the soils at the UST area. The most highly contaminated soils were found in the immediate vicinity of the tank farm, as expected. Maps showing contaminant concentrations for both TPH and VOCs are provided as Figures 2 and 3.

Soil Assessment During Tank Closure -- The underground storage tank closure, which included the removal of the three tanks and the initial soil excavation, was conducted during the week of December 11, 1989. Excavation of contaminated soil was conducted with the objective of reaching clean margins of <100 ppm TPH.

During the tank closure, the soils were scanned using a PID as they were excavated and stockpiled into piles for future disposal. Samples were collected from each pile and analyzed for both TPH and VOCs. Test results indicated TPH concentrations from <10 to 15,000 ppm and total concentrations for VOCs from non-detectable to 3.78 ppm.

After excavation, confirmatory samples were collected from the excavation (see Figure 4) and analyzed to determine if sufficient soils had been removed to obtain clean margins of <100 ppm TPH. Results indicated that additional soil excavation was needed to meet target levels in three areas of the excavation.

Follow-up work, which included additional soil excavation, was conducted during the week of January 8, 1990. Fifty cubic yards of additional soil was removed from the three areas where contamination still exceeded the target cleanup levels (see Figure 4). After the removal of the additional soil, confirmatory samples

were collected from the pit walls. Analytical results for these samples (see Attachment 2) confirmed that a sufficient amount of soil had indeed been removed to leave margins of <100 ppm TPH in the soil.

Approximately 350 cubic yards of contaminated soil were removed. A summary of the tank closure, including all summary data, was provided to both the Underground Storage Tank Program and The Hazardous Waste Management Program in the previously referenced January 31, 1990 report.

In summary, assessment activities at The Torrington Company's facility in Sylvania, Georgia showed high concentrations of both TPH and VOCs to be present in the soils immediately surrounding the three underground storage tanks. As a part of the tank closure, a total of 350 cubic yards of contaminated soil was removed and stockpiled for future disposal. Final confirmatory sampling and analysis confirmed that the source of the contamination had been removed with the removal of the tanks and the most heavily contaminated soils to a level of <100 ppm TPH as documented by confirmatory sampling.

No further soil removal is required since the remaining soils fall below Georgia EPD's target soil clean-up level of 100 ppm for TPH. Additionally, per Georgia EPD's letter of March 9, 1990 to The Torrington Company, EPD has agreed that no further soil excavation is required in the UST area (see Attachment 3).

Characterization of Contaminated Groundwater

Monitoring Well System -- Wells are in place to monitor the perched water table, the uppermost aquifer and also the deeper limestone aquifer. The wells are presently monitored per the facility's permit. The most recent analytical data for the monitoring well system is summarized below.

Additional monitoring wells UST-9, UST-10, and UST-11 were installed prior to the tank farm closure to determine the extent of groundwater contamination in the perched water table downgradient from the petroleum release. As part of the Phase II SWMU investigation, three additional monitoring wells, UST-12, UST-13, and UST-14, were installed along the southeast edge of the parking area. Lithologic and well construction diagrams for these wells are provided as Attachment 4. These wells were installed to characterize groundwater between well B-2 and the UST area.

The perched water table in the area of the underground storage tanks has been impacted by the release of petroleum product and VOCs from the tank farm.

TPH Contamination -- The horizontal extent of the TPH contamination has been defined in the perched water table.

Wells UST-1, UST-9, and UST-11 were sampled on August 15, 1989. Well UST-1 showed TPH at a level of 22 mg/l, well UST-11 was at a level of 6.6 mg/l, and well UST-9 showed non-detectable.

Wells UST-1D, UST-12, and UST-13 were sampled on October 6, 1989. Well UST-1D showed TPH at a level of 5.8 mg/l. Well UST-12 was at a level of 2.3 mg/l and well UST-13 showed 6.1 mg/l. THe analytical results for wells UST-12 and UST-13 are believed to have resulted from contamination that was introduced into the wells during the installation process.

On December 14, 1989 ten wells were sampled for TPH. The only well that showed TPH at a level of contamination that exceeded the detection limit of 1.0 mg/l was well UST-1 at 5.3 mg/l. Results of all of the pertinent analyses are included as Attachment 5.

A map showing the estimated extent of the TPH plume using the highest detected TPH concentrations from any of the three sampling dates is included as Figure 5. It should be noted that even when

using the worst-case, i.e., highest contaminant levels, the plume is completely contained within the area of influence of the proposed intercepter trench.

The vertical extent of TPH contamination has been defined at the UST area. Wells UST-1, UST-1D, and well UST-1DD were sampled on December 14, 1989. Only well UST-1, which monitors the perched water table, was contaminated at 5.3 mg/l. TPH contamination has been shown to be restricted to the perched water table.

VOCs Contamination -- The horizontal extent of the VOCs contamination has been defined in the perched water table at the UST area. A map showing the estimated extent of the VOCs plume in the perched water table is included as Figure 6. It should be noted that the estimated extent of the plume is contained within the area of influence of the proposed intercepter trench.

The most recent sampling in the UST area (August 15, 1989) has confirmed the presence of VOCs in wells UST-1 and UST-11. Well UST-10 was dry at that time. The levels for Total VOCs were 12,400 ppb in UST-1 and 54,000 ppb for UST-11. These results indicate that a plume of VOCs contamination is migrating via the perched water table.

During September 1989, three additional monitoring wells, UST-12, UST-13, and UST-14, were installed to monitor the perched water table farther out in the parking lot, downgradient of the UST area. The wells were sampled on October 6, 1989. The results of the analyses showed VOCs levels of 190 ppb in UST-12, 322 ppb in UST-13, and 4,467 ppb in UST-14. Results of all these analyses are included as Attachment 6.

Concentrations of VOCs for the perched water table show large variations and seasonal fluctuations. All of the wells in the UST area that monitor the perched water table aquifer will be re-sampled for VOC analysis to better define the extent of the VOC plume. The groundwater sampling will be conducted within 60 days of approval of this document. An updated plume map for the perched water table plume will be supplied to EPD at that time.

Results of sample analysis in the drum storage area, which is located still further downgradient to the southeast, indicate that the VOCs contamination has not migrated into this area. Well DSA-1 and DSA-4 in this area show non-detectable levels for VOCs.

The vertical extent of the VOCs contamination has been defined at the UST area. Monitoring wells UST-1, UST-1D, UST-1DD, and LS-1 monitor the vertical extent of the contamination at the UST area. The wells were last sampled on December 14, 1989. At that time, well UST-1 showed a level for total VOCs of 7,910 ug/l, well UST-1D was at a level of 116 ug/l, and well UST-1DD was at a non-detectable level. Thus, the vertical extent of the VOCs contamination has been defined and shown to be restricted to the perched water table and the upper part of the uppermost aquifer. Additional sampling of monitoring well UST-1DD is planned to monitor the vertical migration of the VOC plume. This well will be monitored on a semi-annual basis.

Hydrogeologic Considerations

Soil Types -- The soils found in the perched water table are consistent across the UST area. The saturated zone is composed primarily of an unconsolidated clayey sand (SC). The clayey sand varies in color from tan or light brown to orange and becomes mottled in appearance at a depth of 4-6 feet. The clay content of the SC varies with an average of 10-20% clay increasing up to 50% clay in places with the gradational contact into the underlying confining clay.

Below the clayey sand lies a clay bed 24 feet thick as measured in the lithologic log for well UST-1D. The clay is typically maroon to light gray and is classified as a stiff, fat clay (CH) with less than 5% sand. The clay bed supports the perched water table in the UST area.

The clay is encountered at an average depth of 10 feet in the tank farm area and approximately 12 to 13 feet in the wells installed in the southeast parking area (UST-12, UST-13, and UST-14). The clay unit appears to dip slightly to the southeast.

Potentiometric Data -- Groundwater flow direction for the perched water table in the area varies from northeast to

southeast at the tank farm. A potentiometric map for the perched water table which shows the direction of groundwater flow at the UST area is included as Figure 7.

A groundwater flow rate for the perched water table at the UST area can be estimated from the available data for the CCSI and the DCSI area, approximately 400 feet northeast of the UST area. Data from this area shows an estimated range for the groundwater flow rate from 39 to 77 feet per year (see Attachment 7).

A range of flow rates is provided since the hydraulic gradient is variable across the area. Also, due to the varying clay content of the aquifer materials for the perched water table, the permeability of these materials is also variable. After the trench has been in place for a year and seasonal potentiometric data has been obtained for the UST area, a revised flow rate for the area can be calculated.

Vertical movement of the contaminated groundwater is also a concern. However, deep monitoring wells are installed in the UST area and the vertical extent of the contamination has been defined. A deep recovery well has also been installed at the UST area to collect VOCs contaminated groundwater from the uppermost aquifer in this area. This well should prevent any further vertical migration in the UST area.

SECTION III

CORRECTIVE ACTION COMPLETED OR IN PROGRESS

Removal of TPH Contaminated Soil

The corrective action for the removal of TPH contaminated soil has been completed. The action involved the excavation and disposal of TPH soil down to levels of less than 100 ppm TPH. See Section II of this report for details concerning the removal and disposal of the TPH contaminated soil. See also Attachment 2 which confirms that an appropriate amount of TPH contaminated soil was removed during the closure action. For details of the closure action see the following document:

> "The Torrington Company, Sylvania, Georgia, Closure of Underground Storage Tanks", Atlanta Environmental Management, January 30, 1990.

Remediation of TPH Contaminated Groundwater

Remediation of TPH contaminated groundwater has not been conducted. Per the State of Georgia regulations, remediation of groundwater for TPH contamination at the UST area is not required due to the low levels of TPH detected in the groundwater and the site conditions (e.g. distances to private and public wells, etc.). Remediation of VOCs contamination has been determined by the facility to be warranted. The CAP was developed primarily for the remediation of VOCs contamination, however, it should coincidentally be effective for the remediation of any TPH contamination which may be present.

SECTION IV

DESIGN OF CORRECTIVE ACTION SYSTEM

Trenches are particularly effective for dewatering shallow water zones with low flow rates and low permeability aquifer materials where dewatering with standard recovery well systems is impractical. For remediation of the perched water table in the UST area, the installation of an intercepter trench is by far the most effective method for dewatering, both with regard to the assurance that the system has a fully encompassing zone of influence and the cost of maintenance.

Placement of the trench is extremely important when remediating contaminated source areas such as the UST area. The closer to the source area, the more quickly the most highly contaminated ground water is collected. The further out a trench is installed, the less quickly the bulk of the contamination is removed.

The design for the trench will be similar to that of the trench installed at the CCSI and DCSI area. A schematic of the trench is provided as Figure 8. The drain will be double-sided, i.e. open on both sides, and installed in a non-contaminated part of the site.

Intercepter Trench Specifications

A groundwater intercepter trench will be installed to collect both TPH and VOCs contaminated groundwater at the UST area. Specifications on the location and the design of the trench are provided as follows:

- The trench will be a minimum of two feet in width and excavated to a minimum depth of one foot into the confining clay layer.

- A cut section of MIRAFI 140N filter fabric will be placed in the trench that allows for the anticipated trench dimensions and three feet of overlap on the top.

- A three inch base of pea gravel will then be gently placed in the bottom of the trench in order to avoid tearing the filter fabric.

- Corrugated plastic drainage tubing with a polyester envelope (e.g. ADS SOCK, or equivalent) to cover the drain pipe will next be placed in the trench. Minimum specifications call for a four inch pipe with a slope of 0.01 (0.006 minimum by calculation).

- The slope for the drain will be surveyed during installation to insure proper grade is maintained.

- A minimum of two feet of pea gravel will be placed above the drain pipe. The filter fabric will then be overlapped on top of the gravel to a minimum distance of two feet.

- The trench will be backfilled with clean soil from the excavation and compacted.

The trench design outlined above has worked well at the CCSI and DCSI area and should also provide an effective, long term low maintenance system for remediation in the UST area. The MIRAFI 140N filter fabric will serve to allow fines (silts and clays) into the drain while preventing the drain from clogging with sand. A product description for the MIRAFI 140N is included as Attachment 8.

General information on the aquifer and its estimated hydraulic characteristics used in designing the trench is provided on Table 2. The following information provides details on the items specified in the table.

- The <u>length of the drain</u> was estimated to be 650 feet.

- The <u>depth of clay</u> is an approximate depth averaged along the length of the drain based upon the available boring data from the site. The upper contact for the confining clay is not always exact rather it is often a gradational change; thus, this depth is approximate within one to two feet. An average depth to clay along the length of the trench is approximately 13 feet.

- The aquifer thickness for the perched water table varies seasonally. The aquifer thickness for data from July 1989 was an average of approximately five feet thick along the length of the trench.

- The average volume of water was estimated using the data on groundwater flow rate calculated for the intercepter trench at the CCSI and DCSI area and the previously mentioned data on aquifer thickness to calculate an estimated daily discharge volume along the length of the trench. Estimated daily discharge volumes range from 1,800 to 3,400 gallons per day.

  It should be noted that these are estimates only and are based on data from a similar setting elsewhere on-site. Actual flow rates could differ from this since discharge volumes for the perched water table vary considerably depending upon climate and rainfall.

  The flow rate at the CCSI and DCSI trench varies with climate from a monthly low average of 357 gallons per day in January 1989 to a monthly high of 6,540 gallons per day for September 1988. Overall, the annual daily average is 1,800 gallons per day. The fluctuation should be much less at the UST area; however, since the parking lot is paved and the recharge area for the parking lot is the unpaved areas near the main building and the open tank area. The entire CCSI and DCSI area is a recharge area.

SECTION V

GROUNDWATER TREATMENT

The design of the trench provides for the collection of groundwater in a sump. From the sump, water will be pumped to the WWTS area. The water will then be pumped to the existing air stripping tower where VOCs will be air stripped from the water. After treatment, the water will be reused at the facility and then treated by the facility's wastewater treatment system prior to discharge to the City of Sylvania's POTW. Wastewater discharge is regulated by the facility's pre-treatment permit.

Water from the UST area will also contain a small amount of TPH contamination; thus, an investigation into the effects TPH will have on the air stripping unit was conducted. The investigation indicated that the levels of TPH anticipated (<1 ppm) should not adversely effect the operation or efficiency of the unit. Any TPH contamination remaining after processing for VOCs will be removed by the facilities WWTS system prior to being discharged.

The groundwater collection trench system will be inspected on a weekly basis to assure it is operating properly. The sump will be inspected to assure that it is maintaining its structural integrity. Since the trench itself is a passive system, it requires little if any maintenance. The volumes of water collected will be recorded and reviewed and any drastic changes in volumes will be investigated to assure that no clogging of the trench system has occurred. The air stripping tower is operated and inspected on a daily basis to assure that it remains in good working order.

SECTION VI

OBJECTIVES OF CORRECTIVE ACTION

Target clean-up concentrations for TPH, as described in 391-3-15-.09(2) of the Georgia Rules for UST management, were determined for the UST site. As a result of a well inventory of the area, along with an evaluation of the extensive groundwater data already available concerning the site, it was determined that the target clean-up levels consistent with 391-3-15-(2)(a) are applicable. However, the nearest drinking water well is approximately .5 miles to the northeast of the site, which is not in a downgradient direction from the UST area. Three City of Sylvania drinking water supply wells are located within three miles of the site. However, these wells are located hydraulically upgradient from the site and additionally are not hydraulically interconnected with the perched water table (or the uppermost aquifer). Therefore, the remediation of TPH contaminated groundwater is not required; however, the remediation of groundwater for VOCs will also be effective in the remediation of any TPH contaminated groundwater.

Target clean-up levels for the VOCs contaminated groundwater are specified in the facility's Hazardous Waste Facility Permit (HW-056(D), 1988) as background levels.

SECTION VII

GROUNDWATER MONITORING PROGRAM TO DEMONSTRATE THE EFFECTIVENESS OF THE CORRECTIVE ACTION PROGRAM

A monitoring well system for the contaminant plume is already in place and will provide sufficient information to evaluate the effectiveness of the intercepter trench.

Several existing wells are located at varying distances from the original source area upgradient of the proposed trench and within the plume of contamination (see Figure 6). Wells UST-12 and UST-14 are appropriate for monitoring conditions within the plume and will provide sufficient information to characterize contaminant movement in the area. Well UST-1 is appropriate to serve as the Point of Compliance well (POC).

Several wells are also located outside and downgradient of the proposed trench location. These wells include DSA-1, B-3, and UST-7S. The wells are appropriate for determining the effectiveness of the trench in containing the groundwater contamination for the perched water table.

A single recovery well, R-13 has been installed at the UST area for recovery of contaminated groundwater from the uppermost aquifer. This well is presently recovering contaminated groundwater for treatment for VOCs by the air stripping tower located at the WWTS area via piping located within the secondary containment system.

Existing monitoring wells will be used to monitor and characterize plume movement within the uppermost aquifer. Monitoring wells UST-1D and UST-1DD will be monitored as point of compliance (POC) wells for the uppermost aquifer. Monitoring wells W-10 and UST-7D will be used to monitor changes within the plume downgradient of the withdrawal well and the recovery trench.

Based upon the detection of certain hazardous constituents in the perched water table and the uppermost aquifer and on the knowledge that certain of these constituents were handled at the facility, the following list of constituents will be monitored for during the compliance period:

- 1,1-Dichloroethane
- 1,1-Dichloroethylene
- 1,1,1-Trichloroethane
- Trichloroethylene
- Trichlorofluoromethane
- Chloroethane
- Chloroform
- Methylene Chloride
- Total Petroleum Hydrocarbons (TPH) (Perched Water Table Wells)

Monitoring of the system for VOCs and TPH will be conducted at the following frequency, which is consistent for the other areas of the facility:

1) Semi-annual monitoring of the POC well -- UST-1, UST-1D, UST-1DD

2) Annual monitoring of all other wells within and outside of the plume -- UST-12, UST-14, DSA-1, B-3, and UST-7S, ans W-10. UST-7D

Information on the effectiveness of the treatment system will be submitted to Georgia EPD on a semi-annual basis. See Section IX of this report for information on what the report will include.

If DSA-1, B-3, and UST-7S do show the presence of VOC contamination at levels exceeding the concentration limits proposed (background), groundwater quality will be assessed and confirmed

to determine if the data is anomalous. The extent and amount of groundwater contamination will then be evaluated and appropriate action will be taken, per approval of EPD. Modifications, if necessary, will then be implemented to assure the effectiveness of the system. Also, the need for additional wells downgradient of these wells will be assessed.

Sampling and analysis procedures per 40 CFR 270.14(c)(8) and 270.14(c)(7)(vi) will be consistent with Sections C-5b and C-7a(6) as detailed in Volume V of the Addendum to the facility's Post-Closure Care Permit Application.

Monitoring data and statistical analysis procedures per 40 CFR 270.14(c)(8) and 270.14(c)(7)(vi), will be consistent with Section C-7a(6) of Volume V (CCSI/DCSI area).

SECTION VIII

SCHEDULE FOR IMPLEMENTATION

The Torrington Company is presently involved in a number of major environmental projects at the facility which are being performed to meet the requirements of their post-closure care permit (HW-056D). These projects are summarized below:

- Post Closure Care Permit modification process.
- Startup and evaluation of the recovery system for the off-site area, the property boundary, and the UST area.
- Installation of an interceptor trench system for the perched water table at the landfill area.
- Further site assessment and possible remediation at the B-2 area.

Due to the size and complexity of the projects presently underway, a schedule for implementing the corrective action at the UST area must be incorporated into the overall schedule for the above projects.

A tentative schedule, which includes details regarding the installation of the trench, is outlined as Table 3.

SECTION IX

REPORTING REQUIREMENTS

Reporting for the corrective action system, including groundwater monitoring results, will be in accordance with the facilities post-closure care permit (i.e., semi-annual reporting for the site corrective action for VOC contaminated groundwater). These reporting requirements are outlined under Sections I.C and IV.C of the permit.

Semi-annual reports will follow EPD guidance and will include information on all monitoring, testing, and analytical data. Sections of the report will address the following items:

- Summary of work performed/problems encountered with both the monitoring and recovery systems during the previous six months.
- Groundwater analytical results from the previous six months.
- Semi-annual determination of groundwater flow rate and direction.
- Demonstration that the corrective action system is decreasing contaminant levels in groundwater and creating a hydraulic barrier, thus preventing plume migration.
- Groundwater remediation system data.

SECTION X

COST ESTIMATES

Costs are based upon the actual costs for the dewatering trench that was installed at the CCSI and the DCSI area during the summer of 1988. Costs for the fiberglass tank and the concrete dike are not included as these items were not considered applicable at the UST area. Costs were included for a sump into which water would be collected and pumped periodically down to the WWTS area for treatment. No costs have been included for the repair of the parking lot after the installation of the trench.

Cost also assumes that the present groundwater monitoring wells can be used to assess the effectiveness of the groundwater collection system. This is a reasonable assumption. Costs are not included for the design specifications of the collection trench and an associated groundwater recharge system if this option is deemed necessary.

Projected costs for installation of the trench area are estimated to be $97.75 per foot.

Trench Installation Costs - 650' x $95.75 / ft = $62,240
Soil Disposal Costs, if Applicable. $250 / cubic yard

FIGURES

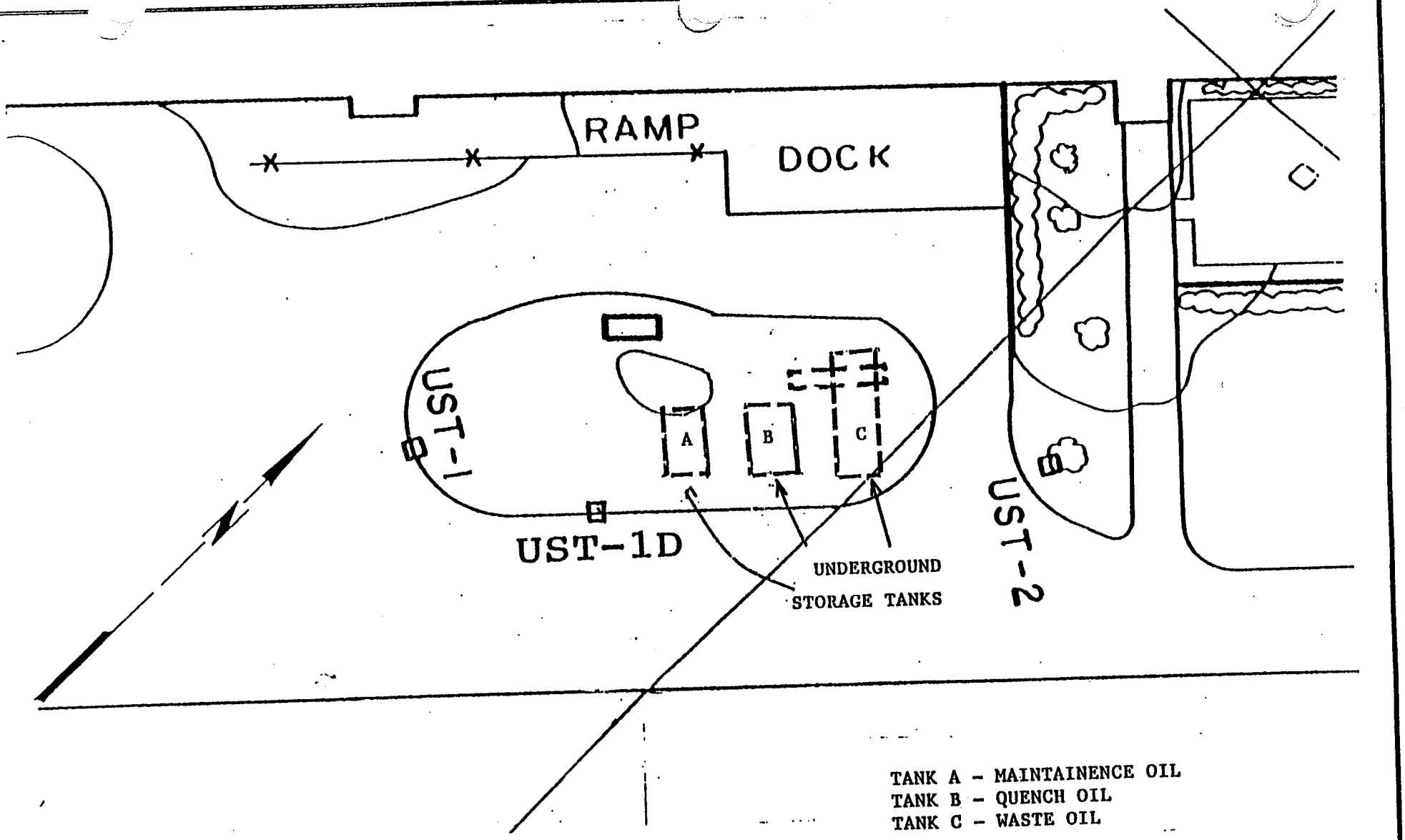

Figure 1. Base Map of UST Area Showing Location of the Underground Storage Tanks Prior to Their Removal.

SCALE 1" = 25'

Atlanta Environmental Management, Inc.
1920 Monroe Drive, N.E.
Suite 100
Atlanta, Georgia 30324

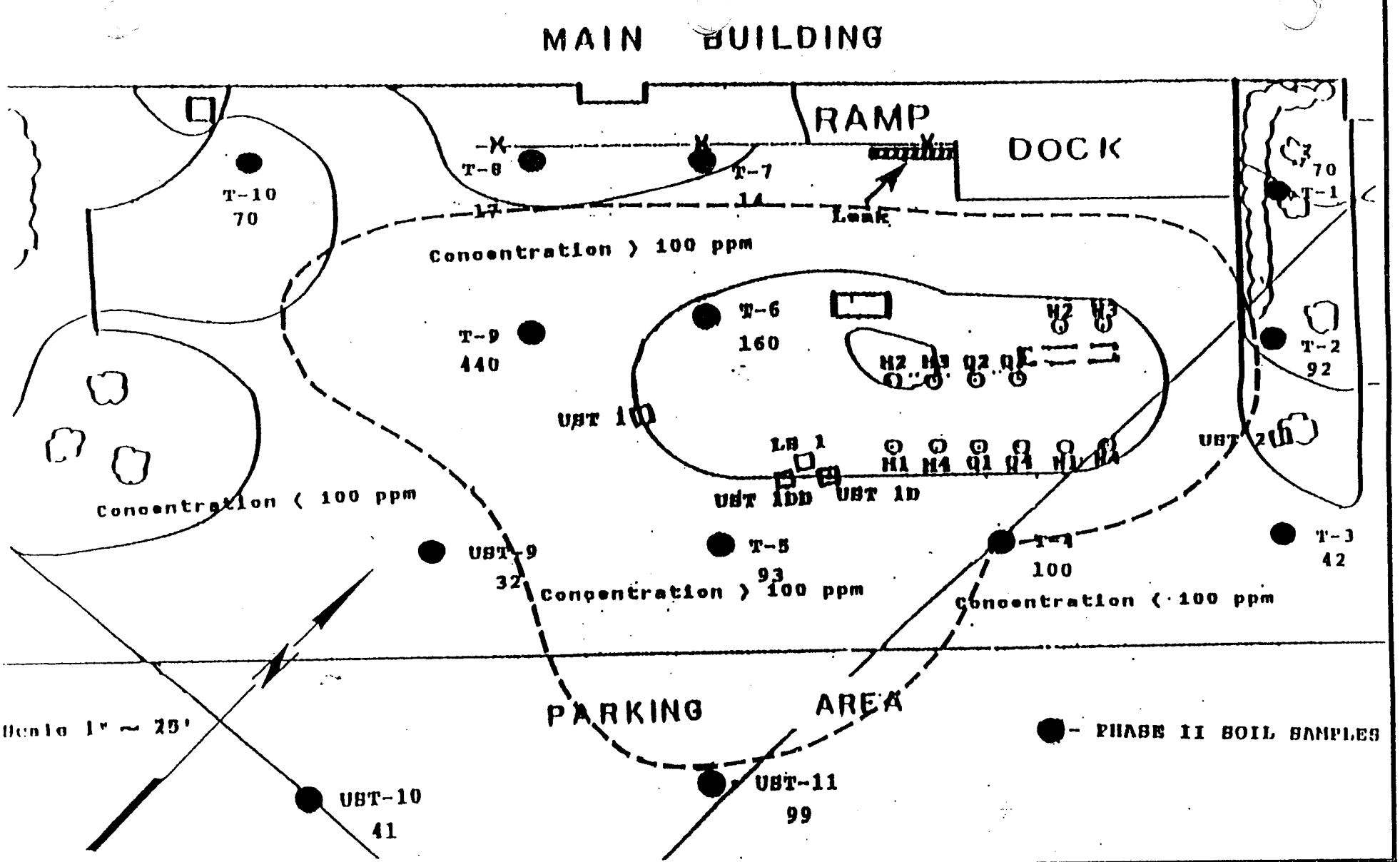

Figure 2. Map Showing Contaminant Concentrations for TPH in Soil at the Tank Farm Area.

SCALE 1" = 25'

Atlanta Environmental Management, Inc.
1920 Monroe Drive, N.E.
Suite 100
Atlanta, Georgia 30324

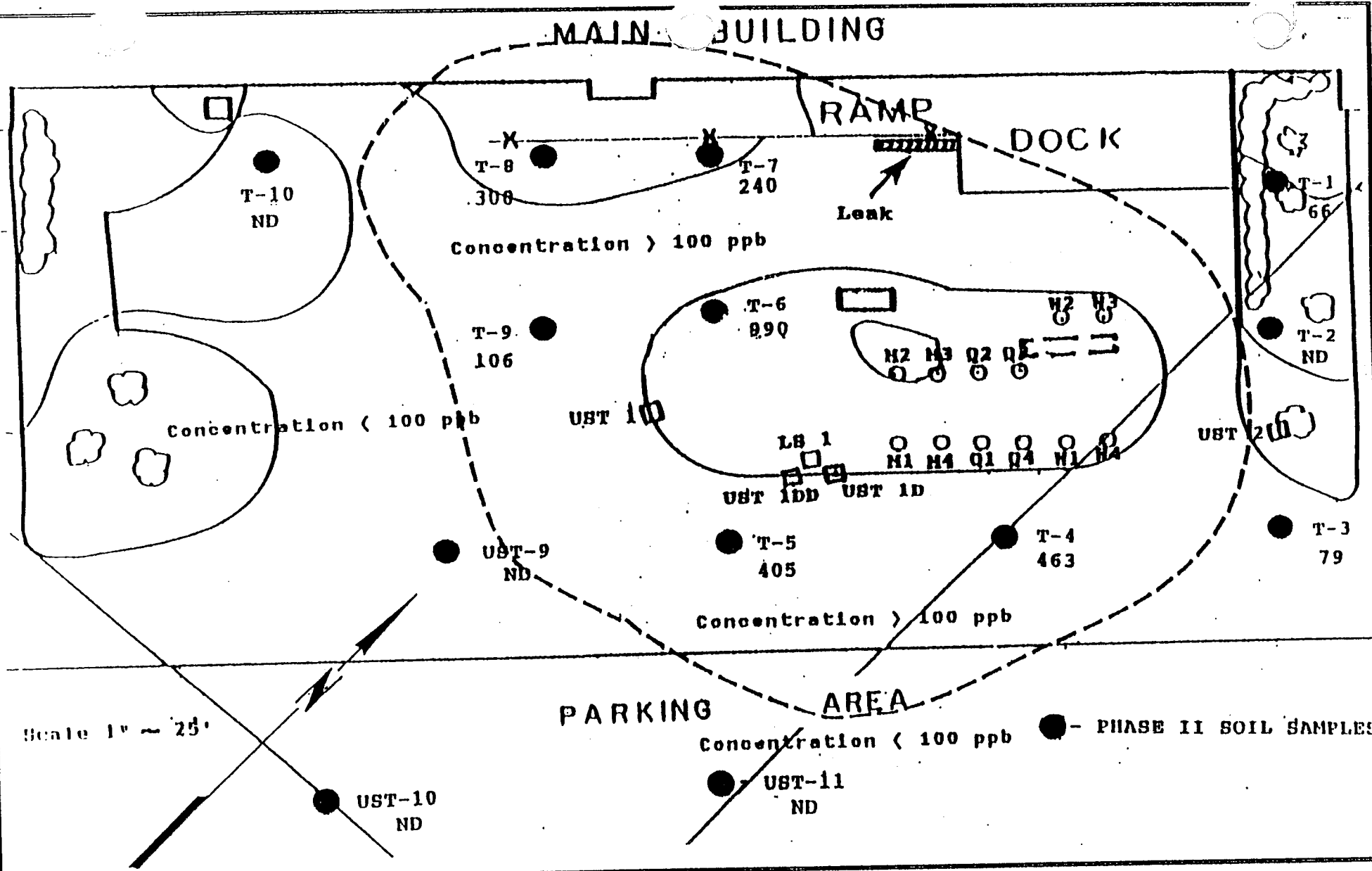

Figure 3. Map Showing Contaminant Concentrations for VOCs in Soil at the Tank Farm Area.

SCALE 1" = 25'

Atlanta Environmental Management, Inc.
1920 Monroe Drive, N.E.
Suite 100
Atlanta, Georgia 30324

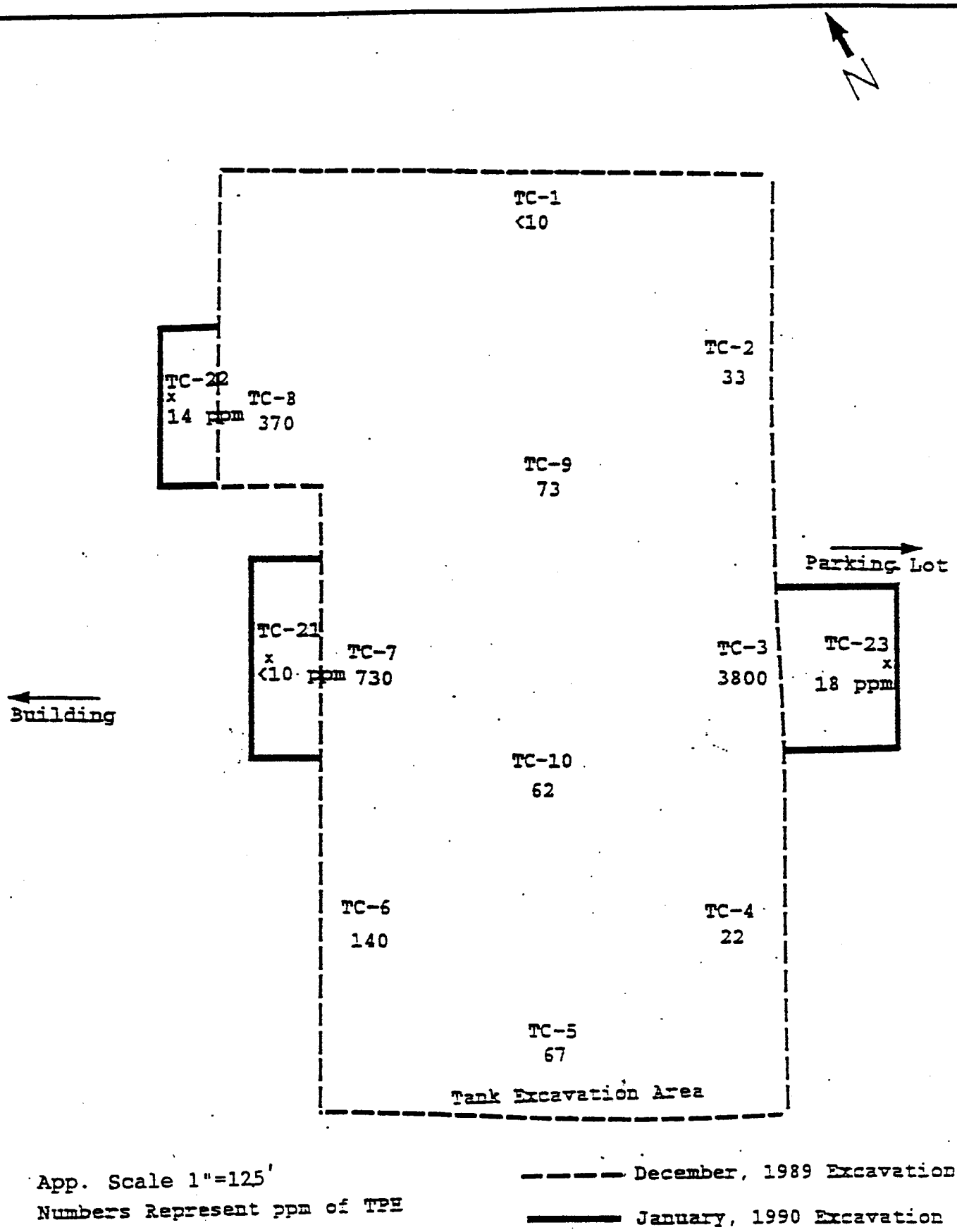

Figure 4. Areas Requiring Additional Soil Removal to Achieve a Cleanup Level of <100 ppm TPH in Soil.

Atlanta Environmental Management, Inc.
1920 Monroe Drive, NE
Suite 100
Atlanta, GA 30324

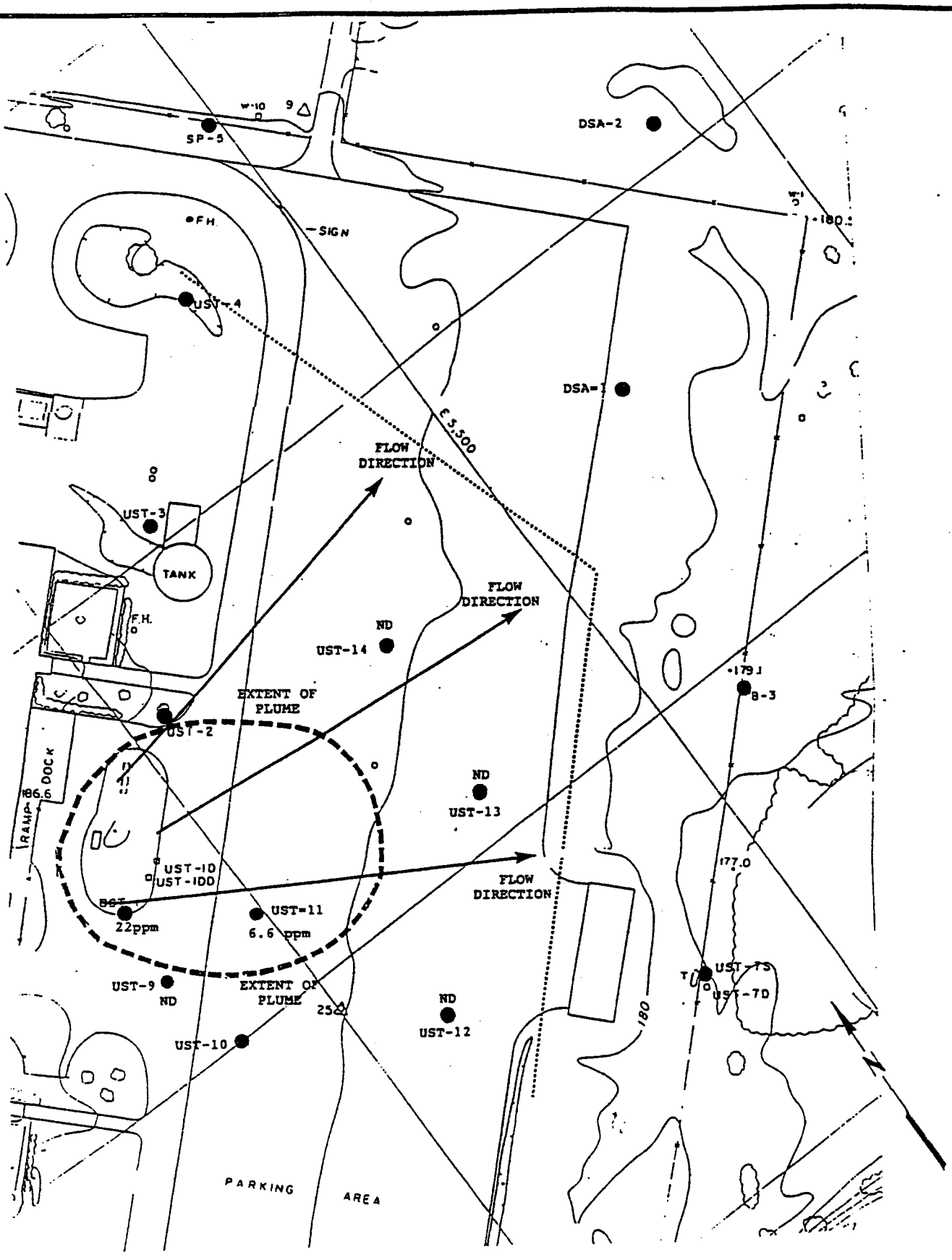

Figure 5. Estimated Extent of the TPH Plume in the Perched Water Table at the UST Area.

SCALE 1" = 80'

Atlanta Environmental Management, Inc.
1920 Monroe Drive, NE
Suite 100
Atlanta, GA 30324

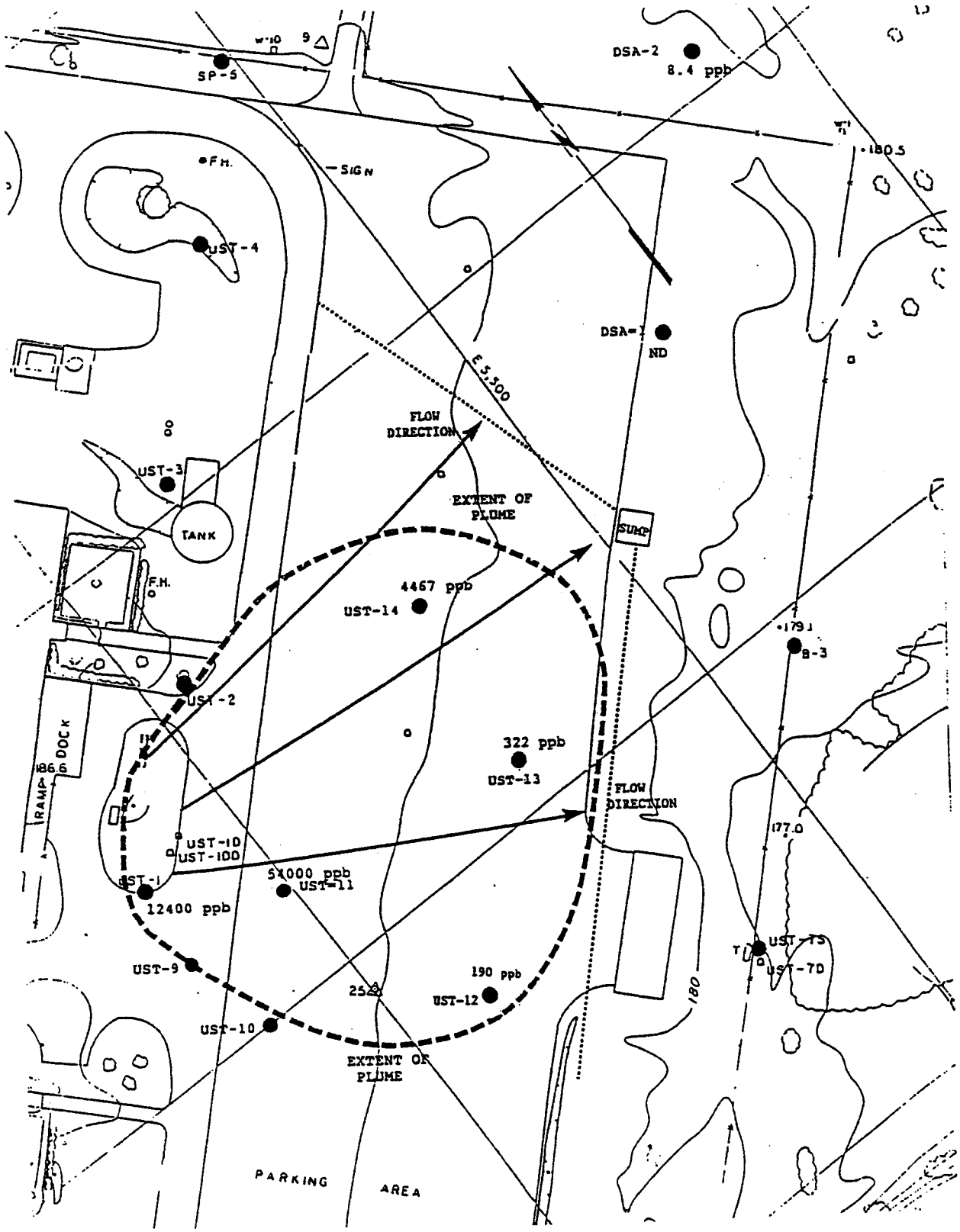

Figure 6. Estimated Extent of the VOC Plume in the Perched Water Table at the UST Area.

SCALE 1" = 80'

Atlanta Environmental Management, Inc.
1920 Monroe Drive, NE
Suite 100
Atlanta, GA 30324

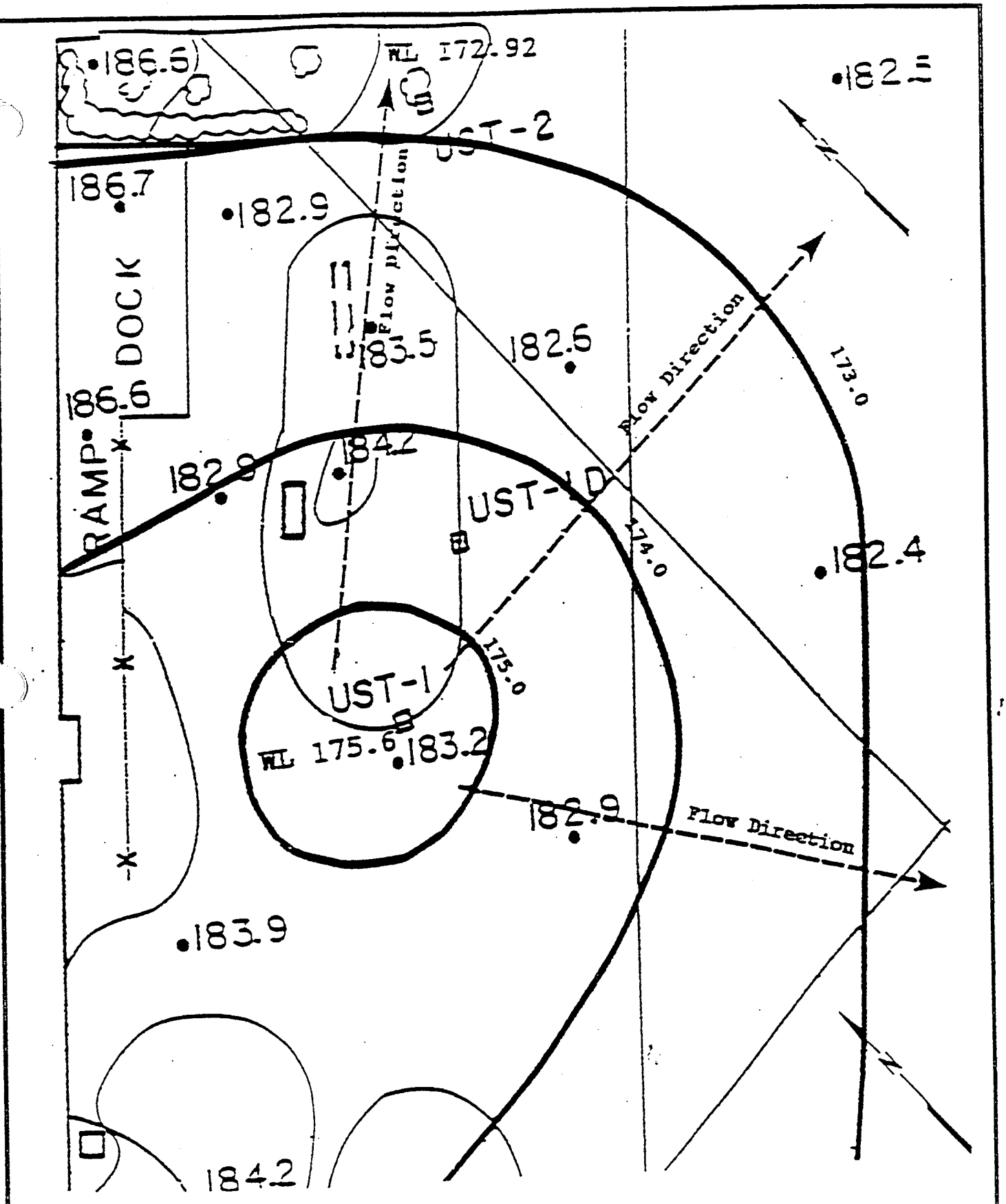

Figure 7. Potentiometric Map for the Perched Water Table Which Shows the Direction of Groundwater Flow at the UST Area.

SCALE 1" = 25'

Atlanta Environmental Management, Inc.
1920 Monroe Drive, NE
Suite 100
Atlanta, GA 30324

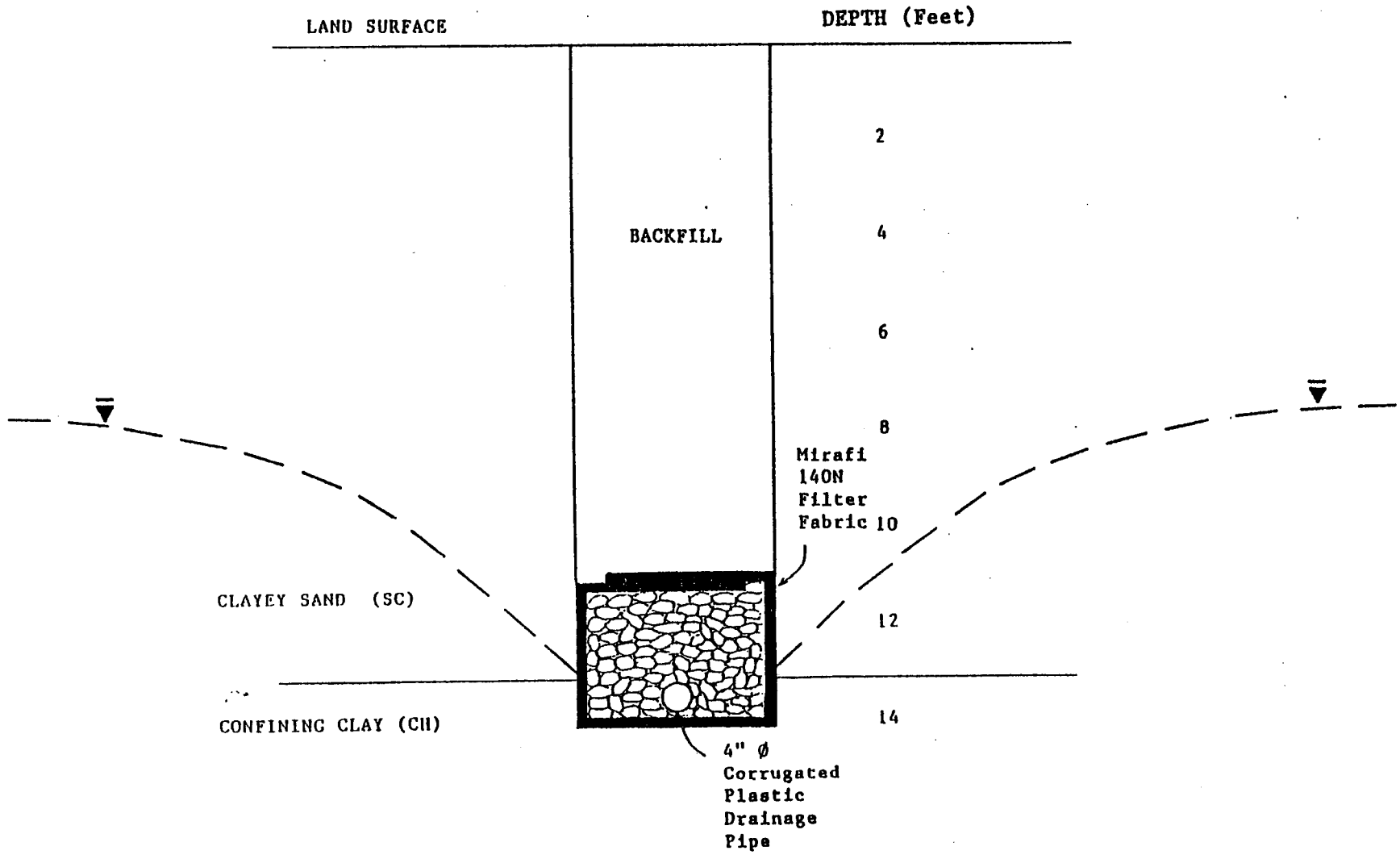

Figure 8. Intercepter Trench Schematic.
Cross-Section. Not to Scale.

Atlanta Environmental Management, Inc.
1920 Monroe Drive, N.E.
Suite 100
Atlanta, Georgia 30324

TABLES

Table 1

PID Screening Data for Determining the Vertical Extent of VOC Contamination in Soil at the UST Area

	SAMPLE NUMBER														
Depth	S-11	S-12	S-13	S-14	S-15	S-16	S-17	S-18	S-19	S-20	S-21	S-22	S-23	S-24	S-25
1.0	7.0	7.8	-	-	-	-	-	-	1.1	6.6	29.6	-	-	-	-
2.0	10.0+	9.2	7.0	5.6	1.6	10.2	5.4	7.1	1.6	13.1	47.8	7.4	4.8	6.6	8.5
3.0	10.0+	3.8	6.6	11.0	3.0	8.6	5.3	9.2	2.0	17.6	34.4	-	-	8.5	9.7
4.0	7.8	5.6	8.4	11.9	-	-	3.8	-	2.2	-	21.6	8.6	6.6	6.8	8.3
5.0	10.0+	10.0+	-	-	7.5	10.1	-	5.4	2.4	7.6	20.6	-	-	-	-
6.0	8.4	6.0	14.4	14.6	10.1	7.4	3.8	2.6	3.6	2.3	2.8	7.8	6.8	7.8	3.7
7.0	10.0+	10.0+	-	-	-	-	-	-	1.7	11.7	3.3	-	-	-	-
8.0	10.0+	10.0+	31.9	3.2	14.1	19.3	13.1	4.3	-	25.1	8.7	6.3	6.6	12.2	12.6
9.0	10.0+	10.0+	65.5	62.0	18.2	55.8	6.5	23.2	-	11.6	16.9	6.3	4.3	18.6	10.8
10.0	10.0+	10.0+	100.0+	-	17.2	100.0+	43.9	44.2	-	17.8	11.5	8.0	2.8	22.6	54.6
11.0	16.0	10.0+	-	-	-	70.6	-	-	-	-	17.4	-	-	42.6	22.6
12.0	16.0	10.0+	-	-	-	-	-	-	-	-	-	-	-	-	-

Screening data refers to PID counts in ppm. The PID was calibrated to a 100 ppm benzene standard.

Table 2

Trench and Aquifer Information for the Perched Water Table

Length of Drain	650 Feet
Depth to Clay from Land Surface (Avg)	13 Feet
Aquifer Thickness (average based on July 1989 data)	5 Feet
Percent of Plume Captured (estimated)	90% - 100%
Average Daily Discharge Volume for Trench (estimated)	1,800 - 3,400 Gallons Per Day

Table 3

Tentative Implementation Schedule for Installation of the Trench at the UST Area (1991-1992)

	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Submit Corrective Action Plan (CAP)	X															
Projected Date for Approval of CAP by EPD			X													
Discuss Scope of Work with Contractors				X												
Bids Received/Evaluate/ Select Contractor						X	-----	X								
Order Supplies for Installation of Trench									X							
Develop Detailed Specification Document for Installation of Trench Including a Health and Safety Plan										X						
Begin Implementation of Corrective Action Plan Install First Leg of Trench and Tie Into Sump												X				
Complete Second Leg of Trench and Tie Into Sump Begin Operation														X		
Submit Final Report to EPD																X

ATTACHMENT 1

CORRECTION ACTION PLAN (CAP) CERTIFICATION

I. PLAN CERTIFICATION

CORRECTIVE ACTION PLAN (CAP) CERTIFICATION

I hereby certify that this plan and all attachments have been prepared in accordance with EPD's "Requirements for Underground Storage Tank (UST) Release: Corrective Action Plan (CAP) Content"; the infomration submitted is true, accurate, and complete, and the plan satisfies all the criteria and requirements of Rule 391-3-15-.09 of the Georgia Rules for Underground Storage Tank Management.

RC Dunigan

Mr. Randal C. Dunigan
Plant Manager

May 10, 1991
Date

ATTACHMENT 2

CONFIRMATORY SAMPLES FROM EXCAVATION SHOWING THAT THE CLEANUP LEVEL OF <100 PPM TPH HAD BEEN REACHED

James W. Andrews, Ph.D.
President

Jeanette Davis Long
Vice-President

SAVANNAH LABORATORIES AND ENVIRONMENTAL SERVICES, INC.

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LOG NO: 89-10997

Received: 15 DEC 89

Mr. Bruce Paske
The Torrington Company
P. O. Box 1667, Friendship Road
Sylvania, GA 30467

Project: Tank Cleanup

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
10997-1	TCLO (12.14.89)	Client
10997-2	Dirty 1 (12.14.89)	
10997-3	Dirty 2 (12.14.89)	
10997-4	Dirty 3 (12.14.89)	
10997-5	Dirty 4 (12.14.89)	

PARAMETER	10997-1	10997-2	10997-3	10997-4	10997-5
Purgeables (624)					
Benzene, ug/kg dw	<5.6	<5.6	<28	<28	<5.1
Bromodichloromethane, ug/kg dw	<5.6	<5.6	<28	<28	<5.1
Bromoform, ug/kg dw	<5.6	<5.6	<28	<28	<5.1
Bromomethane, ug/kg dw	<11	<11	<56	<56	<12
Carbon Tetrachloride, ug/kg dw	<5.6	<5.6	<28	<28	<5.1
Chlorobenzene, ug/kg dw	<5.6	<5.6	<28	<28	<5.1
Chloroethane, ug/kg dw	<11	<11	<56	<56	<12
2-Chloroethylvinyl Ether, ug/kg dw	<11	<11	<56	<56	<12
Chloroform, ug/kg dw	<5.6	<5.6	<28	<28	<5.1
Chloromethane, ug/kg dw	<11	<11	<56	<56	<12
Dibromochloromethane, ug/kg dw	<5.6	<5.6	<28	<28	<5.1
1,2-Dichlorobenzene, ug/kg dw	<5.6	<5.6	<28	<28	<5.1
1,3-Dichlorobenzene, ug/kg dw	<5.6	<5.6	<28	<28	<5.1
1,4-Dichlorobenzene, ug/kg dw	<5.6	<5.6	<28	<28	<5.1
1,1-Dichloroethane, ug/kg dw	25	<5.6	<28	<28	<5.1
1,2-Dichloroethane, ug/kg dw	<5.6	<5.6	<28	<28	<5.1
1,1-Dichloroethene, ug/kg dw	630	<5.6	<28	<28	<6.1
trans-1,2-Dichloroethylene, ug/kg dw	<5.6	<5.6	<28	<28	<5.1

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LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
10997-1	TC10 (12.14.89)	Client
10997-2	Dirty 1 (12.14.89)	
10997-3	Dirty 2 (12.14.89)	
10997-4	Dirty 3 (12.14.89)	
10997-5	Dirty 4 (12.14.89)	

PARAMETER	10997-1	10997-2	10997-3	10997-4	10997-5
1,2-Dichloropropane, ug/kg dw	<5.6	<5.6	<28	<28	<6.1
Cis-1,3-Dichloropropene, ug/kg dw	<5.6	<5.6	<28	<28	<6.1
Trans-1,3-Dichloropropene, ug/kg dw	<5.6	<5.6	<28	<28	<6.1
Ethylbenzene, ug/kg dw	<5.6	14	32	68	<6.1
Methylene Chloride, ug/kg dw	<5.6	<5.6	<28	<28	<6.1
1,1,2,2-Tetrachloroethane, ug/kg dw	<5.6	<5.6	<28	<28	<6.1
Tetrachloroethylene, ug/kg dw	<5.6	36	<28	<28	<6.1
Toluene, ug/kg dw	16	59	81	230	11
1,1,1-Trichloroethane, ug/kg dw	28000	3600	690	430	140
1,1,2-Trichloroethane, ug/kg dw	<5.6	<5.6	<28	<28	<6.1
Trichloroethene, ug/kg dw	<5.6	<5.6	<28	<28	<6.1
Trichlorofluoromethane, ug/kg dw	<5.6	<5.6	<28	<28	<6.1
Vinyl Chloride, ug/kg dw	<11	<11	<56	<56	<12
Xylenes, ug/kg dw	46	72	74	85	16

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REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
10997-1	TC10 (12.14.89)	Client
10997-2	Dirty 1 (12.14.89)	
10997-3	Dirty 2 (12.14.89)	
10997-4	Dirty 3 (12.14.89)	
10997-5	Dirty 4 (12.14.89)	

PARAMETER	10997-1	10997-2	10997-3	10997-4	10997-5
Surrogates - Volatiles					
Toluene-d8, % Rec.	88 %	87 %	104 %	94 %	90 %
4-Bromofluorobenzene, % Rec.	92 %	92 %	85 %	97 %	91 %
Surrogate - 1,2-Dichloroethane-d4, % Rec.	99 %	95 %	104 %	102 %	88 %
Petroleum Hydrocarbons (IR), mg/kg	62	15000	1500	460	53
Percent Solids, %	86 %	90 %	98 %	89 %	82 %

James W. Andrews, Ph.D.
President

Janette Davis Long
Vice President

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LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
10997-6	Dirty 5 (12.14.89)	Client
10997-7	Dirty 6 (12.14.89)	
10997-8	Dirty 7 (12.14.89)	
10997-9	Q. Dirty 1 (12.14.89)	
10997-10	Q. Dirty 2 (12.14.89)	

PARAMETER	10997-6	10997-7	10997-8	10997-9	10997-10
Purgeables (624)					
Benzene, ug/kg dw	<5.7	<5.8	<110	<5.6	<5.6
Bromodichloromethane, ug/kg dw	<5.7	<5.8	<110	<5.6	<5.6
Bromoform, ug/kg dw	<5.7	<5.8	<110	<5.6	<5.6
Bromomethane, ug/kg dw	<11	<12	<220	<11	<11
Carbon Tetrachloride, ug/kg dw	<5.7	<5.8	<110	<5.6	<5.6
Chlorobenzene, ug/kg dw	<5.7	<5.8	<110	<5.6	<5.6
Chloroethane, ug/kg dw	<11	<12	<220	<11	<11
2-Chloroethylvinyl Ether, ug/kg dw	<11	<12	<220	<11	<11
Chloroform, ug/kg dw	<5.7	<5.8	<110	<5.6	<5.6
Chloromethane, ug/kg dw	<11	<12	<220	<11	<11
Dibromochloromethane, ug/kg dw	<5.7	<5.8	<110	<5.6	<5.6
1,2-Dichlorobenzene, ug/kg dw	<5.7	<5.8	<110	<5.6	<5.6
1,3-Dichlorobenzene, ug/kg dw	<5.7	<5.8	<110	<5.6	<5.6
1,4-Dichlorobenzene, ug/kg dw	<5.7	<5.8	<110	<5.6	<5.6
1,1-Dichloroethane, ug/kg dw	<5.7	<5.8	<110	<5.6	<5.6
1,2-Dichloroethane, ug/kg dw	<5.7	<5.8	<110	<5.6	<5.6
1,1-Dichloroethene, ug/kg dw	<5.7	<5.8	<110	<5.6	<5.6
trans-1,2-Dichloroethylene, ug/kg dw	<5.7	<5.8	<110	<5.6	<5.6

James W. Andrews, Ph.D.
President

Janette Davis Long
Vice-President

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Project: Tank Cleanup

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10997-6	Dirty 5 (12.14.89)	Client
10997-7	Dirty 6 (12.14.89)	
10997-8	Dirty 7 (12.14.89)	
10997-9	Q. Dirty 1 (12.14.89)	
10997-10	Q. Dirty 2 (12.14.89)	

PARAMETER	10997-6	10997-7	10997-8	10997-9	10997-10
1,2-Dichloropropane, ug/kg dw	<5.7	<5.8	<110	<5.6	<5.6
Cis-1,3-Dichloropropene, ug/kg dw	<5.7	<5.8	<110	<5.6	<5.6
Trans-1,3-Dichloropropene, ug/kg dw	<5.7	<5.8	<110	<5.6	<5.6
Ethylbenzene, ug/kg dw	<5.7	7.8	<110	9.4	10
Methylene Chloride, ug/kg dw	<5.7	<5.8	<110	<5.6	<5.6
1,1,2,2-Tetrachloroethane, ug/kg dw	<5.7	<5.8	<110	<5.6	<5.6
Tetrachloroethylene, ug/kg dw	<5.7	<5.8	<110	<5.6	<5.6
Toluene, ug/kg dw	10	17	133	33	27
1,1,1-Trichloroethane, ug/kg dw	50	71	2300	110	150
1,1,2-Trichloroethane, ug/kg dw	<5.7	<5.8	<110	<5.6	5.6
Trichloroethene, ug/kg dw	<5.7	<5.8	<110	<5.6	5.6
Trichlorofluoromethane, ug/kg dw	<5.7	<5.8	<110	<5.6	5.6
Vinyl Chloride, ug/kg dw	<11	<12	<220	<11	<11
Xylenes, ug/kg dw	20	3100	600	63	62

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10997-6	Dirty 5 (12.14.89)	Client
10997-7	Dirty 6 (12.14.89)	
10997-8	Dirty 7 (12.14.89)	
10997-9	Q. Dirty 1 (12.14.89)	
10997-10	Q. Dirty 2 (12.14.89)	

PARAMETER	10997-6	10997-7	10997-8	10997-9	10997-10
Surrogates - Volatiles					
Toluene-d8, % Rec.	87 %	82 %	87 %	92 %	84 %
4-Bromofluorobenzene, % Rec.	80 %	91 %	92 %	82 %	89 %
Surrogate - 1,2-Dichloroethane-d4, % Rec.	109 %	91 %	99 %	82 %	81 %
Petroleum Hydrocarbons (IR), mg/kg	130	290	8100	1500	930
Percent Solids, %	88 %	85 %	90 %	89 %	89 %

James W. Anderson, Ph.D.
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Jeanne Davis Long
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Sylvania, GA 30467

Project: Tank Cleanup

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION . SOLID OR SEMISOLID SAMPLES	SAMPLED BY
10997-11	Q. Dirty 3 (12.14.89)	Client
10997-12	Q. Dirty 4 (12.14.89)	
10997-13	Q. Dirty 5 (12.14.89)	
10997-14	Q. Dirty 6 (12.14.89)	
10997-15	Q. Dirty 7 (12.14.89)	

PARAMETER	10997-11	10997-12	10997-13	10997-14	10997-15
Purgeables (624)					
Benzene, ug/kg dw	<5.6	<5.7	<5.7	<5.7	<5.8
Bromodichloromethane, ug/kg dw	<5.6	<5.7	<5.7	<5.7	<5.8
Bromoform, ug/kg dw	<5.6	<5.7	<5.7	<5.7	<5.8
Bromomethane, ug/kg dw	<11	<11	11	<11	<12
Carbon Tetrachloride, ug/kg dw	<5.6	<5.7	<5.7	<5.7	<5.8
Chlorobenzene, ug/kg dw	<5.6	<5.7	<5.7	<5.7	<5.8
Chloroethane, ug/kg dw	<11	<11	<11	<11	<12
2-Chloroethylvinyl Ether, ug/kg dw	<11	<11	<11	<11	<12
Chloroform, ug/kg dw	<5.6	<5.7	<5.7	<5.7	<5.8
Chloromethane, ug/kg dw	<11	<11	<11	<11	<12
Dibromochloromethane, ug/kg dw	<5.6	<5.7	<5.7	<5.7	<5.8
1,2-Dichlorobenzene, ug/kg dw	<5.6	<5.7	<5.7	<5.7	<5.8
1,3-Dichlorobenzene, ug/kg dw	<5.6	<5.7	<5.7	<5.7	<5.8
1,4-Dichlorobenzene, ug/kg dw	<5.6	<5.7	<5.7	<5.7	<5.8
1,1-Dichloroethane, ug/kg dw	<5.6	<5.7	<5.7	<5.7	<5.8
1,2-Dichloroethane, ug/kg dw	<5.6	<5.7	<5.7	<5.7	<5.8
1,1-Dichloroethene, ug/kg dw	<5.6	<5.7	<5.7	<5.7	<5.8
trans-1,2-Dichloroethylene, ug/kg dw	<5.6	<5.7	<5.7	<5.7	<5.8

James W. Andrews, Ph.D.
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SAVANNAH LABORATORIES AND ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue (31404)
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LOG NO: 89-10997

Received: 15 DEC 89

Mr. Bruce Peaks
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P. O. Box 1667, Friendship Road
Sylvania, GA 30467

Project: Tank Cleanup

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION . SOLID OR SEMISOLID SAMPLES	SAMPLED BY
10997-11	Q. Dirty 3 (12.14.89)	Client
10997-12	Q. Dirty 4 (12.14.89)	
10997-13	Q. Dirty 5 (12.14.89)	
10997-14	Q. Dirty 6 (12.14.89)	
10997-15	Q. Dirty 7 (12.14.89)	

PARAMETER	10997-11	10997-12	10997-13	10997-14	10997-15
1,2-Dichloropropane, ug/kg dw	<5.6	<5.7	<5.7	<5.7	<5.8
Cis-1,3-Dichloropropene, ug/kg dw	<5.6	<5.7	<5.7	<5.7	<5.8
Trans-1,3-Dichloropropene, ug/kg dw	<5.6	<5.7	<5.7	<5.7	<5.8
Ethylbenzene, ug/kg dw	6.9	<5.7	<5.7	<5.7	<5.8
Methylene Chloride, ug/kg dw	<5.6	<5.7	<5.7	<5.7	<5.8
1,1,2,2-Tetrachloroethane, ug/kg dw	<5.6	<5.7	<5.7	<5.7	<5.8
Tetrachloroethylene, ug/kg dw	<5.6	<5.7	<5.7	11	<5.8
Toluene, ug/kg dw	15	6.6	10	21	<5.8
1,1,1-Trichloroethane, ug/kg dw	49	22	30	360	<5.8
1,1,2-Trichloroethane, ug/kg dw	<5.6	<5.7	<5.7	<5.7	<5.8
Trichloroethene, ug/kg dw	<5.6	<5.7	<5.7	<5.7	<5.8
Trichlorofluoromethane, ug/kg dw	<5.6	<5.7	<5.7	<5.7	<5.8
Vinyl Chloride, ug/kg dw	<11	<11	<11	<11	<12
Xylenes, ug/kg dw	44	200	200	21	<5.8

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LOG NO: 89-10997

Received: 15 DEC 89

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Project: Tank Cleanup

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
10997-11	Q. Dirty 3 (12.14.89)	Client
10997-12	Q. Dirty 4 (12.14.89)	
10997-13	Q. Dirty 5 (12.14.89)	
10997-14	Q. Dirty 6 (12.14.89)	
10997-15	Q. Dirty 7 (12.14.89)	

PARAMETER	10997-11	10997-12	10997-13	10997-14	10997-15
Surrogates - Volatiles					
Toluene-d8, % Rec.	86 %	84 %	86 %	82 %	81 %
4-Bromofluorobenzene, % Rec.	74 %	84 %	88 %	109 %	81 %
Surrogate - 1,2-Dichloroethane-d4, % Rec.	91 %	81 %	79 %	91 %	84 %
Petroleum Hydrocarbons (IR), mg/kg	1100	420	2500	6100	980
Percent Solids, %	89 %	88 %	88 %	87 %	86 %

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Project: Tank Cleanup

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
10997-16	TC9 (12.14.89)	Client
10997-17	Clean 1 (12.14.89)	
10997-18	Clean 2 (12.14.89)	
10997-19	Clean 3 (12.14.89)	
10997-20	Q. Clean 1 (12.14.89)	

PARAMETER	10997-16	10997-17	10997-18	10997-19	10997-20
Purgeables (624)					
Benzene, ug/kg dw	<33	<5.6	<5.4	<5.7	<5.6
Bromodichloromethane, ug/kg dw	<33	<5.6	<5.4	<5.7	<5.6
Bromoform, ug/kg dw	<33	<5.6	<5.4	<5.7	<5.6
Bromomethane, ug/kg dw	<66	<11	<11	<11	<11
Carbon Tetrachloride, ug/kg dw	<33	<5.6	<5.4	<5.7	<5.6
Chlorobenzene, ug/kg dw	<33	<5.6	<5.4	<5.7	<5.6
Chloroethane, ug/kg dw	<66	<11	<11	<11	<11
2-Chloroethylvinyl Ether, ug/kg dw	<66	<11	<11	<11	<11
Chloroform, ug/kg dw	<33	<5.6	<5.4	<5.7	<5.6
Chloromethane, ug/kg dw	<66	<11	<11	<11	<11
Dibromochloromethane, ug/kg dw	<33	<5.6	<5.4	<5.7	<5.6
1,2-Dichlorobenzene, ug/kg dw	<33	<5.6	<5.4	<5.7	<5.6
1,3-Dichlorobenzene, ug/kg dw	<33	<5.6	<5.4	<5.7	<5.6
1,4-Dichlorobenzene, ug/kg dw	<33	<5.6	<5.4	<5.7	<5.6
1,1-Dichloroethane, ug/kg dw	92	<5.6	<5.4	<5.7	<5.6
1,2-Dichloroethane, ug/kg dw	<33	<5.6	<5.4	<5.7	<5.6
1,1-Dichloroethene, ug/kg dw	130	<5.6	<5.4	<5.7	<5.6
trans-1,2-Dichloroethylene, ug/kg dw	<33	<5.6	<5.4	<5.7	<5.6

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Project: Tank Cleanup

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
10997-16	TC9 (12.14.89)	Client
10997-17	Clean 1 (12.14.89)	
10997-18	Clean 2 (12.14.89)	
10997-19	Clean 3 (12.14.89)	
10997-20	Q. Clean 1 (12.14.89)	

PARAMETER	10997-16	10997-17	10997-18	10997-19	10997-20
1,2-Dichloropropane, ug/kg dw	<33	<5.6	<5.4	<5.7	<5.6
Cis-1,3-Dichloropropene, ug/kg dw	<33	<5.6	<5.4	<5.7	<5.6
Trans-1,3-Dichloropropene, ug/kg dw	<33	<5.6	<5.4	<5.7	<5.6
Ethylbenzene, ug/kg dw	<33	15	<5.4	<5.7	<5.6
Methylene Chloride, ug/kg dw	<33	<5.6	<5.4	<5.7	<5.6
1,1,2,2-Tetrachloroethane, ug/kg dw	<33	<5.6	<5.4	<5.7	<5.6
Tetrachloroethylene, ug/kg dw	<33	<5.6	<5.4	<5.7	<5.6
Toluene, ug/kg dw	<33	14	9.2	<5.7	28
1,1,1-Trichloroethane, ug/kg dw	3300	23	5.9	23	<5.6
1,1,2-Trichloroethane, ug/kg dw	<33	<5.6	<5.4	<5.7	<5.6
Trichloroethene, ug/kg dw	330	<5.6	<5.4	<5.7	<5.6
Trichlorofluoromethane, ug/kg dw	<33	<5.6	<5.4	<5.7	<5.6
Vinyl Chloride, ug/kg dw	<66	<11	<11	<11	<11
Xylenes, ug/kg dw	46	74	22	<5.7	11
Surrogates - Volatiles					
Toluene-d8, % Rec.	90 %	96 %	82 %	90 %	84 %
4-Bromofluorobenzene, % Rec.	103 %	86 %	76 %	79 %	74 %
Surrogate - 1,2-Dichloroethane-d4, % Rec.	108 %	103 %	85 %	90 %	86 %

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Project: Tank Cleanup

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
10997-16	TC9 (12.14.89)	Client
10997-17	Clean 1 (12.14.89)	
10997-18	Clean 2 (12.14.89)	
10997-19	Clean 3 (12.14.89)	
10997-20	Q. Clean 1 (12.14.89)	

PARAMETER	10997-16	10997-17	10997-18	10997-19	10997-20
Petroleum Hydrocarbons (IR), mg/kg	73	<10	580	470	58
Percent Solids, %	76 %	90 %	93 %	92 %	89 %

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Project: Tank Cleanup

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION . SOLID OR SEMISOLID SAMPLES	SAMPLED BY
10997-21	Q. Clean 2 (12.14.89)	Client
10997-22	Q. Clean 3 (12.14.89)	
10997-23	Q. Clean 4 (12.14.89)	
10997-24	Q. Clean 5 (12.14.89)	
10997-25	Q. Clean 6 (12.14.89)	

PARAMETER	10997-21	10997-22	10997-23	10997-24	10997-25
Purgeables (624)					
Benzene, ug/kg dw	<5.6	<5.7	<5.9	<5.5	<5.4
Bromodichloromethane, ug/kg dw	<5.6	<5.7	<5.9	<5.5	<5.4
Bromoform, ug/kg dw	<5.6	<5.7	<5.9	<5.5	<5.4
Bromomethane, ug/kg dw	<11	<11	<12	<11	<11
Carbon Tetrachloride, ug/kg dw	<5.6	<5.7	<5.9	<5.5	<5.4
Chlorobenzene, ug/kg dw	<5.6	<5.7	<5.9	<5.5	<5.4
Chloroethane, ug/kg dw	<11	<11	<12	<11	<11
2-Chloroethylvinyl Ether, ug/kg dw	<11	<11	<12	<11	<11
Chloroform, ug/kg dw	<5.6	<5.7	<5.9	<5.5	<5.4
Chloromethane, ug/kg dw	<11	<11	<12	<11	<11
Dibromochloromethane, ug/kg dw	<5.6	<5.7	<5.9	<5.5	<5.4
1,2-Dichlorobenzene, ug/kg dw	<5.6	<5.7	<5.9	<5.5	<5.4
1,3-Dichlorobenzene, ug/kg dw	<5.6	<5.7	<5.9	<5.5	<5.4
1,4-Dichlorobenzene, ug/kg dw	<5.6	<5.7	<5.9	<5.5	<5.4
1,1-Dichloroethane, ug/kg dw	<5.6	<5.7	<5.9	<5.5	<5.4
1,2-Dichloroethane, ug/kg dw	<5.6	<5.7	<5.9	<5.5	<5.4
1,1-Dichloroethene, ug/kg dw	11	<5.7	<5.9	<5.5	<5.4
trans-1,2-Dichloroethylene, ug/kg dw	<5.6	<5.7	<5.9	<5.5	<5.4

James W. Andrews, Ph.D.
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LOG NO: 89-10997

Received: 15 DEC 89

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Project: Tank Cleanup

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
10997-21	Q. Clean 2 (12.14.89)	Client
10997-22	Q. Clean 3 (12.14.89)	
10997-23	Q. Clean 4 (12.14.89)	
10997-24	Q. Clean 5 (12.14.89)	
10997-25	Q. Clean 6 (12.14.89)	

PARAMETER	10997-21	10997-22	10997-23	10997-24	10997-25
1,2-Dichloropropane, ug/kg dw	<5.6	<5.7	<5.9	<5.5	<5.4
Cis-1,3-Dichloropropene, ug/kg dw	<5.6	<5.7	<5.9	<5.5	<5.4
Trans-1,3-Dichloropropene, ug/kg dw	<5.6	<5.7	<5.9	<5.5	<5.4
Ethylbenzene, ug/kg dw	<5.6	8.6	<5.9	<5.5	<5.4
Methylene Chloride, ug/kg dw	<5.6	<5.7	<5.9	<5.5	<5.4
1,1,2,2-Tetrachloroethane, ug/kg dw	<5.6	<5.7	<5.9	<5.5	<5.4
Tetrachloroethylene, ug/kg dw	<5.6	<5.7	<5.9	25	<5.4
Toluene, ug/kg dw	11	8.3	<5.9	90	28
1,1,1-Trichloroethane, ug/kg dw	133	9.7	130	<5.5	<5.4
1,1,2-Trichloroethane, ug/kg dw	<5.6	<5.7	<5.9	<5.5	<5.4
Trichloroethene, ug/kg dw	<5.6	<5.7	<5.9	<5.5	<5.4
Trichlorofluoromethane, ug/kg dw	<5.6	<5.7	15	<5.5	<5.4
Vinyl Chloride, ug/kg dw	<11	<11	<12	<11	<11
Xylenes, ug/kg dw	<5.6	44	53	19	<5.4

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Project: Tank Cleanup

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
10997-21	Q. Clean 2 (12.14.89)	Client
10997-22	Q. Clean 3 (12.14.89)	
10997-23	Q. Clean 4 (12.14.89)	
10997-24	Q. Clean 5 (12.14.89)	
10997-25	Q. Clean 6 (12.14.89)	

PARAMETER	10997-21	10997-22	10997-23	10997-24	10997-25
Surrogates - Volatiles					
Toluene-d8, % Rec.	88 %	101 %	93 %	87 %	82 %
4-Bromofluorobenzene, % Rec.	77 %	90 %	81 %	87 %	74 %
Surrogate - 1,2-Dichloroethane-d4, % Rec.	82 %	86 %	99 %	82 %	81 %
Petroleum Hydrocarbons (IR), mg/kg	<10	280	250	1900	310
Percent Solids, %	89 %	87 %	85 %	91 %	92 %

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Project: Tank Cleanup

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
10997-26	TC1 (12.13.89)	Client
10997-27	TC2 (12.13.89)	
10997-28	TC3 (12.13.89)	
10997-29	TC4 (12.14.89)	
10997-30	TC5 (12.14.89)	

PARAMETER	10997-26	10997-27	10997-28	10997-29	10997-30
Petroleum Hydrocarbons (IR), mg/kg	<10	33	3800	22	67
Percent Solids, %	86 %	87 %	86 %	87 %	80 %

Methods: EPA SW-846.

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Project: Tank Cleanup

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
10997-31	TC6 (12.14.89)	Client
10997-32	TC7 (12.13.89)	
10997-33	TC8 (12.13.89)	

PARAMETER	10997-31	10997-32	10997-33
Petroleum Hydrocarbons (IR), mg/kg	140	730	370
Percent Solids, %	86 %	86 %	85 %

Methods: EPA SW-846.

James W. Andrews, Ph.D.
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Project: Tank Cleanup

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , QC SAMPLES	SAMPLED BY
		Client
10997-34	Method Blank-Soil	
10997-35	Accuracy (Mean % Recovery)-Soil	
10997-36	Precision (% RPD)-Soil	
10997-37	Date Extracted-Soil	
10997-38	Date Analyzed-Soil	

PARAMETER	10997-34	10997-35	10997-36	10997-37	10997-38
Purgeables (624)					
Benzene, ug/kg dw	<5.0	113 %	19 %	12.21.89	12.21.89
Bromodichloromethane, ug/kg dw	<5.0	---	---	12.21.89	12.21.89
Bromoform, ug/kg dw	<5.0	---	---	12.21.89	12.21.89
Bromomethane, ug/kg dw	<10	---	---	12.21.89	12.21.89
Carbon Tetrachloride, ug/kg dw	<5.0	108 %	24 %	12.21.89	12.21.89
Chlorobenzene, ug/kg dw	<5.0	---	---	12.21.89	12.21.89
Chloroethane, ug/kg dw	<10	---	---	12.21.89	12.21.89
2-Chloroethylvinyl Ether, ug/kg dw	<10	---	---	12.21.89	12.21.89
Chloroform, ug/kg dw	<5.0	---	---	12.21.89	12.21.89
Chloromethane, ug/kg dw	<10	---	---	12.21.89	12.21.89
Dibromochloromethane, ug/kg dw	<5.0	---	---	12.21.89	12.21.89
1,2-Dichlorobenzene, ug/kg dw	<5.0	---	---	12.21.89	12.21.89
1,3-Dichlorobenzene, ug/kg dw	<5.0	---	---	12.21.89	12.21.89
1,4-Dichlorobenzene, ug/kg dw	<5.0	---	---	12.21.89	12.21.89
1,1-Dichloroethane, ug/kg dw	<5.0	---	---	12.21.89	12.21.89
1,2-Dichloroethane, ug/kg dw	<5.0	---	---	12.21.89	12.21.89
1,1-Dichloroethene, ug/kg dw	<5.0	117 %	20 %	12.21.89	12.21.89
trans-1,2-Dichloroethylene, ug/kg dw	<5.0	---	---	12.21.89	12.21.89

James W. Andrews, Ph.D.
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REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , QC SAMPLES	SAMPLED BY
10997-34	Method Blank-Soil	Client
10997-35	Accuracy (Mean % Recovery)-Soil	
10997-36	Precision (% RPD)-Soil	
10997-37	Date Extracted-Soil	
10997-38	Date Analyzed-Soil	

PARAMETER	10997-34	10997-35	10997-36	10997-37	10997-38
1,2-Dichloropropane, ug/kg dw	<5.0	---	---	12.21.89	12.21.89
Cis-1,3-Dichloropropene, ug/kg dw	<5.0	---	---	12.21.89	12.21.89
Trans-1,3-Dichloropropene, ug/kg dw	<5.0	---	---	12.21.89	12.21.89
Ethylbenzene, ug/kg dw	<5.0	---	---	12.21.89	12.21.89
Methylene Chloride, ug/kg dw	<5.0	---	---	12.21.89	12.21.89
1,1,2,2-Tetrachloroethane, ug/kg dw	<5.0	---	---	12.21.89	12.21.89
Tetrachloroethylene, ug/kg dw	<5.0	---	---	12.21.89	12.21.89
Toluene, ug/kg dw	<5.0	122 %	16 %	12.21.89	12.21.89
1,1,1-Trichloroethane, ug/kg dw	<5.0	---	---	12.21.89	12.21.89
1,1,2-Trichloroethane, ug/kg dw	<5.0	---	---	12.21.89	12.21.89
Trichloroethene, ug/kg dw	<5.0	110 %	15 %	12.21.89	12.21.89
Trichlorofluoromethane, ug/kg dw	<5.0	---	---	12.21.89	12.21.89
Vinyl Chloride, ug/kg dw	<5.0	---	---	12.21.89	12.21.89
Xylenes, ug/kg dw	<5.0	---	---	12.21.89	12.21.89
Petroleum Hydrocarbons (IR), mg/l	<10	114 %	3.5 %	12.19.89	12.19.89

Methods: EPA SW-846.

Jeanette D. Long

James W. Anderson, Ph.D.
President

Janice Davis Long
Vice-President

SAVANNAH LABORATORIES AND ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue (31404)
P. O. Box 13548 • Savannah, GA 31416-0548
(912) 354-7858

LOG NO: S0-03205

Received: 12 JAN 90

Mr. Mark Potts
Atlanta Environmental Mgmt., Inc.
1920 Monroe Dr., NE, Suite 100
Atlanta, GA 30324

Project: Torrington

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
03205-1	TC-21 (01.11.90)	Client
03205-2	TG-22 (01.11.90)	
03205-3	TG-23 (01.11.90)	

PARAMETER	03205-1	03205-2	03205-3
Petroleum Hydrocarbons (IR), mg/kg	<10	14	18
Percent Solids, %	85 %	87 %	88 %

Janette Davis Long
Vice President

SAVANNAH LABORATORIES
AND ENVIRONMENTAL SERVICES, INC.
5102 LaRoche Avenue (31404)
P. O. Box 13548 • Savannah, GA 31416-0548
(912) 354-7858

LOG NO: SG-03205

Received: 12 JAN 90

Mr. Mark Potts
Atlanta Environmental Mgmt., Inc.
1920 Monroe Dr., NE, Suite 100
Atlanta, GA 30324

Project: Torrington

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , QC SAMPLES	SAMPLED BY
03205-4	Method Blank-Soil	Client
03205-5	Accuracy (Mean % Recovery)-Soil	
03205-6	Precision (% RPD)-Soil	
03205-7	Date Extracted-Soil	
03205-8	Date Analyzed-Soil	

PARAMETER	03205-4	03205-5	03205-6	03205-7	03205-8
etroleum Hydrocarbons (IR), mg/kg	<10	120 %	13 %	01.12.90	01.12.90

Methods: EPA SW-846.

Janette D. Long

James W. Andrews, Ph.D.
President

Janette Davis Long
Vice-President

SAVANNAH LABORATORIES AND ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue (31404)
P. O. Box 13548 • Savannah, GA 31416-0548
(912) 354-7858

LOG NO: SO-03205

Received: 12 JAN 90

Mr. Mark Potts
Atlanta Environmental Mgmt., Inc.
1920 Monroe Dr., NE, Suite 100
Atlanta, GA 30324

Project: Torrington

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , QC SAMPLES	SAMPLED BY
		Client
03205-4	Method Blank-Soil	
03205-5	Accuracy (Mean % Recovery)-Soil	
03205-6	Precision (% RPD)-Soil	
03205-7	Date Extracted-Soil	
03205-8	Date Analyzed-Soil	

PARAMETER	03205-4	03205-5	03205-6	03205-7	03205-8
Petroleum Hydrocarbons (IR), mg/kg	<10	120 %	13 %	01.12.90	01.12.90

Methods: EPA SW-846.

Janette D. Long

Janette D. Long

James M. Andrews, Ph.D.
President

Janette Davis Long
Vice-President

SAVANNAH LABORATORIES AND ENVIRONMENTAL SERVICES, INC.

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LOG NO: S0-03205

Received: 12 JAN 90

Mr. Mark Potts
Atlanta Environmental Mgmt., Inc.
1920 Monroe Dr., NE, Suite 100
Atlanta, GA 30324

Project: Torrington

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
		Client
03205-1	TC-21 (01.11.90)	
03205-2	TG-22 (01.11.90)	
03205-3	TG-23 (01.11.90)	

PARAMETER	03205-1	03205-2	03205-3
Petroleum Hydrocarbons (IR), mg/kg	<10	14	18
Percent Solids, %	85 %	87 %	88 %

ATTACHMENT 3

GEORGIA EPD'S MARCH 9, 1990 LETTER TO THE TORRINGTON CO. REGARDING NO FURTHER SOIL EXCAVATION

Georgia Department of Natural Resources
205 Butler Street, S.E., Floyd Towers East, Atlanta, Georgia 30334
Leonard Ledbetter, Commissioner
Harold F. Reheis, Assistant Director
Environmental Protection Division

March 9, 1990

Mr. Bruce Peake
The Torrington Company
Friendship Road
Post Office Box 1667
Sylvania, Georgia 30467

Re: Closure of Underground Storage Tanks

Dear Mr. Peake:

This letter is in response to your request of February 8, 1990. As you are aware the Underground Storage Tank (UST) Area at Torrington is a Solid Waste Management Unit (SWMU) as defined by Hazardous Waste Facility Permit No. HW-056(D) and will require corrective action for VOC contaminated groundwater. Because of the existing post-closure activities associated with Torrington's Permit, the Hazardous Waste Management Program has responsibility for the review of the submitted report regarding work completed as a part of the UST removal.

The analytical results provided in the report indicate that the target cleanup concentration of 100 ppm Total Petroleum Hydrocarbons (TPH) in the soil was met at 9 of 10 sampling locations after excavation. The exception being soil with a concentration level of 140 ppm TPH at location TC-6. In consideration of the fact that corrective action for the VOC plume of contamination will encompass the smaller TPH plume and that monitoring well samples will be analyzed for TPH in the UST area during remediation, no further soil excavation is required in this area.

Your facility should continue following Georgia's Rules for Underground Storage Tank Management for implementation of corrective action at the UST area, in conjunction with the requirements of Georgia's Rules for Hazardous Waste Management and Permit No. HW-056(D) which regulate the corrective action of the VOC contamination. All future correspondence regarding the UST should be addressed to the Hazardous Waste Management Program. We will coordinate with the Underground Storage Tank Program to insure that compliance with applicable regulations is maintained during cleanup. If you have questions regarding this matter, please call Don McHugh at (404) 656-2833.

Sincerely,

Bill Mundy

Bill Mundy
Unit Coordinator
Hazardous Waste Management Program

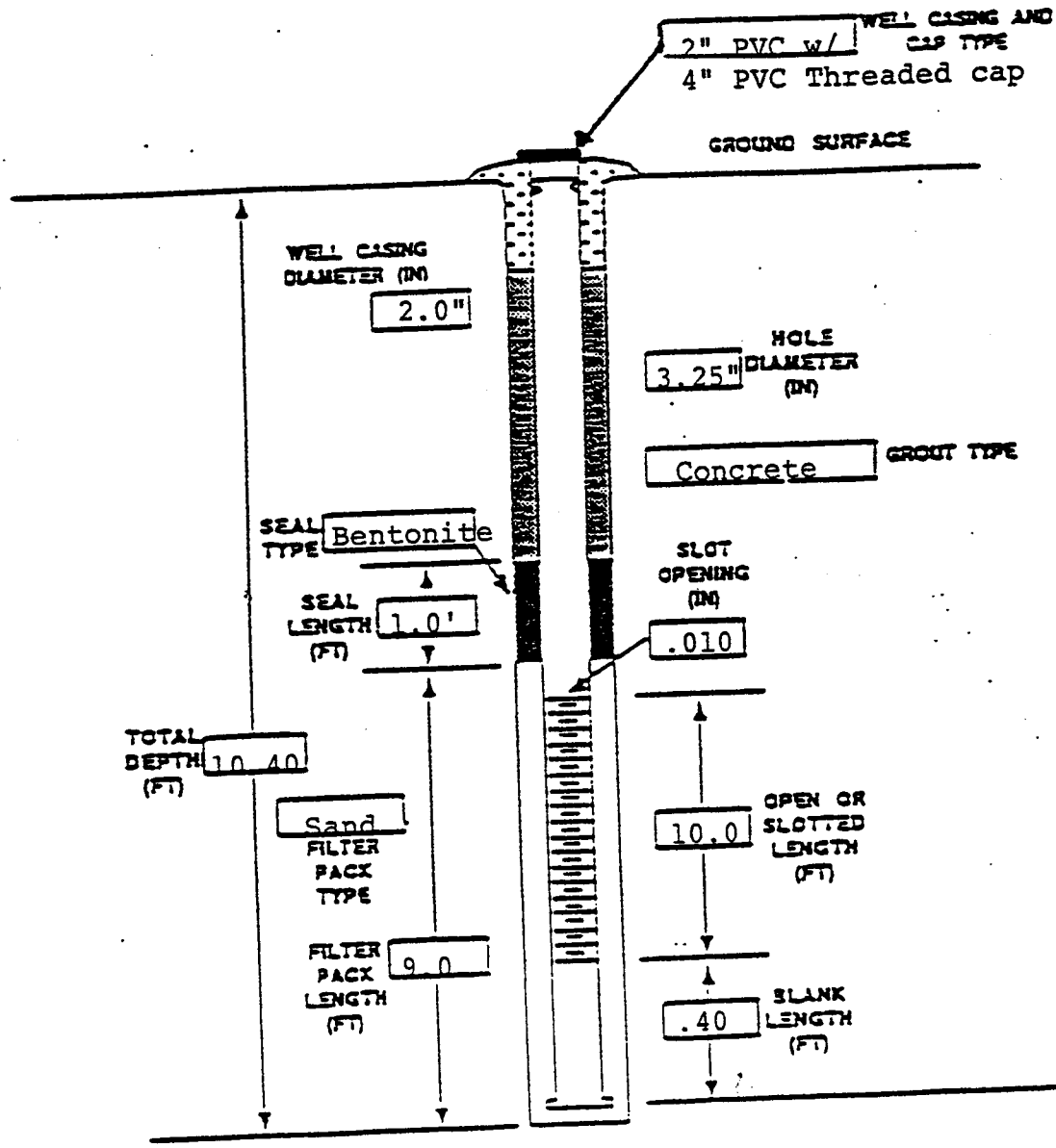
ATTACHMENT 4

LITHOLOGIC AND WELL CONSTRUCTION DIAGRAMS FOR MONITORING WELLS UST-9 THROUGH UST-14

MANAGEMENT INC.

WELL CONSTRUCTION DIAGRAM

PROJECT: Torrington/Sylvania
LOCATION: UST Area
WELL NUMBER: UST-9
DATE INSTALLED: 7-21-89
ELEVATION: 1782.0
☒ GROUND ☐ CASING ☐ PROTECTOR CASING
☐ ABOVE GROUND LEVEL ☐ ABOVE MEAN SEA LEVEL



COMMENTS: Well was hand augered to 11.5'. Well was installed using a hand auger and developed using a PVC bailer.

PAGE ____ OF ____

Atlanta Environmental Management Inc.

Monitoring Well Log

Date: 7-21-89

Owner: Torrington/Sylvania
Well No: UST-9
Location: UST-Area

Driller: Ron Yarborough
Geologist: Ron Yarborough
Drilling Method: Hand Auger (3.25")

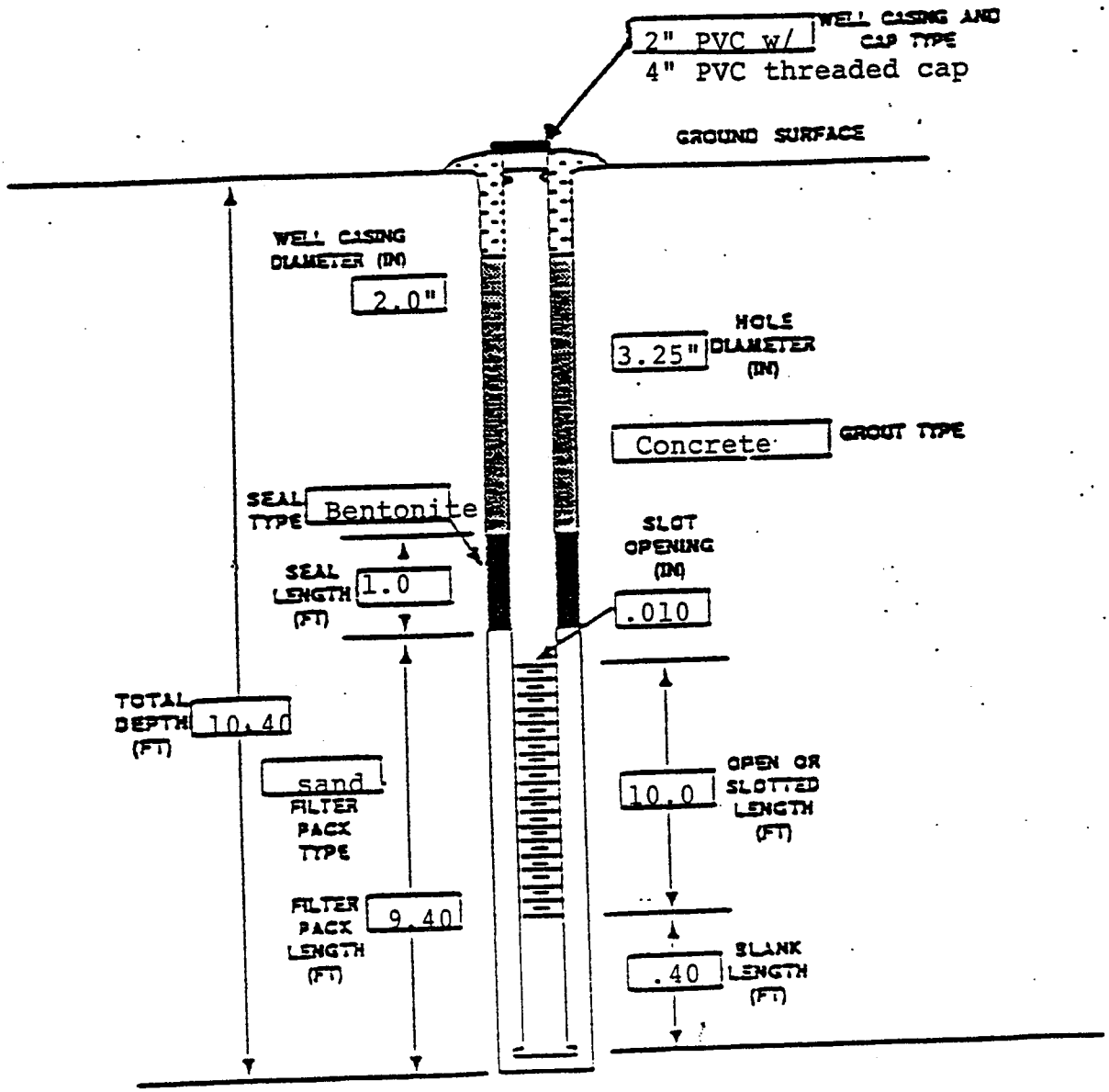
Screened From: 0.0 ft. to 10.0 ft.
Gravel Pack: 40-50 mesh to 1.40 ft.
Bentonite Seal: .40 ft. to 1.40 ft.
Concrete Seal from .40 ft. to surface
Water Level: 8.06 ft. below well top.
Well top elevation: ~182.0 ft.

Depth (feet) From	To	Lithology	Remarks
0.0	1.0	CL-Red, soft, very sandy, clay	Hand augered
1.0	7.0	SC-Light tan, orange, abundant clay, sand	
7.0	10.5	SC-Light tan, light gray, orange very clayey, sand	Well was terminated after reaching clay-lower limit of perched water table.

ENVIRONMENTAL MANAGEMENT INC.

WELL CONSTRUCTION DIAGRAM

PROJECT: Torrington/Sylvania
LOCATION: UST-Area
WELL NUMBER: UST-10
DATE INSTALLED: 7-21-89
ELEVATION: ≈182.0
X GROUND ☐ CASING ☐ PROTECTOR CASING
☐ ABOVE GROUND LEVEL ☐ ABOVE MEAN SEA LEVEL



COMMENTS: Well was installed using hand auger to depth of 11.5'. Well was developed using PVC bailer.

PAGE ____ OF ____

Atlanta Environmental Management Inc.

Monitoring Well Log

Date: 7-21-89

Owner: Torrington/Sylvania
Well No: UST-10
Location: UST Area
Driller: Ron Yarborough
Geologist: Ron Yarborough
Drilling Method: Hand Auger (3.25")

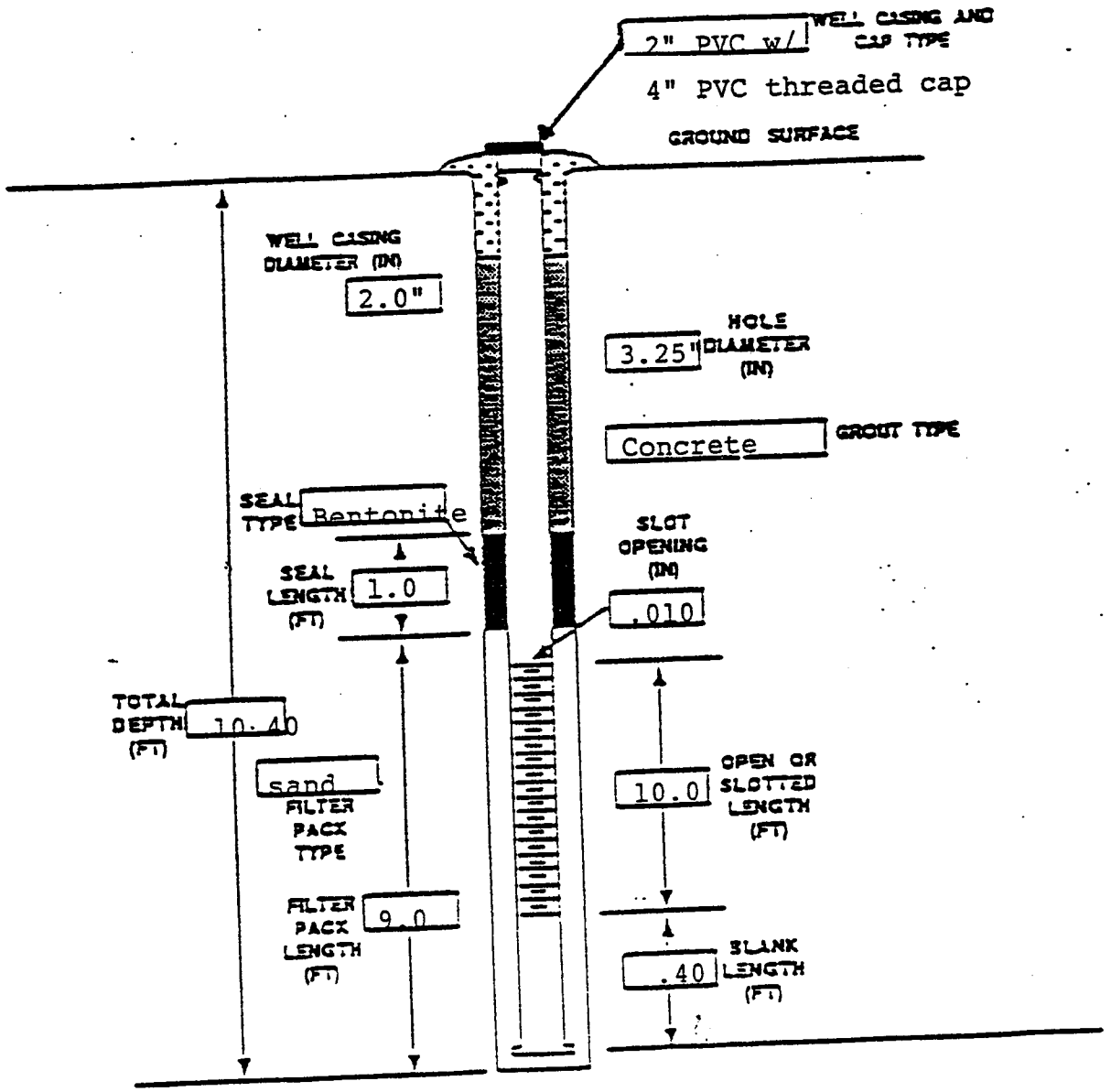
Screened From: 0.0 ft. to 10.0 ft.
Gravel Pack: 40-50 mesh to 1.40 ft.
Bentonite Seal: .40 ft. to 1.40 ft.
Concrete Seal from .40 ft. to surface
Water Level: 6.81 ft. below well top.
Well top elevation: ≈182.0 ft.

Depth (feet) From	To	Lithology	Remarks
0.0	1.0	CL-Red, soft, very dandy, clay	Hand Auguered
1.0	7.0	SC-Light tan, orange, abundant clay, sand	
7.0	10.5	SC-Light tan, light gray, orange very clayey, sand	
10.5	11.5	CL-Maroon, light gray, laminated lean clay	Well was terminated after reaching clay-lower limit of perched water table.

MANAGEMENT INC.

WELL CONSTRUCTION DIAGRAM

PROJECT: Torrington/Sylvania
LOCATION: UST-Area
WELL NUMBER: UST-11
DATE INSTALLED: 7-21-89
ELEVATION: 5182.0
☒ GROUND ☐ CASING ☐ PROTECTOR CASING
☐ ABOVE GROUND LEVEL ☐ ABOVE MEAN SEA LEVEL



COMMENTS: Well was installed using 3.25" hand auger to total depth of 11.5'. Well was developed using PVC bailer.

Atlanta Environmental Management Inc.

Monitoring Well Log

Date: July 21, 1989

Owner: Torrington/Sylvania
Well No: UST-11
Location: UST Area

Driller: Ron Yarborough
Geologist: Ron Yarborough
Drilling Method: Hand Auger (3.25")

Screened From: 0.0 ft. to 10.0 ft.
Gravel Pack: 40-50 mesh to 1.40 ft.
Bentonite Seal: .40 ft. to 1.40 ft.
Concrete Seal from .40 ft. to surface
Water Level: 7.91 ft. below well top.
Well top elevation: ≈182.0 ft.

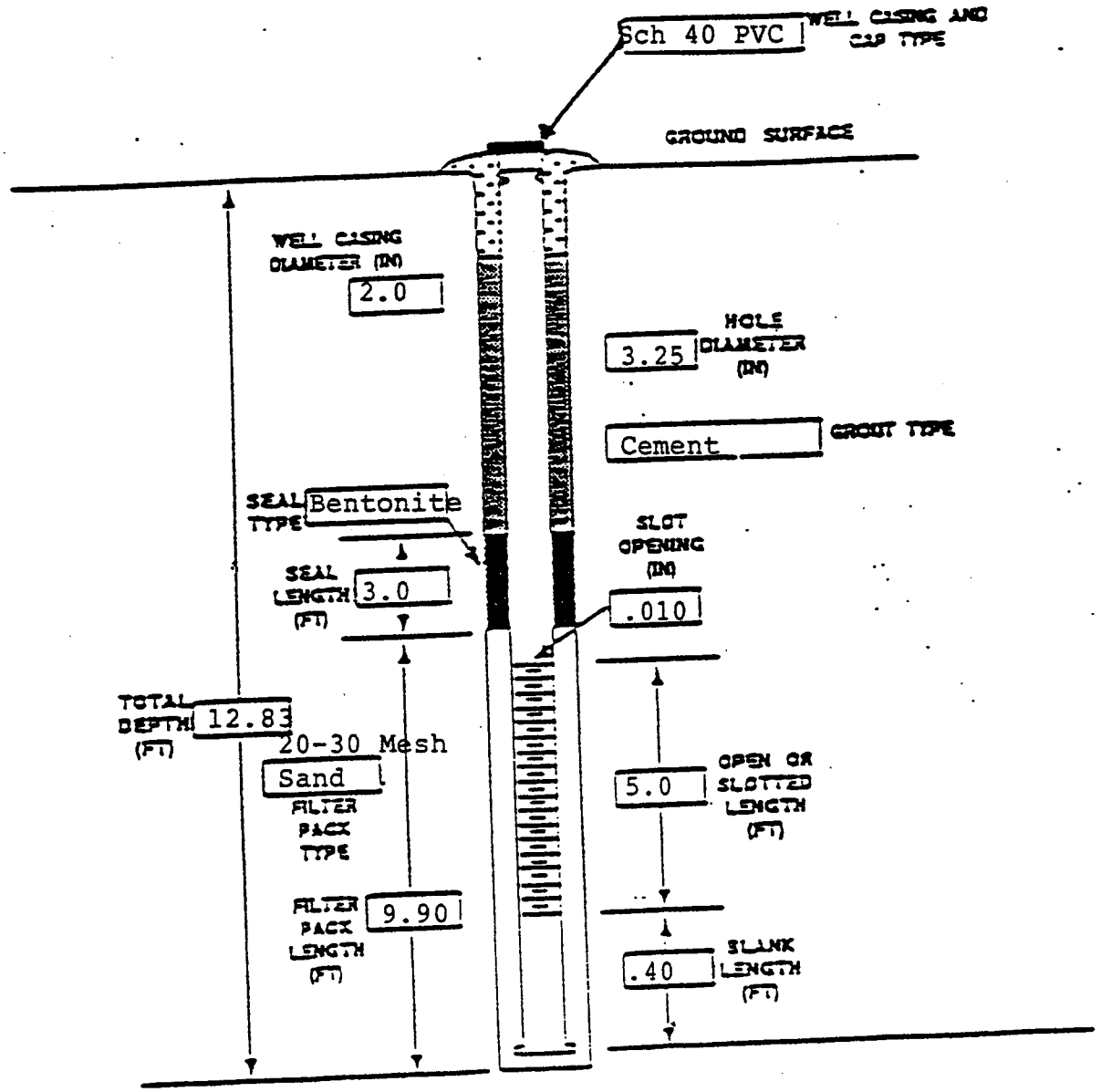
Depth (feet) From	To	Lithology	Remarks
0.0	1.0	CL-Red, soft, very sandy, clay	Hand augered
1.0	7.0	SC-Light tan, orange, abundant clay, sand	
7.0	10.5	SC-Light tan, light gray, orange, very clayey, sand	
10.5	11.5	CL-Maroon, light gray, laminated lean clay	Well was terminated after reaching clay-lower limit of perched water table

MANAGEMENT INC.

WELL CONSTRUCTION DIAGRAM

PROJECT: Torrington/Sylvania
LOCATION: Parking Lot at UST Area
WELL NUMBER: UST-12
DATE INSTALLED: September 29,1989

ELEVATION:
☒GROUND ☐CASING ☐PROTECTOR CASING
☐ABOVE GROUND LEVEL ☐ABOVE MEAN SEA LEVEL



COMMENTS: Well was installed using a hand auger and developed using a PVC bailer.

PAGE ____ OF ____

Atlanta Environmental Management, Inc.

Monitoring Well Log

Date: September 29, 1989

Owner:. Torrington Company
Well No: UST-12
Location: Parking lot at UST area

Driller: J. Waters
Geologist: R. Yarborough
Drilling Method: Hand Auger

Screened From: 12.43 ft. to 7.43 ft. (0.01" slot
Gravel Pack: 30-40 mesh to 4 ft.
Bentonite Seal: 4 ft. to 1 ft.
Concrete Seal from 1 ft. to surface
Water Level: ≅ 9 ft. below ~~xxxxx~~ land
Well top elevation: _____ ft. sfc.
Well Materials: Triloc Sch 40 PVC-2" (threaded) with a locking cap

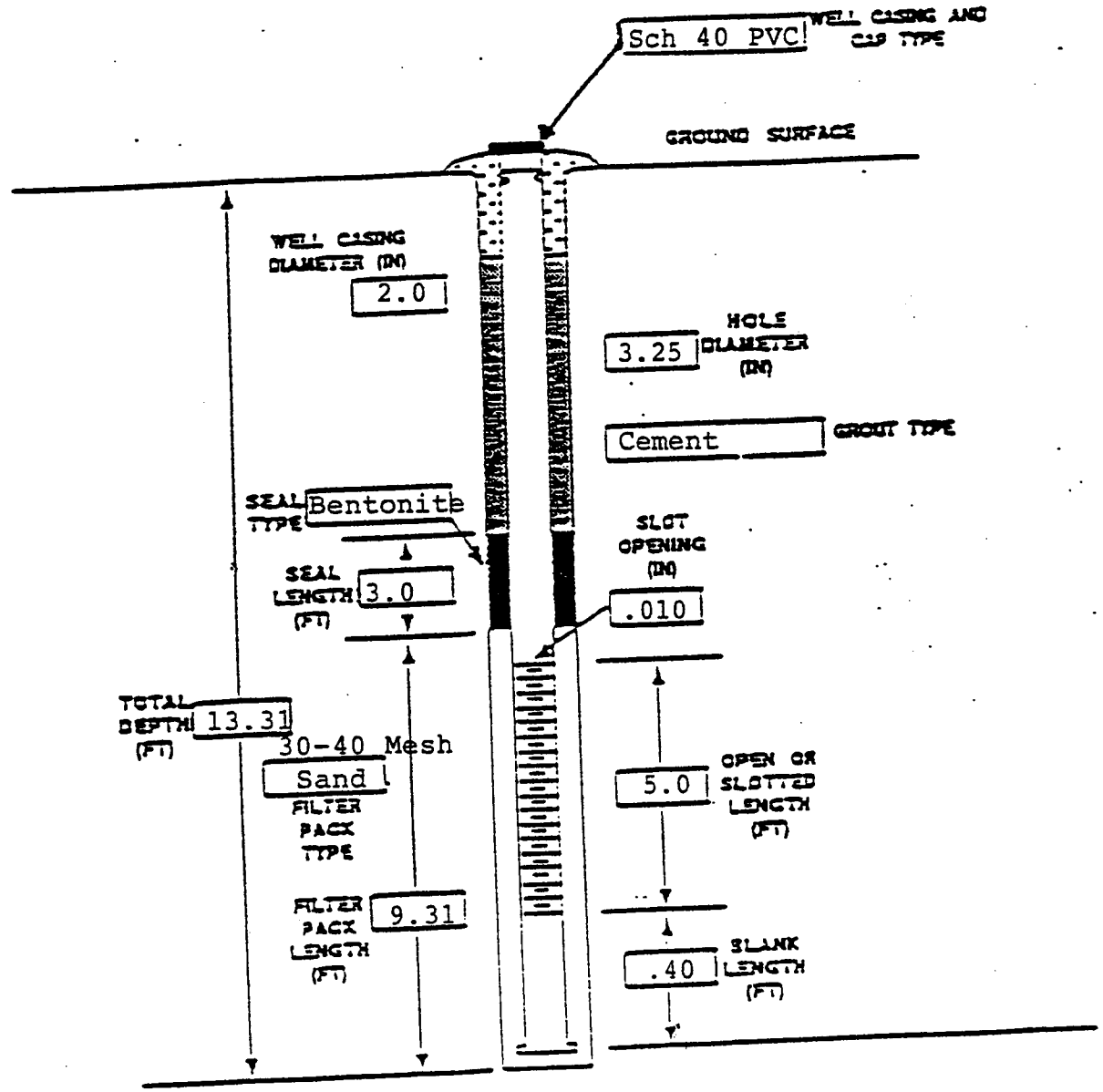
Depth (feet) From	To	Lithology	Remarks
0	1/3	Asphalt	
1/3	1	Light brown silty fine sand (sM)	
1		Ochreous brown clayey find sand, ≪ 20%	
		clay. Mottled red and purple at 4 ft.	
		up to 30% clay	Wet at approx. 9' dept
	11-1/2	at approximately ≅7 feet. (sC)	
11-1/2		Purple mottled gray lean clay,	
		approximately 10% sand (fine to very	
		fine) (CL)	
		Total Depth: 12-1/2 feet BLS.	
		Several feet below the water table.	
		The well was developed by surging	
		with a PVC bailer.	

MANAGEMENT INC.

WELL CONSTRUCTION DIAGRAM

PROJECT: Torrington/Sylvania
LOCATION: Parking Lot at UST Area
WELL NUMBER: UST-13
DATE INSTALLED: September 29, 1989

ELEVATION:
☒ GROUND ☐ CASING ☐ PROTECTOR CASING
☐ ABOVE GROUND LEVEL ☐ ABOVE MEAN SEA LEVEL



COMMENTS: Well was installed using a hand auger and developed by surging with a PVC bailer.

Atlanta Environmental Management, Inc.

Monitoring Well Log

Date: September 29, 1989

Owner: Torrington Company
Well No: UST-13
Location: Parking Lot at UST Area

Driller: J. Waters
Geologist: M. Potts
Drilling Method: Hand Auger

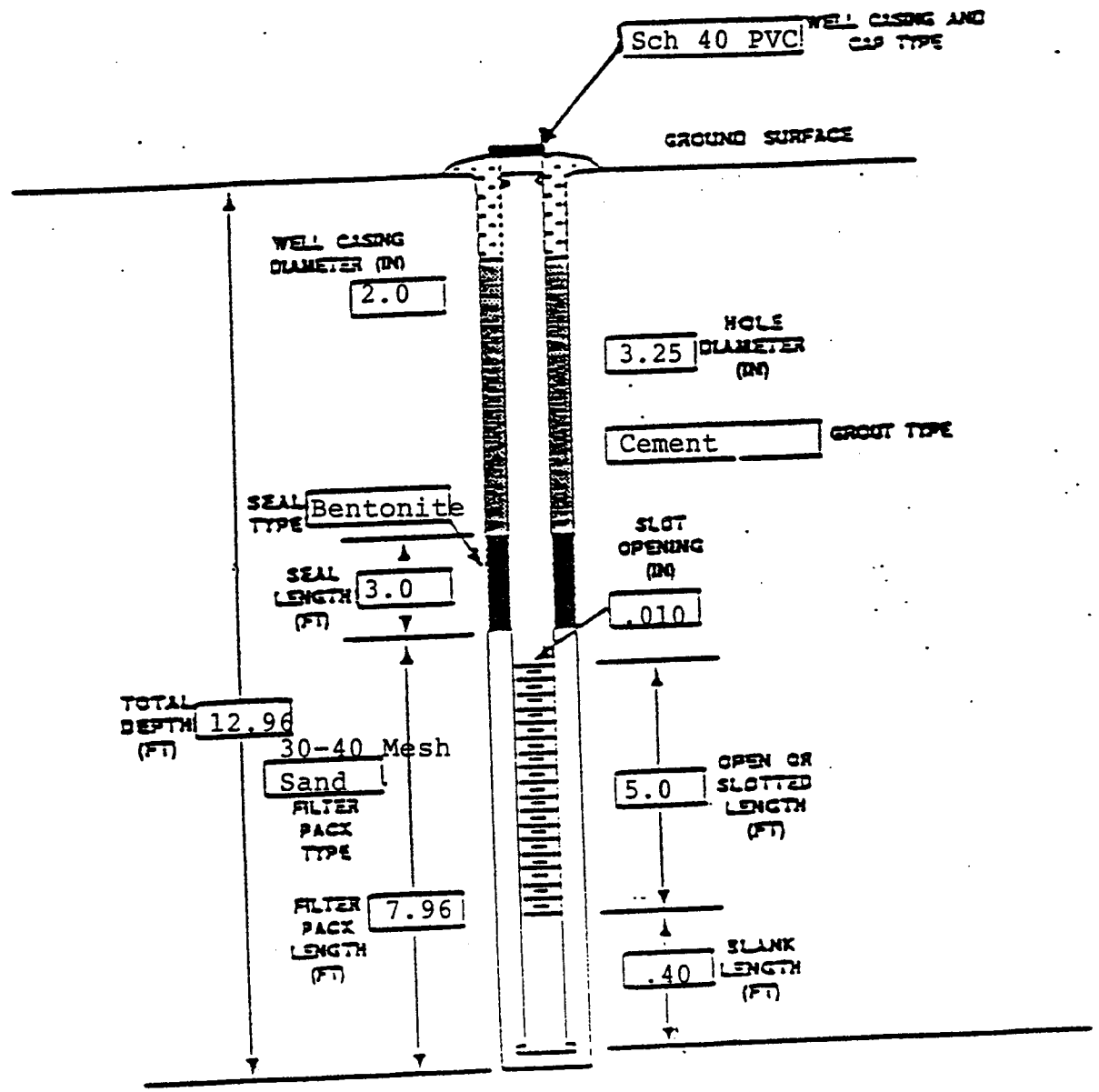
Screened From: 12.91 ft. to 7.91 ft. (0.01
Gravel Pack: 30-40 mesh to 4 ft. (slot
Bentonite Seal: 4 ft. to 1 ft.
Concrete Seal from 1 ft. to surface
Water Level: ≈ 9 ft. below ~~weddxtopx~~ land
Well top elevation: _____ ft. sfc.
Well Materials: Triloc Sch 40 PVC-2" (threaded) with a locking cap.

Depth (feet) From	To	Lithology	Remarks
0	1/3	Asphalt	
1/3	1-1/2	Light brown silty find sand (SM)	
1-1/2		Ochreous brown clayey find sand,	
		approximately 20% clay. Mottled red	
		and purple at 4-1/2-5 ft. At 7 ft.	Wet Approximately 9' depth
	11	Approximately 30% clay, variable (SC)	
11	12-1/2	Clayey sand stringers within a lean	
		gray clay, approximately 10% sand (CL)	
12-1/2		Light grayish white clayey fine sand (SC)	
		Total Depth: 13-1/2 feet BLS.	
		Several feet below the water table.	
		The well was developed by surging with	
		a PVC bailer.	

MANAGEMENT INC.

WELL CONSTRUCTION DIAGRAM

PROJECT: Torrington/Sylvania
LOCATION: Parking Lot at UST Area
WELL NUMBER: UST-14
DATE INSTALLED: September 29, 1989
ELEVATION:
☒ GROUND ☐ CASING ☐ PROTECTOR CASING
☐ ABOVE GROUND LEVEL ☐ ABOVE MEAN SEA LEVEL



COMMENTS: Well was installed using a hand auger and developed by surging with a PVC bailer

PAGE ____ OF ____

Atlanta Environmental Management, Inc.

Monitoring Well Log

Date: September 29, 1989

Owner: Torrington Company
Well No: UST-14
Location: Parking Lot at UST Area

Driller: J. Waters
Geologist: R. Yarborough
Drilling Method: Hand Auger

Screened From: 12.56 ft. to 7.56 ft.
Gravel Pack: 30-40 mesh to 5 ft.
Bentonite Seal: 5 ft. to 2 ft.
Concrete Seal from 1 ft. to surface
Water Level: ≈ 9 ft. below ~~well top~~ land
Well top elevation: _____ ft.sfc.
Well Materials: Triloc Sch. 40 PVC-2" (threaded) with a locking cap

Depth (feet) From	To	Lithology	Remarks
		See Log for Well UST-12	
		Total Depth: 13 feet BLS.	
		Several feet below the water table.	
		The well was developed by surging with	
		a PVC bailer.	

ATTACHMENT 5

ANALYTICAL RESULTS FROM THE MONITORING WELLS THAT DEFINE THE HORIZONTAL EXTENT OF TPH CONTAMINATION IN THE PERCHED WATER TABE AT THE UST AREA

James W. Andrews, Ph.D.
President
Davis Locke
Vice President

SAVANNAH LABORATORIES AND ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue (31404)
P. O. Box 13548 • Savannah, GA 31416-0548
(912) 354-7858

LOG NO: 89-6702

Received: 15 AUG 89

Mr. Bruce Peake
The Torrington Company
P. O. Box 1667, Friendship Road
Sylvania, GA 30467

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
6702-1	UST 1 (08.14.89) 1030	Client
6702-2	UST 11 (08.14.89) 1120	

PARAMETER	6702-1	6702-2
Purgeables (624)		
Benzene, ug/l	<500	<500
Bromodichloromethane, ug/l	<500	<500
Bromoform, ug/l	<500	<500
Bromomethane, ug/l	<1000	<1000
Carbon Tetrachloride, ug/l	<500	<500
Chlorobenzene, ug/l	<500	<500
Chloroethane, ug/l	<1000	<1000
2-Chloroethylvinyl Ether, ug/l	<1000	<1000
Chloroform, ug/l	<500	<500
Chloromethane, ug/l	<1000	<1000
Dibromochloromethane, ug/l	<500	<500
1,2-Dichlorobenzene, ug/l	<500	<500
1,3-Dichlorobenzene, ug/l	<500	<500
1,4-Dichlorobenzene, ug/l	<500	<500
1,1-Dichloroethane, ug/l	<500	<500
1,2-Dichloroethane, ug/l	<500	<500
1,1-Dichloroethene, ug/l	6800	26000
1,2-Dichloroethylene, ug/l	<500	<500
1,2-Dichloropropane, ug/l	<500	<500
Cis-1,3-Dichloropropene, ug/l	<500	<500
Trans-1,3-Dichloropropene, ug/l	<500	<500

SAVANNAH LABORATORIES
AND ENVIRONMENTAL SERVICES, INC.
5102 LaRoche Avenue (31404)
P. O. Box 13543 • Savannah, GA 31416-0543
(912) 354-7858

LOG NO: 89-6702

Received: 15 AUG 89

Mr. Bruce Peake
The Torrington Company
P. O. Box 1667, Friendship Road
Sylvania, GA 30467

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
6702-1	UST 1 (08.14.89) 1030	Client
6702-2	UST 11 (08.14.89) 1120	

PARAMETER	6702-1	6702-2
Ethylbenzene, ug/l	<500	<500
Methylene Chloride, ug/l	<500	<500
1,1,2,2-Tetrachloroethane, ug/l	<500	<500
Tetrachloroethylene, ug/l	<500	<500
Toluene, ug/l	<500	<500
1,1,1-Trichloroethane, ug/l	5600	25000
1,1,2-Trichloroethane, ug/l	<500	<500
Trichloroethene, ug/l	<500	<500
Trichlorofluoromethane, ug/l	<500	<500
Vinyl Chloride, ug/l	<1000	<1000
Petroleum Hydrocarbons (IR), mg/l	22	5.6

6840

[illegible], Ph.D.
President

James Davis Long
Vice-President

SAVANNAH LABORATORIES
AND ENVIRONMENTAL SERVICES, INC.
5102 LaRoche Avenue (31404)
P. O. Box 13543 • Savannah, GA 31416-0543
(912) 354-7858

LOG NO: 89-6702

Received: 15 AUG 89

Mr. Bruce Peake
The Torrington Company
P. O. Box 1667, Friendship Road
Sylvania, GA 30467

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
6702-3	UST 9 (08.14.89) 1110	Client

PARAMETER	6702-3
Petroleum Hydrocarbons (IR), mg/l	<1.0

SAVANNAH LABORATORIES
AND ENVIRONMENTAL SERVICES, INC
5102 LaRoche Avenue (31404)
P. O. Box 13548 • Savannah, GA 31416-0548
(912) 354-7858

LOG NO: 89-6702

Received: 15 AUG 89

Mr. Bruce Peaks
The Torrington Company
P. O. Box 1667, Friendship Road
Sylvania, GA 30467

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , QC SAMPLES	SAMPLED BY
6702-4	Detection Limits	
6702-5	Accuracy (Mean % Recovery)	Client
6702-6	Precision (% RPD)	

PARAMETER		6702-4	6702-5	6702-6
Purgeables (624)				
Benzene, ug/l		500	103 %	5.8 %
Bromodichloromethane, ug/l		500	---	---
Bromoform, ug/l		500	---	---
Bromomethane, ug/l		1000	---	---
Carbon Tetrachloride, ug/l		500	---	---
Chlorobenzene, ug/l		500	99 %	7.1 %
Chloroethane, ug/l		1000	---	---
2-Chloroethylvinyl Ether, ug/l		1000	---	---
Chloroform, ug/l		500	---	---
Chloromethane, ug/l		1000	---	---
Dibromochloromethane, ug/l		500	---	---
1,2-Dichlorobenzene, ug/l		500	---	---
1,3-Dichlorobenzene, ug/l		500	---	---
1,4-Dichlorobenzene, ug/l		500	---	---
1,1-Dichloroethane, ug/l		500	---	---
1,2-Dichloroethane, ug/l		500	---	---
1,1-Dichloroethene, ug/l		500	119 %	1.7 %
1,2-Dichloroethylene, ug/l		500	---	---
1,2-Dichloropropane, ug/l		500	---	---
Cis-1,3-Dichloropropene, ug/l		500	---	---

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AND ENVIRONMENTAL SERVICES, INC
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Sylvania, GA 30467

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , QC SAMPLES	SAMPLED BY
6702-4	Detection Limits	
6702-5	Accuracy (Mean % Recovery)	Client
6702-6	Precision (% RPD)	

PARAMETER		6702-4	6702-5	6702-6
Trans-1,3-Dichloropropene, ug/l	500	---	---	
Ethylbenzene, ug/l	500	---	---	
Methylene Chloride, ug/l	500	---	---	
1,1,2,2-Tetrachloroethane, ug/l	500	---	---	
Tetrachloroethylene, ug/l	500	---	---	
Toluene, ug/l	500	---	---	
1,1,1-Trichloroethane, ug/l	500	99 %	3.0 %	
1,1,2-Trichloroethane, ug/l	500	---	---	
Trichloroethene, ug/l	500	---	---	
Trichlorofluoromethane, ug/l	500	103 %	7.7 %	
Vinyl Chloride, ug/l	500	---	---	
Petroleum Hydrocarbons (IR), mg/l	1000	---	---	
	1.0	95	0	

Methods: EPA 40 CFR Part 136.

Janette D. Long

James W. Andrews, Ph.D.
President

Janette Davis Long
Vice-President

SAVANNAH LABORATORIES
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LOG NO: 89-8553

Received: 06 OCT 89

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REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
8553-5	UST 1D (10.05.89)	Client
8553-6	UST 12 (10.05.89)	
8553-7	UST 13 (10.05.89)	

PARAMETER	8553-5	8553-6	8553-7
Petroleum Hydrocarbons (IR), mg/l	5.8	12.3	6.1

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LOG NO: 89-10996

Received: 14 DEC 89

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PARTIAL
REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
10996-32	UST-1	Savannah Laboratories
10996-33	UST-1D	
10996-34	UST-1DD	

PARAMETER	10996-32	10996-33	10996-34
ns-1,3-Dichloropropene, ug/l	<250	<5	<5
Ethylbenzene, ug/l	<250	<5	<5
Methylene Chloride, ug/l	<250	<5	<5
1,1,2,2-Tetrachloroethane, ug/l	<250	<5	<5
Tetrachloroethylene, ug/l	<250	<5	<5
Toluene, ug/l	<250	<5	<5
1,1,1-Trichloroethane, ug/l	3700	60	<5
1,1,2-Trichloroethane, ug/l	<250	<5	<5
Trichloroethene, ug/l	<250	<5	<5
Trichlorofluoromethane, ug/l	<250	<5	<5
Vinyl Chloride, ug/l	<500	<10	<10
Xylenes, ug/l	<250	<5	<5
Surrogates - Volatiles			
Toluene-d8, % Rec.	98 %	89 %	91 %
4-Bromofluorobenzene, % Rec.	103 %	95 %	95 %
Surrogate - 1,2-Dichloroethane-d4, % Rec.	105 %	96 %	92 %
Petroleum Hydrocarbons (IR), mg/l	5.3	<1.0	<1.0
Water Level (casing top) ft.	8.13	33.20	30.90

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PARTIAL
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LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
10996-35	UST-2	Savannah Laboratories
10996-36	UST-3	
10996-37	UST-7S	
10996-38	UST-8	
10996-39	UST-12	

AMETER	10996-35	10996-36	10996-37	10996-38	10996-39
Petroleum Hydrocarbons (IR), mg/l	<1.0	<1.0	<1.0	<1.0	<1.0
Water Level (casing top) ft.	9.60	5.19	6.50	8.70	9.06

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REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
10996-40	UST-13	Savannah Laboratories
10996-41	UST-14	
10996-42	B-3	
10996-43	DSA-5	

METER	10996-40	10996-41	10996-42	10996-43
Petroleum Hydrocarbons (IR), mg/l	<1.0	<1.0	<1.0	<1.0
Water Level (casing top) ft.	11.25	10.66	9.55	5.80

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PARTIAL
REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
10996-44	W-15D - 10	Savannah Laboratories
10996-45	W-16D - 12	
10996-46	W-16DD - 13	
10996-47	TW-1 - A	
10996-48	W-17D	

METER	10996-44	10996-45	10996-46	10996-47	10996-48
Purgeables (624)					
Benzene, ug/l	<5	<5	<5	<5	<5
Bromodichloromethane, ug/l	<5	<5	<5	<5	<5
Bromoform, ug/l	<5	<5	<5	<5	<5
Bromomethane, ug/l	<10	<10	<10	<10	<10
Carbon Tetrachloride, ug/l	<5	<5	<5	<5	<5
Chlorobenzene, ug/l	<5	<5	<5	<5	<5
Chloroethane, ug/l	<10	<10	<10	<10	<10
2-Chloroethylvinyl Ether, ug/l	<10	<10	<10	<10	<10
Chloroform, ug/l	<5	<5	<5	<5	<5
Chloromethane, ug/l	<10	<10	<10	<10	<10
Dibromochloromethane, ug/l	<5	<5	<5	<5	<5
1,2-Dichlorobenzene, ug/l	<5	<5	<5	<5	<5
1,3-Dichlorobenzene, ug/l	<5	<5	<5	<5	<5
1,4-Dichlorobenzene, ug/l	<5	<5	<5	<5	<5
1,1-Dichloroethane, ug/l	<5	12	9	8	<5
1,2-Dichloroethane, ug/l	<5	<5	<5	<5	<5
1,1-Dichloroethene, ug/l	10	<5	6	<5	<5
trans-1,2-Dichloroethylene, ug/l	<5	<5	<5	<5	<5

ATTACHMENT 6

ANALYTICAL RESULTS FROM THE MONITORING WELLS THAT DEFINE THE HORIZONTAL EXTENT OF VOC CONTAMINATION IN THE PERCHED WATER TABLE AT THE UST AREA

[illegible], Ph.D.
President

[illegible] Davis Lang
Vice-President

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LOG NO: 89-5427

Received: 10 JUL 89

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PARTIAL
REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
5427-1	LS-1 (07.07.89) 1400	Client
5427-3	DSA-1 (07.07.89) 1400	
5427-4	DSA-2 (07.07.89) 1400	

PARAMETER	5427-1	5427-2	5427-3	5427-4
Purgeables (624)				
Benzene, ug/l	<5		<5	<5
Bromodichloromethane, ug/l	<5		<5	<5
Bromoform, ug/l	<5		<5	<5
Bromomethane, ug/l	<10		<10	<10
Carbon Tetrachloride, ug/l	<5		<5	<5
Chlorobenzene, ug/l	<5		<5	<5
Chloroethane, ug/l	<10		<10	<10
2-Chloroethylvinyl Ether, ug/l	<10		<10	<10
Chloroform, ug/l	<5		<5	<5
Chloromethane, ug/l	<10		<10	<10
Dibromochloromethane, ug/l	<5		<5	<5
1,2-Dichlorobenzene, ug/l	<5		<5	<5
1,3-Dichlorobenzene, ug/l	<5		<5	<5
1,4-Dichlorobenzene, ug/l	<5		<5	<5
1,1-Dichloroethane, ug/l	<5		<5	<5
1,2-Dichloroethane, ug/l	<5		<5	<5
1,1-Dichloroethene, ug/l	<5		<5	<5
trans-1,2-Dichloroethylene, ug/l	<5		<5	<5

[illegible]
President

[illegible]
Vice-President

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REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
5427-1	LS-1 (07.07.89) 1400	Client
5427-3	DS2-1 (07.07.89) 1400	
5427-4	DS2-2 (07.07.89) 1400	

PARAMETER	5427-1	5427-3	5427-4
1,2-Dichloropropane, ug/l	<5	<5	<5
Cis-1,3-Dichloropropene, ug/l	<5	<5	<5
Trans-1,3-Dichloropropene, ug/l	<5	<5	<5
Ethylbenzene, ug/l	<5	<5	<5
Methylene Chloride, ug/l	<5	<5	<5
1,1,2,2-Tetrachloroethane, ug/l	<5	<5	<5
Tetrachloroethylene, ug/l	<5	<5	<5
Toluene, ug/l	6.1	<5	<5
1,1,1-Trichloroethane, ug/l	<5	<5	<5
1,1,2-Trichloroethane, ug/l	<5	<5	8.4
Trichloroethene, ug/l	<5	<5	<5
Trichlorofluoromethane, ug/l	<10	<10	<10
Vinyl Chloride, ug/l			
Surrogates - Volatiles			
Toluene-d8, % Rec.	111 %	110 %	109 %
4-Bromofluorobenzene, % Rec.	113 %	111 %	111 %
1,2-Dichloroethane-d4, % Rec.	97 %	96 %	97 %

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Page 1

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
		Client
8553-1	UST 11 (10.05.89)	
8553-2	UST 12 (10.05.89)	
8553-3	UST 13 (10.05.89)	
8553-4	UST 14 (10.05.89)	

PARAMETER	8553-1	8553-2	8553-3	8553-4
Volatiles by GC/MS				
Chloromethane, ug/l	<10	<10	<10	<10
Bromomethane, ug/l	<10	<10	<10	<10
Vinyl Chloride, ug/l	<10	<10	<10	<10
Chloroethane, ug/l	<10	<10	<10	<10
Methylene Chloride, ug/l	<5	<5	<5	<5
Acetone, ug/l	940	190	140	170
Carbon Disulfide, ug/l	<5	<5	<5	<5
1,1-Dichloroethylene, ug/l	130	<5	140	2900
1,1-Dichloroethane, ug/l	<5	<5	7.8	120
1,2-Dichloroethylene, ug/l	<5	<5	<5	31
Chloroform, ug/l	<5	<5	<5	13
1,2-Dichloroethane, ug/l	<5	<5	<5	25
2-Butanone, ug/l	<10	<10	<10	<10
1,1,1-Trichloroethane, ug/l	100	<5	22	600
Carbon Tetrachloride, ug/l	<5	<5	<5	<5
Vinyl Acetate, ug/l	<10	<10	<10	<10
Bromodichloromethane, ug/l	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane, ug/l	<5	<5	<5	<5
1,2-Dichloropropane, ug/l	<5	<5	<5	<5

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LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
8553-1	UST 11 (10.05.89)	Client
8553-2	UST 12 (10.05.89)	
8553-3	UST 13 (10.05.89)	
8553-4	UST 14 (10.05.89)	

PARAMETER	8553-1	8553-2	8553-3	8553-4
Trans-1,3-Dichloropropene, ug/l	<5	<5	<5	<5
Trichloroethylene, ug/l	<5	<5	12	570
Dibromochloromethane, ug/l	<5	<5	<5	<5
1,1,2-Trichloroethane, ug/l	<5	<5	<5	18
Benzene, ug/l	<5	<5	<5	<5
cis-1,3-Dichloropropene, ug/l	<5	<5	<5	<5
2-Chloroethylvinyl Ether, ug/l	<10	<10	<10	<10
Bromoform, ug/l	<5	<5	<5	<5
2-Hexanone, ug/l	<10	<10	<10	<10
4-methyl-2-pentanone, ug/l	<10	<10	<10	<10
Tetrachloroethylene, ug/l	<5	<5	<5	<5
Toluene, ug/l	<5	<5	<5	<5
Chlorobenzene, ug/l	<5	<5	<5	<5
Ethylbenzene, ug/l	<5	<5	<5	<5
Styrene, ug/l	<5	<5	<5	<5
Xylenes, ug/l	<5	<5	<5	<5

ATTACHMENT 7

ESTIMATED GROUNDWATER FLOW RATE FOR THE PERCHED WATER TABLE

ESTIMATED AVERAGE GROUNDWATER FLOW RATE FOR THE PERCHED WATER TABLE

An estimated average groundwater flow rate has been calculated for the perched water table at the interceptor trench area. Potentiometric data was used from December 12-14, 1988. Baseflow for the interceptor trench at the CCSI and DCSI is low at this time of the year. The flow rate on December 12 and 15, 1988 was 600 gallons per day with a monthly average of 688 gallons per day. This is a time of low rainfall when baseflow is indicative of groundwater discharge and effects due to precipitation are minimal.

Discharge area for the aquifer, perpendicular to the direction of groundwater flow, was approximately 477.5 ft^2 at this time with Q (discharge volume) = A (discharge area of aquifer) x V (discharge velocity)

$$Q = A \times V;$$

$$600\ gallons/day = (477.5\ ft^2)(V);$$

$$600\ gallons/day \times \frac{.134\ ft^3}{gallons} = (477.5\ ft^2)(V);$$

$$V = .17\ ft/day,\ or\ 62\ feet\ year.$$

This discharge velocity of 62 feet/year is indicative of an average velocity. Testing of aquifer materials elsewhere at the site has shown a high variability in the aquifer materials and their permeabilities within the perched water table. Ranges in order of magnitude of 1-2 have been noted.

$V = Ki$

with K = hydraulic conductivity of aquifer materials

and i = hydraulic gradient

An average groundwater flow rate has been calculated which is a result of the average (mean) hydraulic gradient (i) at the site. However, since i varies from .036 - .071 with 0.057 as an average gradient within the area of the interceptor trench, a range of flow rates can be estimated.

i	V (flow rate)
Average (.057)	62 feet/year
Low .036	39 feet/year
High .071	77 feet/year

Thus, for purposes of estimating an average groundwater flow rate for the perched water table, a range of 39 to 77 feet/year appears reasonable. Using the above equation, $V = Ki$, V and i are the knowns and the hydraulic conductivity (K) can be determined. Based upon an average V of 62 feet per year and an average hydraulic gradient of 0.057, an average hydraulic conductivity for the perched water table at the CCSI and DCSI area is calculated to 1.05×10^{-3} cm/sec.

ATTACHMENT 8

MIRAFI 140N PRODUCT DESCRIPTION SHEET

MIRAFI INC

ATTACHMENT 6.

MIRAFI 140N

PRODUCT DESCRIPTION

Mirafi 140N is a needlepunched nonwoven fabric composed of polypropylene filaments lightly calendered on one side. The fabric is inert to biological degradation and naturally encountered chemicals, alkalies, and acids. Mirafi 140N conforms to the minimum certifiable property values listed in the following table.

FABRIC PROPERTY	UNIT	TEST METHOD	MINIMUM CERTIFIABLE VALUE[4]
Weight	oz/sy	ASTM D-3776-79	4.0
Thickness	mil	ASTM D-1777-64	60
Grab Tensile Strength	lb	ASTM D-4632-86	120
Grab Tensile Elongation	%	ASTM D-4632-86	50
Trapezoid Tear Strength	lb	ASTM D-4533-85	45
Burst Strength	psi	ASTM D-3786-80a[1]	210
Puncture Resistance	lb	ASTM D-3787-80[2]	65
Apparent Opening Size	U.S. Standard Sieve	ASTM D-4751-87	100+ (.0059")
Permittivity	sec^{-1}	ASTM D-4491-85[3]	1.9
Water Flow Rate	gpm/sf	ASTM D-4491-85[3]	170

[1]Diaphragm Bursting Tester.

[2]Tension Testing Machine with ring clamp; steel ball replaced with a 5/16-inch diameter solid steel cylinder centered within the ring clamp, (P).

[3]Cm Constant Head Test Method.

[4]Minimum certifiable values are based on a 95% confidence level.