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GROUNDWATER SAMPLING REPORT PHASE 1 AT AIR FORCE PLANT 4 NAS FORT WORTH TX
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FORT WORTH JRB
CARSWELL FIELD
TEXAS

ADMINISTRATIVE RECORD
COVER SHEET

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GROUNDWATER SAMPLING REPORT - PHASE I

U.S. AIR FORCE PLANT NO. 4
CARSWELL AIR FORCE BASE
FORT WORTH, TEXAS

Prepared for

U.S. CORPS OF ENGINEERS
FORT WORTH DISTRICT
Contract No. DACA63-91-D-0061
Delivery Order No. 052

Prepared by

Geo-Marine, Inc.
550 East 15th Street
Plano, Texas 75074

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EXECUTIVE SUMMARY

Geo-Marine, Inc. (GMI) has completed the Phase I groundwater sampling program on a portion of Carswell Air Force Base (CAFB) located in Fort Worth, Texas, for the Fort Worth District Corps of Engineers (USCOE). Phase I included the sampling of groundwater using a cone penetrometer at 90 locations as proposed by the USCOE. Samples were analyzed for purgeable halocarbons under method 8010 to determine the overall dimensions of the known trichloroethene (TCE) plume previously identified in the area (Radian Corporation 1991). A subsequent Phase II investigation will define the extent of the plume.

The sampling portion of the project was conducted between October 21 and November 3, 1992. The truck-mounted cone penetrometer and operating crew were contracted from Fugro Geosciences, Inc. of Houston, Texas. Proper decontamination practices were followed for all equipment involved in sampling.

Analytic work was done by NDRC Laboratories of Richardson, Texas, a USCOE-approved facility. During the sampling process, 92 holes were pushed and 32 water samples collected; one location (006) was an equipment demonstration performed at no cost and one location (086) was bottomed at a shallow depth in hard fill for a net count of 90 locations. One sample (019) was subsequently broken by laboratory personnel; attempts to retake the sample at the same location were unsuccessful.

Results for 37 analytes have been received for 31 samples plus the trip blanks, rinsate samples, and duplicate samples included as proper QA/QC procedure. The results indicate the following:

> The TCE plume has spread laterally to the north (the reported down gradient direction is south to southeast). The plume is not defined in this direction as it extends outside the designated project area onto other portions of CAFB.

> Below detection level (bdl) results from sample points along Pumphrey Road on the eastern side of the project area indicate that the plume has not yet migrated off-site in this direction.

> The extent of the plume to the south was not determined because water samples could not be obtained south of White Settlement Road.

> TCE values have increased since the previous analyses (the peak value was 12,000 micrograms per liter [μg/l] versus the previously recorded high of 6,400 μg/l).

> Positive results for other purgeable halocarbons compounds generally followed the same pattern as TCE in that the highest values are found in the west and northwest part of the project area, while bdl results are recorded along the eastern margin, and the southern boundary is undefined.

Recommendations for the Phase II portion of the project would include a change in SOW. The difficulty in collecting water samples is not completely understood; however, it is believed to be a combination of seasonal low water and slow recharge, failure in some locations to reach true bedrock because of intervening thin isolated hard layers, and difficulty in accessing water trapped in sediment lenses other than at the soil-bedrock interface.

To accomplish the Phase II objectives, sample locations would be needed in the following areas (Figure ES-1):

(1) the flightline area west of the Phase I project area as far as Taxiway D 195,

(2) the portion of CAFB directly north of the western portion of the Phase I project area at least as far as Taxiway C 130,

(3) south of White Settlement Road, particularly on the southern part of the golf course between the radar station and the housing subdivision as no previous data exist, and

(4) around the daycare center and military housing along Texas Highway 183, provided appropriate clearances are possible.

It is recommended that the SOW-specified equipment used to collect the samples in Phase I be supplemented in Phase II. A small, conventional, truck-mounted drill rig to auger small diameter boreholes to genuine bedrock not previously reached is recommended (i.e., southern and eastern parts of Phase I). The cone penetrometer would continue to be used in areas where it was previously successful (i.e., to the north and west of the Phase I project area). Collection procedures should be altered with both types of equipment to leave holes open longer because of the dryness of the season and the reported slow recharge to springs and perched water-bearing lenses. Temporary screening and casing

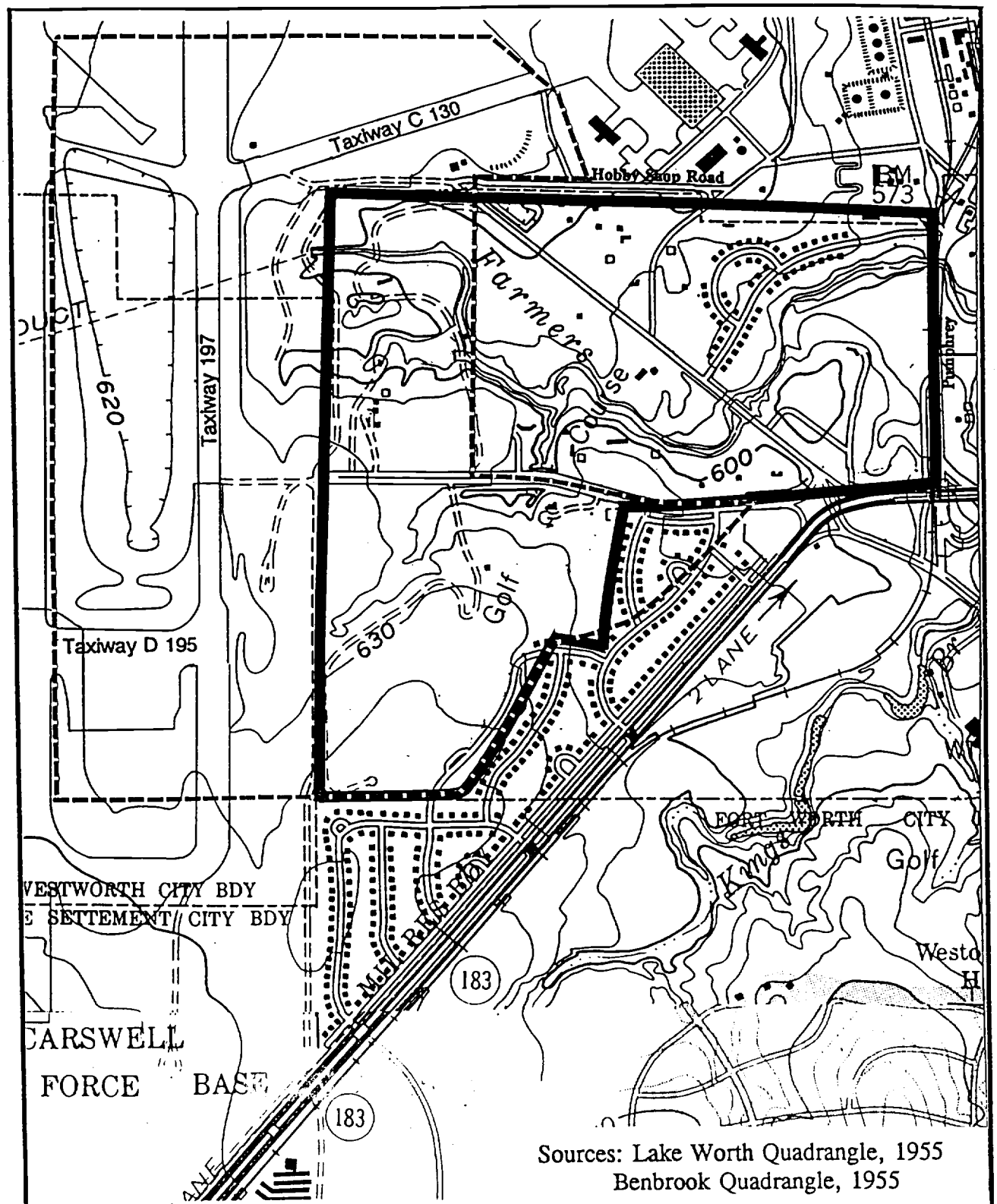

Figure ES-1. A topographic base map with the areas covered by the Phase I groundwater sampling program (▬) and the areas proposed for Phase II sampling (– – –).

could be used in holes where boring walls tend to slough. All cuttings would be contained in barrels pending proper disposal.

It is also recommended that Phase II sampling be planned so that definitive boundary sampling (e.g., along the southern edge of the golf course near the daycare center and military housing) would be done first. These samples would be analyzed at the laboratory "rush rate" so that initial results could influence the choice of subsequent sampling locations.

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1.0 INTRODUCTION - SCOPE AND PURPOSE

The Fort Worth District Corps of Engineers (USCOE) contracted Geo-Marine, Inc. (GMI) to perform two phases of groundwater sampling at Air Force Plant No. 4 at Carswell Air Force Base (CAFB), Fort Worth, Texas (Figure 1). This report covers the Phase I sampling operations and results.

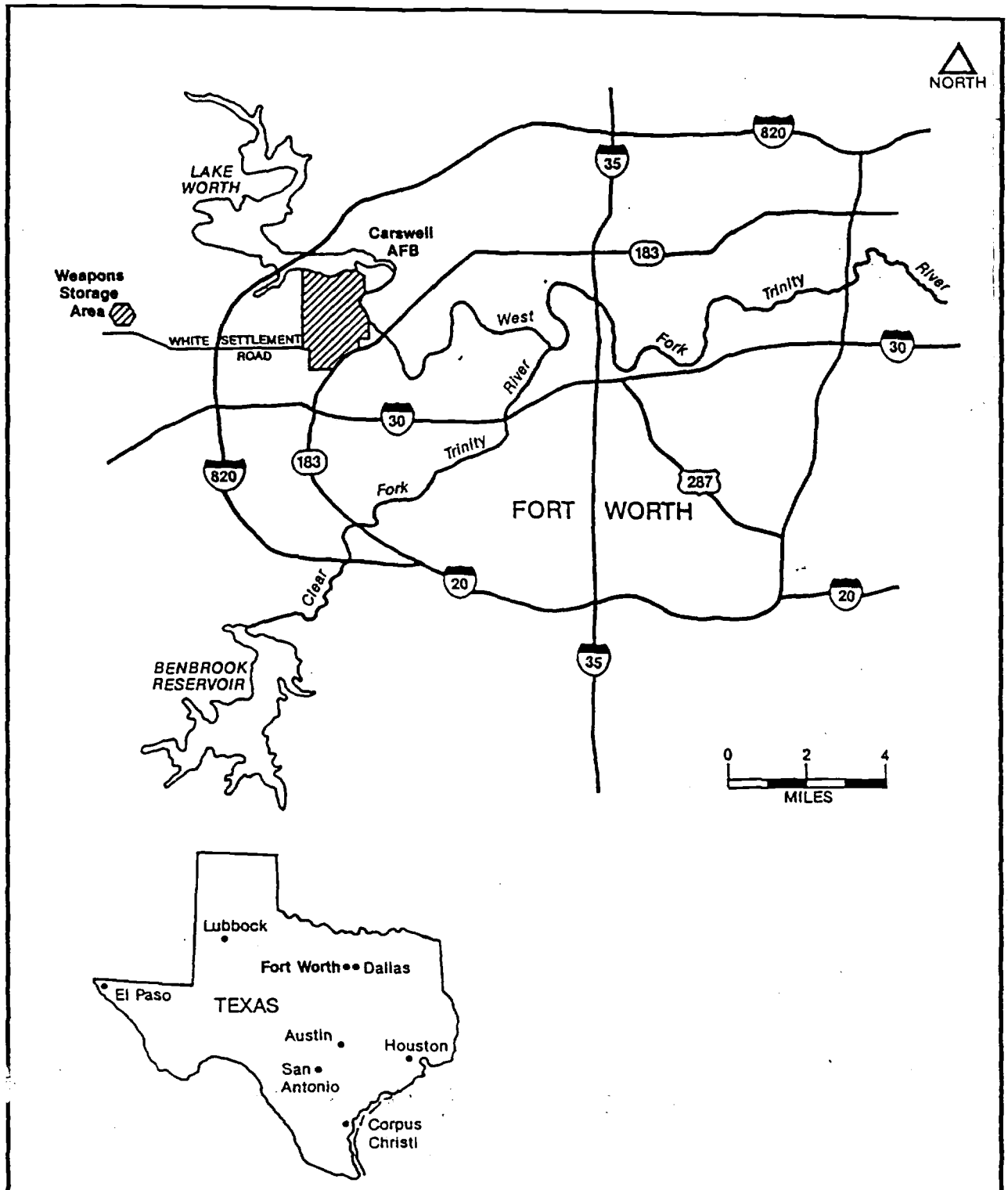
The objective of Phase I was to generally delineate the trichloroethene (TCE) plume previously identified. Ninety-two sample sites were accessed with a cone penetrometer and 31 groundwater samples collected during this phase. Results established plume boundary on the east; however, the north and west boundaries are outside the initial study area, and the data in the south were too scarce to define a boundary. The bulk of the sampling activity was on the CAFB golf course with other sites accessed near buildings and along roads and trails.

Analyses for TCE and 36 other purgeable halocarbon compounds under method 8010 demonstrated a general consistency in distribution of the elevated values of five compounds. Three other compounds showed isolated elevated spikes, and the others were all below detection limit (bdl). In general, peak concentrations were higher than previously measured and the northern boundary of the plume, as delineated by 1990 data, has moved north (opposite to the reported down gradient direction of south to southeast) at least 1,000 feet. It is anticipated that the previously defined southern plume boundary has also migrated enlarging the area of contamination to the south.

The tasks required by the Scope of Work (SOW) can be accomplished in Phase II if:

(1) a more effective sampling procedure is implemented and,

(2) access is gained to areas north and west of the initially defined project area.



Source: Radian Corporation, 1986

Figure 1. Regional location map of Carswell Air Force Base, Fort Worth, Texas

2.0 SUMMARY OF BACKGROUND MATERIAL

2.1 Investigations at Carswell Air Force Base

A Remedial Investigation is being conducted at CAFB under the Department of Defense Installation Restoration Program (IRP). The first phase, Phase I (Initial Assessment/Records Search), was performed by CH2M Hill (1984). Radian Corporation (1986) performed Phase II Stage 1 (Problem Confirmation/Quantification) and Phase II Stage 2 (Remedial Investigation Report for the Flightline Area).

2.1.1 Previous Geological Studies

The Flightline Area, defined as the area near the southern end of the flightline at CAFB (Figure 2), consists of alluvium with floodplain and fluviatile terrace deposits (Figure 3). These deposits together constitute the Upper Zone. The Upper Zone lies unconformably on the Cretaceous Goodland and Walnut Formations, which form the limestone and shale bedrock. Where the Goodland and Walnut Formations are continuous, they form an aquitard between the Upper Zone and the underlying Paluxy aquifers (Radian Corporation 1991). In the Air Force Plant No. 4 (AFP 4) area, the Walnut Formation is either absent or thin enough to allow leakage from the Upper Zone to recharge the upper Paluxy sand (Hargis and Associates 1989).

In the Flightline Area, the alluvium ranges from about 13 feet to more than 40 feet thick. The top five to 10 feet are generally silt and clay with variable amounts of sand and gravel. Below this, sand and gravel gradually dominate and increase in grain size with depth. Paleochannel features appear to have eroded into the bedrock with basal gravel deposits of gravel-sized limestone and shell fragments. The bedrock has been described as being level across Taxiway 197, but irregular locally, typical of an erosional surface modified by fluvial processes (Radian Corporation 1991).

2.1.2 Groundwater Investigations at Carswell Air Force Base

During the Phase I study, 22 sites were investigated for the possibility of hazardous materials. Five of these sites were located at the Weapons Storage Area which is located 11 miles west of CAFB (see

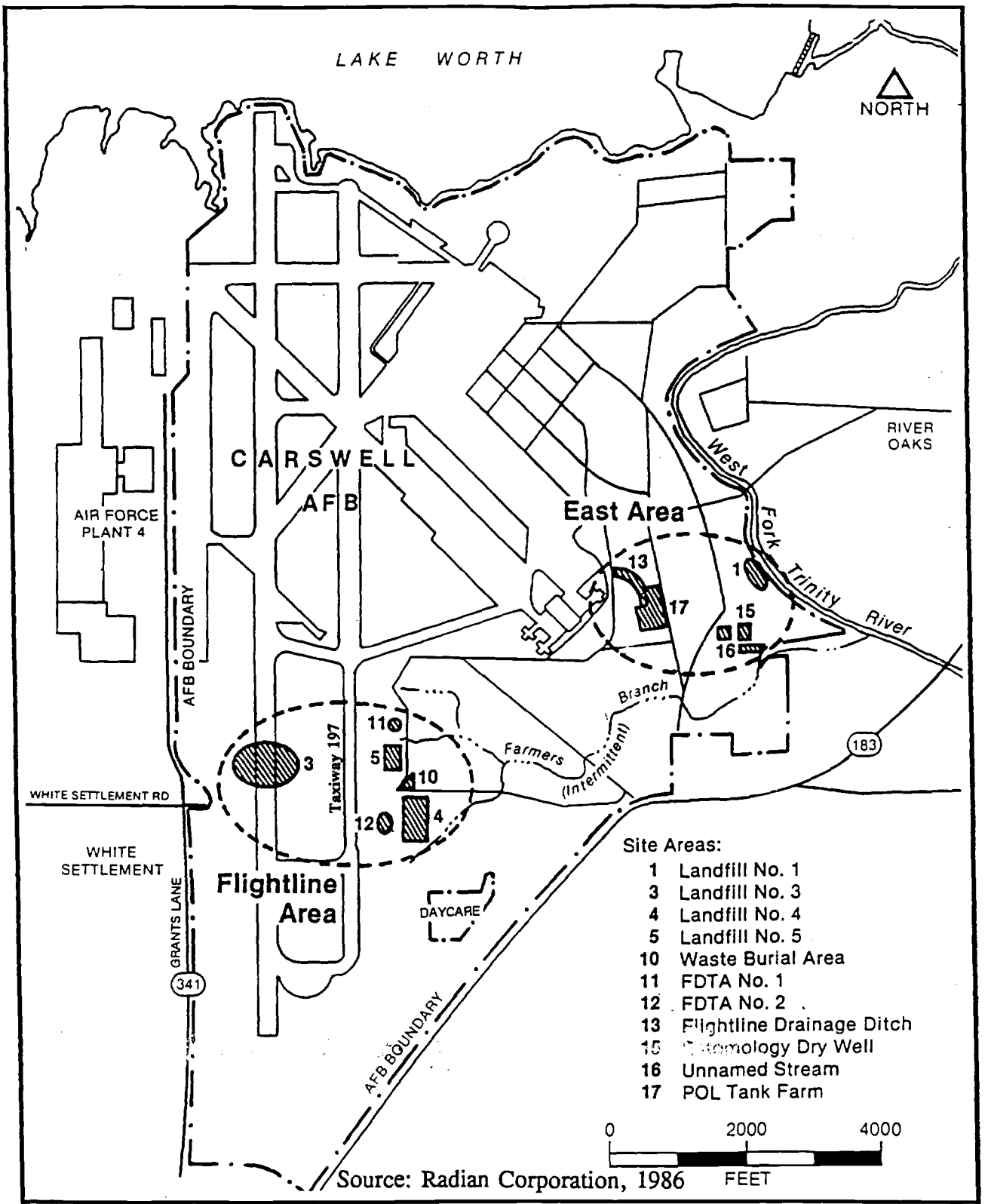
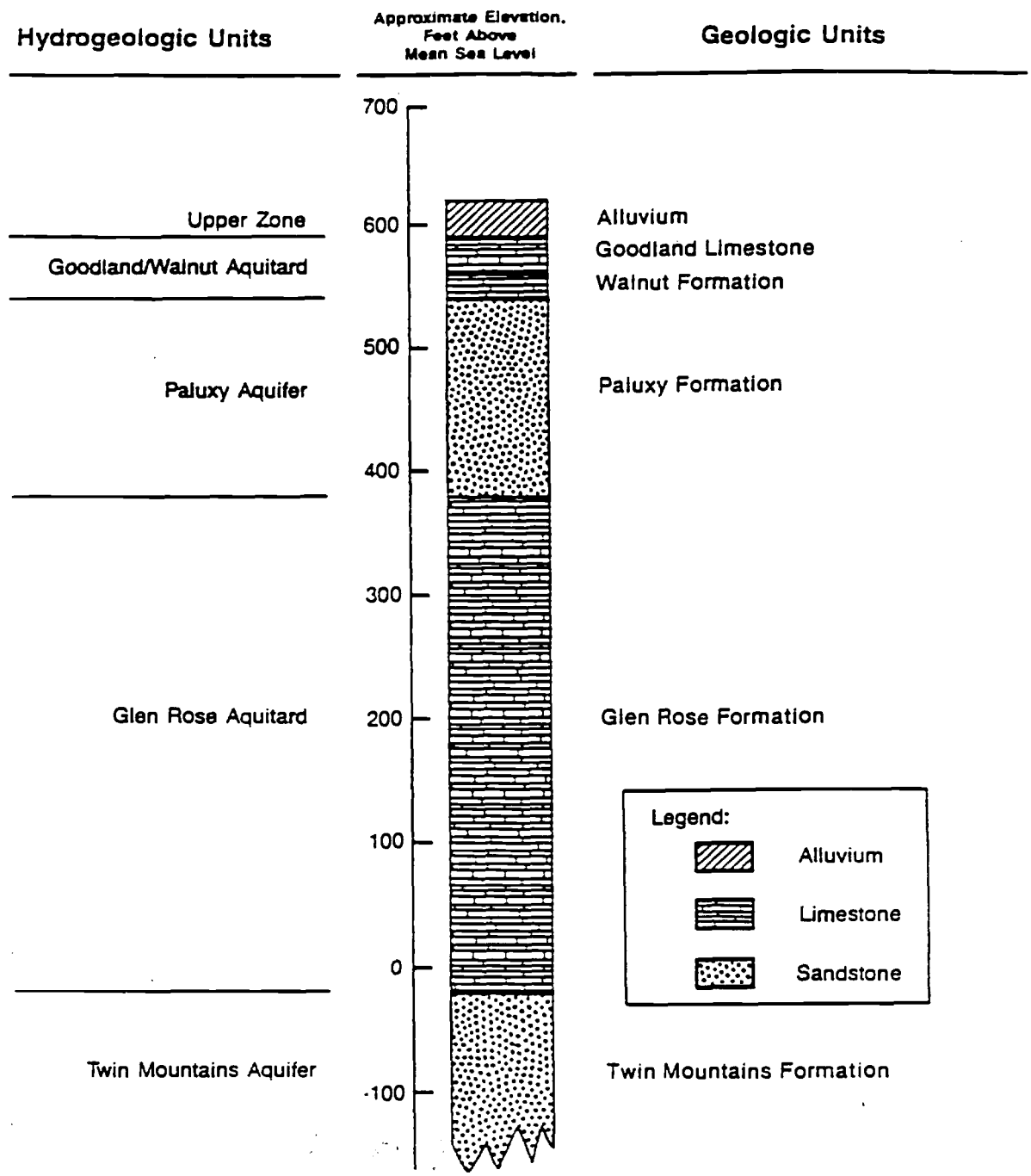


Figure 2. General location map of the potential hazardous waste sites identified during the Installation Restoration Program (IRP) at Carswell Air Force Base, Fort Worth, Texas



Source: Radian Corporation, 1986

Figure 3. General hydrogeologic column in the area of Carswell Air Force Base

Figure 1). Of these 22 sites, a significant concern for the environment and human health was identified at 12 sites.

The 12 sites were chosen for further investigation under Phase II Stage 1. The purpose of this investigation was to determine if the environment had been contaminated as a result of spills and disposal practices at these sites, to estimate the extent of contamination, to identify the consequences of migrating pollutants, and to recommend future investigations to define the boundaries of contamination and its direction of movement. Of the 12 sites investigated, only six posed a threat in the flightline/golf course area (see Figure 2). The other six included the Weapons Storage Area, where trichloroethene (TCE) and radium were detected, and five locations on the east side of the base near the main gate. These are:

- Landfill No. 1, near the Trinity River, where grease and oil were detected along with heavy metals, phenols, and purgeable hydrocarbons at detection limits.
- Flightline Drainage Ditch, where grease, oils, and heavy metals were found and probably due to detergents from the wash racks or JP-4 from the Fuels Systems Shop.
- Entomology Dry Well which had not affected the groundwater.
- Unnamed stream, which emerges from the oil-water separator, had oil and grease in the sediments, tetrachloroethene (PCE) in the stream, and TCE in the groundwater in addition to other purgeable organic compounds associated with fuels from a former gasoline station.
- POL Tank Farm had groundwater highly contaminated with total organic carbon (TOC) and total organic halide (TOX), probably from more than one source, and migrating toward Farmers Branch (creek).

The six sites on or near the Flightline Area are Landfill No. 3, 4 and 5, Fire Department Training Areas 1 and 2, and a Waste Burial Area. These sites were suspected potential sources of contamination in the Phase II Stage 1 and 2 investigations performed by Radian Corporation. The data obtained during Stage 2 showed that Landfill No. 3 and Fire Training Area 1 posed no threat to the environment or human health (Radian Corporation 1991). A Decision Summary Technical Document to Support No Further Action was prepared for each site in 1990 (Radian Corporation 1991). The remaining four sites were studied in more detail and described in the next section.

2.2 Previous Investigations in the Flightline Area

Previous IRP studies documented contamination in the soil and groundwater and found TCE and chromium (Cr) to be the primary contaminants. Four sites (Figure 4) were studied as potential sources from 5 March to 22 June 1990 (Radian Corporation 1991).

- LF04 - Landfill No. 4
- LF05 - Landfill No. 5
- WP07 - Waste Burial Area
- FT09 - Fire Training Area 2

2.2.1 Brief History of the Four Sites

Initial field examination methods included geophysical surveys, borings, and monitor well installation and sampling. In this area geophysical surveys, including magnetometer, electromagnetic, and electrical resistivity surveys, were conducted in an attempt to identify buried drums.

LF04 - Landfill No. 4

Landfill No. 4, an approximate 10-acre area, is located east of Taxiway 197 and south of White Settlement Road. The landfill consisted of six large pits filled with refuse which was burned and buried. This site was reported to contain drums of liquid wastes, partially full paint cans, and cadmium batteries. Presently, it is the site of a radar station.

LF05 - Landfill No. 5

Landfill No. 5 is located northwest of LF04 on the flightline side (west) of the fence. A clay berm was constructed along the creek running beside the landfill. The landfill received flightline wastes and refuse such as oils, thinners, strippers, and paints. Materials were burned regularly and buried.

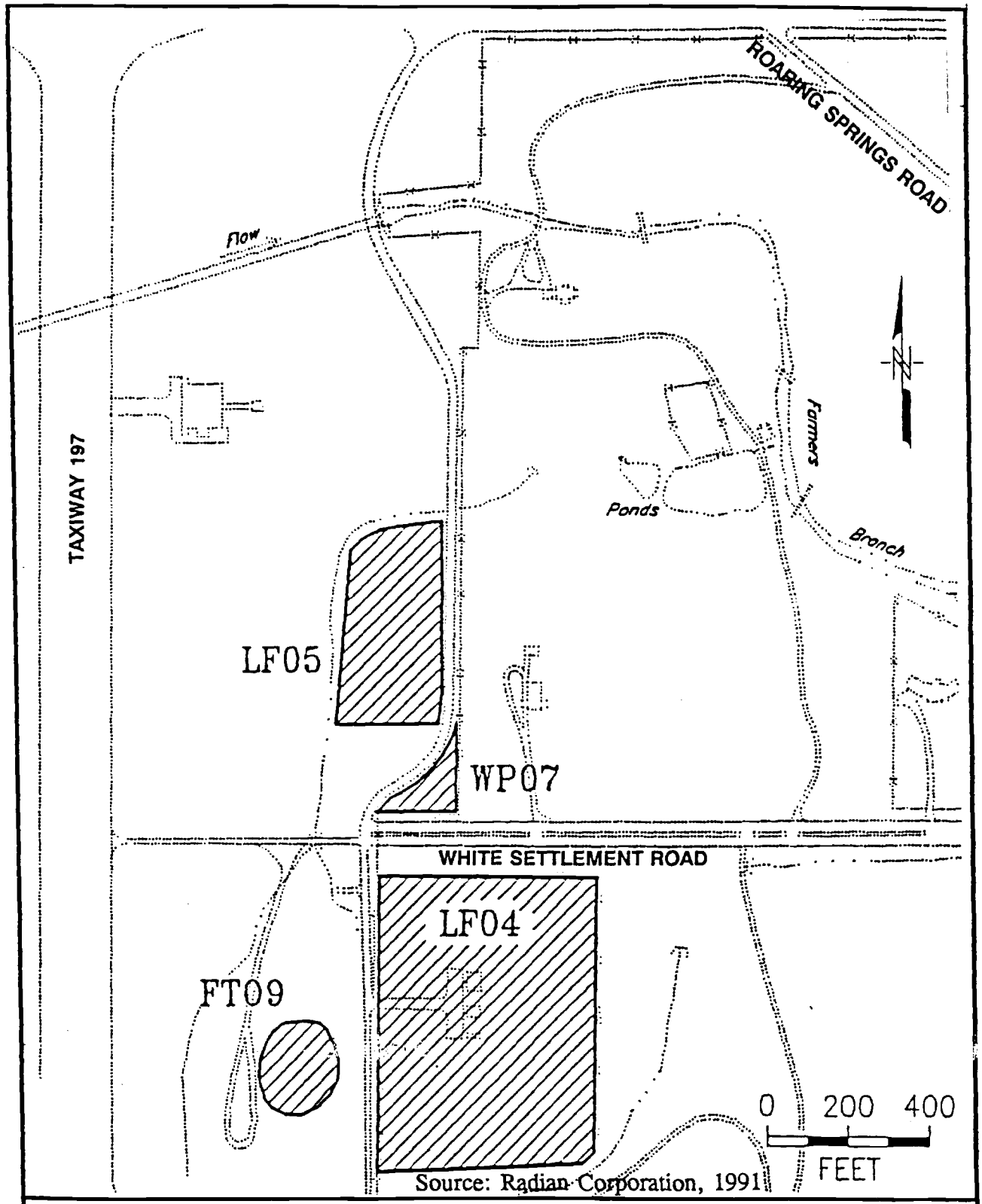


Figure 4. The four sites identified as potential sources of contamination. They include two landfills (LF04 and LF05), one fire training area (FT09), and one waste disposal area (WP07).

WP07 - Waste Burial Area

Site WP07, on the west side of the fence, is located between the two landfills (4 and 5) and north of White Settlement Road which ends at the runway area. During the 1960s, various types of hazardous wastes such as drums of cleaning solvents, leaded sludge, and possibly ordnance were disposed of at this site.

FT09 - Fire Department Training Area 2

Site FT09 is located west of the fence between Taxiway 197 and LF04. Since 1963 this site has been used for fire department training exercises. It consisted of a pit lined with gravel and enclosed by an earthen berm. A second pit, no longer in existence, was built to collect runoff materials from the training pit (Radian Corporation 1991).

2.2.2 Summary of Findings

The findings of the Phase II Stage 2 Flightline Area investigation with respect to the nature and extent of groundwater contamination are:

- Free product was not detected in the monitor wells installed to determine if the base of the Upper Zone contained dense non-aqueous phase liquids (DNAPL) in the Flightline Area.
- TCE, vinyl chloride (VC), PCE, and the cis- and trans- isomers of 1,2-dichloroethene (1,2-DCE) are the leading contaminants in the groundwater and surface waters.
- Concentrations of TCE exceeded the Federal maximum contaminant level (MCL) of 5 μg/l in 27 of the 35 monitor wells and VC exceeded the MCL of 2 μg/l in seven wells.
- Air Force Plant No. 4 (AFP 4) may be a source of organic contamination as well as Sites WP07, LF04, LF05, and FT09. The existence of additional upgradient sources from the known sources on CAFB is supported by documented TCE contamination in the Upper Zone beneath AFP 4 (Hargis and Associates 1989).
- The extreme western and eastern limits of the TCE plume are undefined, and the apex is migrating downgradient eastward with a decrease in concentration since samples were

taken in 1988 (Figure 5). Evidence suggested the plume is preferentially migrating along accumulations of sand and gravel deposited in paleochannels and identified from soil borings (Radian Corporation 1991).

- The vertical extent of the TCE plume is limited downward by the surface of the Goodland/Walnut Formation, which underlies the upper zone. No contaminants were detected in the two Paluxy monitor wells.
- Similarities in groundwater and surface water TCE concentrations in the tributary to Farmers Branch suggested that the stream is a zone of groundwater discharge.

2.3 Investigations at Air Force Plant No. 4

The investigations at U.S. Air Force Plant No. 4 (AFP 4), west of the flightline, were performed by Hargis and Associates, Inc. (H&A) and focused on the groundwater conditions of the Paluxy Aquifer as well as the Upper Zone. The information in this section refers to the Summary of Remedial Investigations (Hargis and Associates, Inc. 1989).

Since the east side of AFP 4 is relevant to the 1992 investigation of the golf course area TCE plume, the findings in that area will be discussed. These findings are:

- Basal sand and gravel deposits are potential pathways for contaminant migration in the Upper Zone. Groundwater flow was generally to the east on the east side.
- The most commonly detected contaminants were TCE, trans-1,2-DCE, and Cr. Their distribution was influenced by an erosional channel in the Walnut Formation and by the direction of groundwater flow.
- The contaminants migrating from AFP 4 originated from a different source than the contaminants detected in the monitor wells on CAFB.
- The Walnut Formation is thin or absent in the area of the East Parking Lot along Grants Lane (see Figure 2). Trans-1,2-DCE and TCE detected in water samples from the Paluxy upper sand unit were lower in concentration than in the Upper Zone. The primary source of recharge to the Paluxy upper sand appeared to be vertical leakage from the overlying Upper Zone near Grants Lane. The Paluxy Formation is composed of four

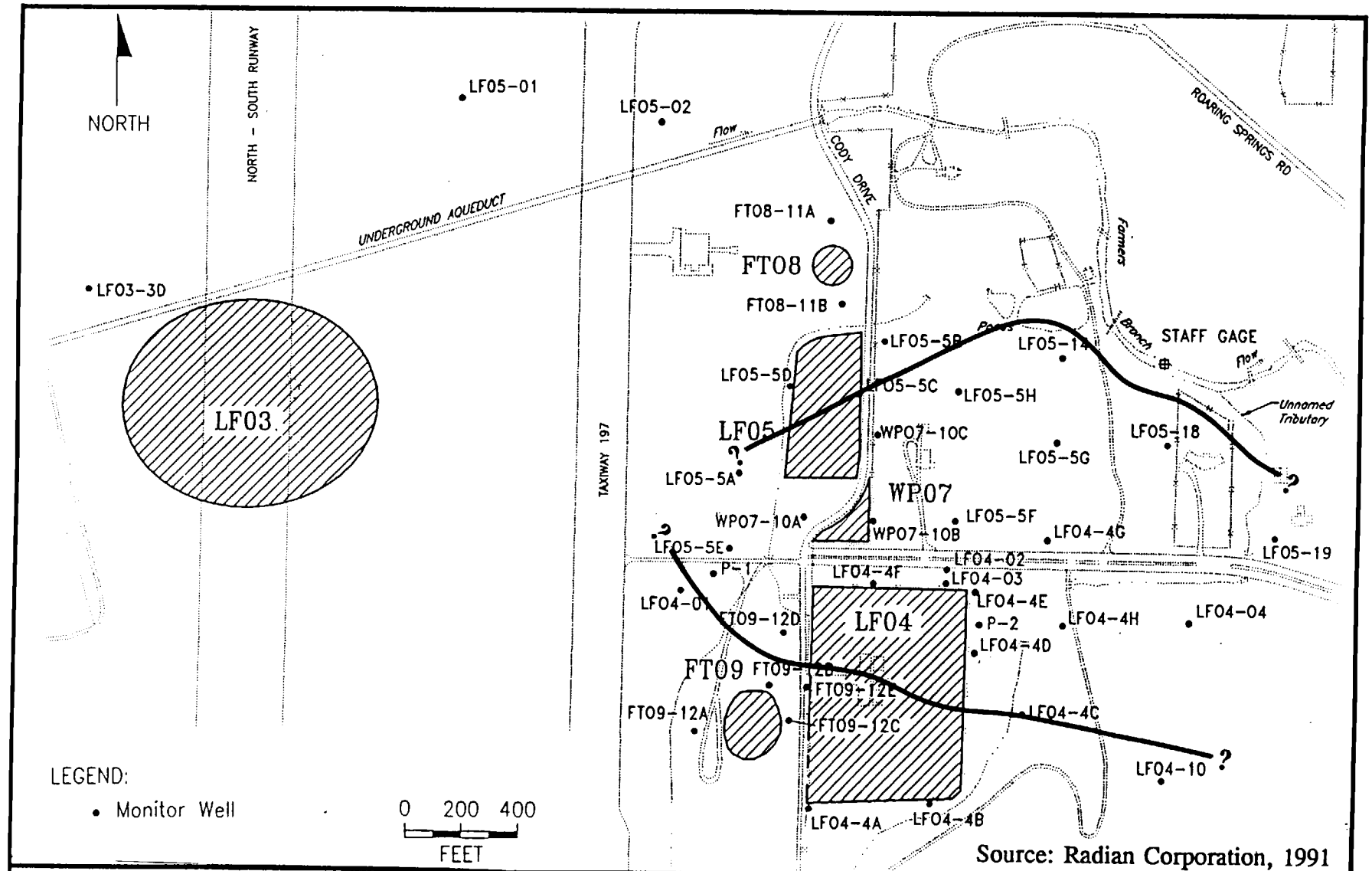


Figure 5. The TCE plume in the area of Phase I as defined from monitor well data in June 1990 (Radian Corporation, 1991). The solid line (—) marks the 100 ppb contour. At that time the plume was open ended to the east and west.

aquifers. The aquifers are (in descending order) Paluxy upper sand, upper Paluxy aquifer, middle Paluxy aquifer, and lower Paluxy aquifer.

- The upper Paluxy aquifer, a separate groundwater unit below the Paluxy upper sand, was unconfined and flowed to the southeast. The upper Paluxy aquifer is recharged by Lake Worth and potentially by vertical seepage from the Paluxy upper sand unit near the East Parking Lot. Thus, the TCE contamination in the upper Paluxy aquifer may be leakage from the Paluxy upper sand.

H&A's recommendations for the east side of AFP 4 included: (1) collect samples from the Upper Zone Radian wells on the CAFB side concurrently with the H&A monitor wells on the AFP 4 side to develop an updated plume map, determine the concentrations of contaminants, and the extent of contamination; (2) drill more monitor wells east of Grants Lane in the upper zone; and (3) conduct more aquifer tests in upper zone monitor wells to estimate hydrologic parameters.

2.4 Quarterly Groundwater Monitoring at Air Force Plant No. 4

The Environmental Systems Division of Jacobs Engineering Group Inc. has performed the quarterly groundwater monitoring activities at AFP 4 to aid in the remedial action plan under the IRP. The objectives are to monitor changes in groundwater quality in the Upper Zone and Paluxy aquifers, map contaminant plumes, assess the potential for movement of plumes across Air Force boundaries, monitor changes in water table levels, check for free product and monitor its thickness, monitor water quality at White Settlement municipal wells, and detect contaminants seeping into surface waters from the Upper Zone (Jacobs Engineering 1991).

The results of the first sampling event revealed that the principle volatile organic compounds (VOC) identified at AFP 4 were TCE, cis-1,2-DCE, and VC. The wells on the east flightline area and the golf course area (see Figure 5) contained levels of TCE between 880 and 3,800 μg/l. Monitor wells LF04-02, LF04-04, WP07-10A, LF05-01, and LF05-5A are approximately aligned along the southeastern projection of the plume at AFP 4. According to the analytical results, the plume defined on the AFP 4 facility "does indeed" extend southeasterly onto CAFB. It is unknown how far east the plume extends, but it does extend past LF04-04 (Jacobs Engineering 1991).

The second sampling event results (January to February 1992) for CAFB landfill wells compared with the first quarter results. VOC results from the wells upgradient of the landfills were lower than those downgradient, suggesting that the CAFB landfills were contributing TCE and DCE to the AFP 4 plume. More upgradient wells on the flightline are needed to quantify this contribution. The high concentrations of TCE and DCE found in the unnamed tributary to Farmers Branch on the far east side of the sample area (LF05-S) "support Radian's description of the tributary as 'the principal pathway for offsite and offbase migration' (Radian Corporation 1991)" (Jacobs Engineering 1992).

3.0 FIELD PROCEDURES

3.1 Introduction

The USCOE supplied GMI with a site map with a superimposed 250-foot by 500-foot grid to be used as a guide for the location of the 90 sample sites at CAFB in the Phase I program. Specific sample sites were located using a compass and measuring wheel and known points for reference. Sr. Airman John Newlin, CAFB Quality Assurance Evaluator, coordinated the utility clearance efforts of both Air Force Base personnel and private companies for each location.

Sample collection was subcontracted to Fugro Geosciences, Inc. of Houston, Texas, which used a hydraulically driven steel probe (a cone penetrometer) to penetrate the unconsolidated surface material to bedrock. Water, where present, was sampled using a narrow gauge steel bailer. Water samples were transported to the lab in 40-milligram (mg) glass VOA vials on ice without any other preservatives.

The conical tip, steel well screen, steel rods, and sampling bailers were decontaminated between each station using a steam cleaner. All wash water was collected in 55-gallon drums on site for later treatment and proper disposal. By the end of each sampling day, all holes had been grouted to the surface.

NDRC Laboratories of Richardson, Texas, a USCOE-approved facility, analyzed all samples for purgeable halocarbons using EPA method 8010 which provided results for 37 compounds. A duplicate sample for every 10 sampled sites was collected. This duplicate sample was split with the duplicate sample shipped to NDRC as a quality control sample and the split sample shipped to USCOE Southwestern Division Laboratory (SWDL) as a quality assurance sample. Rinsate blanks and trip blanks were included for quality control.

A Safety, Health, and Emergency Response Plan (SHERP) was developed and approved by Rene Moradel, USCOE Chief Safety Officer, prior to the sampling phase. A GMI safety officer was on site at all times to assure compliance with the plan. Breathing zone air was monitored for organic vapors using an HNU at each sampling site following penetration and sampling.

3.2 Sample Site Location and Utility Clearance

Sample site locations were marked using supplied site maps which included a suggested grid with spacing of 250 feet in the north-south direction and 500 feet in the east-west direction. Grid points (Figure 6) were located using a compass and measuring wheel. Permanent structures such as roads, buildings, and some fences were used as reference marks. Issues such as utilities, streams, roads, structures, and golf course greens and fairways resulted in deviation from the original grid. Individual locations were marked with yellow wire flags to distinguish them from other marked features.

Most of the 90 designated sample sites are located within the golf course and the remainder near buildings or along roads. Roads, driveways, and golf course trails were used for access with "cross-country" travel minimized to avoid damage to ground surface soil and vegetation. A total of 92 sites was marked to provide several options in the case of utility proximity or difficulties of access. Location 006 was probed as an equipment demonstration, and Location 086 did not reach bedrock because of extensive fill material. Therefore, the net number of sample locations was 90. Following the direction of Bobby Hernandez, Community Planner for CAFB, a minimum distance of 100 feet was maintained from the several historic sites on the base (including buildings and a small cemetery), and a minimum of 50 feet was maintained from residences when holes were to be pushed in grass areas so that any resultant ruts would not adversely impact the inhabitants.

Sr. Airman John Newlin held several meetings with Tony Mills of GMI and the following utility representatives: Bubba Plunk (City of Fort Worth Water Department), Earl Upchurch (golf course maintenance), Larry Davis (Lone Star Gas Co.), and Henry Whitely (Pride Pipeline Co.). Maps were provided with underground utilities marked including gas lines, water lines, sewer lines (storm and sanitary), phone cables, and liquid fuel pipelines. A map of the golf course irrigation system was also provided. However, each flagged location was checked individually by the relevant utilities to assure non-impact and safety. Where appropriate, subsurface utilities were located with colored flags and/or lines spray-painted on the ground surface.

Golf course personnel (especially Mr. Earl Upchurch) were consulted frequently because not all of the several generations of irrigation systems were accurately mapped. These systems are unique in that they can be broken merely by driving over them because of the generally shallow depths and the inherent

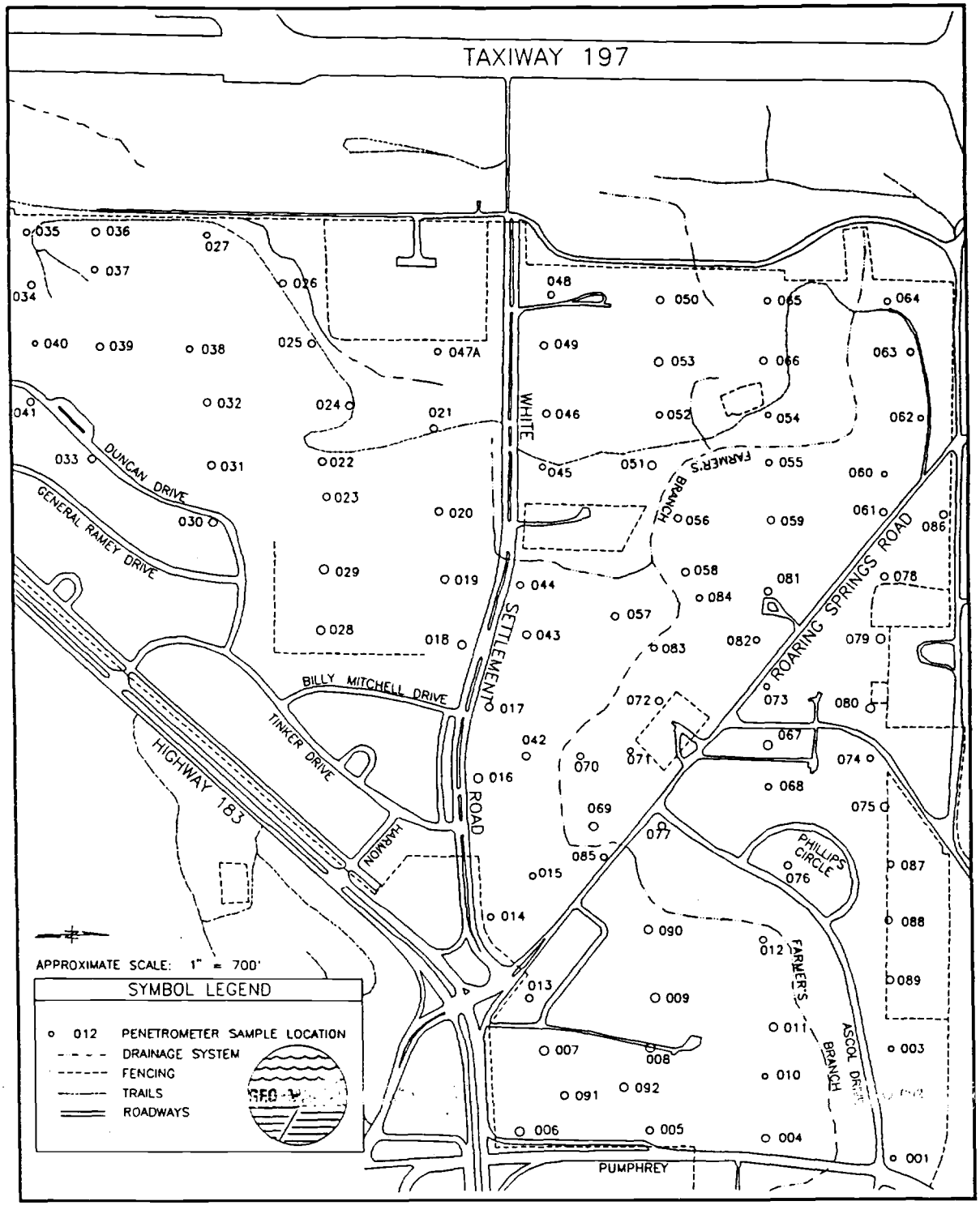


Figure 6. Phase I groundwater sampling locations using the cone penetrometer

weakness of small diameter, thin-shelled PVC pipe. The other subsurface conduits require actual penetration to sustain damage. During Phase I no subsurface utilities were hit and damaged by the penetrometer. The irrigation system piping was not broken either by the overhead weight of the penetrometer truck or by a cone tip.

3.3 Sample Collection

Hole penetration and sample collection were done by equipment and personnel from Fugro Geosciences Inc. of Houston, Texas (Appendix A, Site Photographs). Their patented truck-mounted system is hydraulically driven with a maximum pushing force of 20 tons. The probe is 2.2 inches in diameter with a cone at the tip made of stainless steel; it is driven into the ground at a constant rate of 2.2 centimeters per second (cps) and can penetrate virtually all soil types and some soft weathered rock. Fresh bedrock is readily identifiable from instrument response. The probe is then pulled off the bottom to retract the solid exterior and expose the steel screened interval so that any water present at the soil-bedrock interface may enter the pipe.

Collection of ground water was accomplished by bailing with a small diameter stainless steel bailer using one of several scenarios:

(1) immediately (i.e., within a few minutes) through the screened interval of the pipe while near the bottom of the hole,

(2) immediately (i.e., within a few minutes) through the screened interval of the pipe with the pipe tip withdrawn a short distance off the bottom of the hole,

(3) up to an hour later in the open hole after the pipe had been completely withdrawn,

(4) after a few hours (e.g., overnight) through the pipe with the pipe withdrawn a short distance off the bottom of the hole.

The first three techniques resulted in samples in some locations. The fourth was not successful where it was tried.

The bailer has a relatively small capacity so that several runs may be needed depending on the volume of sample required at the particular station. Each water sample was emptied directly into two 40-ml VOA

glass vials used to transport the samples to the laboratories. Samples were sealed only when an undisturbed meniscus was visible. Following capping, each vial was carefully checked for bubbles; if any were found, the sample was retaken. NDRC Laboratories, approved to do analytic work for the USCOE, did the analyses. Both NDRC and the USCOE SWDL in Dallas, Texas, analyzed duplicates taken for every ten samples.

Each sample was individually labeled as to site designation, date, time, and sampler and sealed in the field with an identifying QA seal. Samples were wrapped in bubble wrap to protect from breakage and stored in ice-filled coolers for daily transportation to the laboratories. At laboratory recommendation and with USCOE approval, no preservative other than ice was used. Chain of custody forms were prepared for all samples noting time and date of sampling with continuous custody documented by signatures. Copies of the forms are included with the analytic results in Appendix B.

3.4 Quality Control

3.4.1 Sampling

Each cooler of samples included a trip blank which was prepared using deionized water supplied by the lab and transported in the same type of 40-ml glass vial under the same conditions as the field-collected samples. A rinsate sample was also prepared each day by collecting deionized water used for the final rinse of the sampling equipment. A pair of duplicate samples was collected for each tenth sample; one sample was submitted to NDRC, and the second was analyzed by the USCOE SWDL per the SOW. The duplicate transported to NDRC was not labeled as a duplicate to provide a standard check on the laboratory.

Field procedures were carried out in a systematic manner by the same small number of trained and experienced individuals to assure consistency in data collection. Breathing zone air measurements, done at each sample location for the protection of the crew, were performed at the same point in the data collection sequence, with the same equipment, and by one of the GMI employees. Copies of the air monitoring forms are included as Appendix C. The equipment, HNU model PI-101, was calibrated each morning, and the zero point was checked frequently during the day. Project meetings and field activities

are described chronologically in a complete field notebook maintained on site at all times. Copies of the notebook are included as Appendix D.

3.4.2 Analytic

Laboratory QA/QC procedures, as required by the USCOE, are included with the results in Appendix B.

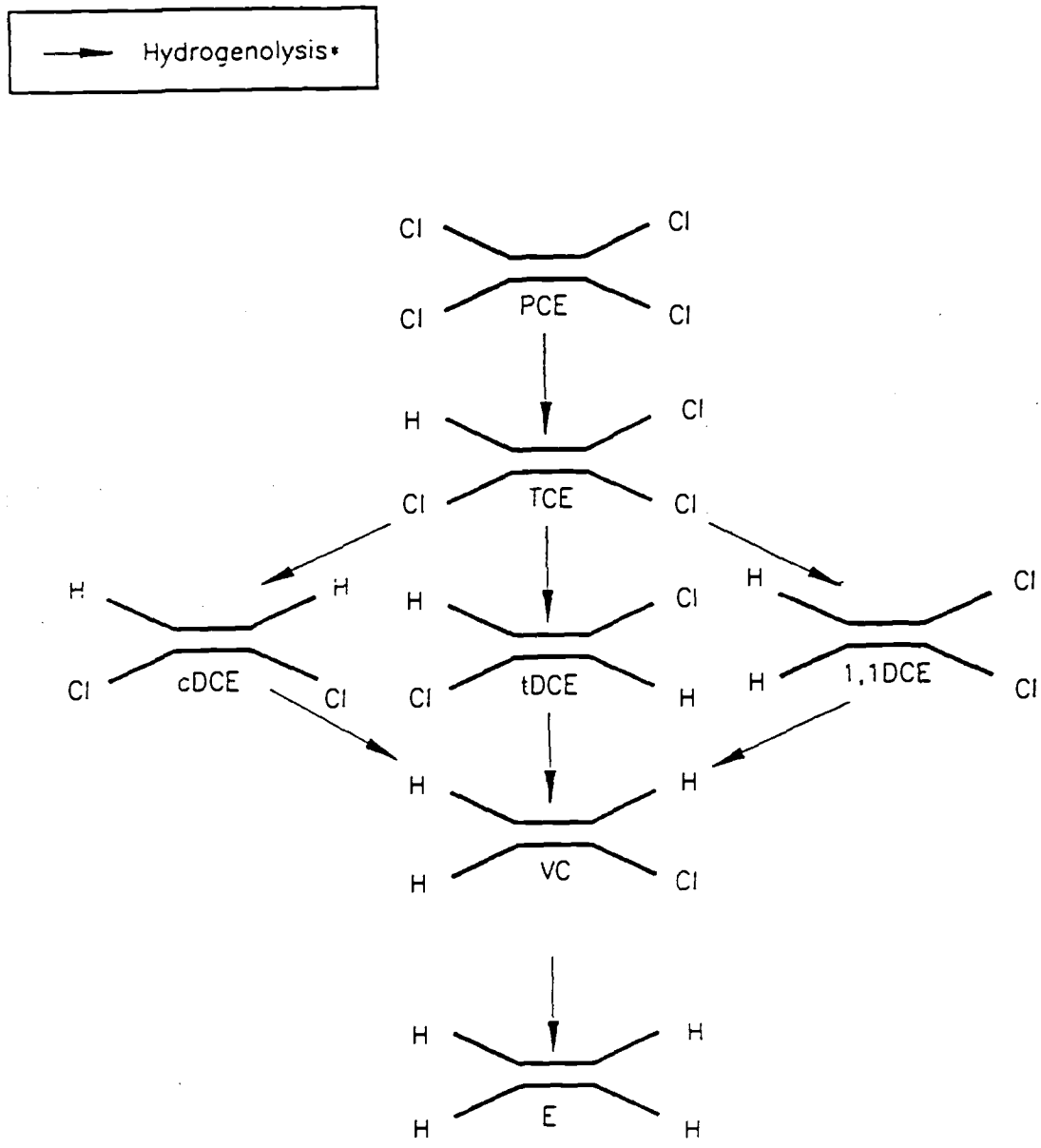
3.5 Decontamination

All equipment, which had the potential to be contaminated, was decontaminated between each sample station. A decon station was set up in an open gravelled area on the west side of Pumphrey Road across from the Visitors Center at the base entrance for the duration of Phase I. Cone tips, protective steel casing and steel well screen sections, steel rods, and large and small bailers were cleaned there with a steam cleaner and detergent. All wash water has been retained in four labeled 55-gallon metal drums at CAFB until the proper treatment and/or disposal method(s) have been determined.

Other contamination-minimization precautions included: (1) the use of disposable surgical gloves by those handling the sample to avoid cross-contamination and (2) grouting all holes within the day in order to protect adjacent and other horizons from possible exposure to contamination.

3.6 Analyses

Per the SOW, all samples sent to either lab were analyzed using EPA method 8010 for purgeable halocarbons. Method 8010 is a gas chromatographic method which can identify a large number of analytes (Wagner 1992). From previous investigations (Radian Corporation 1986, 1990), it had been determined that trichloroethene (TCE), dichloroethene (DCE), and vinyl chloride (VC) were compounds of special concern; however, because it is known that solvents in the halocarbon family can alter their composition to various "daughter products" (Figure 7) (Radian Corporation 1991), it was deemed important to analyze for all members of this family. Preparation and analyses were done within the maximum allowable holding time of 14 days.



PCE - tetrachloroethene
TCE - trichloroethene
cDCE - cis-1,2-dichloroethene
DCE - trans-1,2-dichloroethene
1,1DCE - 1,1-dichloroethene
VC - vinyl chloride
E - ethene

* A reduction reaction in which a carbon-halogen bond is broken and hydrogen replaces the halogen

Source: Radian Corporation, 1991

Figure 7. A diagram of the chemical process called hydrogenolysis, which could explain the presence of some of the compounds identified in the shallow groundwater under the base

3.7 Safety, Health, and Emergency Response

Prior to the initiation of Phase I, a SHERP was prepared for approval by the USCOE Chief Safety Officer, Rene Moradel. The SHERP addressed the subjects of designated safety personnel, required/recommended personal protective equipment (PPE), breathing air monitoring procedures and allowable limits, characteristics of anticipated contaminants (including the Material Safety Data Sheets [MSDS]), and certifications for involved persons. The SHERP also included plans to be used in the case of an emergency including key names and phone numbers, directions to the nearest hospital with appropriate care facilities, and a route map to the facility in each vehicle.

Prior to the initiation of Phase I sampling, a site safety meeting was held and attended by all field personnel to discuss pertinent safety issues and assure that all members had reviewed the SHERP and were familiar with the hospital route. Additional safety issues discussions were handled on an "as needed basis". A complete copy of the SHERP is included as Appendix E.

A safety concern peculiar to the sampling site, a golf course, was the hazard of golf ball impact. Each team member was instructed to watch carefully for all players and remember that these players always had the right-of-way. Despite this care, the sampling truck was hit several times; however, there was no equipment damage nor were there any personal injuries.

Per the SOW the breathing zone air was carefully monitored at each sample location for volatile organics for the protection of the field crew and others in the area; copies of the completed forms are included in Appendix C. The instrument used was an HNU model #PI-101 which measures total organic vapors in parts per million (ppm). Although it does not identify specific compounds, high readings (those above 5 ppm) would provide an indication of possible concern. The decision of whether or not to instruct the crew to use air purifying respirators (APR) with chemical filter cartridges would be made by the site safety officer. All field personnel had APRs available during the sampling phase of the project; however, their use was never warranted as the HNU readings in the breathing air space never exceeded 1 ppm. If readings had equalled or exceeded 100 ppm, the site safety officer would have evacuated the immediate area, including both field personnel and others nearby (such as golf course personnel and players).

Flightline training at CAFB is required for any persons working on or near any of the runways or taxiways. This training includes an illustrated lecture and a tour of the areas under the jurisdiction of this training. The key elements are (1) aircraft always have the right-of-way, (2) speed limits in all areas are 15 mph, and (3) red lines painted on the pavement indicate restricted areas and are not to be crossed by either individuals or vehicles. On October 29, 1992, three GMI staff and three Fugro staff underwent this training and received clearance documents for themselves and their vehicles.

4.0 DISCUSSION AND INTERPRETATION OF FINDINGS

4.1 Introduction

Samples from a total of 32 sample locations were submitted for laboratory analyses using method 8010. Water was not encountered in the remaining 60 sites. Sample vials for site 019 were broken at the laboratory; results for 37 purgeable halocarbon compounds on the remaining 31 sites have been received. Five of the eight specified compounds of interest in the SOW (1,1-dichloroethene [DCE]; cis-1,2-DCE; trans-1,2-DCE; trichloroethene [TCE]; and tetrachloroethene [PCE]), had results elevated above their respective laboratory detection limits. Results for the remaining three (1,1,1-dichloroethane [DCA]; 1,1,1-trichloroethane [TCA]; and 1,1,2-TCA) were below detection levels (bdl) for all compounds. In addition four other compounds of the purgeable halocarbon family (1,2-dichlorobenzene [DCB]; methylene chloride [MC]; chloroform [CF]; and trans-1,3-dichloropentene [DCP]) each had one or two elevated values. Complete final laboratory results are included in Appendix B.

4.2 Data Distribution

Data distribution in part reflects water distribution because the sample grid was laid out in a regular pattern with deviations made only for utility, buildings, historic structures, roads, and golf course considerations. The paucity of data (compared with anticipated results) has resulted in the preparation of distribution maps rather than contoured concentration maps because neither the continuity nor the boundary of the contamination plume can be unequivocally established in many areas. Figures 8 through 12 show concentration values for five compounds: TCE; c-1,2-DCE; t-1,2-DCE; PCE; and 1,1-DCE. All results (Table 1) are given in micrograms per liter (μg/l) which is equivalent to parts per billion (ppb).

The highest TCE and PCE values (see Figures 8 and 9) are located in the west central part of the project area just east of the flightline and north of White Settlement Road. The contaminant plume has not been delineated to the west (some of the highest GMI values are next to the fence bounding the flightline), to the north (values of 1,300, 780, 1,2000, and 690 ppb for TCE and 104 and 1,900 ppb for PCE are less than 500 feet south of the north edge of the project area), and to the south (there are no data south of the 4,500 ppb value for TCE and 470 ppb for PCE at site 045). Values adjacent to Pumphrey Road on the

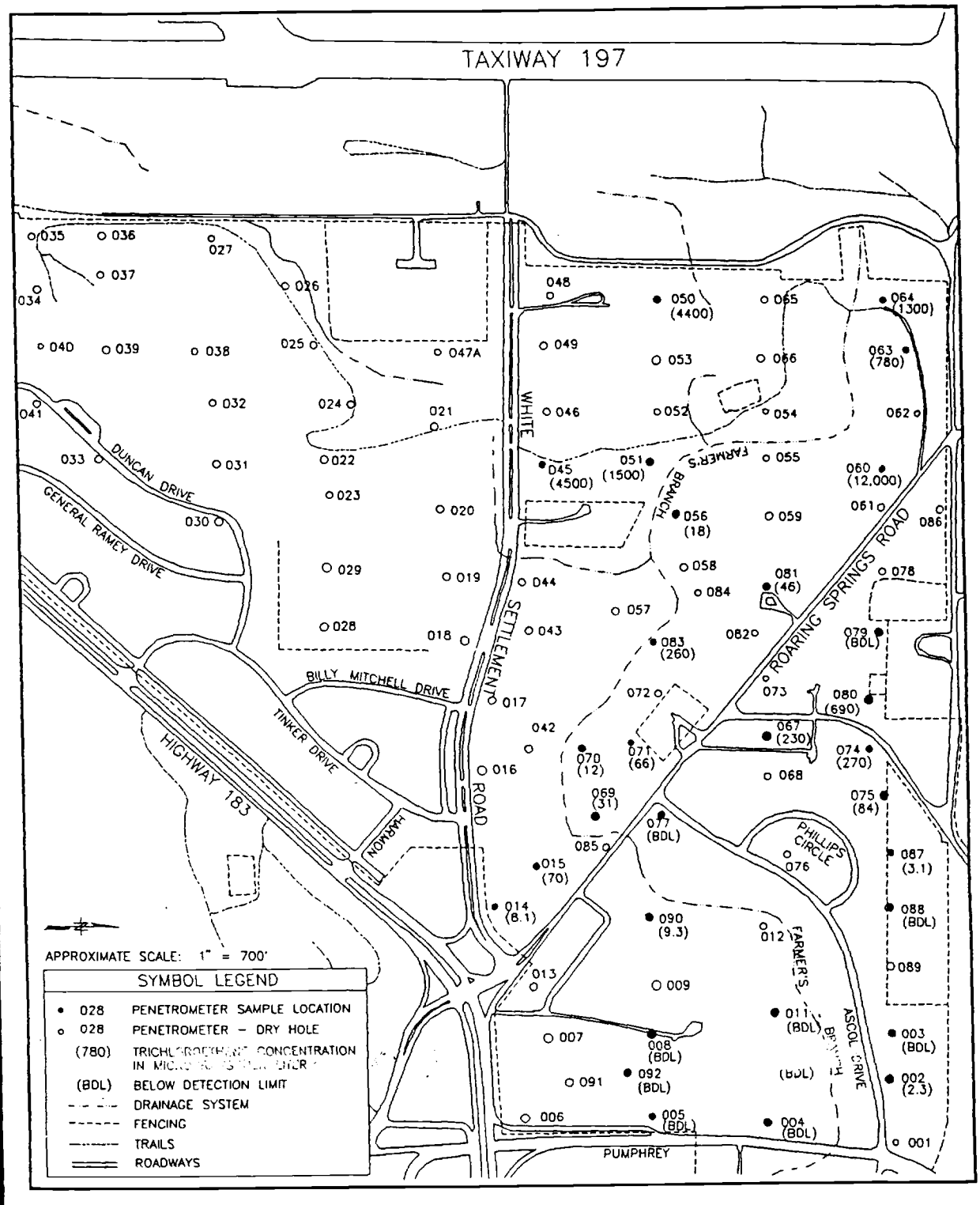


Figure 8. Trichloroethene concentration distribution map

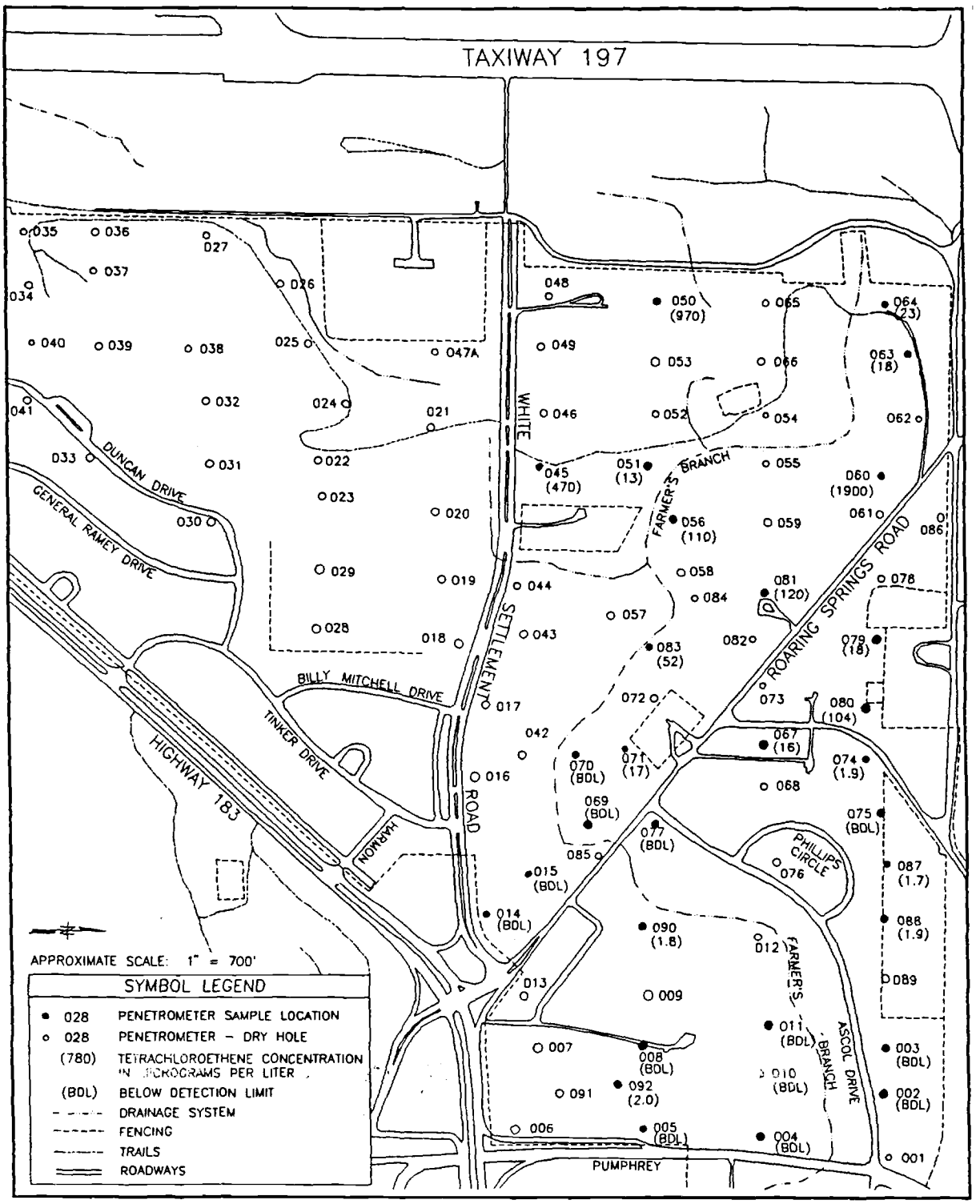


Figure 9. Tetrachloroethene concentration distribution map

GEO-MARINE

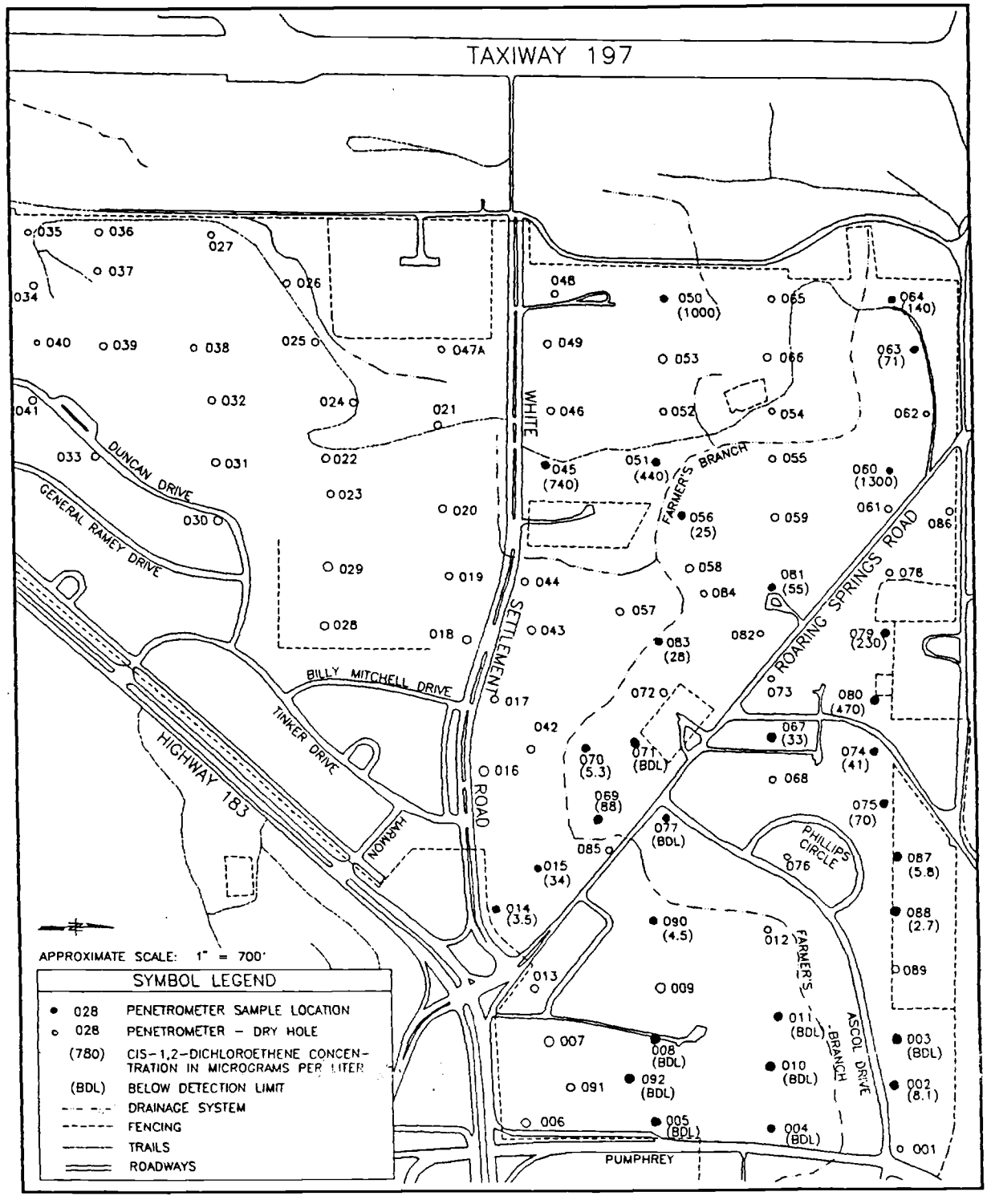


Figure 10. Cis-1,2-Dichloroethene concentration distribution map

GEO-MARINE

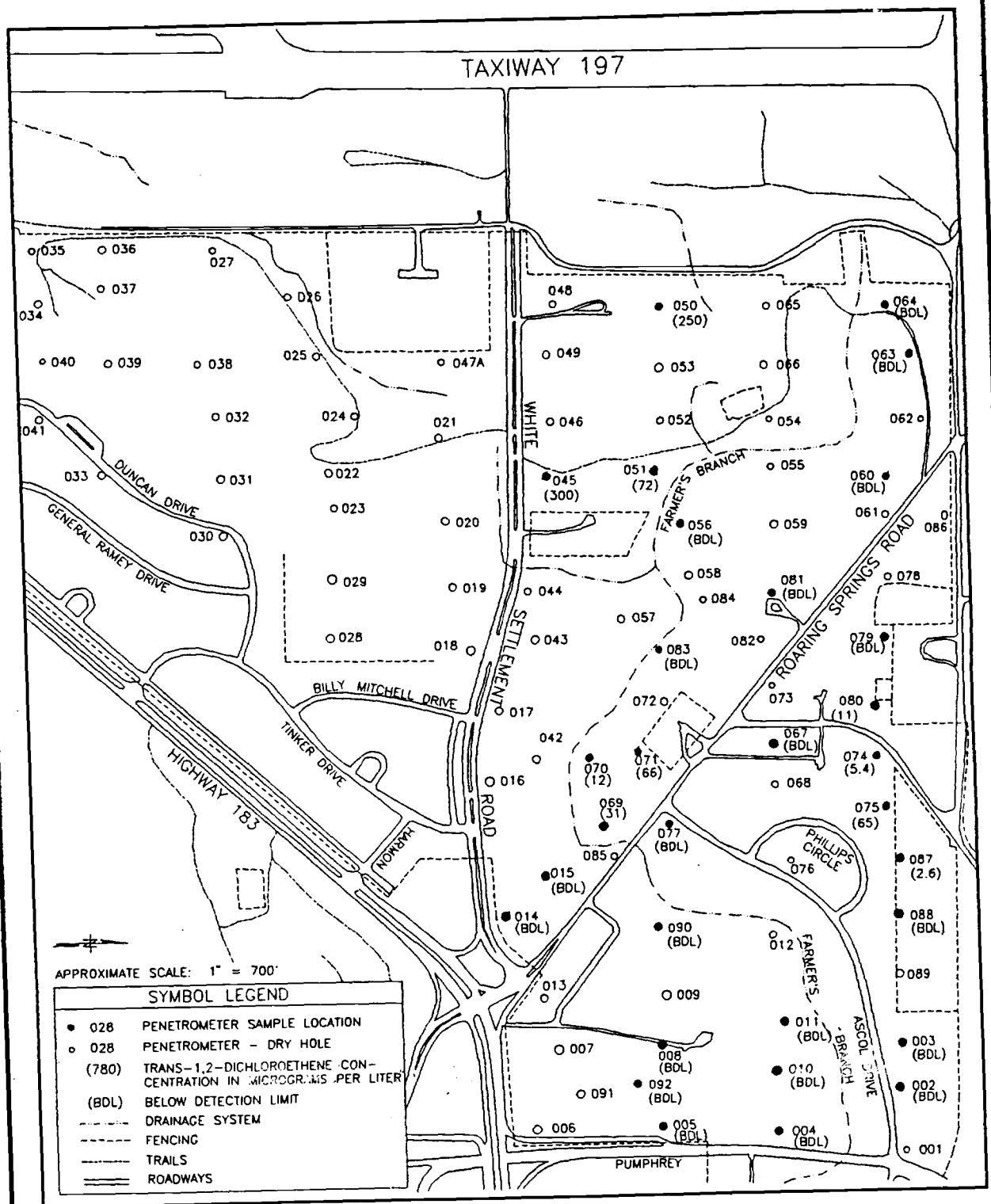


Figure 11. Trans-1,2-Dichloroethene concentration distribution map

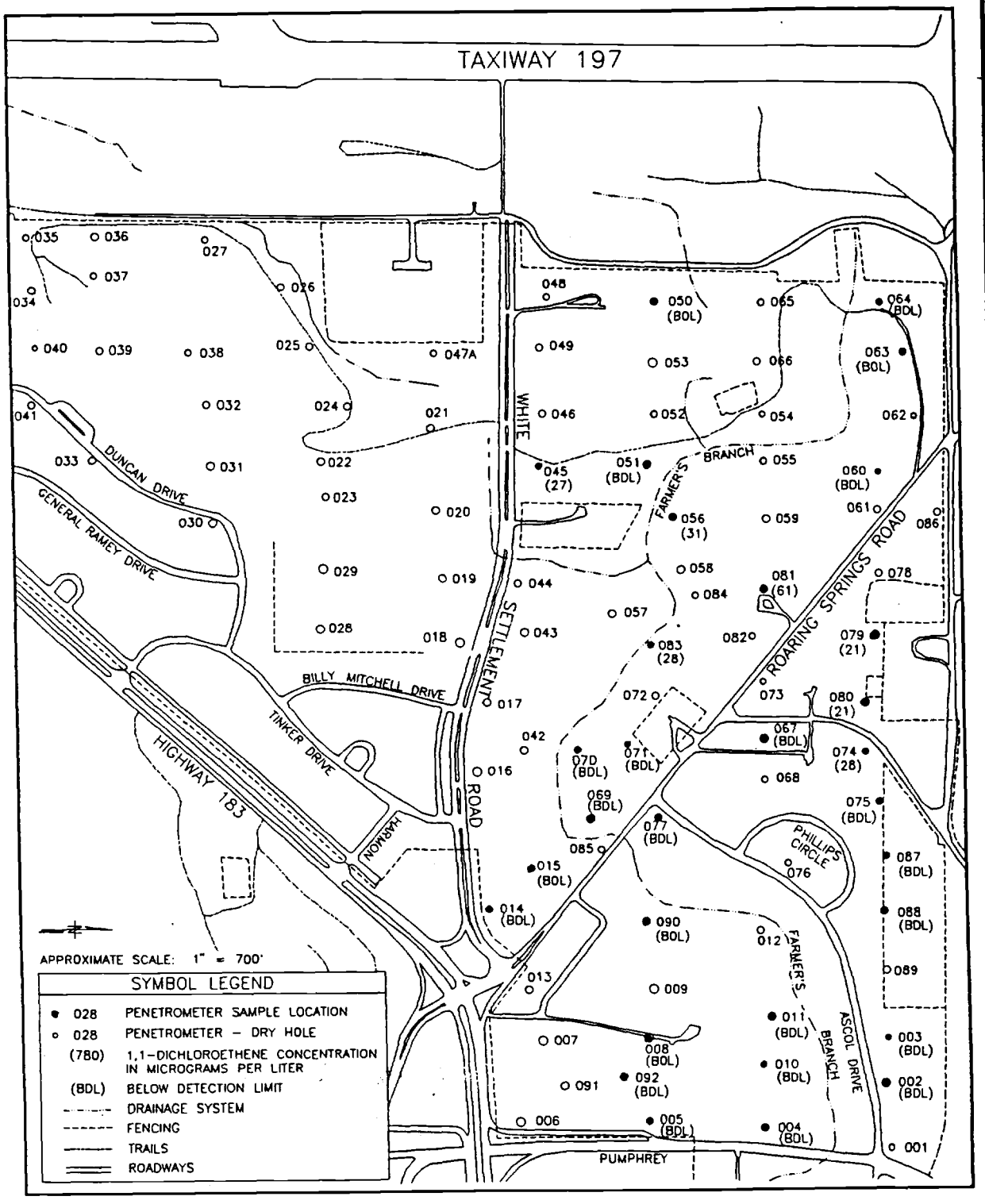


Figure 12. 1,1-Dichloroethene concentration distribution map

GEO-MARINE

Table 1

Laboratory Results/Method 8010

Sample No.	Date Sampled	D.F.[1]	1,1-DCE	C-1,2-DCE	t-1,2-DCE	1,1-DCA	TCE	1,1,1-TCA	1,1,2-TCA	PCE	1,2-DCB[2]	MC[2]	CF[2]	t-1,3-DCP[2]
002	10/21	1	<2.0	8.1	<1.0	<1.0	2.3	<1.0	<1.0	<1.0	<2.0	<5.0	<1.0	<2.0
003	"	1	"	<1.0	"	"	<1.0	"	"	"	"	"	"	"
004	"	1	"	"	"	"	"	"	"	"	"	"	"	"
005	"	1	"	"	"	"	"	"	"	"	"	"	"	"
008	10/22	1	"	"	"	"	"	"	"	"	"	"	"	"
010	"	1	"	"	"	"	"	"	"	"	"	"	"	"
006[3]	"	1	"	"	"	"	"	"	"	"	"	"	"	"
011	"	1	"	"	"	"	"	"	"	"	"	"	"	"
014	"	1	"	3.5	"	"	8.1	"	"	"	"	"	"	"
015	"	25	<50	34	<25	<25	70	<25	<25	34	<25	<125	<25	<50
045	10/27	10	27	740	300	<10	4500	<10	<10	470	35	<50	<10	<20
050	10/28	1	<2.0	1000	250	<1.0	4400	<1.0	<1.0	970	<2.0	<5.0	<1.0	<2
051	"	1	"	440	72	"	1500	"	"	13	"	"	"	"
056	"	1	31	25	<1.0	"	18	"	"	110	"	11	"	"
60	"	100	<200	1300	<100	<100	12,000	<100	<100	1900	<200	<500	<100	<200
063	10/29	10	<20	71	<10	<10	780	<10	<10	18	<20	<50	<10	<20
063A[3]	"	10	"	74	"	"	870	"	"	21	"	"	"	"
064	"	10	"	140	"	"	1300	"	"	23	"	"	"	"
067	"	10	"	33	"	"	230	"	"	16	"	"	"	"

Table 1 (Continued)

Laboratory Results/Method 8010

Sample No.	Date Sampled	D.F.[1]	1,1-DCE	C-1,2-DCE	t-1,2-DCE	1,1-DCA	TCE	1,1,1-TCA	1,1,2-TCA	PCE	1,2-DCB[2]	MC[2]	CF[2]	t-1,3-DCP[2]
069	10/29	10	"	88	"	"	31	"	"	<10	"	"	11	"
070	10/30	1	<2.0	5.3	<1.0	<1.0	12	<1.0	<1.0	<1.0	<2.0	<5.0	<1.0	<2.0
071	10/30	10	<20	<10	<10	<10	66	<10	<10	17	<20	<50	<10	170
074	"	1	28	41	5.4	<1.0	270	<1.0	<1.0	1.9	<2.0	<5.0	<1.0	<2.0
075	"	10	<20	70	65	<10	84	<10	<10	<10	<20	<50	<10	<20
077	"	1	<2	<1.0	<1	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<5.0	1.2	<2.0
079	11/02	10	<20	230	<10	<10	<10	<10	<10	18	<20	<50	<10	<20
079A[3]	"	10	21	220	<10	<10	"	"	"	<10	<20	"	"	"
080	"	10	21	470	11	<10	690	<10	<10	104	<20	<50	<10	<20
081	"	1	61	55	<1.0	<1.0	460	<1.0	<1.0	120	<2.0	<5.0	<1.0	<2.0
083	"	10	28	28	<10	<10	260	<10	<10	52	<20	<50	<10	<20
087	11/03	1	<2.0	5.8	2.6	<1.0	3.1	<1.0	<1.0	1.7	<2.0	<5.0	<1.0	<2.0
088	"	1	"	2.7	<1.0	<1.0	<1.0	<1.0	<1.0	1.9	<2.0	<5.0	<1.0	<2.0
090	"	1	"	4.5	<1.0	<1.0	9.3	<1.0	<1.0	1.8	<2.0	<5.0	<1.0	<2.0
092	"	1	"	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.0	<2.0	<5.0	<1.0	<2.0

All results in micrograms per liter ($\mu g/l$) = parts per billion (ppb)

[1] Dilution factor

[2] Not on COE request list

[3] Duplicate of previous sample

east are generally bdl for both compounds, which suggests that the plume is still contained on CAFB in that direction; site 092 (220 feet from the road) has a PCE value of 2.0 ppb; and site 002 (315 feet from the road) has a TCE value of 2.3 ppb.

Cis- and trans-1,2-DCE display similar trends (see Figures 10 and 11). The higher values (up to 1,300 ppb) are generally in the same area as the higher TCE and PCE values except that the t-1,2-DCE plume does not extend as far north as the other three. The contaminant plume is also similar in that bdl results are found along Pumphrey Road to the east while the boundaries of the plume are not mapped at the west and north margins of the project area, and water is absent south of White Settlement Road. Values for t-1,2-DCE mimic those of c-1,2-DCE except that the maximum value is 250 ppb on the west and the edge of the plume has been delineated to the north where there is a row of sample sites with bdl results (060, 063, and 064).

The 1,1-DCE values are generally lower and more discontinuous (see Figure 12). The highest values (20 to 28 ppb) are scattered except for a row of three along the north central part of the project area. Bdl results occur along the western as well as the eastern edge.

The other three compounds specified in the SOW (1,1-DCA; 1,1,1-TCA; and 1,1,2-TCA) had no positive results from the holes from which water was obtained during this phase. However, four additional compounds that were not singled out in the SOW, which had results in the 8010 scan, had one or two results each above their respective detection limits. The compounds were 1,2 dichlorobenzene (1,2-DCB) with 35 ppb at site 045; methylene chloride (MC) with 11 ppb at site 056; chloroform (CF) with 11 ppb at site 069 and 1.2 ppb at site 077; and trans-1,3-dichloropentene (t-1,2-DCP) with 170 ppb at site 071. Unless additional data expand these isolated spikes, they are not deemed significant.

Additional data are needed within and adjacent to the Phase I area in the northern, western, and southern directions. Previous work (Radian Corporation 1991) defined the edges of the TCE plume on the north and south (see Figure 5), but did not have sufficient data (based on monitor well locations) on the east and west. The Phase I results suggest that the northern edge of the plume has migrated north and is no longer defined and the eastern edge of the plume is on CAFB property west of Pumphrey Road. The current project did not address the western extent beyond the flightline boundary fence, and no water

samples could be collected south of White Settlement Road. Thus, the current southern boundary of the plume is unknown. At this time off-base migration has not been documented in any direction.

4.3 Source(s) and/or Derivation of Contaminants

Purgeable halocarbons have the potential to degrade into other compounds analogous to the decay of radioactive elements. Therefore, not all of those compounds identified in the water under CAFB are directly explained by disposal or leaks. According to Radian Corporation (1991) PCE can react via hydrogenolysis to form TCE which in turn can form the DCE group and so on to an end product of ethene (see Figure 7). Hydrogenolysis is a reduction reaction which in series can progressively replace the halogen ions (in this case chloride) by hydrogen. The timing of these reactions is believed to be relatively short (days to a few years) and may account for some of the variety of compounds and diversity of occurrence observed at CAFB.

The SOW did not include source identification; however, it can be noted that several of the highest values seen during Phase I are near two sites previous workers have specified as potential sources: Landfill LF05 and Waste Disposal Area WP07 (Radian Corporation 1986, 1991).

4.4 Occurrence of Water

The erratic distribution of water and the widespread absences were not anticipated and are not readily explained. Based on examination of the previous work done in the area prior to the current phase, it was reasoned that the interface between the soil and the less permeable bedrock (either the Goodland Limestone or the Walnut Clay, depending upon location) provided the most likely locus for groundwater collection. Conversations with CAFB and golf course personnel about intermittent springs (e.g., along Roaring Springs Road) supported this theory. The presence of several dozen pre-existing monitor wells within the project area for which both bedrock and water level data were available also appeared to provide control; however, earlier reports did indicate that recharge to at least some of the wells could be slow.

Water samples were available from approximately one-third of the sampled locations. The others did not contain free water and did not respond to a water indicator which detects dampness and measures water

depths down hole. The most perplexing site was 019. It was successfully sampled on October 23, 1992; attempts to resample on October 29, 1992 following laboratory breakage were not successful, even though the subsequent two attempts penetrated to the same depth and were located as close as three feet to the initial location. The original hole 019 was the only successful attempt to sample water south of White Settlement Road where a total of 25 sites are located. Previous work (Radian Corporation 1991) has also indicated highly variable water levels over relatively short distances (Figure 13).

Also included in the "dry holes" were three locations (044, 047, and 052) each within a few feet of a monitor well for which both bedrock and water level data are available (LF04-4D, LF05-19, and LF05-14, respectively). Lithologic logs are available for two of the wells, and all three are plotted on a bedrock contour map which allows estimates of depth to bedrock. A comparison of the total depths of the probed holes (which has been defined as top of bedrock) and bedrock as determined during drilling shows discrepancies of from three to eight feet (Table 2).

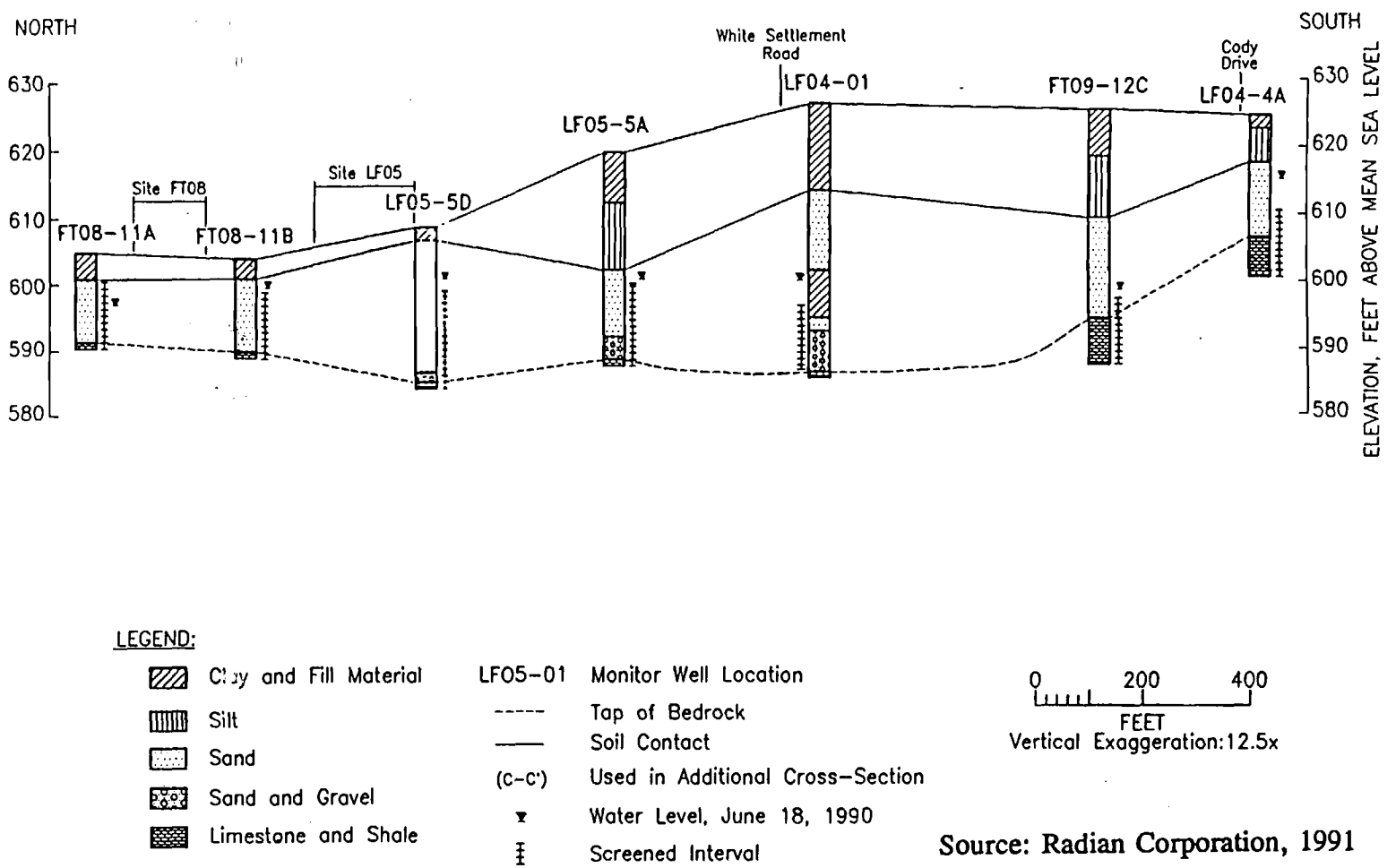
Table 2

Depth to Bedrock Comparisons

Sample Site	Depth to "Bedrock"	Monitor Well#	Depth to Bedrock	Difference (ft.)
044	14.7	LF05-19	20.5	5.8
047	17.3	LF04-4D	25.5	8.2
052	9.9	LF05-14	13.0	3.1

The lithologic logs also include occasional mention of relatively hard layers up to several inches thick variously referred to as sandstone, limestone, or marl. These layers, if thick and hard enough, could act as "pseudo-bedrock" and potentially halt the penetrometer some unknown distance above actual bedrock. Bedrock is customarily defined during drilling by the number of hammer blows required to advance the bit one inch.

Approximately eight feet of vertical section of soil and rock were available for observation in the cutbank on the north side of Farmers Branch, near location 083. This is an area in which the Goodland, a white, chalky, silty limestone interbedded with thin marl beds, is the bedrock. Examination of the soil section indicated that (1) no seeps were evident anywhere in the section, (2) the soil textures were varied and



Source: Radian Corporation, 1991

Figure 13. A typical geologic cross-section constructed from lithologic logs showing the variance in water levels

discontinuous, and (3) hard, thin layers of sediment cemented with iron oxide occurred within the soil sequence above actual bedrock. This appears consistent with the observations recorded by the Radian geologists examining samples during monitor well installation.

A combination of four different factors appears to be responsible for the lack of water.

(1) The cone penetrometer is generally stopped by the first hard layer; if this is an isolated layer, rather than the top of continuous bedrock, the water-bearing horizon may lie below.

(2) October and November traditionally follow several relatively dry months. Recharge to shallow groundwater in this area is almost exclusively from the surface. There were no heavy rains prior to Phase I sampling to fully recharge the springs and perched water table(s).

(3) Recovery in at least some of the wells is documented as being slow. Although holes were generally left open for an hour or more, this may not have been sufficient for water to collect.

(4) The observed heterogeneity of the soil column suggests that water may occur at other levels than the soil-rock interface. If these relatively porous lenses encased within less permeable material occurred more than a foot or two above the base of the hole, they would be sealed off as long as the rods remain in the ground. It is also possible that the withdrawal action could temporarily seal off these layers with lower permeability (clayey) material.

5.0 RECOMMENDATIONS

The recommendations made by GMI for the Phase II sampling program are based on the following:

(1) additional areas of study based on the current known extent of the TCE plume,

(2) the difficulty in obtaining water samples, therefore, the lack of data in certain areas of Phase I, and

(3) the possibility of a change in the SOW.

5.1 New Sampling Areas

Defining the eastern extent of the TCE plume has been an apparent success. Phase I data indicate the plume has not yet reached the eastern boundary. The results along Pumphrey Road yielded bdl values for all compounds with the exception of 2.0 μg/l PCE at location 092 and values of 2.3 μg/l TCE and 8.1 μg/l DCE at location 002. These two sites are located approximately 220 feet and 315 feet, respectively, from the road.

Because the concentrations of TCE increase westward from Pumphrey Road along the north fence, GMI believes samples should be taken north of the fence across Hobby Shop Road and possibly across Taxiway C 130 (Figure 14). This should either link the golf course plume with the plume inferred from data taken during earlier sampling projects, or individually define its boundaries and, more precisely, the source.

Two additional areas of concern are the area west of the golf course on the flightline and the Phase I locations east of the flightline fence. It is recommended that four or five points in the Phase I area be infilled north of White Settlement Road where no water samples were taken. The few concentrations obtained in this area were high, ranging from 1,300 to 4,400 μg/l. If the objective of Phase II sampling is to determine if and to what degree this plume links with AFP 4, then the area west of Taxiway 197 and in the vicinity of Taxiway D 195 should be sampled. The conventional sampling scheme proposed in the SOW (250 ft. x 500 ft. grid) should suffice.

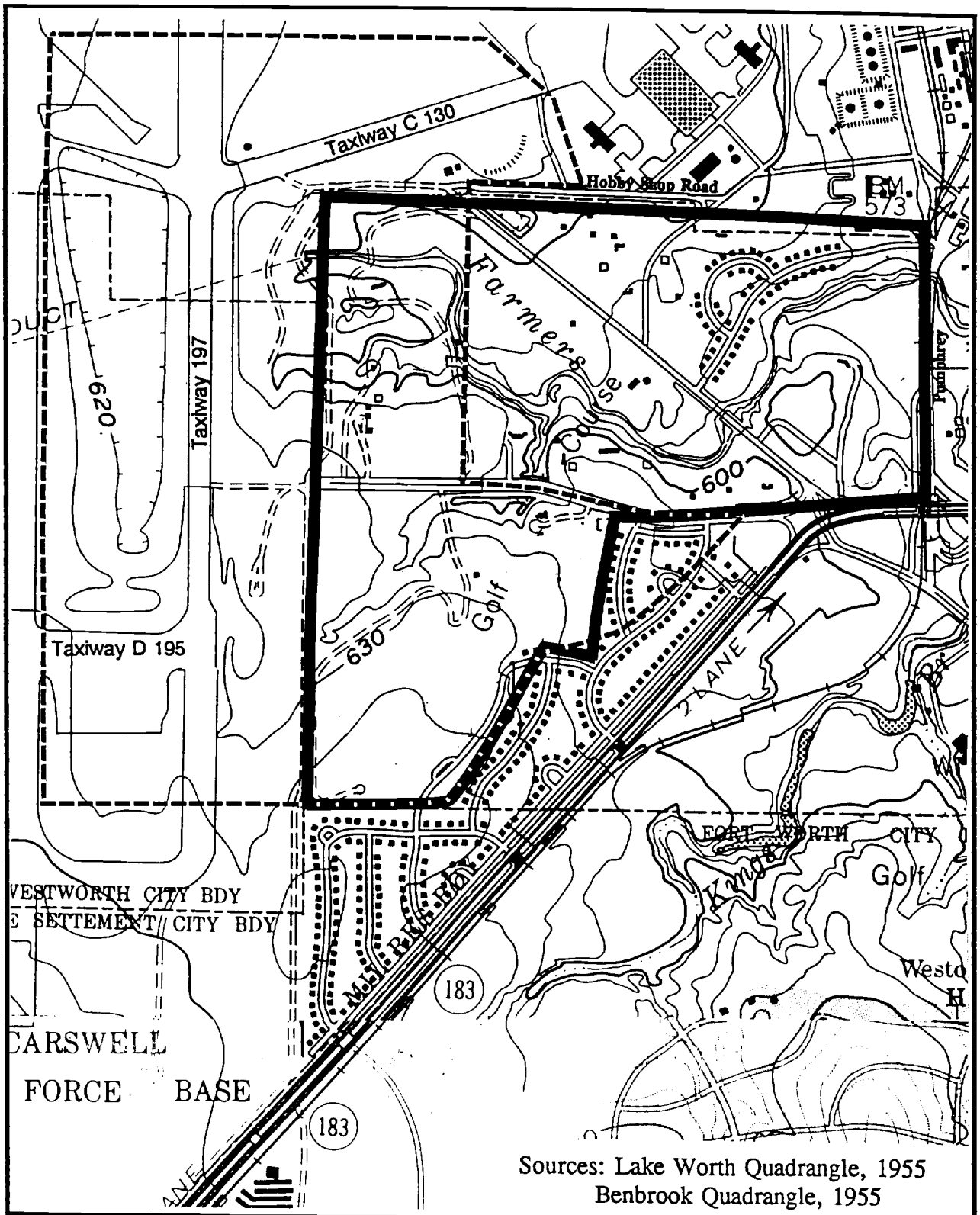


Figure 14. A topographic base map with the areas covered by the Phase I groundwater sampling program (▬) and the areas proposed for Phase II sampling (– – –).

Finally, the golf course area south of White Settlement Road should be retested, since no water samples were extracted from that area. This area includes the area south and east of the radar facility to the housing subdivision.

5.2 Difficulties in Groundwater Sampling

In order to improve data collection, the problems and uncertainties involved with the current methods should be discussed.

In cases where the cone penetrometer was used near an existing well, the cone did not always reach the same depth. Two examples where a driller's log was used as a reference were at locations 052 and 044. At 052, the log of Radian Monitor Well No. LF05-14 shows bedrock to be 13 feet below ground level (BGL). At 7.2 feet BGL there is a marl described in the lithologic log as a stiff clay with large $CaCO_3$ fragments and oxidized seams. Taking into account an approximate five-foot difference in surface elevation and an estimated two foot downway slope of the bedrock, the cone at 10 feet depth was apparently impeded by the marly zone. Water was found by Radian to be two feet below the top of the marl during a wet season (April 1990). No water was found this time. The result suggested the inability to penetrate all the way to bedrock plus a possible seasonal variation in water level.

A lithologic log was also available near location 044, where the cone reached 14.7 feet BGL. The nearby well LF05-19 was drilled to bedrock at 20 feet with water at about 13 feet. In this case the issue seems to be a function of both an inability to penetrate to bedrock and the seasonal fluctuation of groundwater levels because water was not contacted at 13 feet BGL. There is no indication from the log of a hard interval except a one-inch thick limestone bed at six-foot depth. The rest of the sequence is sand and gravel.

A similar example occurred at 047A which was located next to monitor well LF04-4D. The casing is at least 25.52 feet BGL, and the water level was at 15.6 feet BGL in May 1990. The water sampler reached a depth of 17.3 feet BGL. Due to approximate estimates of differences in elevation between the well and 047A, it is difficult to assess how close the sampler should have been to a previous water level; however, the water level indicator did not detect moisture. The total depth was an estimated 8 to 10 feet

above bedrock. It should also be noted that during the first attempt to punch the hole at this location, a depth of 6.4 feet was reached. The object or layer which halted the cone was not identified.

At location 065, confirmed bedrock was reached, but there was no water. The nearby Radian soil boring log of LF05-09 showed bedrock at 14 feet with water at 11 feet. The cone reached 17 feet, finding bedrock possibly lower in elevation than the driller. No water was found there nor at the next location, 066, which reached about the same depth (18 feet BGL). Even after waiting one hour at each location, an attempt was made with an open hole bailer with no success. In summary, adequate depth was reached, but there was no water.

Another phenomenon occurred at location 019. During the first attempt on site, a water sample was produced with no difficulty. The sample containers were broken at the lab. On the next attempt, six days later, two more attempts resulted in dry holes. Both holes were located within 10 feet of the original hole. If any change in the water table is suspected, it should have risen slightly due to a wet weekend between times of sampling rather than fallen during the six day interval.

5.3 Proposed Changes in the Scope of Work

A modification to the SOW may be necessary. Water samples may not be collected at every location, but bedrock should be located. To be certain that bedrock is reached, the cone penetrometer should be modified or a drilling rig used at some locations south of White Settlement Road and in some select locations on the north side.

It may be feasible to use the cone penetrometer on the west side (flightline side) of the fence and also on the north area near Taxiway C 190 as a primary tool. It is recommended that it first be used in areas near wells where the depth to bedrock is known. Follow-up with a drill rig with small diameter augers can be done where necessary.

At locations where the bedrock has been determined, but no water flows in immediately, a temporary screen and casing could be positioned in the hole for collecting water at a later time by bailer. The casing could then be removed and either decontaminated and reused, or disposed of. The choice of

materials used in casing construction would depend on the relative costs involved, including decon time and materials.

6.0 REFERENCES

Hargis and Montgomery. 1983. Phase I Investigation of Subsurface Conditions at U.S. Air Force Plant No. 4, Fort Worth, Texas, Vol. 1.

Hargis and Associates. 1989. Summary of Interim Remedial Investigations January 1987 to April 1989, U.S. Air Force Plant No. 4, Fort Worth, Texas, Vol. I, II, and III.

Jacobs Engineering Group Inc. 1991. Installation Restoration Program (IRP) Quarterly Groundwater Monitoring Quarterly Letter Report. Air Force Plant 4, Texas. December.

Jacobs Engineering Group Inc. 1992. Installation Restoration Program (IRP) Quarterly Groundwater Monitoring Quarterly Letter Report. Air Force Plant 4, Texas.

Proctor, N.H., J.P. Hughes, and M.L. Fischman. 1989. Chemical Hazards of the Workplace: Van Nostrand Reinhold, New York.

Radian Corporation. 1986. Installation Restoration Program (IRP) Phase II, Stage 1, Vol. 1 Final Report, Carswell AFB, Texas, for Period 12/84-4/85.

Radian Corporation. 1991. Installation Restoration Program (IRP) Phase II, Stage 2, Vol. 1 and 2, Final Report, Carswell AFB, Texas, for Period 1988-1991.

Wagner, R. E. (ed.). 1992. Guide to Environmental Analytical Methods: Genium Publishing Corp., Schenectady, N.Y.

7.0 ACRONYMS AND ABBREVIATIONS

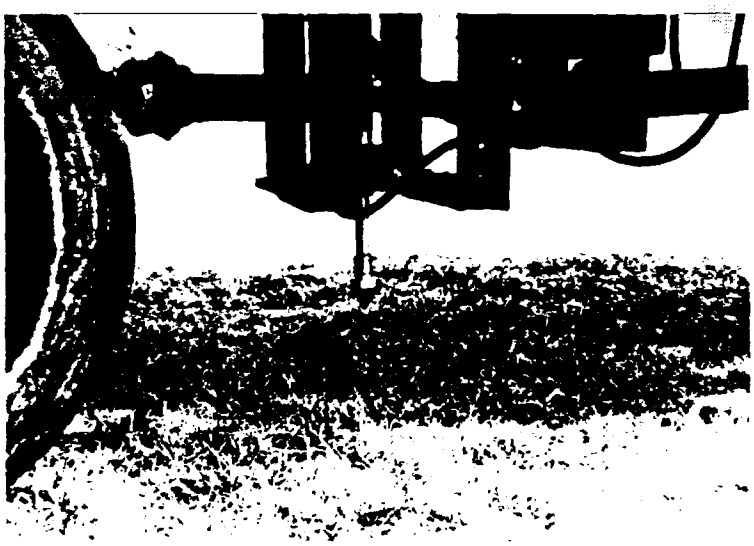
AFP 4	Air Force Plant No. 4
bdl	below detection level
BGL	Below Ground Level
CAFB	Carswell Air Force Base
CF	Chloroform
cps	centimeters per second
Cr	Chromium
DCA	Dichloroethane
DCB	Dichlorobenzene
DCE	Dichloroethene
DCP	Dichloropentene
DNAPL	Dense Non-Aqueous Phase Liquid
EPA	Environmental Protection Agency
FT	Fire Training Area
GMI	Geo-Marine, Inc.
H&G	Hargis and Associates, Inc.
HNU	A photo-ionization detector for organic vapors
IRP	Installation Restoration Program
JP-4	Jet Fuel
LF	Landfill
MC	Methylene chloride
MCL	Maximum Contaminant Level
μg/l	micrograms per liter
ml	milliliters
MSDS	Material Safety Data Sheets
MSL	Mean Sea Level
PCE	Tetrachloroethene
ppb	parts per billion
PPE	Personal Protective Equipment
ppm	parts per million
QA	Quality Assurance
QA/QC	Quality Assurance/ Quality Control
SHERP	Safety, Health, and Emergency Response Plan
SOW	Scope of Work
SWDL	Southwestern Division Laboratory
TCA	Trichloroethane
TCE	Trichloroethene
TOC	Total Organic Carbon
TOX	Total Organic Halides
USCOE	U.S. Army Corps of Engineers
VC	Vinyl Chloride
VOA	Volatile Organic Analysis
VOC	Volatile Organic Compound
WP	Waste Burial Area

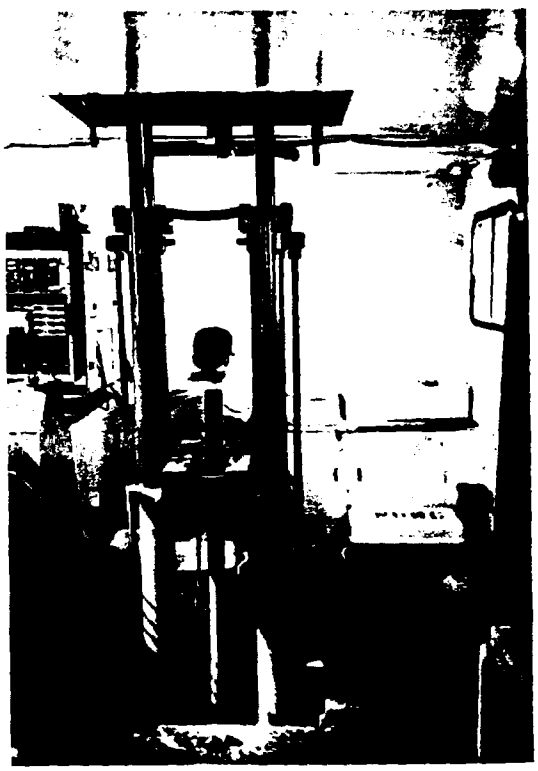
APPENDIX A

Selected Site Photographs

The Fugro Geosciences truck on location on the golf course. Two of the hydraulic jacks used to level the truck before "punching" are visible under the truck body; note that the front wheels are off the ground. The elevated portion in the center of the roof is to accommodate the hydraulic equipment used to make the holes. It can be retracted for clearance.

A closer view of the penetrometer under the truck prior to sampling. The cone shaped end is pushed into the ground using forces as high as 20 tons. At the soil-bedrock interface, the pipe is retracted to expose steel screen which allows water to enter the pipe for sampling.





Two views of the interior of the sampling truck. On the left the hydraulic punch is pushing down a length of steel pipe to which additional lengths can be attached as needed to reach bottom. The open[illegible] roof is into the elevated portion noted in the photo[illegible] above. On the right the panel of control and monitoring gauges is visible.

APPENDIX B

Analytic Results, Chain-of Custody Forms, and QA/QC

NDRC LABORATORIES, INC.

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1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 22-OCT-1992

REPORT NUMBER : D92-11949-1
REPORT DATE : 31-OCT-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : TB-102192
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 20-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 26-OCT-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-11949-1
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-11949-1
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	106 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 22-OCT-1992

REPORT NUMBER : D92-11949-2
REPORT DATE : 31-OCT-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : RB-102192
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 21-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 26-OCT-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-11949-2
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-11949-2
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	116 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 22-OCT-1992

REPORT NUMBER : D92-11949-3
REPORT DATE : 31-OCT-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-002
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 21-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 26-OCT-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-11949-3
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L		2.3	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene				8.1	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-11949-3
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	106 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 22-OCT-1992

REPORT NUMBER : D92-11949-4
REPORT DATE : 31-OCT-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-003
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 21-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 26-OCT-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-11949-4
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-11949-4
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	109 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 22-OCT-1992

REPORT NUMBER : D92-11949-5
REPORT DATE : 31-OCT-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-004
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 21-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 26-OCT-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-11949-5
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-11949-5
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	110 %

NDRC Laboratories, Inc. David R Godwin v 2

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 22-OCT-1992

REPORT NUMBER : D92-11949-6
REPORT DATE : 31-OCT-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-005
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 21-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 26-OCT-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-11949-6
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-11949-6
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	108 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 22-OCT-1992

REPORT NUMBER : D92-11949-7
REPORT DATE : 31-OCT-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : MS
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 22-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 27-OCT-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L		9.6	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L		7.5	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L		9.3	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L		9.2	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-11949-7
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L		7.2	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-11949-7
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	98.0 %

NDRC Laboratories, Inc. David R Godwin ✓ 2

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 22-OCT-1992

REPORT NUMBER : D92-11949-8
REPORT DATE : 31-OCT-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : MSD
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 22-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 27-OCT-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L		11.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L		8.5	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L		10.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L		10.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-11949-8
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L		8.6	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-11949-8
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	105 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 22-OCT-1992

REPORT NUMBER : D92-11949-9
REPORT DATE : 31-OCT-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : Method Blank
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 22-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 27-OCT-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-11949-9
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-11949-9
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	104 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

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1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT **DALLAS** **HOUSTON**

DATE RECEIVED : 22-OCT-1992

REPORT NUMBER : D92-11949-10
REPORT DATE : 31-OCT-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : Blank Spike
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 22-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 27-OCT-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L		11.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L		8.8	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L		10.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L		11.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-11949-10
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L		8.3	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-11949-10
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	110 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED: 22-OCT-1992

REPORT NUMBER: D92-11949
REPORT DATE: 31-OCT-1992

SUBMITTED BY: Geo-Marine, Inc.

LABORATORY ANALYSIS
QUALITY CONTROL REPORT

ANALYSIS:	Vinyl Chloride	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 8010	
Sample Extracted:	10/26/92	MS/MSD RPD:	16.9	%
QC Extracted:	10/27/92	Average Spike Recovery:	78.9	%
Sample Analyzed:	10/26/92	Duplicate RPD:	----	
QC Analyzed:	10/27/92	Method Blank:	<5.0	µg/L
QC Sample Number:	D92-11949-1	Blank Spike Recovery:	82.7	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Chloroform	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 8010	
Sample Extracted:	10/26/92	MS/MSD RPD:	11.2	%
QC Extracted:	10/27/92	Average Spike Recovery:	98.5	%
Sample Analyzed:	10/26/92	Duplicate RPD:	----	
QC Analyzed:	10/27/92	Method Blank:	<1.0	µg/L
QC Sample Number:	D92-11949-1	Blank Spike Recovery:	104	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Bromodichloromethane	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 8010	
Sample Extracted:	10/26/92	MS/MSD RPD:	9.9	%
QC Extracted:	10/27/92	Average Spike Recovery:	101	%
Sample Analyzed:	10/26/92	Duplicate RPD:	----	
QC Analyzed:	10/27/92	Method Blank:	<1.0	µg/L
QC Sample Number:	D92-11949-1	Blank Spike Recovery:	108	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Chlorobenzne	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 8010	
Sample Extracted:	10/26/92	MS/MSD RPD:	12.2	%
QC Extracted:	10/27/92	Average Spike Recovery:	80.1	%
Sample Analyzed:	10/26/92	Duplicate RPD:	----	
QC Analyzed:	10/27/92	Method Blank:	<3.0	µg/L
QC Sample Number:	D92-11949-1	Blank Spike Recovery:	88.3	%
		TCLP Spike Recovery:	----	

ANALYSIS:	1,2-Dichlorobenzene	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 8010	
Sample Extracted:	10/26/92	MS/MSD RPD:	7.8	%
QC Extracted:	10/27/92	Average Spike Recovery:	96.1	%
Sample Analyzed:	10/26/92	Duplicate RPD:	----	
QC Analyzed:	10/27/92	Method Blank:	<2.0	µg/L
QC Sample Number:	D92-11949-1	Blank Spike Recovery:	107	%
		TCLP Spike Recovery:	---	

CHAIN OF CUSTODY RECORD — **NDRC LABORATORIES, INC.** — 1089 East Collins Blvd., Richardson, TX 75081 (214) 238-5591

GC

ORIGINAL

CASE NARRATIVE REQUIRED

QC REPORT

Submitted by		Bill to	
Name:	Geo Marine	Name:	↑
Address:	550 E. 15th ST Plano, TX	Address:	SAME ↓
Contact:	LYLE WINNETTE	Contact:	MARY Alice GARZA
Phone:	(214) 423-5480	Phone:	SAME
Fax:	(214) 422-2736	Fax:	↓

Lab use only
Due Date: 10-~~2~~ 3-92
GC
RCRA ☐
NPDES ☐
Section / Date

Proj. No. 1161-052 — Project Name: Carswell AFB GW sampling — No. of Containers

Adhoc ~~###~~ cis-1,2 Dichloroethene
Method 601/8010
Halogenated Volatiles

Matrix	Date	Time	Comp	Grab	Identifying Marks	VOA	A/G 1 Lt.	250 ml	P/O	Method 601/8010	Halogenated Volatiles	Lab. Sample ID
W	10-20-92	4:30		✓	TB-102092	2				✓		11949-1
W	10-21	12:15		✓	RB-102192	2				✓		2
W	10-21	12:45		✓	CAFB-002	2				✓		3
W	10-21	2:45		✓	CAFB-003	2				✓		4
W	10-21	4:15		✓	CAFB-004	2				✓		5
W	10-21	4:50		✓	CAFB-005	2				✓		6
					MS							7
					MSD							8
					Method Blank							9
					Blank Spike							10

Turn around time ☐ 100% ☐ 50% ☐ Standard Other: _____ Temperature °C: _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
[signature]	10/22	9:30	Collin McNair	10/22	9:30
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Remarks: Please provide standard USCOE QA/QC documentation.

V 30

NDRC LABORATORIES, INC. No 10989

Dallas - 1089 East Collins Blvd. • Richardson, Texas 75081 • (214) 238-5591 • Fax (214) 238-5592

SAMPLE PRESERVATION INFORMATION SHEET

Field Sampling ☐ Incoming Samples ☐

EnAL

npany: [illegible] Job No: [illegible]

No. of Cooler(s): 1 Temperature of Cooler(s): [illegible]

RVATION INFORMATION

Sample No.	Temperature of Sample	Sample Container	Volume	Preservation used *	Initial pH	Final pH	Bottles generated	Comments

No Preservation

RVATION USED *

1 - Cool to 4° C
2 - H_2SO_4 to pH < 2
3 - HNO_3 to pH < 2
4 - HCL to pH < 2
5 - NaOH to pH > 12
6 - $Na_2S_2O_2$ 0.008%
7 - 2 mL Zinc Acetate and NaOH to pH > 12
8 - None required

NGK
Preserved by

Date/Time

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 23-OCT-1992

REPORT NUMBER : D92-12036-1
REPORT DATE : 5-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-008
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 22-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 27-OCT-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12036-1
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	112 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT **DALLAS** **HOUSTON**

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QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	112 %

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12036-2
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12036-2
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 23-OCT-1992

REPORT NUMBER : D92-12036-3
REPORT DATE : 5-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-010
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 22-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 27-OCT-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
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VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12036-3
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	113 %

NDRC Laboratories, Inc. David R. Godwin v 2

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12036-3
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	113 %

NDRC Laboratories, Inc. David R. Godwin v 2

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12036-4
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12036-4
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 23-OCT-1992

REPORT NUMBER : D92-12036-5
REPORT DATE : 5-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : RB-102292
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 22-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 28-OCT-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 23-OCT-1992

REPORT NUMBER : D92-12036-5
REPORT DATE : 5-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : RB-102292
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 22-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 28-OCT-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12036-5
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	108 %

NDRC Laboratories, Inc. David R. Godwin v 2

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12036-5
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	108 %

NDRC Laboratories, Inc. David R. Godwin v 2

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12036-6
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12036-6
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 23-OCT-1992

REPORT NUMBER : D92-12036-7
REPORT DATE : 5-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-014
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 22-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 27-OCT-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	[illegible]	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 23-OCT-1992

REPORT NUMBER : D92-12036-7
REPORT DATE : 5-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-014
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 22-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 27-OCT-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12036-7
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	108 %

NDRC Laboratories, Inc. David R. Godwin v 2

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12036-7

ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	108 %

NDRC Laboratories, Inc. David R. Godwin v 2

David R. Godwin, Ph.D.
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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12036-8
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	75	µg/L	<	75	µg/L
Dichlorodifluoromethane	500	µg/L	<	500	µg/L
1,1-Dichloroethene	50	µg/L	<	50	µg/L
1,2-Dichloroethane	75	µg/L	<	75	µg/L
1,1-Dichloroethane	25	µg/L	<	25	µg/L
trans-1,2-Dichloroethene	25	µg/L	<	25	µg/L
1,2-Dichloropropane	25	µg/L	<	25	µg/L
cis-1,3-Dichloropropene	50	µg/L	<	50	µg/L
trans-1,3-Dichloropropene	50	µg/L	<	50	µg/L
Methylene chloride	125	µg/L	<	125	µg/L
1,1,2,2-tetrachloroethane	25	µg/L	<	25	µg/L
1,1,1,2-tetrachloroethane	125	µg/L	<	125	µg/L
Tetrachloroethene	25	µg/L		34	µg/L
1,1,1-Trichloroethane	25	µg/L	<	25	µg/L
1,1,2-Trichloroethane	25	µg/L	<	25	µg/L
Trichloroethene	25	µg/L		70	µg/L
Trichlorofluoromethane	125	µg/L	<	125	µg/L
Trichloropropane	125	µg/L	<	125	µg/L
vinyl chloride	125	µg/L	<	125	µg/L
cis-1,2-Dichloroethene				34	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12036-8
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	101 %

NDRC Laboratories, Inc. David R. Godwin v 2

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 23-OCT-1992

REPORT NUMBER : D92-12036-9
REPORT DATE : 5-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : MS
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 22-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 28-OCT-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L		13.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L		9.5	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L		13.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L		12.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12036-9
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L		9.4	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12036-9
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	108 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 23-OCT-1992

REPORT NUMBER : D92-12036-10
REPORT DATE : 5-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : MSD
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 22-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 28-OCT-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L		12.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L		9.7	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L		13.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L		12.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12036-10
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L		9.4	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12036-10
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	104 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 23-OCT-1992

REPORT NUMBER : D92-12036-11
REPORT DATE : 5-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : Method Blank
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 22-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 28-OCT-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12036-11
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12036-11
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	118 %

NDRC Laboratories, Inc. David R. Godwin v 2

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12036-12
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L		10.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12036-12
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L		10.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED: 23-OCT-1992

REPORT NUMBER: D92-12036
REPORT DATE: 5-NOV-1992

SUBMITTED BY: Geo-Marine, Inc.

LABORATORY ANALYSIS
QUALITY CONTROL REPORT

ANALYSIS:	Vinyl Chloride	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	10/27/92	MS/MSD RPD:	0.10	%
QC Extracted:	10/28/92	Average Spike Recovery:	94.1	%
Sample Analyzed:	10/27/92	Duplicate RPD:	----	
QC Analyzed:	10/28/92	Method Blank:	<5.0	µg/L
QC Sample Number:	D92-12069-1	Blank Spike Recovery:	105	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Chloroform	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	10/27/92	MS/MSD RPD:	0.76	%
QC Extracted:	10/28/92	Average Spike Recovery:	130	%
Sample Analyzed:	10/27/92	Duplicate RPD:	----	
QC Analyzed:	10/28/92	Method Blank:	<1.0	µg/L
QC Sample Number:	D92-12069-1	Blank Spike Recovery:	124	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Bromodichloromethane	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	10/27/92	MS/MSD RPD:	5.5	%
QC Extracted:	10/28/92	Average Spike Recovery:	127	%
Sample Analyzed:	10/27/92	Duplicate RPD:	----	
QC Analyzed:	10/28/92	Method Blank:	<1.0	µg/L
QC Sample Number:	D92-12069-1	Blank Spike Recovery:	121	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Chlorobenzene	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	10/27/92	MS/MSD RPD:	1.9	%
QC Extracted:	10/28/92	Average Spike Recovery:	96.2	%
Sample Analyzed:	10/27/92	Duplicate RPD:	----	
QC Analyzed:	10/28/92	Method Blank:	<2.0	µg/L
QC Sample Number:	D92-12069-1	Blank Spike Recovery:	95.3	%
		TCLP Spike Recovery:	----	

ANALYSIS:	1,2-Dichlorobenzene	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	10/27/92	MS/MSD RPD:	1.7	%
QC Extracted:	10/28/92	Average Spike Recovery:	116	%
Sample Analyzed:	10/27/92	Duplicate RPD:	----	
QC Analyzed:	10/28/92	Method Blank:	<2.0	µg/L
QC Sample Number:	D92-12069-1	Blank Spike Recovery:	116	%
		TCLP Spike Recovery:	----	

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED: 23-OCT-1992

REPORT NUMBER: D92-12036
REPORT DATE: 5-NOV-1992

SUBMITTED BY: Geo-Marine, Inc.

LABORATORY ANALYSIS
QUALITY CONTROL REPORT

ANALYSIS:	Vinyl Chloride	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	10/27/92	MS/MSD RPD:	0.10	%
QC Extracted:	10/28/92	Average Spike Recovery:	94.1	%
Sample Analyzed:	10/27/92	Duplicate RPD:	----	
QC Analyzed:	10/28/92	Method Blank:	<5.0	µg/L
QC Sample Number:	D92-12069-1	Blank Spike Recovery:	105	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Chloroform	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	10/27/92	MS/MSD RPD:	0.76	%
QC Extracted:	10/28/92	Average Spike Recovery:	130	%
Sample Analyzed:	10/27/92	Duplicate RPD:	----	
QC Analyzed:	10/28/92	Method Blank:	<1.0	µg/L
QC Sample Number:	D92-12069-1	Blank Spike Recovery:	124	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Bromodichloromethane	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	10/27/92	MS/MSD RPD:	5.5	%
QC Extracted:	10/28/92	Average Spike Recovery:	127	%
Sample Analyzed:	10/27/92	Duplicate RPD:	----	
QC Analyzed:	10/28/92	Method Blank:	<1.0	µg/L
QC Sample Number:	D92-12069-1	Blank Spike Recovery:	121	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Chlorobenzene	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	10/27/92	MS/MSD RPD:	1.9	%
QC Extracted:	10/28/92	Average Spike Recovery:	96.2	%
Sample Analyzed:	10/27/92	Duplicate RPD:	----	
QC Analyzed:	10/28/92	Method Blank:	<2.0	µg/L
QC Sample Number:	D92-12069-1	Blank Spike Recovery:	95.3	%
		TCLP Spike Recovery:	----	

ANALYSIS:	1,2-Dichlorobenzene	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	10/27/92	MS/MSD RPD:	1.7	%
QC Extracted:	10/28/92	Average Spike Recovery:	116	%
Sample Analyzed:	10/27/92	Duplicate RPD:	----	
QC Analyzed:	10/28/92	Method Blank:	<2.0	µg/L
QC Sample Number:	D92-12069-1	Blank Spike Recovery:	116	%
		TCLP Spike Recovery:	----	

NDRC LABORATORIES, INC. NO 19879

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SAMPLE PRESERVATION INFORMATION SHEET

Field Sampling ☐ Incoming Samples ☐

GENERAL

Company: [illegible] Job No: 12036 1-12

No. of Cooler(s): 7 Temperature of Cooler(s): 4°C

PRESERVATION INFORMATION

Sample No.	Temperature of Sample	Sample Container	Volume	Preservation used *	Initial pH	Final pH	Bottles generated	Comments

NO PRESERVATIVES

PRESERVATION USED *

1 - Cool to 4° C
2 - H_2SO_4 to pH < 2
3 - HNO_3 to pH < 2
4 - HCL to pH < 2
5 - NaOH to pH > 12
6 - $Na_2S_2O_2$ 0.008%
7 - 2 mL Zinc Acetate and NaOH to pH > 12
8 - None required

NGK
Preserved by

[illegible]
Date/Time

NDRC LABORATORIES, INC. 19879

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SAMPLE PRESERVATION INFORMATION SHEET

Field Sampling ☐ Incoming Samples ☐

GENERAL

Company: [illegible] Job No: 12036 1-12

No. of Cooler(s): 7 Temperature of Cooler(s): 4/0C

PRESERVATION INFORMATION

Sample No.	Temperature of Sample	Sample Container	Volume	Preservation used *	Initial pH	Final pH	Bottles generated	Comments

No Preservatives

PRESERVATION USED *

1 - Cool to 4° C
2 - H_2SO_4 to pH < 2
3 - HNO_3 to pH < 2
4 - HCL to pH < 2
5 - NaOH to pH > 12
6 - $Na_2S_2O_2$ 0.008%
7 - 2 mL Zinc Acetate and NaOH to pH > 12
8 - None required

NGK
Preserved by

[illegible]
Date/Time

CUSTOMER : Geo-Marine, Inc.
PROJECT : 1161-052 Carswell AFB

==========

SAMPLE ID : D92-12241-1 DATE SAMPLED : 27-OCT-1992
ID MARKS : RB-102792 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	29-OCT-1992

==========

SAMPLE ID : D92-12241-2 DATE SAMPLED : 27-OCT-1992
ID MARKS : CAFB 045 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	30-OCT-1992

==========

SAMPLE ID : D92-12241-3 DATE SAMPLED : 27-OCT-1992
ID MARKS : TB-102792 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	30-OCT-1992

==========

SAMPLE ID : D92-12241-4 DATE SAMPLED : 28-OCT-1992
ID MARKS : MS

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	30-OCT-1992

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SAMPLE ID : D92-12241-5 DATE SAMPLED : 28-OCT-1992
ID MARKS : MSD

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	30-OCT-1992

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SAMPLE ID : D92-12241-6 DATE SAMPLED : 28-OCT-1992
ID MARKS : Method Blank

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	30-OCT-1992

CUSTOMER : Geo-Marine, Inc.
PROJECT : 1161-052 Carswell AFB

SAMPLE ID : D92-12241-1 DATE SAMPLED : 27-OCT-1992
ID MARKS : RB-102792 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	29-OCT-1992

SAMPLE ID : D92-12241-2 DATE SAMPLED : 27-OCT-1992
ID MARKS : CAFB 045 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	30-OCT-1992

SAMPLE ID : D92-12241-3 DATE SAMPLED : 27-OCT-1992
ID MARKS : TB-102792 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	30-OCT-1992

SAMPLE ID : D92-12241-4 DATE SAMPLED : 28-OCT-1992
ID MARKS : MS

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	30-OCT-1992

SAMPLE ID : D92-12241-5 DATE SAMPLED : 28-OCT-1992
ID MARKS : MSD

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	30-OCT-1992

SAMPLE ID : D92-12241-6 DATE SAMPLED : 28-OCT-1992
ID MARKS : Method Blank

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	30-OCT-1992

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 28-OCT-1992

REPORT NUMBER : D92-12241-1
REPORT DATE : 9-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : RB-102792
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 27-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 29-OCT-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 28-OCT-1992

REPORT NUMBER : D92-12241-1
REPORT DATE : 9-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : RB-102792
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 27-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 29-OCT-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12241-1
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	113 %

NDRC Laboratories, Inc. David R. Godwin v 2

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12241-1
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	113 %

NDRC Laboratories, Inc. David R. Godwin v 2

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12241-2
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	30	µg/L	<	30	µg/L
Dichlorodifluoromethane	200	µg/L	<	200	µg/L
1,1-Dichloroethene	20	µg/L		27	µg/L
1,2-Dichloroethane	30	µg/L	<	30	µg/L
1,1-Dichloroethane	10	µg/L	<	10	µg/L
trans-1,2-Dichloroethene	10	µg/L		300	µg/L
1,2-Dichloropropane	10	µg/L	<	10	µg/L
cis-1,3-Dichloropropene	20	µg/L	<	20	µg/L
trans-1,3-Dichloropropene	20	µg/L	<	20	µg/L
Methylene chloride	50	µg/L	<	50	µg/L
1,1,2,2-tetrachloroethane	10	µg/L	<	10	µg/L
1,1,1,2-tetrachloroethane	50	µg/L	<	50	µg/L
Tetrachloroethene	10	µg/L		470	µg/L
1,1,1-Trichloroethane	10	µg/L	<	10	µg/L
1,1,2-Trichloroethane	10	µg/L	<	10	µg/L
Trichloroethene	10	µg/L		4500	µg/L
Trichlorofluoromethane	50	µg/L	<	50	µg/L
Trichloropropane	50	µg/L	<	50	µg/L
vinyl chloride	50	µg/L	<	50	µg/L
cis-1,2-Dichloroethene				740	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12241-2
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	30	µg/L	<	30	µg/L
Dichlorodifluoromethane	200	µg/L	<	200	µg/L
1,1-Dichloroethene	20	µg/L		27	µg/L
1,2-Dichloroethane	30	µg/L	<	30	µg/L
1,1-Dichloroethane	10	µg/L	<	10	µg/L
trans-1,2-Dichloroethene	10	µg/L		300	µg/L
1,2-Dichloropropane	10	µg/L	<	10	µg/L
cis-1,3-Dichloropropene	20	µg/L	<	20	µg/L
trans-1,3-Dichloropropene	20	µg/L	<	20	µg/L
Methylene chloride	50	µg/L	<	50	µg/L
1,1,2,2-tetrachloroethane	10	µg/L	<	10	µg/L
1,1,1,2-tetrachloroethane	50	µg/L	<	50	µg/L
Tetrachloroethene	10	µg/L		470	µg/L
1,1,1-Trichloroethane	10	µg/L	<	10	µg/L
1,1,2-Trichloroethane	10	µg/L	<	10	µg/L
Trichloroethene	10	µg/L		4500	µg/L
Trichlorofluoromethane	50	µg/L	<	50	µg/L
Trichloropropane	50	µg/L	<	50	µg/L
vinyl chloride	50	µg/L	<	50	µg/L
cis-1,2-Dichloroethene				740	µg/L

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 28-OCT-1992

REPORT NUMBER : D92-12241-3
REPORT DATE : 9-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : TB-102792
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 27-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 30-OCT-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 28-OCT-1992

REPORT NUMBER : D92-12241-3
REPORT DATE : 9-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : TB-102792
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 27-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 30-OCT-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12241-3
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	117 %

NDRC Laboratories, Inc. David R. Godwin v 2

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12241-3

ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	117 %

NDRC Laboratories, Inc. David R. Godwin v 2

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12241-4
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L		8.5	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12241-4
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	103 %

NDRC Laboratories, Inc. David R. Godwin v 2

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 28-OCT-1992

REPORT NUMBER : D92-12241-5
REPORT DATE : 9-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : MSD
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 28-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 30-OCT-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L		11.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L		9.6	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L		12.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L		12.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12241-5
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L		8.4	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12241-5
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	109 %

NDRC Laboratories, Inc. David R. Godwin v 2

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 28-OCT-1992

REPORT NUMBER : D92-12241-6
REPORT DATE : 9-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : Method Blank
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 28-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 30-OCT-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12241-6
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12241-6
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	114 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 28-OCT-1992

REPORT NUMBER : D92-12241-7
REPORT DATE : 9-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : Blank Spike
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 28-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 30-OCT-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L		13.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L		9.6	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L		13.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L		11.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12241-7
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L		8.6	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12241-7
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	105 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED: 28-OCT-1992

REPORT NUMBER: D92-12241
REPORT DATE: 9-NOV-1992

SUBMITTED BY: Geo-Marine, Inc.

LABORATORY ANALYSIS
QUALITY CONTROL REPORT

ANALYSIS:	Vinyl Chloride	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	10/30/92	MS/MSD RPD:	0.94	%
QC Extracted:	10/30/92	Average Spike Recovery:	84.8	%
Sample Analyzed:	10/30/92	Duplicate RPD:	----	
QC Analyzed:	10/30/92	Method Blank:	<5.0	µg/L
QC Sample Number:	D92-12241-3	Blank Spike Recovery:	86.2	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Chloroform	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	10/30/92	MS/MSD RPD:	3.3	%
QC Extracted:	10/30/92	Average Spike Recovery:	121	%
Sample Analyzed:	10/30/92	Duplicate RPD:	----	
QC Analyzed:	10/30/92	Method Blank:	<1.0	µg/L
QC Sample Number:	D92-12241-3	Blank Spike Recovery:	126	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Bromodichloromethane	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	10/30/92	MS/MSD RPD:	9.2	%
QC Extracted:	10/30/92	Average Spike Recovery:	120	%
Sample Analyzed:	10/30/92	Duplicate RPD:	----	
QC Analyzed:	10/30/92	Method Blank:	<1.0	µg/L
QC Sample Number:	D92-12241-3	Blank Spike Recovery:	126	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Chlorobenzene	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	10/30/92	MS/MSD RPD:	4.9	%
QC Extracted:	10/30/92	Average Spike Recovery:	98.6	%
Sample Analyzed:	10/30/92	Duplicate RPD:	----	
QC Analyzed:	10/30/92	Method Blank:	<3.0	µg/L
QC Sample Number:	D92-12241-3	Blank Spike Recovery:	96.1	%
		TCLP Spike Recovery:	----	

ANALYSIS:	1,2,-Dichlorobenzene	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	10/30/92	MS/MSD RPD:	1.7	%
QC Extracted:	10/30/92	Average Spike Recovery:	116	%
Sample Analyzed:	10/30/92	Duplicate RPD:	----	
QC Analyzed:	10/30/92	Method Blank:	<2.0	µg/L
QC Sample Number:	D92-12241-3	Blank Spike Recovery:	115	%
		TCLP Spike Recovery.		

CHAIN OF CUSTODY RECORD

NDRC LABORATORIES-DALLAS, INC.

1101 Commerce Drive, Richardson, TX 75081 (214) 238-5591

QC REPORT

ORIGINAL

Submitted by	Bill to
Name: GEO-MARINE INC.	Name: ↑
Address: 550 E. 15th ST. PLANO, TX 75074	Address: SAME ↓
Contact: LYLE WINNETTE	Contact: MARY ALICE GARZA
Phone: 214-423-5480 FAX: 214-422-2736	Phone: & FAX: SAME

Proj. No.: 1161-052

Project Name: CARSWELL AFB G.W. SAMPLING

Sample Collection Date: 10-27-92

Sta. No. MATRIX	Date	Time	Comp	Grab	Station Location	No. of Containers	METHOD 8010/601 HALOGENATED VOLATILES	PHOC (TS-1,2) - DECHLOROMETHANE	GAS NARRATIVE REQUIRED										Remarks
W	10/27	0705		↓	RB-102792	2	✓												12241-1
W	"	1448		↓	CAFB 045	2	✓												2
W	"	1455		X	TB-102792	2	✓												3
					MS		✓												4
					MSD		✓												5
					METHOD BLANK		✓												6
					BLANK SPIKE		✓												7
					LIQUID														

GC

DUE 11/9/92!

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
[signature]	[signature]	10-28-92	1510
[signature]	[signature]	10-28-92	1620

Remarks

PLEASE PROVIDE STANDARD USCOE QA/QC DOCUMENTATION

67-9

NDRC LABORATORIES, INC. № 20201

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SAMPLE PRESERVATION INFORMATION SHEET

Field Sampling ☐ Incoming Samples ☐

Geo Marine Job No: 17241

ooler(s): 1 Temperature of Cooler(s): 4°C

ON INFORMATION

e	Temperature of Sample	Sample Container	Volume	Preservation used *	Initial pH	Final pH	Bottles generated	Comments

ON USED *

1 - Cool to 4° C
2 - H_2SO_4 to pH < 2
3 - HNO_3 to pH < 2
4 - HCL to pH < 2
5 - NaOH to pH > 12
6 - $Na_2S_2O_2$ 0.008%
7 - 2 mL Zinc Acetate and NaOH to pH > 12
8 - None required

eserved by

4-25-92
Date/Time

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED: 29-OCT-1992

REPORT NUMBER: D92-12296-1-10
REPORT DATE: 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
Plano, TX 75074
ATTENTION : Mr. Lyle Winnette

PROJECT : 1161-052 Carswell AFB

DATE SAMPLED : 28-OCT-1992

CASE NARRATIVE COMMENTS:

No unusual problems were encountered during the sample analysis for this project.

Please refer to the attached Case Narrative Summary for a comparison of sample identifications and analytical requests.

NDRC Laboratories, Inc. David A. Weese

David A. Weese
Project Manager

CUSTOMER : Geo-Marine, Inc.
PROJECT : 1161-052 Carswell AFB

SAMPLE ID : D92-12296-1 DATE SAMPLED : 28-OCT-1992
ID MARKS : RB-102892 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	3-NOV-1992

SAMPLE ID : D92-12296-2 DATE SAMPLED : 28-OCT-1992
ID MARKS : CAFB-050 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	4-NOV-1992

SAMPLE ID : D92-12296-3 DATE SAMPLED : 28-OCT-1992
ID MARKS : TB-102892 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	3-NOV-1992

SAMPLE ID : D92-12296-4 DATE SAMPLED : 28-OCT-1992
ID MARKS : CAFB-051 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	4-NOV-1992

SAMPLE ID : D92-12296-5 DATE SAMPLED : 28-OCT-1992
ID MARKS : CAFB-056 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	6-NOV-1992

SAMPLE ID : D92-12296-6 DATE SAMPLED : 28-OCT-1992
ID MARKS : CAFB-060 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	3-NOV-1992

CUSTOMER : Geo-Marine, Inc.
PROJECT : 1161-052 Carswell AFB

SAMPLE ID : D92-12296-7 DATE SAMPLED : 29-OCT-1992
ID MARKS : MS

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	3-NOV-1992

SAMPLE ID : D92-12296-8 DATE SAMPLED : 29-OCT-1992
ID MARKS : MSD

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	3-NOV-1992

SAMPLE ID : D92-12296-9 DATE SAMPLED : 29-OCT-1992
ID MARKS : Method Blank

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	3-NOV-1992

SAMPLE ID : D92-12296-10 DATE SAMPLED : 29-OCT-1992
ID MARKS : Blank Spike

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	3-NOV-1992

ANALYSIS ID	DESCRIPTION
8010_L	Purgeable Halocarbons, Liquid Samples

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 29-OCT-1992

REPORT NUMBER : D92-12296-1
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : RB-102892
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 28-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 3-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12296-1
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12296-1
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	112 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 29-OCT-1992

REPORT NUMBER : D92-12296-2
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-050
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 28-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 4-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12296-2
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L		250	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L		970	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L		4400	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene				1000	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12296-2
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	118 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 29-OCT-1992

REPORT NUMBER : D92-12296-3
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : TB-102892
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 28-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 3-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12296-3
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12296-3
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	110 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 29-OCT-1992

REPORT NUMBER : D92-12296-4
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-051
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 28-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 4-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12296-4
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L		72.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L		13.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L		1500	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene				440	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12296-4
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	109 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 29-OCT-1992

REPORT NUMBER : D92-12296-5
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-056
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 28-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 6-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12296-5
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L		31.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L		11.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L		110	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L		18.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene			<	25.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12296-5
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	115 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 29-OCT-1992

REPORT NUMBER : D92-12296-6
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-060
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 28-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 3-NOV-1992
DILUTION FACTOR : 100

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	500	µg/L	<	500	µg/L
Bromodichloromethane	100	µg/L	<	100	µg/L
Bromoform	200	µg/L	<	200	µg/L
Bromomethane	1200	µg/L	<	1200	µg/L
Carbon tetrachloride	200	µg/L	<	200	µg/L
Chlorobenzene	300	µg/L	<	300	µg/L
Chloroethane	600	µg/L	<	600	µg/L
2-Chloroethylvinyl ether	300	µg/L	<	300	µg/L
Chloroform	100	µg/L	<	100	µg/L
1-Chlorohexane	500	µg/L	<	500	µg/L
Chlordmethane	500	µg/L	<	500	µg/L
Chloromethy methyl ether	500	µg/L	<	500	µg/L
Chlorotoluene	500	µg/L	<	500	µg/L
Dibromochloromethane	100	µg/L	<	100	µg/L
Dibromomethane	500	µg/L	<	500	µg/L
1,2-Dichlorobenzene	200	µg/L	<	200	µg/L
1,3-Dichlorobenzene	400	µg/L	<	400	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12296-6
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	300	µg/L	<	300	µg/L
Dichlorodifluoromethane	2000	µg/L	<	2000	µg/L
1,1-Dichloroethene	200	µg/L	<	200	µg/L
1,2-Dichloroethane	300	µg/L	<	300	µg/L
1,1-Dichloroethane	100	µg/L	<	100	µg/L
trans-1,2-Dichloroethene	100	µg/L	<	100	µg/L
1,2-Dichloropropane	100	µg/L	<	100	µg/L
cis-1,3-Dichloropropene	200	µg/L	<	200	µg/L
trans-1,3-Dichloropropene	200	µg/L	<	200	µg/L
Methylene chloride	500	µg/L	<	500	µg/L
1,1,2,2-tetrachloroethane	100	µg/L	<	100	µg/L
1,1,1,2-tetrachloroethane	500	µg/L	<	500	µg/L
Tetrachloroethene	100	µg/L		1900	µg/L
1,1,1-Trichloroethane	100	µg/L	<	100	µg/L
1,1,2-Trichloroethane	100	µg/L	<	100	µg/L
Trichloroethene	100	µg/L		12000	µg/L
Trichlorofluoromethane	500	µg/L	<	500	µg/L
Trichloropropane	500	µg/L	<	500	µg/L
vinyl chloride	500	µg/L	<	500	µg/L
cis-1,2-Dichloroethene				1300	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12296-6
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	112 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 29-OCT-1992

REPORT NUMBER : D92-12296-7
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : MS
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 29-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 3-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L		12.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L		9.5	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L		12.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L		11.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12296-7
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L		9.2	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12296-7
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	105 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

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1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 29-OCT-1992

REPORT NUMBER : D92-12296-8
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : MSD
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 29-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 3-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L		13.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L		9.6	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L		13.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L		11.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12296-8
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L		9.2	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12296-8
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	104 %

NDRC Laboratories, Inc. David R. Godwin v 2

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 29-OCT-1992

REPORT NUMBER : D92-12296-9
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : Method Blank
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 29-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 3-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12296-9
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12296-9
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	118 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 29-OCT-1992

REPORT NUMBER : D92-12296-10
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : Blank Spike
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 29-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 3-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L		12.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L		9.6	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L		13.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L		11.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12296-10
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L		9.4	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12296-10
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	108 %

NDRC Laboratories, Inc. David R. Godwin v 2

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED: 29-OCT-1992

REPORT NUMBER: D92-12296
REPORT DATE: 10-NOV-1992

SUBMITTED BY: Geo-Marine, Inc.

LABORATORY ANALYSIS
QUALITY CONTROL REPORT

ANALYSIS:	Vinyl Chloride	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	11/3/92	MS/MSD RPD:	0.43	%
QC Extracted:	11/3/92	Average Spike Recovery:	92.0	%
Sample Analyzed:	11/3/92	Duplicate RPD:	----	
QC Analyzed:	11/3/92	Method Blank:	<5.0	µg/L
QC Sample Number:	D92-12296-3	Blank Spike Recovery:	94.1	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Chloroform	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	11/3/92	MS/MSD RPD:	6.4	%
QC Extracted:	11/3/92	Average Spike Recovery:	125	%
Sample Analyzed:	11/3/92	Duplicate RPD:	----	
QC Analyzed:	11/3/92	Method Blank:	<1.0	µg/L
QC Sample Number:	D92-12296-3	Blank Spike Recovery:	126	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Bromodichloromethane	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	11/3/92	MS/MSD RPD:	4.1	%
QC Extracted:	11/3/92	Average Spike Recovery:	123	%
Sample Analyzed:	11/3/92	Duplicate RPD:	----	
QC Analyzed:	11/3/92	Method Blank:	<1.0	µg/L
QC Sample Number:	D92-12296-3	Blank Spike Recovery:	121	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Chlorobenzene	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	11/3/92	MS/MSD RPD:	1.0	%
QC Extracted:	11/3/92	Average Spike Recovery:	95.5	%
Sample Analyzed:	11/3/92	Duplicate RPD:	----	
QC Analyzed:	11/3/92	Method Blank:	<3.0	µg/L
QC Sample Number:	D92-12296-3	Blank Spike Recovery:	96.1	%
		TCLP Spike Recovery:	----	

ANALYSIS:	1,2,-Dichlorobenzene	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	11/3/92	MS/MSD RPD:	0.87	%
QC Extracted:	11/3/92	Average Spike Recovery:	115	%
Sample Analyzed:	11/3/92	Duplicate RPD:	----	
QC Analyzed:	11/3/92	Method Blank:	<2.0	µg/L
QC Sample Number:	D92-12296-3	Blank Spike Recovery:	110	%
		TCLP Spike Recovery:	----	

CHAIN OF CUSTODY RECORD **NDRC LABORATORIES, INC.** 1089 East Collins Blvd., Richardson, TX 75081 (214) 238-5591

Submitted by		Bill to	
Name:	GEO-MARINE	Name:	↑
Address:	550 E. 15th St. PLANO, TX 75074	Address:	SAME ↓
Contact:	LYLE WINNETTE	Contact:	MARY ALICE GARZA
Phone:	(214) 423-5480	Phone:	SAME
Fax:	(214) 422-2736	Fax:	↓

GG

ORIGINAL QC REPORT

CASE NARRATIVE REQUIRED

Lab use only
Due Date: 11-10-92

RCRA ☐
NPDES ☐

Section / Date

Proj. No. 1161-052
Project Name: CARSWELL AFB - GROUNDWATER SAMPLING
No. of Containers

Lab. Sample ID 12296

Matrix	Date	Time	Comp	Grab	Identifying Marks	VOA	A/G 1 Lt.	250 ml	P/O	METHOD 601/8010 HALOGENATED VOLATILES	Cis-1,2-Dichloroethene	Adhoc									
W	10-28-92	7:05		X	RB-102892	2				✓											-1
W	10-28	0900		X	CAFB-~~10~~ 050	2				✓											-2
W	10-28	0925		X	TB-102892	2				✓											-3
W	10-28	0945		X	CAFB-051	2				✓											-4
W	10-28	1407		X	CAFB-056	2				✓											-5
W	10-28	1600		X	CAFB-060	2				✓											-6
					MS																-7
					MSD																-8
					METHOD BLANK																-9
					BLANK SPIKE																-10

Turn around time ☐ 100% ☐ 50% ☐ Standard Other: _____ Temperature °C: _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Jerry C. Mills	10/29/92	0812	[signature]	10-29-92	8:06
[signature]	10-29	3:40	[signature]	10-29-92	3:40

Remarks: G.C. FRIG

Matrix: W - Water S - Soil SD - Solid Liquid Air Bag C - Cylinder SL - Sludge C NDRC not accepted changes

NDRC LABORATORIES, INC. NO 20141

Dallas - 1089 East Collins Blvd. • Richardson, Texas 75081 • (214) 238-5591 • Fax (214) 238-5592

SAMPLE PRESERVATION INFORMATION SHEET

Field Sampling ☐ Incoming Samples ☐

GENERAL

Company: Geo Marine Job No: 12256

No. of Cooler(s): 1 Temperature of Cooler(s): 4°C

PRESERVATION INFORMATION

Sample No.	Temperature of Sample	Sample Container	Volume	Preservation used *	Initial pH	Final pH	Bottles generated	Comments

PRESERVATION USED *

1 - Cool to 4° C
2 - H_2SO_4 to pH < 2
3 - HNO_3 to pH < 2
4 - HCL to pH < 2
5 - NaOH to pH > 12
6 - $Na_2S_2O_2$ 0.008%
7 - 2 mL Zinc Acetate and NaOH to pH > 12
8 - None required

LRN
Preserved by

10-29-97
Date/Time

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED: 30-OCT-1992

REPORT NUMBER: D92-12308-1-11
REPORT DATE: 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
Plano, TX 75074
ATTENTION : Mr. Lyle Winnette

PROJECT : 1161-052 Carswell AFB

DATE SAMPLED : 29,30-OCT-1992

CASE NARRATIVE COMMENTS:

No unusual problems were encountered during the sample analysis for this project.

ease refer to the attached Case Narrative Summary for a comparison of mple identifications and analytical requests.

NDRC Laboratories, Inc. David A. Weese

David A. Weese
Project Manager

CUSTOMER : Geo-Marine, Inc.
PROJECT : 1161-052 Carswell AFB

SAMPLE ID : D92-12308-1 DATE SAMPLED : 29-OCT-1992
ID MARKS : RB-102992 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	3-NOV-1992

SAMPLE ID : D92-12308-2 DATE SAMPLED : 29-OCT-1992
ID MARKS : CAFB-063 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	4-NOV-1992

SAMPLE ID : D92-12308-3 DATE SAMPLED : 29-OCT-1992
ID MARKS : CAFB-063A GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	4-NOV-1992

SAMPLE ID : D92-12308-4 DATE SAMPLED : 29-OCT-1992
ID MARKS : CAFB-064 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	4-NOV-1992

SAMPLE ID : D92-12308-5 DATE SAMPLED : 29-OCT-1992
ID MARKS : CAFB-067 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	3-NOV-1992

SAMPLE ID : D92-12308-6 DATE SAMPLED : 29-OCT-1992
ID MARKS : TB-102992 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	4-NOV-1992

CUSTOMER : Geo-Marine, Inc.
PROJECT : 1161-052 Carswell AFB

SAMPLE ID : D92-12308-7 DATE SAMPLED : 29-OCT-1992
ID MARKS : CAFB-069 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	3-NOV-1992

SAMPLE ID : D92-12308-8 DATE SAMPLED : 30-OCT-1992
ID MARKS : MS

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	4-NOV-1992

SAMPLE ID : D92-12308-9 DATE SAMPLED : 30-OCT-1992
ID MARKS : MSD

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	4-NOV-1992

SAMPLE ID : D92-12308-10 DATE SAMPLED : 30-OCT-1992
ID MARKS : Method Blank

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	4-NOV-1992

SAMPLE ID : D92-12308-11 DATE SAMPLED : 30-OCT-1992
ID MARKS : Blank Spike

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	4-NOV-1992

ANALYSIS ID	DESCRIPTION
8010_L	Purgeable Halocarbons, Liquid Samples

NDRC LABORATORIES, INC.

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1089 East Collins Blvd., Richardson, Texas 75081 • (214) 238-5591 • FAX (214) 238-5592

BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 30-OCT-1992

REPORT NUMBER : D92-12308-1
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : RB-102992
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 29-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 3-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12308-1
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12308-1
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	114 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 30-OCT-1992

REPORT NUMBER : D92-12308-2
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-063
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 29-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 4-NOV-1992
DILUTION FACTOR : 10

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	50	µg/L	<	50	µg/L
Bromodichloromethane	10	µg/L	<	10	µg/L
Bromoform	20	µg/L	<	20	µg/L
Bromomethane	120	µg/L	<	120	µg/L
Carbon tetrachloride	20	µg/L	<	20	µg/L
Chlorobenzene	30	µg/L	<	30	µg/L
Chloroethane	60	µg/L	<	60	µg/L
2-Chloroethylvinyl ether	30	µg/L	<	30	µg/L
Chloroform	10	µg/L	<	10	µg/L
1-Chlorohexane	50	µg/L	<	50	µg/L
Chloromethane	50	µg/L	<	50	µg/L
Chloromethy methyl ether	50	µg/L	<	50	µg/L
Chlorotoluene	50	µg/L	<	50	µg/L
Dibromochloromethane	10	µg/L	<	10	µg/L
Dibromomethane	50	µg/L	<	50	µg/L
1,2-Dichlorobenzene	20	µg/L	<	20	µg/L
1,3-Dichlorobenzene	40	µg/L	<	40	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12308-2
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	30	µg/L	<	30	µg/L
Dichlorodifluoromethane	200	µg/L	<	200	µg/L
1,1-Dichloroethene	20	µg/L	<	20	µg/L
1,2-Dichloroethane	30	µg/L	<	30	µg/L
1,1-Dichloroethane	10	µg/L	<	10	µg/L
trans-1,2-Dichloroethene	10	µg/L	<	10	µg/L
1,2-Dichloropropane	10	µg/L	<	10	µg/L
cis-1,3-Dichloropropene	20	µg/L	<	20	µg/L
trans-1,3-Dichloropropene	20	µg/L	<	20	µg/L
Methylene chloride	50	µg/L	<	50	µg/L
1,1,2,2-tetrachloroethane	10	µg/L	<	10	µg/L
1,1,1,2-tetrachloroethane	50	µg/L	<	50	µg/L
Tetrachloroethene	10	µg/L		18	µg/L
1,1,1-Trichloroethane	10	µg/L	<	10	µg/L
1,1,2-Trichloroethane	10	µg/L	<	10	µg/L
Trichloroethene	10	µg/L		780	µg/L
Trichlorofluoromethane	50	µg/L	<	50	µg/L
Trichloropropane	50	µg/L	<	50	µg/L
vinyl chloride	50	µg/L	<	50	µg/L
cis-1,2-Dichloroethene				71	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12308-2
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	113 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 30-OCT-1992

REPORT NUMBER : D92-12308-3
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-063A
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 29-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 4-NOV-1992
DILUTION FACTOR : 10

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	50	µg/L	<	50	µg/L
Bromodichloromethane	10	µg/L	<	10	µg/L
Bromoform	20	µg/L	<	20	µg/L
Bromomethane	120	µg/L	<	120	µg/L
Carbon tetrachloride	20	µg/L	<	20	µg/L
Chlorobenzene	30	µg/L	<	30	µg/L
Chloroethane	60	µg/L	<	60	µg/L
2-Chloroethylvinyl ether	30	µg/L	<	30	µg/L
Chloroform	10	µg/L	<	10	µg/L
1-Chlorohexane	50	µg/L	<	50	µg/L
Chloromethane	50	µg/L	<	50	µg/L
Chloromethy methyl ether	50	µg/L	<	50	µg/L
Chlorotoluene	50	µg/L	<	50	µg/L
Dibromochloromethane	10	µg/L	<	10	µg/L
Dibromomethane	50	µg/L	<	50	µg/L
1,2-Dichlorobenzene	20	µg/L	<	20	µg/L
1,3-Dichlorobenzene	40	µg/L	<	40	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12308-3
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	30	µg/L	<	30	µg/L
Dichlorodifluoromethane	200	µg/L	<	200	µg/L
1,1-Dichloroethene	20	µg/L	<	20	µg/L
1,2-Dichloroethane	30	µg/L	<	30	µg/L
1,1-Dichloroethane	10	µg/L	<	10	µg/L
trans-1,2-Dichloroethene	10	µg/L	<	10	µg/L
1,2-Dichloropropane	10	µg/L	<	10	µg/L
cis-1,3-Dichloropropene	20	µg/L	<	20	µg/L
trans-1,3-Dichloropropene	20	µg/L	<	20	µg/L
Methylene chloride	50	µg/L	<	50	µg/L
1,1,2,2-tetrachloroethane	10	µg/L	<	10	µg/L
1,1,1,2-tetrachloroethane	50	µg/L	<	50	µg/L
Tetrachloroethene	10	µg/L		21	µg/L
1,1,1-Trichloroethane	10	µg/L	<	10	µg/L
1,1,2-Trichloroethane	10	µg/L	<	10	µg/L
Trichloroethene	10	µg/L		870	µg/L
Trichlorofluoromethane	50	µg/L	<	50	µg/L
Trichloropropane	50	µg/L	<	50	µg/L
vinyl chloride	50	µg/L	<	50	µg/L
cis-1,2-dichloroethene				74	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12308-3
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	109 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 30-OCT-1992

REPORT NUMBER : D92-12308-4
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-064
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 29-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 4-NOV-1992
DILUTION FACTOR : 10

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	50	µg/L	<	50	µg/L
Bromodichloromethane	10	µg/L	<	10	µg/L
Bromoform	20	µg/L	<	20	µg/L
Bromomethane	120	µg/L	<	120	µg/L
Carbon tetrachloride	20	µg/L	<	20	µg/L
Chlorobenzene	30	µg/L	<	30	µg/L
Chloroethane	60	µg/L	<	60	µg/L
2-Chloroethylvinyl ether	30	µg/L	<	30	µg/L
Chloroform	10	µg/L	<	10	µg/L
1-Chlorohexane	50	µg/L	<	50	µg/L
Chloromethane	50	µg/L	<	50	µg/L
Chloromethy methyl ether	50	µg/L	<	50	µg/L
Chlorotoluene	50	µg/L	<	50	µg/L
Dibromochloromethane	10	µg/L	<	10	µg/L
Dibromomethane	50	µg/L	<	50	µg/L
1,2-Dichlorobenzene	20	µg/L	<	20	µg/L
1,3-Dichlorobenzene	40	µg/L	<	40	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12308-4
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	30	µg/L	<	30	µg/L
Dichlorodifluoromethane	200	µg/L	<	200	µg/L
1,1-Dichloroethene	20	µg/L	<	20	µg/L
1,2-Dichloroethane	30	µg/L	<	30	µg/L
1,1-Dichloroethane	10	µg/L	<	10	µg/L
trans-1,2-Dichloroethene	10	µg/L	<	10	µg/L
1,2-Dichloropropane	10	µg/L	<	10	µg/L
cis-1,3-Dichloropropene	20	µg/L	<	20	µg/L
trans-1,3-Dichloropropene	20	µg/L	<	20	µg/L
Methylene chloride	50	µg/L	<	50	µg/L
1,1,2,2-tetrachloroethane	10	µg/L	<	10	µg/L
1,1,1,2-tetrachloroethane	50	µg/L	<	50	µg/L
Tetrachloroethene	10	µg/L		23	µg/L
1,1,1-Trichloroethane	10	µg/L	<	10	µg/L
1,1,2-Trichloroethane	10	µg/L	<	10	µg/L
Trichloroethene	10	µg/L		1300	µg/L
Trichlorofluoromethane	50	µg/L	<	50	µg/L
Trichloropropane	50	µg/L	<	50	µg/L
vinyl chloride	50	µg/L	<	50	µg/L
cis-1,2-Dichloroethene				140	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12308-4
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	106 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 30-OCT-1992

REPORT NUMBER : D92-12308-5
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-067
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 29-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 3-NOV-1992
DILUTION FACTOR : 10

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	50	µg/L	<	50	µg/L
Bromodichloromethane	10	µg/L	<	10	µg/L
Bromoform	20	µg/L	<	20	µg/L
Bromomethane	120	µg/L	<	120	µg/L
Carbon tetrachloride	20	µg/L	<	20	µg/L
Chlorobenzene	30	µg/L	<	30	µg/L
Chloroethane	60	µg/L	<	60	µg/L
2-Chloroethylvinyl ether	30	µg/L	<	30	µg/L
Chloroform	10	µg/L	<	10	µg/L
1-Chlorohexane	50	µg/L	<	50	µg/L
Chloromethane	50	µg/L	<	50	µg/L
Chloromethy methyl ether	50	µg/L	<	50	µg/L
Chlorotoluene	50	µg/L	<	50	µg/L
Dibromochloromethane	10	µg/L	<	10	µg/L
Dibromomethane	50	µg/L	<	50	µg/L
1,2-Dichlorobenzene	20	µg/L	<	20	µg/L
1,3-Dichlorobenzene	40	µg/L	<	40	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12308-5
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	30	µg/L	<	30	µg/L
Dichlorodifluoromethane	200	µg/L	<	200	µg/L
1,1-Dichloroethene	20	µg/L	<	20	µg/L
1,2-Dichloroethane	30	µg/L	<	30	µg/L
1,1-Dichloroethane	10	µg/L	<	10	µg/L
trans-1,2-Dichloroethene	10	µg/L	<	10	µg/L
1,2-Dichloropropane	10	µg/L	<	10	µg/L
cis-1,3-Dichloropropene	20	µg/L	<	20	µg/L
trans-1,3-Dichloropropene	20	µg/L	<	20	µg/L
Methylene chloride	50	µg/L	<	50	µg/L
1,1,2,2-tetrachloroethane	10	µg/L	<	10	µg/L
1,1,1,2-tetrachloroethane	50	µg/L	<	50	µg/L
Tetrachloroethene	10	µg/L		16	µg/L
1,1,1-Trichloroethane	10	µg/L	<	10	µg/L
1,1,2-Trichloroethane	10	µg/L	<	10	µg/L
Trichloroethene	10	µg/L		230	µg/L
Trichlorofluoromethane	50	µg/L	<	50	µg/L
Trichloropropane	50	µg/L	<	50	µg/L
vinyl chloride	50	µg/L	<	50	µg/L
cis-1,2-Dichlorothene				33	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12308-5
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	104 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 30-OCT-1992

REPORT NUMBER : D92-12308-6
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : TB-102992
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 29-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 4-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12308-6
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12308-6
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	115 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 30-OCT-1992

REPORT NUMBER : D92-12308-7
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-069
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 29-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 3-NOV-1992
DILUTION FACTOR : 10

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	50	µg/L	<	50	µg/L
Bromodichloromethane	10	µg/L	<	10	µg/L
Bromoform	20	µg/L	<	20	µg/L
Bromomethane	120	µg/L	<	120	µg/L
Carbon tetrachloride	20	µg/L	<	20	µg/L
Chlorobenzene	30	µg/L	<	30	µg/L
Chloroethane	60	µg/L	<	60	µg/L
2-Chloroethylvinyl ether	30	µg/L	<	30	µg/L
Chloroform	10	µg/L		11	µg/L
1-Chlorohexane	50	µg/L	<	50	µg/L
Chloromethane	50	µg/L	<	50	µg/L
Chloromethy methyl ether	50	µg/L	<	50	µg/L
Chlorotoluene	50	µg/L	<	50	µg/L
Dibromochloromethane	10	µg/L	<	10	µg/L
Dibromomethane	50	µg/L	<	50	µg/L
1,2-Dichlorobenzene	20	µg/L	<	20	µg/L
1,3-Dichlorobenzene	40	µg/L	<	40	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12308-7
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	30	µg/L	<	30	µg/L
Dichlorodifluoromethane	200	µg/L	<	200	µg/L
1,1-Dichloroethene	20	µg/L	<	20	µg/L
1,2-Dichloroethane	30	µg/L	<	30	µg/L
1,1-Dichloroethane	10	µg/L	<	10	µg/L
trans-1,2-Dichloroethene	10	µg/L	<	10	µg/L
1,2-Dichloropropane	10	µg/L	<	10	µg/L
cis-1,3-Dichloropropene	20	µg/L	<	20	µg/L
trans-1,3-Dichloropropene	20	µg/L	<	20	µg/L
Methylene chloride	50	µg/L	<	50	µg/L
1,1,2,2-tetrachloroethane	10	µg/L	<	10	µg/L
1,1,1,2-tetrachloroethane	50	µg/L	<	50	µg/L
Tetrachloroethene	10	µg/L	<	10	µg/L
1,1,1-Trichloroethane	10	µg/L	<	10	µg/L
1,1,2-Trichloroethane	10	µg/L	<	10	µg/L
Trichloroethene	10	µg/L		31	µg/L
Trichlorofluoromethane	50	µg/L	<	50	µg/L
Trichloropropane	50	µg/L	<	50	µg/L
vinyl chloride	50	µg/L	<	50	µg/L
cis-1,2-Dichloroethene				88	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12308-7
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	116 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 30-OCT-1992

REPORT NUMBER : D92-12308-8
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : MS
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 30-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 4-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L		13.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L		9.5	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L		13.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L		10.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12308-8
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L		10.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12308-8
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	104 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 30-OCT-1992

REPORT NUMBER : D92-12308-9
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : MSD
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 30-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 4-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L		12.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L		8.7	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L		13.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L		9.4	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12308-9
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L		8.8	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12308-9

ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	97.0 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 30-OCT-1992

REPORT NUMBER : D92-12308-10
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : Method Blank
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 30-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 4-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12308-10
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12308-10
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	120 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 30-OCT-1992

REPORT NUMBER : D92-12308-11
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : Blank Spike
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 30-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 4-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L		12.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L		8.8	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L		12.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L		11.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12308-11
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L		8.2	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12308-11
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	96.0 %

NDRC Laboratories, Inc. David R. Godwin v 2

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED: 30-OCT-1992

REPORT NUMBER: D92-12308
REPORT DATE: 10-NOV-1992

SUBMITTED BY: Geo-Marine, Inc.

LABORATORY ANALYSIS
QUALITY CONTROL REPORT

ANALYSIS:	Vinyl Chloride	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	11/4/92	MS/MSD RPD:	12	%
QC Extracted:	11/4/92	Average Spike Recovery:	94.1	%
Sample Analyzed:	11/4/92	Duplicate RPD:	----	
QC Analyzed:	11/4/92	Method Blank:	<5.0	µg/L
QC Sample Number:	D92-12308-6	Blank Spike Recovery:	81.7	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Chloroform	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	11/4/92	MS/MSD RPD:	3.1	%
QC Extracted:	11/4/92	Average Spike Recovery:	129	%
Sample Analyzed:	11/4/92	Duplicate RPD:	----	
QC Analyzed:	11/4/92	Method Blank:	<1.0	µg/L
QC Sample Number:	D92-12308-6	Blank Spike Recovery:	121	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Bromodichloromethane	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	11/4/92	MS/MSD RPD:	5.4	%
QC Extracted:	11/4/92	Average Spike Recovery:	129	%
Sample Analyzed:	11/4/92	Duplicate RPD:	----	
QC Analyzed:	11/4/92	Method Blank:	<1.0	µg/L
QC Sample Number:	D92-12308-6	Blank Spike Recovery:	119	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Chlorobenzene	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	11/4/92	MS/MSD RPD:	8.1	%
QC Extracted:	11/4/92	Average Spike Recovery:	90.9	%
Sample Analyzed:	11/4/92	Duplicate RPD:	----	
QC Analyzed:	11/4/92	Method Blank:	<3.0	µg/L
QC Sample Number:	D92-12308-6	Blank Spike Recovery:	87.7	%
		TCLP Spike Recovery:	----	

ANALYSIS:	1,2,-Dichlorobenzene	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	11/4/92	MS/MSD RPD:	7.1	%
QC Extracted:	11/4/92	Average Spike Recovery:	97.6	%
Sample Analyzed:	11/4/92	Duplicate RPD:	----	
QC Analyzed:	11/4/92	Method Blank:	<2.0	µg/L
QC Sample Number:	D92-12308-6	Blank Spike Recovery:	106	%
		TCLP Spike Recovery:	----	

CHAIN OF CUSTODY RECORD **NDRC LABORATORIES, INC.** 1089 East Collins Blvd., Richardson, TX 75081 (214) 238-5591

Submitted by		Bill to	
Name:	GEO-MARINE	Name:	GC
Address:	550 E. 15th St.	Address:	
	PLANO, TX 75074		
Contact:	LYLE WINNETTE	Contact:	MARY ALICE GARZA
Phone:	(214) 423-5480	Phone:	SAME
Fax:	(214) 422-2736	Fax:	

QC REPORT ORIGINAL

Lab use only
Due Date: 11/11/92

RCRA ☐
NPDES ☐

Section / Date

Proj. No. 1161-052 Project Name CARSWELL AFB - GROUNDWATER SAMPLING

No. of Containers[2]

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks	VOA	A/G 1 Lt.	250 ml	P/O	METHOD 601 / 8010 HALOGENATED VOLATILES	Adhoc - Cis-1,2-Dichloroethene	CASE NARRATIVE REQUIRED	Lab. Sample ID
W	10-29	7:05		X	RB-102992	2				✓			12308-1
W	10-29	0945		X	CAFB-063	2				✓			2
W	10-29	0945		X	CAFB-063A	2				✓			3
W	10-29	0955		X	CAFB-064	2				✓			4
W	10-29	1620		X	CAFB-067	2				✓			5
W	10-29	1040		X	TB-102992	2				✓			6
W	10-30	0750		X	CAFB-069	2				✓			7
					MS								8
					MSD								9
					METHOD BLANK								10
					BLANK SPIKE								11

Turn around time ☐ 100% ☐ 50% ☐ Standard Other: _____ Temperature °C: _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Tony C. Mills	10-30-92	0806	Paul Costlow	10/30/92	08:06
Paul Costlow			Chris Costlow	10/30	9:00

Remarks
PREASE PROVIDE STANDARD USCOE QA/QC DOCUMENTATION.

[1] Matrix: Water S - Soil SL - Solid L - Liquid A - Air Bag C - Charcoal tub. SL - Sludge C

NDRC not a ... nges

NDRC LABORATORIES, INC. № 20151

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SAMPLE PRESERVATION INFORMATION SHEET

Field Sampling ☐ Incoming Samples ☐

GENERAL

Company: Geo-Mariana Job No: 12508

No. of Cooler(s): 1 Temperature of Cooler(s): 4°C

PRESERVATION INFORMATION

Sample No.	Temperature of Sample	Sample Container	Volume	Preservation used *	Initial pH	Final pH	Bottles generated	Comments

PRESERVATION USED *

1 - Cool to 4° C
2 - H_2SO_4 to pH < 2
3 - HNO_3 to pH < 2
4 - HCL to pH < 2
5 - NaOH to pH > 12
6 - $Na_2S_2O_2$ 0.008%
7 - 2 mL Zinc Acetate and NaOH to pH > 12
8 - None required

Preserved by

[illegible]/92
Date/Time

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED: 30-OCT-1992

REPORT NUMBER: D92-12341-1-11
REPORT DATE: 10-NOV-1992

AMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
Plano, TX 75074
ATTENTION : Mr. Lyle Winnette

PROJECT : 1161-052 Carswell AFB

DATE SAMPLED : 30-OCT-1992

ASE NARRATIVE COMMENTS:

"o unusual problems were encountered during the sample analysis for this roject.

`ease refer to the attached Case Narrative Summary for a comparison of mple identifications and analytical requests.

NDRC Laboratories, Inc. David A. Weese

David A. Weese
Project Manager

CUSTOMER : Geo-Marine, Inc.
PROJECT : 1161-052 Carswell AFB

SAMPLE ID : D92-12341-1 DATE SAMPLED : 30-OCT-1992
ID MARKS : CAFB-070 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	5-NOV-1992

SAMPLE ID : D92-12341-2 DATE SAMPLED : 30-OCT-1992
ID MARKS : TB-103092 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	6-NOV-1992

SAMPLE ID : D92-12341-3 DATE SAMPLED : 30-OCT-1992
ID MARKS : RB-103092 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	5-NOV-1992

SAMPLE ID : D92-12341-4 DATE SAMPLED : 30-OCT-1992
ID MARKS : CAFB-071 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	6-NOV-1992

SAMPLE ID : D92-12341-5 DATE SAMPLED : 30-OCT-1992
ID MARKS : CAFB-074 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	6-NOV-1992

SAMPLE ID : D92-12341-6 DATE SAMPLED : 30-OCT-1992
ID MARKS : CAFB-075 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	5-NOV-1992

CUSTOMER : Geo-Marine, Inc.
PROJECT : 1161-052 Carswell AFB

SAMPLE ID : D92-12341-7 DATE SAMPLED : 30-OCT-1992
ID MARKS : CAFB-077 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	10-NOV-1992

SAMPLE ID : D92-12341-8 DATE SAMPLED : 30-OCT-1992
ID MARKS : MS

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	6-NOV-1992

SAMPLE ID : D92-12341-9 DATE SAMPLED : 30-OCT-1992
ID MARKS : MSD

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	6-NOV-1992

SAMPLE ID : D92-12341-10 DATE SAMPLED : 30-OCT-1992
ID MARKS : Method Blank

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	6-NOV-1992

SAMPLE ID : D92-12341-11 DATE SAMPLED : 30-OCT-1992
ID MARKS : Blank Spike

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	6-NOV-1992

ANALYSIS ID	DESCRIPTION
8010_L	Purgeable Halocarbons, Liquid Samples

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 30-OCT-1992

REPORT NUMBER : D92-12341-1
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-070
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 30-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 5-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12341-1
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L		12.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene				5.3	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12341-1
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	118 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 30-OCT-1992

REPORT NUMBER : D92-12341-2
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : TB-103092
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 30-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 6-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12341-2
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12341-2
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	117 %

NDRC Laboratories, Inc. David R. Godwin v 2

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 30-OCT-1992

REPORT NUMBER : D92-12341-3
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : RB-103092
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 30-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 5-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	[illegible]	[illegible]
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12341-3
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L		10.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene				2.3	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12341-3
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	117 %

NDRC Laboratories, Inc. David R. Godwin v 2

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 30-OCT-1992

REPORT NUMBER : D92-12341-4
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-071
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 30-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 6-NOV-1992
DILUTION FACTOR : 10

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	50	µg/L	<	50	µg/L
Bromodichloromethane	10	µg/L	<	10	µg/L
Bromoform	20	µg/L	<	20	µg/L
Bromomethane	120	µg/L	<	120	µg/L
Carbon tetrachloride	20	µg/L	<	20	µg/L
Chlorobenzene	30	µg/L	<	30	µg/L
Chloroethane	60	µg/L	<	60	µg/L
2-Chloroethylvinyl ether	30	µg/L	<	30	µg/L
Chloroform	10	µg/L	<	10	µg/L
1-Chlorohexane	50	µg/L	<	50	µg/L
Chloromethane	50	µg/L	<	50	µg/L
Chloromethy methyl ether	50	µg/L	<	50	µg/L
Chlorotoluene	50	µg/L	<	50	µg/L
Dibromochloromethane	10	µg/L	<	10	µg/L
Dibromomethane	50	µg/L	<	50	µg/L
1,2-Dichlorobenzene	20	µg/L	<	20	µg/L
1,3-Dichlorobenzene	40	µg/L	<	40	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12341-4
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	30	µg/L	<	30	µg/L
Dichlorodifluoromethane	200	µg/L	<	200	µg/L
1,1-Dichloroethene	20	µg/L	<	20	µg/L
1,2-Dichloroethane	30	µg/L	<	30	µg/L
1,1-Dichloroethane	10	µg/L	<	10	µg/L
trans-1,2-Dichloroethene	10	µg/L	<	10	µg/L
1,2-Dichloropropane	10	µg/L	<	10	µg/L
cis-1,3-Dichloropropene	20	µg/L	<	20	µg/L
trans-1,3-Dichloropropene	20	µg/L		170	µg/L
Methylene chloride	50	µg/L	<	50	µg/L
1,1,2,2-tetrachloroethane	10	µg/L	<	10	µg/L
1,1,1,2-tetrachloroethane	50	µg/L	<	50	µg/L
Tetrachloroethene	10	µg/L		17	µg/L
1,1,1-Trichloroethane	10	µg/L	<	10	µg/L
1,1,2-Trichloroethane	10	µg/L	<	10	µg/L
Trichloroethene	10	µg/L		66	µg/L
Trichlorofluoromethane	50	µg/L	<	50	µg/L
Trichloropropane	50	µg/L	<	50	µg/L
vinyl chloride	50	µg/L	<	50	µg/L
cis-1,2-Dichloroethene			<	10.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12341-4
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	90.0 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 30-OCT-1992

REPORT NUMBER : D92-12341-5
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-074
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 30-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 6-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12341-5
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L		28.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L		5.4	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L		1.9	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L		270	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene				41.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12341-5
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	118 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT **DALLAS** **HOUSTON**

DATE RECEIVED : 30-OCT-1992

REPORT NUMBER : D92-12341-6
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-075
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 30-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 5-NOV-1992
DILUTION FACTOR : 10

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	50	µg/L	<	50	µg/L
Bromodichloromethane	10	µg/L	<	10	µg/L
Bromoform	20	µg/L	<	20	µg/L
Bromomethane	120	µg/L	<	120	µg/L
Carbon tetrachloride	20	µg/L	<	20	µg/L
Chlorobenzene	30	µg/L	<	30	µg/L
Chloroethane	60	µg/L	<	60	µg/L
2-Chloroethylvinyl ether	30	µg/L	<	30	µg/L
Chloroform	10	µg/L	<	10	µg/L
1-Chlorohexane	50	µg/L	<	50	µg/L
Chloromethane	50	µg/L	<	50	µg/L
Chloromethy methyl ether	50	µg/L	<	50	µg/L
Chlorotoluene	50	µg/L	<	50	µg/L
Dibromochloromethane	10	µg/L	<	10	µg/L
Dibromomethane	50	µg/L	<	50	µg/L
1,2-Dichlorobenzene	20	µg/L	<	20	µg/L
1,3-Dichlorobenzene	40	µg/L	<	40	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12341-6
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	30	µg/L	<	30	µg/L
Dichlorodifluoromethane	200	µg/L	<	200	µg/L
1,1-Dichloroethene	20	µg/L	<	20	µg/L
1,2-Dichloroethane	30	µg/L	<	30	µg/L
1,1-Dichloroethane	10	µg/L	<	10	µg/L
trans-1,2-Dichloroethene	10	µg/L		65	µg/L
1,2-Dichloropropane	10	µg/L	<	10	µg/L
cis-1,3-Dichloropropene	20	µg/L	<	20	µg/L
trans-1,3-Dichloropropene	20	µg/L	<	20	µg/L
Methylene chloride	50	µg/L	<	50	µg/L
1,1,2,2-tetrachloroethane	10	µg/L	<	10	µg/L
1,1,1,2-tetrachloroethane	50	µg/L	<	50	µg/L
Tetrachloroethene	10	µg/L	<	10	µg/L
1,1,1-Trichloroethane	10	µg/L	<	10	µg/L
1,1,2-Trichloroethane	10	µg/L	<	10	µg/L
Trichloroethene	10	µg/L		84	µg/L
Trichlorofluoromethane	50	µg/L	<	50	µg/L
Trichloropropane	50	µg/L	<	50	µg/L
vinyl chloride	50	µg/L	<	50	µg/L
cis-1,2-Dichloroethene				70.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12341-6
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	116 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 30-OCT-1992

REPORT NUMBER : D92-12341-7
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-077
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 30-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 10-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L		1.2	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12341-7
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12341-7
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	113 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT **DALLAS** **HOUSTON**

DATE RECEIVED : 30-OCT-1992

REPORT NUMBER : D92-12341-8
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : MS
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 30-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 6-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L		12.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L		9.5	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L		12.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L		11.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12341-8
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L		9.3	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12341-8
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	105 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 30-OCT-1992

REPORT NUMBER : D92-12341-9
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : MSD
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 30-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 6-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L		11.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L		9.3	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L		12.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L		11.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12341-9
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L		8.9	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12341-9
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	103 %

NDRC Laboratories, Inc. David R. Godwin v 2

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 30-OCT-1992

REPORT NUMBER : D92-12341-10
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : Method Blank
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 30-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 6-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12341-10
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12341-10
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	118 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 30-OCT-1992

REPORT NUMBER : D92-12341-11
REPORT DATE : 10-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : Blank Spike
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 30-OCT-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 6-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L		12.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L		9.1	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L		12.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L		11.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12341-11
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L		8.4	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12341-11
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	99.0 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED: 30-OCT-1992

REPORT NUMBER: D92-12341
REPORT DATE: 10-NOV-1992

SUBMITTED BY: Geo-Marine, Inc.

LABORATORY ANALYSIS
QUALITY CONTROL REPORT

ANALYSIS:	Vinyl Chloride	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	11/6/92	MS/MSD RPD:	4.0	%
QC Extracted:	11/6/92	Average Spike Recovery:	90.9	%
Sample Analyzed:	11/6/92	Duplicate RPD:	----	
QC Analyzed:	11/6/92	Method Blank:	<5.0	µg/L
QC Sample Number:	D92-12466-3	Blank Spike Recovery:	84.3	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Chloroform	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	11/6/92	MS/MSD RPD:	5.9	%
QC Extracted:	11/6/92	Average Spike Recovery:	119	%
Sample Analyzed:	11/6/92	Duplicate RPD:	----	
QC Analyzed:	11/6/92	Method Blank:	<1.0	µg/L
QC Sample Number:	D92-12466-3	Blank Spike Recovery:	120	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Bromodichloromethane	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	11/6/92	MS/MSD RPD:	6.8	%
QC Extracted:	11/6/92	Average Spike Recovery:	118	%
Sample Analyzed:	11/6/92	Duplicate RPD:	----	
QC Analyzed:	11/6/92	Method Blank:	<1.0	µg/L
QC Sample Number:	D92-12466-3	Blank Spike Recovery:	123	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Chlorobenzene	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	11/6/92	MS/MSD RPD:	2.7	%
QC Extracted:	11/6/92	Average Spike Recovery:	93.8	%
Sample Analyzed:	11/6/92	Duplicate RPD:	----	
QC Analyzed:	11/6/92	Method Blank:	<3.0	µg/L
QC Sample Number:	D92-12466-3	Blank Spike Recovery:	91.1	%
		TCLP Spike Recovery:	----	

ANALYSIS:	1,2,-Dichlorobenzene	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	11/6/92	MS/MSD RPD:	1.8	%
QC Extracted:	11/6/92	Average Spike Recovery:	110	%
Sample Analyzed:	11/6/92	Duplicate RPD:	----	
QC Analyzed:	11/6/92	Method Blank:	<2.0	µg/L
QC Sample Number:	D92-12466-3	Blank Spike Recovery:	109	%
		TCLP Spike Recovery:	----	

CHAIN OF CUSTODY RECORD **NDRC LABORATORIES, INC.** 1089 East Collins Blvd., Richardson, TX 75081 (214) 238-5591

QC REPORT

CASE NARRATIVE REQUIRED

GC ORIGINAL

Submitted by		Bill to	
Name:	GEO-MARINE, INC.	Name:	↑
Address:	550 E. 15th ST PLANO, TX 75074	Address:	SAME ↓
Contact:	LYLE WINNETTE	Contact:	MARY ALICE GARZA
Phone:	(214) 423-5480	Phone:	SAME
Fax:	(214) 422-2736	Fax:	↓

Lab use only
Due Date: 11/11/92 liquid
RCRA ☐
NPDES ☐
Section / Date

Proj. No.: 1161-052
Project Name: CARSWELL AFB - GROUNDWATER SAMPLING
No. of Containers[2]

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks	VOA	A/G 1 Lt.	250 ml	P/O	METHOD 601/8010 HALOGENATED VOLATILES Adhoc - Cis-1,2-Dichloroethene	Lab. Sample ID
W	10-30-92	0845		X	CAFB-070	2				✓	12341 -1
W	10-30	0855		X	TB-103092	2				✓	2
W	10-30	0905		X	RB-103092	2				✓	3
W	10-30	0935		X	CAFB-071	2				✓	4
W	10-30	1150		X	CAFB-074	2				✓	5
W	10-30	1215		X	CAFB-075	2				✓	6
W	10-30	1355		X	CAFB-077	2				✓	7
					MS						8
					MSD						9
					METHOD BLANK						10
					BLANK SPIKE						11

Turn around time ☐ 100% ☐ 50% ☒ Standard Other: _____ Temperature °C: <4°C

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Tony C. Mills	10-30-92	16:11	[signature]	10/30/92	1611
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Remarks: PLEASE PROVIDE STANDARD USCOE QA/QC DOCUMENTATION

Matrix Wa... S - S... SD I... id ir Bag C - Ch... ub. SL - S O DRC ...t ac... ...ges.

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SAMPLE PRESERVATION INFORMATION SHEET

Field Sampling ☐ Incoming Samples ☐

ERAL

Company: [illegible] MARINE Job No: 12341

lo. of Cooler(s): 1 Temperature of Cooler(s): 4

ERVATION INFORMATION

Sample No.	Temperature of Sample	Sample Container	Volume	Preservation used *	Initial pH	Final pH	Bottles generated	Comments

No Preservation

SERVATION USED *

1 - Cool to 4° C
2 - H_2SO_4 to pH < 2
3 - HNO_3 to pH < 2
4 - HCL to pH < 2
5 - NaOH to pH > 12
6 - $Na_2S_2O_2$ 0.008%
7 - 2 mL Zinc Acetate and NaOH to pH > 12
8 - None required

[illegible] Preserved by

10/30/92 Date/Time

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED: 03-NOV-1992

REPORT NUMBER: D92-12466-1-11
REPORT DATE: 11-NOV-1992

:AMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
Plano, TX 75074
ATTENTION : Mr. Lyle Winnette

PROJECT : 1161-052 Carswell AFB

DATE SAMPLED : 02-NOV-1992

:ASE NARRATIVE COMMENTS:

'No unusual problems were encountered during the sample analysis for this ›roject.

ease refer to the attached Case Narrative Summary for a comparison of ımple identifications and analytical requests.

NDRC Laboratories, Inc. David A. Weese

David A. Weese
Project Manager

CUSTOMER : Geo-Marine, Inc.
PROJECT : 1161-052 Carswell AFB

SAMPLE ID : D92-12466-1 DATE SAMPLED : 2-NOV-1992
ID MARKS : RB-110292 Groundwater Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	5-NOV-1992

SAMPLE ID : D92-12466-2 DATE SAMPLED : 2-NOV-1992
ID MARKS : CAFB-080 Groundwater Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	6-NOV-1992

SAMPLE ID : D92-12466-3 DATE SAMPLED : 2-NOV-1992
ID MARKS : TB-110292 Groundwater Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	5-NOV-1992

SAMPLE ID : D92-12466-4 DATE SAMPLED : 2-NOV-1992
ID MARKS : CAFB-079 Groundwater Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	5-NOV-1992

SAMPLE ID : D92-12466-5 DATE SAMPLED : 2-NOV-1992
ID MARKS : CAFB-079A Groundwater Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	5-NOV-1992

SAMPLE ID : D92-12466-6 DATE SAMPLED : 2-NOV-1992
ID MARKS : CAFB-081 Groundwater Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	6-NOV-1992

CUSTOMER : Geo-Marine, Inc.
PROJECT : 1161-052 Carswell AFB

SAMPLE ID : D92-12466-7 DATE SAMPLED : 2-NOV-1992
ID MARKS : CAFB-083 Groundwater Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	6-NOV-1992

SAMPLE ID : D92-12466-8 DATE SAMPLED : 2-NOV-1992
ID MARKS : MS

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	6-NOV-1992

SAMPLE ID : D92-12466-9 DATE SAMPLED : 2-NOV-1992
ID MARKS : MSD

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	6-NOV-1992

SAMPLE ID : D92-12466-10 DATE SAMPLED : 2-NOV-1992
ID MARKS : Method Blank

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	6-NOV-1992

SAMPLE ID : D92-12466-11 DATE SAMPLED : 2-NOV-1992
ID MARKS : Blank Spike

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	6-NOV-1992

ANALYSIS ID	DESCRIPTION
8010_L	Purgeable Halocarbons, Liquid Samples

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 3-NOV-1992

REPORT NUMBER : D92-12466-1
REPORT DATE : 11-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : RB-110292
: Groundwater Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 2-NOV-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 5-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12466-1
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12466-1
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	115 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT **DALLAS** **HOUSTON**

DATE RECEIVED : 3-NOV-1992

REPORT NUMBER : D92-12466-2
REPORT DATE : 11-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-080
: Groundwater Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 2-NOV-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 6-NOV-1992
DILUTION FACTOR : 10

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	50	µg/L	<	50	µg/L
Bromodichloromethane	10	µg/L	<	10	µg/L
Bromoform	20	µg/L	<	20	µg/L
Bromomethane	120	µg/L	<	120	µg/L
Carbon tetrachloride	20	µg/L	<	20	µg/L
Chlorobenzene	30	µg/L	<	30	µg/L
Chloroethane	60	µg/L	<	60	µg/L
2-Chloroethylvinyl ether	30	µg/L	<	30	µg/L
Chloroform	10	µg/L	<	10	µg/L
1-Chlorohexane	50	µg/L	<	50	µg/L
Chloromethane	50	µg/L	<	50	µg/L
Chloromethy methyl ether	50	µg/L	<	50	µg/L
Chlorotoluene	50	µg/L	<	50	µg/L
Dibromochloromethane	10	µg/L	<	10	µg/L
Dibromomethane	50	µg/L	<	50	µg/L
1,2-Dichlorobenzene	20	µg/L	<	20	µg/L
1,3-Dichlorobenzene	40	µg/L	<	40	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12466-2
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	30	µg/L	<	30	µg/L
Dichlorodifluoromethane	200	µg/L	<	200	µg/L
1,1-Dichloroethene	20	µg/L		21	µg/L
1,2-Dichloroethane	30	µg/L	<	30	µg/L
1,1-Dichloroethane	10	µg/L	<	10	µg/L
trans-1,2-Dichloroethene	10	µg/L		11	µg/L
1,2-Dichloropropane	10	µg/L	<	10	µg/L
cis-1,3-Dichloropropene	20	µg/L	<	20	µg/L
trans-1,3-Dichloropropene	20	µg/L	<	20	µg/L
Methylene chloride	50	µg/L	<	50	µg/L
1,1,2,2-tetrachloroethane	10	µg/L	<	10	µg/L
1,1,1,2-tetrachloroethane	50	µg/L	<	50	µg/L
Tetrachloroethene	10	µg/L		104	µg/L
1,1,1-Trichloroethane	10	µg/L	<	10	µg/L
1,1,2-Trichloroethane	10	µg/L	<	10	µg/L
Trichloroethene	10	µg/L		690	µg/L
Trichlorofluoromethane	50	µg/L	<	50	µg/L
Trichloropropane	50	µg/L	<	50	µg/L
vinyl chloride	50	µg/L	<	50	µg/L
cis-1,2-Dichloroethene				470.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12466-2
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	108 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT **DALLAS** **HOUSTON**

DATE RECEIVED : 3-NOV-1992

REPORT NUMBER : D92-12466-3
REPORT DATE : 11-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : TB-110292
: Groundwater Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 2-NOV-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 5-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12466-3
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12466-3
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	108 %

NDRC Laboratories, Inc. David R. Godwin

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 3-NOV-1992

REPORT NUMBER : D92-12466-4
REPORT DATE : 11-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-079
: Groundwater Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 2-NOV-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 5-NOV-1992
DILUTION FACTOR : 10

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	50	µg/L	<	50	µg/L
Bromodichloromethane	10	µg/L	<	10	µg/L
Bromoform	20	µg/L	<	20	µg/L
Bromomethane	120	µg/L	<	120	µg/L
Carbon tetrachloride	20	µg/L	<	20	µg/L
Chlorobenzene	30	µg/L	<	30	µg/L
Chloroethane	60	µg/L	<	60	µg/L
2-Chloroethylvinyl ether	30	µg/L	<	30	µg/L
Chloroform	10	µg/L	<	10	µg/L
1-Chlorohexane	50	µg/L	<	50	µg/L
Chloromethane	50	µg/L	<	50	µg/L
Chloromethy methyl ether	50	µg/L	<	50	µg/L
Chlorotoluene	50	µg/L	<	50	µg/L
Dibromochloromethane	10	µg/L	<	10	µg/L
Dibromomethane	50	µg/L	<	50	µg/L
1,2-Dichlorobenzene	20	µg/L	<	20	µg/L
1,3-Dichlorobenzene	40	µg/L	<	40	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12466-4
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	30	µg/L	<	30	µg/L
Dichlorodifluoromethane	200	µg/L	<	200	µg/L
1,1-Dichloroethene	20	µg/L	<	20	µg/L
1,2-Dichloroethane	30	µg/L	<	30	µg/L
1,1-Dichloroethane	10	µg/L	<	10	µg/L
trans-1,2-Dichloroethene	10	µg/L	<	10	µg/L
1,2-Dichloropropane	10	µg/L	<	10	µg/L
cis-1,3-Dichloropropene	20	µg/L	<	20	µg/L
trans-1,3-Dichloropropene	20	µg/L	<	20	µg/L
Methylene chloride	50	µg/L	<	50	µg/L
1,1,2,2-tetrachloroethane	10	µg/L	<	10	µg/L
1,1,1,2-tetrachloroethane	50	µg/L	<	50	µg/L
Tetrachloroethene	10	µg/L		18	µg/L
1,1,1-Trichloroethane	10	µg/L	<	10	µg/L
1,1,2-Trichloroethane	10	µg/L	<	10	µg/L
Trichloroethene	10	µg/L	<	10	µg/L
Trichlorofluoromethane	50	µg/L	<	50	µg/L
Trichloropropane	50	µg/L	<	50	µg/L
vinyl chloride	50	µg/L	<	50	µg/L
cis-1,2-Dichloroethene				230	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12466-4
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	113 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 3-NOV-1992

REPORT NUMBER : D92-12466-5
REPORT DATE : 11-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-079A
: Groundwater Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 2-NOV-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 5-NOV-1992
DILUTION FACTOR : 10

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	50	µg/L	<	50	µg/L
Bromodichloromethane	10	µg/L	<	10	µg/L
Bromoform	20	µg/L	<	20	µg/L
Bromomethane	120	µg/L	<	120	µg/L
Carbon tetrachloride	20	µg/L	<	20	µg/L
Chlorobenzene	30	µg/L	<	30	µg/L
Chloroethane	60	µg/L	<	60	µg/L
2-Chloroethylvinyl ether	30	µg/L	<	30	µg/L
Chloroform	10	µg/L	<	10	µg/L
1-Chlorohexane	50	µg/L	<	50	µg/L
Chloromethane	50	µg/L	<	50	µg/L
Chloromethy methyl ether	50	µg/L	<	50	µg/L
Chlorotoluene	50	µg/L	<	50	µg/L
Dibromochloromethane	10	µg/L	<	10	µg/L
Dibromomethane	50	µg/L	<	50	µg/L
1,2-Dichlorobenzene	20	µg/L	<	20	µg/L
1,3-Dichlorobenzene	40	µg/L	<	40	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12466-5
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	30	µg/L	<	30	µg/L
Dichlorodifluoromethane	200	µg/L	<	200	µg/L
1,1-Dichloroethene	20	µg/L		21	µg/L
1,2-Dichloroethane	30	µg/L	<	30	µg/L
1,1-Dichloroethane	10	µg/L	<	10	µg/L
trans-1,2-Dichloroethene	10	µg/L	<	10	µg/L
1,2-Dichloropropane	10	µg/L	<	10	µg/L
cis-1,3-Dichloropropene	20	µg/L	<	20	µg/L
trans-1,3-Dichloropropene	20	µg/L	<	20	µg/L
Methylene chloride	50	µg/L	<	50	µg/L
1,1,2,2-tetrachloroethane	10	µg/L	<	10	µg/L
1,1,1,2-tetrachloroethane	50	µg/L	<	50	µg/L
Tetrachloroethene	10	µg/L	<	10	µg/L
1,1,1-Trichloroethane	10	µg/L	<	10	µg/L
1,1,2-Trichloroethane	10	µg/L	<	10	µg/L
Trichloroethene	10	µg/L	<	10	µg/L
Trichlorofluoromethane	50	µg/L	<	50	µg/L
Trichloropropane	50	µg/L	<	50	µg/L
vinyl chloride	50	µg/L	<	50	µg/L
cis-1,2-Dichloroethene				220	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12466-5
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	112 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 3-NOV-1992

REPORT NUMBER : D92-12466-6
REPORT DATE : 11-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-081
: Groundwater Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 2-NOV-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 6-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12466-6
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L		61.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L		120	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L		460	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene				55.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12466-6
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	< 750 %

NDRC Laboratories, Inc. David R. Godwin v 2

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 3-NOV-1992

REPORT NUMBER : D92-12466-7
REPORT DATE : 11-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-083
: Groundwater Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 2-NOV-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 6-NOV-1992
DILUTION FACTOR : 10

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	50	µg/L	<	50	µg/L
Bromodichloromethane	10	µg/L	<	10	µg/L
Bromoform	20	µg/L	<	20	µg/L
Bromomethane	120	µg/L	<	120	µg/L
Carbon tetrachloride	20	µg/L	<	20	µg/L
Chlorobenzene	30	µg/L	<	30	µg/L
Chloroethane	60	µg/L	<	60	µg/L
2-Chloroethylvinyl ether	30	µg/L	<	30	µg/L
Chloroform	10	µg/L	<	10	µg/L
1-Chlorohexane	50	µg/L	<	50	µg/L
Chloromethane	50	µg/L	<	50	µg/L
Chloromethy methyl ether	50	µg/L	<	50	µg/L
Chlorotoluene	50	µg/L	<	50	µg/L
Dibromochloromethane	10	µg/L	<	10	µg/L
Dibromomethane	50	µg/L	<	50	µg/L
1,2-Dichlorobenzene	20	µg/L	<	20	µg/L
1,3-Dichlorobenzene	40	µg/L	<	40	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12466-7
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	30	µg/L	<	30	µg/L
Dichlorodifluoromethane	200	µg/L	<	200	µg/L
1,1-Dichloroethene	20	µg/L		28	µg/L
1,2-Dichloroethane	30	µg/L	<	30	µg/L
1,1-Dichloroethane	10	µg/L	<	10	µg/L
trans-1,2-Dichloroethene	10	µg/L	<	10	µg/L
1,2-Dichloropropane	10	µg/L	<	10	µg/L
cis-1,3-Dichloropropene	20	µg/L	<	20	µg/L
trans-1,3-Dichloropropene	20	µg/L	<	20	µg/L
Methylene chloride	50	µg/L	<	50	µg/L
1,1,2,2-tetrachloroethane	10	µg/L	<	10	µg/L
1,1,1,2-tetrachloroethane	50	µg/L	<	50	µg/L
Tetrachloroethene	10	µg/L		52	µg/L
1,1,1-Trichloroethane	10	µg/L	<	10	µg/L
1,1,2-Trichloroethane	10	µg/L	<	10	µg/L
Trichloroethene	10	µg/L		260	µg/L
Trichlorofluoromethane	50	µg/L	<	50	µg/L
Trichloropropane	50	µg/L	<	50	µg/L
vinyl chloride	50	µg/L	<	50	µg/L
cis-1,2-Dichloroethene				28.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12466-7
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	113 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT **DALLAS** **HOUSTON**

DATE RECEIVED : 3-NOV-1992

REPORT NUMBER : D92-12466-8
REPORT DATE : 11-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : MS
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 2-NOV-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 6-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L		12.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L		9.5	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L		12.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L		11.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12466-8
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L		9.3	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12466-8
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	105 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 3-NOV-1992

REPORT NUMBER : D92-12466-9
REPORT DATE : 11-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : MSD
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 2-NOV-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 6-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L		11.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L		9.3	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L		12.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L		11.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12466-9
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L		8.9	µg/L
cis-1,2-Dicloroethene			<	1.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12466-9
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	103 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 3-NOV-1992

REPORT NUMBER : D92-12466-10
REPORT DATE : 11-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : Method Blank
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 2-NOV-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 6-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12466-10
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12466-10
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	118 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 3-NOV-1992

REPORT NUMBER : D92-12466-11
REPORT DATE : 11-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : Blank Spike
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 2-NOV-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 6-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L		12.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L		9.1	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L		12.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L		11.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12466-11
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L		8.4	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12466-11
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	99.0 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED: 3-NOV-1992

REPORT NUMBER: D92-12466
REPORT DATE: 11-NOV-1992

SUBMITTED BY: Geo-Marine, Inc.

LABORATORY ANALYSIS
QUALITY CONTROL REPORT

ANALYSIS:	Vinyl Chloride	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	11/6/92	MS/MSD RPD:	4.0	%
QC Extracted:	11/6/92	Average Spike Recovery:	90.9	%
Sample Analyzed:	11/6/92	Duplicate RPD:	----	
QC Analyzed:	11/6/92	Method Blank:	<5.0	µg/L
QC Sample Number:	D92-12466-3	Blank Spike Recovery:	84.3	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Chloroform	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	11/6/92	MS/MSD RPD:	5.9	%
QC Extracted:	11/6/92	Average Spike Recovery:	119	%
Sample Analyzed:	11/6/92	Duplicate RPD:	----	
QC Analyzed:	11/6/92	Method Blank:	<1.0	µg/L
QC Sample Number:	D92-12466-3	Blank Spike Recovery:	120	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Bromodichloromethane	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	11/6/92	MS/MSD RPD:	6.8	%
QC Extracted:	11/6/92	Average Spike Recovery:	118	%
Sample Analyzed:	11/6/92	Duplicate RPD:	----	
QC Analyzed:	11/6/92	Method Blank:	<1.0	µg/L
QC Sample Number:	D92-12466-3	Blank Spike Recovery:	123	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Chlorobenzene	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	11/6/92	MS/MSD RPD:	2.7	%
QC Extracted:	11/6/92	Average Spike Recovery:	93.8	%
Sample Analyzed:	11/6/92	Duplicate RPD:	----	
QC Analyzed:	11/6/92	Method Blank:	<3.0	µg/L
QC Sample Number:	D92-12466-3	Blank Spike Recovery:	91.1	%
		TCLP Spike Recovery:	----	

ANALYSIS:	1,2,-Dichlorobenzene	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	11/6/92	MS/MSD RPD:	1.8	%
QC Extracted:	11/6/92	Average Spike Recovery:	110	%
Sample Analyzed:	11/6/92	Duplicate RPD:	----	
QC Analyzed:	11/6/92	Method Blank:	<2.0	µg/L
QC Sample Number:	D92-12466-3	Blank Spike Recovery:	109	%
		TCLP Spike Recovery:	----	

CHAIN OF CUSTODY RECORD **NDRC LABORATORIES, INC.** 1088 East Collins Blvd., Richardson, TX 75081 (214) 238-5591

ORIGINAL

Submitted by		Bill to	
Name:	GEO-MARINE, INC	Name:	↑
Address:	550 E. 15th St. PLANO, TX 75074	Address:	SAME ↓
Contact:	LYLE WINNETTE	Contact:	MARY ALICE GARZA
Phone:	(214) 423-5480	Phone:	SAME
Fax:	(214) 422-	Fax:	↓

Lab use only
Due Date: 11-13-92
GC FRI6
RCRA ☐
NPDES ☐
Section / Date

Proj. No.: 1161-052
Project Name: CARSWELL AFB - GROUNDWATER SAMPLING

GASE NARRATIVE REQUIRED

QC REPORT

GC

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks	VOA	A/G 1 Lt.	250 ml	P/O	METHOD 601/8010 HALOGENATED VOLATILES	ADHOC CIS-1,2-DICHLOROETHYLENE	Lab. Sample ID
W	11-02-92	0915		X	RB-110292	2				✓		12466-1
W	11-02	1110		X	CAFB-080	2				✓		2
W	11-02	1140		X	TB-110292	2				✓		3
W	11-02	1155		X	CAFB-079	2				✓		4
W	11-02	1155		X	CAFB-079A	2				✓		5
W	11-02	1245		X	CAFB-081	2				✓		6
W	11-02	1440		X	CAFB-083	2				✓		7
					MS							8
					MSD							9
					METHOD BLANK							10
					BLANK SPIKE					✓		11

Turn around time ☐ 100% ☐ 50% ☐ Standard Other: _____ Temperature °C: 4

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Lyle Winnette	11-3-92	10:35	Paul Cosgrove	11-3-92	10:45
Paul Cosgrove			Chris Cosgrove	11/3	11:45

Remarks
PLEASE PROVIDE STANDARD USCOE QA/QC DOCUMENTATION.

Matrix: W - Water S - Soil SD - Solid L - Liquid A - Air Bag C - Charcoal tube SL - Sludge O - Oil
Containers: VOA - 40 ml vial A/G - 1 Liter / Or C 50 ml wide plastic

NDRC cannot accept ... al changes. Please Fax ... to

11-10

NDRC LABORATORIES, INC. 19719

Dallas - 1089 East Collins Blvd. • Richardson, Texas 75081 • (214) 238-5591 • Fax (214) 238-5592

SAMPLE PRESERVATION INFORMATION SHEET

Field Sampling ☐ Incoming Samples ☐

NERAL

ompany: Geo Marine Job No: 12466-1-11

No. of Cooler(s): 1 Temperature of Cooler(s): 4°C

E ERVATION INFORMATION

Sample No.	Temperature of Sample	Sample Container	Volume	Preservation used *	Initial pH	Final pH	Bottles generated	Comments

S RVATION USED *

1 - Cool to 4° C
2 - H_2SO_4 to pH < 2
3 - HNO_3 to pH < 2
4 - HCL to pH < 2
5 - NaOH to pH > 12
6 - $Na_2S_2O_2$ 0.008%
7 - 2 mL Zinc Acetate and NaOH to pH > 12
8 - None required

NAK
Preserved by

11-3-92
Date/Time

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED: 03-NOV-1992

REPORT NUMBER: D92-12492-1-10
REPORT DATE: 12-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
Plano, TX 75074
ATTENTION : Mr. Lyle Winnette

PROJECT : 1161-052 Carswell AFB

DATE SAMPLED : 03-NOV-1992

CASE NARRATIVE COMMENTS:

No unusual problems were encountered during the sample analysis for this project.

lease refer to the attached Case Narrative Summary for a comparison of ample identifications and analytical requests.

NDRC Laboratories, Inc. David A. Weese

David A. Weese
Project Manager

CUSTOMER : Geo-Marine, Inc.
PROJECT : 1161-052 Carswell AFB

SAMPLE ID : D92-12492-1 DATE SAMPLED : 3-NOV-1992
ID MARKS : CAFB-087 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	10-NOV-1992

SAMPLE ID : D92-12492-2 DATE SAMPLED : 3-NOV-1992
ID MARKS : TB-110392 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	10-NOV-1992

SAMPLE ID : D92-12492-3 DATE SAMPLED : 3-NOV-1992
ID MARKS : RB-110392 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	10-NOV-1992

SAMPLE ID : D92-12492-4 DATE SAMPLED : 3-NOV-1992
ID MARKS : CAFB-088 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	10-NOV-1992

SAMPLE ID : D92-12492-5 DATE SAMPLED : 3-NOV-1992
ID MARKS : CAFB-090 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	10-NOV-1992

SAMPLE ID : D92-12492-6 DATE SAMPLED : 3-NOV-1992
ID MARKS : CAFB-092 GW Sampling

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	10-NOV-1992

CUSTOMER : Geo-Marine, Inc.
PROJECT : 1161-052 Carswell AFB

SAMPLE ID : D92-12492-7 DATE SAMPLED : 3-NOV-1992
ID MARKS : MS

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	10-NOV-1992

SAMPLE ID : D92-12492-8 DATE SAMPLED : 3-NOV-1992
ID MARKS : MSD

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	10-NOV-1992

SAMPLE ID : D92-12492-9 DATE SAMPLED : 3-NOV-1992
ID MARKS : Method Blank

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	10-NOV-1992

SAMPLE ID : D92-12492-10 DATE SAMPLED : 3-NOV-1992
ID MARKS : Blank Spike

ANALYSIS	PRP BY	PREP DATE	ANL BY	ANALYSIS DATE
8010_L			BSR	10-NOV-1992

ANALYSIS ID	DESCRIPTION
8010_L	Purgeable Halocarbons, Liquid Samples

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 3-NOV-1992

REPORT NUMBER : D92-12492-1
REPORT DATE : 12-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-087
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 3-NOV-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 10-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12492-1
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L		2.6	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L		1.7	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L		3.1	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene				5.8	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12492-1
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	109 %

NDRC Laboratories, Inc. David R. Godwin v 2

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 3-NOV-1992

REPORT NUMBER : D92-12492-2
REPORT DATE : 12-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : TB-110392
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 3-NOV-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 10-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12492-2
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12492-2
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	113 %

NDRC Laboratories, Inc. David R. Godwin v 2

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 3-NOV-1992

REPORT NUMBER : D92-12492-3
REPORT DATE : 12-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : RB-110392
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 3-NOV-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 10-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12492-3
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L		2.1	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12492-3
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	113 %

NDRC Laboratories, Inc. David R. Godwin v 2

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 3-NOV-1992

REPORT NUMBER : D92-12492-4
REPORT DATE : 12-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-088
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 3-NOV-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 10-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12492-4
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L		1.9	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene				2.7	µgL

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12492-4
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	118 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT **DALLAS** **HOUSTON**

DATE RECEIVED : 3-NOV-1992

REPORT NUMBER : D92-12492-5
REPORT DATE : 12-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-090
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 3-NOV-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 10-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12492-5
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L		1.8	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L		9.3	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene				4.5	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12492-5
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	101 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 3-NOV-1992

REPORT NUMBER : D92-12492-6
REPORT DATE : 12-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : CAFB-092
: GW Sampling
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 3-NOV-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 10-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12492-6
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L		2.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12492-6
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	108 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 3-NOV-1992

REPORT NUMBER : D92-12492-7
REPORT DATE : 12-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : MS
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 3-NOV-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 10-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L		12.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L		9.5	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L		12.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L		11.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12492-7
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L		9.3	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12492-7
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	105 %

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David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT **DALLAS** **HOUSTON**

DATE RECEIVED : 3-NOV-1992

REPORT NUMBER : D92-12492-8
REPORT DATE : 12-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : MSD
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 3-NOV-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 10-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L		11.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L		9.3	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L		12.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L		11.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT DALLAS HOUSTON

REPORT NUMBER : D92-12492-8
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L		8.9	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12492-8
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	103 %

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David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED : 3-NOV-1992

REPORT NUMBER : D92-12492-9
REPORT DATE : 12-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : Method Blank
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 3-NOV-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 10-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L	<	1.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L	<	3.0	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L	<	1.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L	<	2.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12492-9
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L	<	5.0	µg/L
cis-1,2-Dicloroethene			<	1.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12492-9
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	115 %

NDRC Laboratories, Inc. David R. Godwin v 2

David R. Godwin, Ph.D.
Chief Executive Officer

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BEAUMONT **DALLAS** **HOUSTON**

DATE RECEIVED : 3-NOV-1992

REPORT NUMBER : D92-12492-10
REPORT DATE : 12-NOV-1992

SAMPLE SUBMITTED BY : Geo-Marine, Inc.
ADDRESS : 550 E. 15th St.
: Plano, TX 75074
ATTENTION : Mr. Lyle Wynnette

SAMPLE MATRIX : Liquid
ID MARKS : Blank Spike
PROJECT : 1161-052 Carswell AFB
DATE SAMPLED : 3-NOV-1992
ANALYSIS METHOD : EPA 8010
ANALYZED BY : BSR
ANALYZED ON : 10-NOV-1992
DILUTION FACTOR : 1

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromobenzene	5.0	µg/L	<	5.0	µg/L
Bromodichloromethane	1.0	µg/L		12.0	µg/L
Bromoform	2.0	µg/L	<	2.0	µg/L
Bromomethane	12.0	µg/L	<	12.0	µg/L
Carbon tetrachloride	2.0	µg/L	<	2.0	µg/L
Chlorobenzene	3.0	µg/L		9.1	µg/L
Chloroethane	6.0	µg/L	<	6.0	µg/L
2-Chloroethylvinyl ether	3.0	µg/L	<	3.0	µg/L
Chloroform	1.0	µg/L		12.0	µg/L
1-Chlorohexane	5.0	µg/L	<	5.0	µg/L
Chloromethane	5.0	µg/L	<	5.0	µg/L
Chloromethy methyl ether	5.0	µg/L	<	5.0	µg/L
Chlorotoluene	5.0	µg/L	<	5.0	µg/L
Dibromochloromethane	1.0	µg/L	<	1.0	µg/L
Dibromomethane	5.0	µg/L	<	5.0	µg/L
1,2-Dichlorobenzene	2.0	µg/L		11.0	µg/L
1,3-Dichlorobenzene	4.0	µg/L	<	4.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12492-10
ANALYSIS METHOD : EPA 8010

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
1,4-Dichlorobenzene	3.0	µg/L	<	3.0	µg/L
Dichlorodifluoromethane	20.0	µg/L	<	20.0	µg/L
1,1-Dichloroethene	2.0	µg/L	<	2.0	µg/L
1,2-Dichloroethane	3.0	µg/L	<	3.0	µg/L
1,1-Dichloroethane	1.0	µg/L	<	1.0	µg/L
trans-1,2-Dichloroethene	1.0	µg/L	<	1.0	µg/L
1,2-Dichloropropane	1.0	µg/L	<	1.0	µg/L
cis-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
trans-1,3-Dichloropropene	2.0	µg/L	<	2.0	µg/L
Methylene chloride	5.0	µg/L	<	5.0	µg/L
1,1,2,2-tetrachloroethane	1.0	µg/L	<	1.0	µg/L
1,1,1,2-tetrachloroethane	5.0	µg/L	<	5.0	µg/L
Tetrachloroethene	1.0	µg/L	<	1.0	µg/L
1,1,1-Trichloroethane	1.0	µg/L	<	1.0	µg/L
1,1,2-Trichloroethane	1.0	µg/L	<	1.0	µg/L
Trichloroethene	1.0	µg/L	<	1.0	µg/L
Trichlorofluoromethane	5.0	µg/L	<	5.0	µg/L
Trichloropropane	5.0	µg/L	<	5.0	µg/L
vinyl chloride	5.0	µg/L		8.4	µg/L
cis-1,2-Dichloroethene			<	1.0	µg/L

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BEAUMONT **DALLAS** **HOUSTON**

REPORT NUMBER : D92-12492-10
ANALYSIS METHOD : EPA 8010

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	99.0 %

NDRC Laboratories, Inc. David R. Godwin v 2

David R. Godwin, Ph.D.
Chief Executive Officer

NDRC LABORATORIES, INC.

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BEAUMONT DALLAS HOUSTON

DATE RECEIVED: 3-NOV-1992

REPORT NUMBER: D92-12492
REPORT DATE: 12-NOV-1992

SUBMITTED BY: Geo-Marine, Inc.

LABORATORY ANALYSIS
QUALITY CONTROL REPORT

ANALYSIS:	Vinyl Chloride	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	11/10/92	MS/MSD RPD:	4.0	%
QC Extracted:	11/6/92	Average Spike Recovery:	90.9	%
Sample Analyzed:	11/10/92	Duplicate RPD:	----	
QC Analyzed:	11/6/92	Method Blank:	<5.0	µg/L
QC Sample Number:	D92-12466-3	Blank Spike Recovery:	84.3	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Chloroform	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	11/10/92	MS/MSD RPD:	5.9	%
QC Extracted:	11/6/92	Average Spike Recovery:	119	%
Sample Analyzed:	11/10/92	Duplicate RPD:	----	
QC Analyzed:	11/6/92	Method Blank:	<1.0	µg/L
QC Sample Number:	D92-12466-3	Blank Spike Recovery:	120	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Bromodichloromethane	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	11/10/92	MS/MSD RPD:	6.8	%
QC Extracted:	11/6/92	Average Spike Recovery:	118	%
Sample Analyzed:	11/10/92	Duplicate RPD:	----	
QC Analyzed:	11/6/92	Method Blank:	<1.0	µg/L
QC Sample Number:	D92-12466-3	Blank Spike Recovery:	123	%
		TCLP Spike Recovery:	----	

ANALYSIS:	Chlorobenzene	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	11/10/92	MS/MSD RPD:	2.7	%
QC Extracted:	11/6/92	Average Spike Recovery:	93.8	%
Sample Analyzed:	11/10/92	Duplicate RPD:	----	
QC Analyzed:	11/6/92	Method Blank:	<3.0	µg/L
QC Sample Number:	D92-12466-3	Blank Spike Recovery:	91.1	%
		TCLP Spike Recovery:	----	

ANALYSIS:	1,2,-Dichlorobenzene	Analysis Method:	EPA 8010	
Technician:	BSR	Extraction Method:	EPA 5030	
Sample Extracted:	11/10/92	MS/MSD RPD:	1.8	%
QC Extracted:	11/6/92	Average Spike Recovery:	110	%
Sample Analyzed:	11/10/92	Duplicate RPD:	----	
QC Analyzed:	11/6/92	Method Blank:	<2.0	µg/L
QC Sample Number:	D92-12466-3	Blank Spike Recovery:	109	%
		TCLP Spike Recovery:	----	

CHAIN OF CUSTODY RECORD

NDRC LABORATORIES, INC. 1089 East Collins Blvd., Richardson, TX 75081 (214) 238-5591

GC ORIGINAL

QC REPORT

CASE NARRATIVE

Submitted by		Bill to	
Name:	GEO-MARINE, INC.	Name:	↑
Address:	550 E. 15TH ST. PLANO, TX 75074	Address:	SAME ↓
Contact:	LYLE WINNETTE	Contact:	MARY ALICE GARZA
Phone:	(214) 423-5480	Phone:	SAME
Fax:	(214) 422-2736	Fax:	↓

Lab use only
Due Date: 11/13/92

RCRA ☐
NPDES ☐

Section / Date

Proj. No.: 1161-052
Project Name: CARSWELL AFB - GROUNDWATER SAMPLING

METHOD 8010/601 Halogenated Volatiles
Aromatics -1,2-Dichloroethane

Matrix	Date	Time	Comp	Grab	Identifying Marks	No. of Containers VOA	A/G 1 Lt.	250 ml	P/O	Lab. Sample ID
W	11-03-92	0845		X	CAFB-087	2			✓	12492-1
W	11-03	0850		X	TB-110392	2			✓	2
W	11-03	0900		X	RB-110392	2			✓	3
W	11-03	0930		X	CAFB-088	2			✓	4
W	11-03	1120		X	CAFB-090	2			✓	5
W	11-03	1230		X	CAFB-092	2			✓	6
					MS				X	7.
					MSD					8.
					METHOD BLANK					9.
					BLANK SPIKE					10

Turn around time ☐ 100% ☐ 50% ☐ Standard Other: _____ Temperature °C: 4

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Tony C. Mills	11-03-92	1521	[signature]	11/3/92	1525
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Remarks: PLEASE PROVIDE STANDARD USCOE QA/QC DOCUMENTATION.

11-1

NDRC LABORATORIES, INC. NO 19566

Dallas - 1089 East Collins Blvd. • Richardson, Texas 75081 • (214) 238-5591 • Fax (214) 238-5592

SAMPLE PRESERVATION INFORMATION SHEET

Field Sampling ☐ Incoming Samples ☐

NERAL

Company: _____ Job No: 12492

No. of Cooler(s): 1 Temperature of Cooler(s): 4°C

SERVATION INFORMATION

Sample No.	Temperature of Sample	Sample Container	Volume	Preservation used *	Initial pH	Final pH	Bottles generated	Comments

ESERVATION USED *

1 - Cool to 4° C
2 - H_2SO_4 to pH < 2
3 - HNO_3 to pH < 2
4 - HCL to pH < 2
5 - NaOH to pH > 12
6 - $Na_2S_2O_2$ 0.008%
7 - 2 mL Zinc Acetate and NaOH to pH > 12
8 - None required

_____ Preserved by

11-3-97 Date/Time

APPENDIX C

Air Monitoring Forms

GEO-MARINE, INC.

AIR MONITORING FORMS (daily calibration unless noted)

Contaminant of Interest: T.C.E.

Type of Sample: area (✓) personal ( )

Equipment Make & Model: HNU PI-101

DATE	TIME	INSTRUMENT READING	SAMPLER INITIALS
10/22/92	1018	< 1 ppm	[illegible]
"	1105	< 1 ppm	[illegible]
"	1145	< 1 ppm	[illegible]
"	1230	< 1 ppm	[illegible]
"	1340	< 1 ppm	[illegible]
"	1425	< 1 ppm	[illegible]
"	1532	< 1 ppm	[illegible]
"	1613	< 1 ppm	[illegible]
"	1710	< 1 ppm	[illegible]
"	1807	< 1 ppm	[illegible]

GEO-MARINE, INC.

AIR MONITORING FORMS (daily calibration unless noted)

Contaminant of Interest: TCE (trichloroethylene)

Type of Sample (area, personal): area

Equipment Make & Model: HNU Systems, Inc. model PI-101

DATE	TIME	INSTRUMENT READING	SAMPLER INITIALS
10/23/92	0920	<1 ppm	TCM
	1011	<1 ppm	TCM
	1320	<1 ppm	ZZW
	1327	<1 ppm	ZZW
	1345	<1 ppm	ZZW
	1410	1 ppm	ZZW
	1448	1 ppm	ZZW
	1517	<1 ppm	ZZW

GEO-MARINE, INC.

AIR MONITORING FORMS (daily calibration unless noted)

Contaminant of Interest: TCE (trichloroethylene)

Type of Sample (area, personal): area

Equipment Make & Model: HNU Systems, Inc. model PI-101

DATE	TIME	INSTRUMENT READING	SAMPLER INITIALS
10/27/92	0820	<1 ppm	TCM
	0900	<1 ppm	TCM
	1215	<1 ppm	TCM
	1250	<1 ppm	TCM
	1345	<1 ppm	TCM
	1500	1 ppm	TCM
	1536	2 ppm	LLD
	1627	<1 ppm	LLD
	1715	<1 ppm	TCM

GEO-MARINE, INC.

AIR MONITORING FORMS (daily calibration unless noted)

Contaminant of Interest: TCE (trichloroethylene)

Type of Sample (area, personal): area

Equipment Make & Model: HNU Systems, Inc. model PI-101

DATE	TIME	INSTRUMENT READING	SAMPLER INITIALS
~~10-23-92~~ 10-28-92	0945	<1 ppm	TCM
	0816	<1 ppm	TCM
	0905	<1 ppm	TCM
	0951	<1 ppm	TCM
	1020	<1 ppm	TCM
	1206	<1 ppm	TCM
	1302	<1 ppm	TCM
	1355	<1 ppm	TCM
	1403	<1 ppm	TCM
	1440	<1 ppm	TCM
	1517	<1 ppm	TCM
	1546	<1 ppm	TCM
	1620	<1 ppm SPIKE 2 TO 3 ppm	TCM
	1650	<1 ppm	TCM

GEO-MARINE, INC.

AIR MONITORING FORMS (daily calibration unless noted)

Contaminant of Interest: TCE (trichloroethylene)

Type of Sample (area, personal): area

Equipment Make & Model: HNU Systems, Inc. model PI-101

DATE	TIME	INSTRUMENT READING	SAMPLER INITIALS
10-29-92	0755	GRADUALLY CLIMBED TO 5ppm. BREATHING SPACE <1 ppm	TCM
	0837	1.2 ppm (IN HOLE)	TCM
	0912	<1 ppm	TCM
	1015	<1 ppm	TCM
	1116	<1 ppm	TCM
	1234	<1 ppm	TCM
	1627	<1 ppm	TCM
	1712	<1 ppm	TCM

GEO-MARINE, INC.

AIR MONITORING FORMS (daily calibration unless noted)

Contaminant of Interest: TCE (trichloroethylene)

Type of Sample (area, personal): area

Equipment Make & Model: HNU Systems, Inc. model PI-101

DATE	TIME	INSTRUMENT READING	SAMPLER INITIALS
10-30-92	0757	<1 PPM	TCM
	0835	SAMPLE HEADSPACE LAB-B 070 <1 PPM	TCM
	0930	SOIL ON CONE <1 PPM	TCM
	1005	IN CASING <1 PPM; MOMENTARILY SPIKED TO 5 PPM BREATHING SPACE <1 PPM	TCM
	1155	SOIL ON CONE <1 PPM	TCM
	1240	CONE & BREATHING SPACE <1 PPM	TCM
	1314	<1 PPM	TCM
	1350	<1 PPM	TCM

GEO-MARINE, INC.

AIR MONITORING FORMS (daily calibration unless noted)

Contaminant of Interest: TCE (trichloroethylene)

Type of Sample (area, personal): area

Equipment Make & Model: HNU Systems, Inc. model PI-101

DATE	TIME	INSTRUMENT READING	SAMPLER INITIALS
11-02-92	0948	< 1 ppm	TCM
	1125	< 1 ppm	TCM
	1215	BREATHING SPACE < 1ppm OVER HOLE 5 TO 20ppm	TCM
	1250	< 1 ppm	TCM
	1335	< 1 ppm	TCM
	1405	< 1 ppm at CAFB-079 WHERE HOLE MEASURED 20ppm	TCM
	1455	< 1 ppm	TCM
	1535	< 1 ppm	TCM
	1620	< 1 ppm	TCM

GEO-MARINE, INC.

AIR MONITORING FORMS (daily calibration unless noted)

Contaminant of Interest: TCE (trichloroethylene)

Type of Sample (area, personal): area

Equipment Make & Model: HNU Systems, Inc. model PI-101

DATE	TIME	INSTRUMENT READING	SAMPLER INITIALS
11-03-92	0845	<1 PPM	TCM
	0918	<1PPM	TCM
	0940	CAFB-069 HEADSPACE OPEN HOLE >25PPM BREATHING SPACE <1PPM	TCM
	1030	10-20 PPM HEADSPACE	TCM
	1130	3 PPM HEADSPACE	TCM
	1230	2.5 ppm HEADSPACE	TCM

APPENDIX D

Field Log Book

CONTRACT NO. 1161-052

ANALYSIS METHOD 8010/601

NDRC LAB (214)238-5591 KEITH KILPATRICK

FRIDAY 10-2-92 334-9924

IN A MEETING WITH FRANK GREY AT HIS OFFICE IN FT WORTH, THE MAP WITH A PRELIMINARY GRID OF THE GOLF COURSE AREA WAS OBTAINED. FRANK MET ME, TONY MILLS, AT THE OFFICE OF THE CONTRUCTION MANAGEMENT PERSONNEL. BOBBY HERNANDEZ MARKED THE SPECIAL INTEREST (HISTORICAL) AREAS TO AVOID. HIS NUMBER IS 782-6264.

JOHN NEWLIN, QUALITY ASSURANCE EVALUATOR, WAS ASSIGNED THE DUTY OF GIVING GEO-MARINE A DIGGING PERMIT FOR THE FUGRO DEMONSTRATION AND ULTIMATELY FOR THE WHOLE PROJECT. 782-6272 HE EXPLAINED THAT IT WOULD TAKE AT LEAST 48 HOURS TO GET IT DONE.

MONDAY 10-5-92

TALKED TO FRANK GREY ABOUT THE ARA DEMONSTRATION. HE HAS NOT BEEN IN CONTACT WITH THEM

ABOUT THE TIME? DEMONSTRATION THIS WEEK. I ASKED FOR THE REST OF THE REPORT THAT HE GAVE US. THAT IS, THE FIGURES TO HARRIS & ASSOCIATES REPORT. HE SAID HE WOULD LOOK FOR IT.

10-6-92 TUESDAY

FRANK CALLED AND SAID ARA WAS THERE YESTERDAY, AND WE SHOULD COME AS SOON AS POSSIBLE.

ARA DEMONSTRATED THEIR CONE PENETROMETER FOR LYLE, LOUISE AND ME. FRANK WAS THERE AND SO WERE SEVERAL AIR FORCE PERSONNEL.

FRANK GAVE US A TOUR OF THE GOLF COURSE AND SHOWED US THE GENERAL DYNAMICS PLANT WHERE A PARTS CLEANING VAT HAD LEAKED TCE FOR 10 YEARS. THERE WAS ALSO A PIT OF BURIED BARRELS NEAR THE NW CORNER OF THE GOLF COURSE.

FRANK ALSO COMMENTED ON THE FACT THAT WE HAD ALL OF THE INFORMATION THAT WAS AVAILABLE UNLESS WE COULD GET SOME HELP FROM GENERAL DYNAMICS.

WEDNESDAY 10-7-92

I CALLED JOHN NEWLIN TO ASK FOR A MAP OF THE GOLF COURSE AND THE UTILITIES; ALSO FOR PERMISSION TO PARK THE RIG (FUGRO) ON ASCOL. HE SAID HE WOULD CHECK ON IT. ALSO SAID HE WOULD BE THERE FRIDAY AND TO STOP AT THE GATE AND WAIT FOR FRANK TO COME IN AND GET HIM.

THURSDAY 10-8-92 3:45 pm

JOHN CALLED AND SAID MAPS WERE READY. I ASKED HIM TO BRING THEM TO THE FUGRO DEMO.

FRIDAY 10-9-92

~~LYELL~~ LYLE, LOUISE, TONY WENT TO CHRISWELL TO FUGRO DEMONSTRATION AT 10:00 AM. DRAFT SHEET WAS DELIVERED TO FRANK GREY FOR RENE MORADEL OF COE. 334 2195

Bill Bindell (operator) and Mark Bender (helper) demonstrated the new Fugro core penetrometer. COE personnel were Frank Grey, Steve, Cathy, and Debbie Fitzgibbons. Sr. Airman John Newlin and Chief of Contract Management Jim Hurley of the Air Force.

Fugro punched one hole at corner of Pumphrey and 183, on the golf course. This was the only place where utilities were cleared.

EARL UPCHURCH - GOLF COURSE MAINT. 738-1341 (RAY THOMAS)
WILL BE AVAILABLE FOR LOCATION OF SPRINKLER SYSTEM. AND DO NOT DRIVE ON FAIRWAYS FOR FEAR OF DAMAGING HIS WATER LINES. GMI CAN DRIVE ON THE TRAILS.

Hole was 10' deep. Got printout of lithology based on friction ratios. "DRY HOLE."

JOHN NEWLIN BROUGHT COPIES OF UTILITIES MAPS FOR GMI. NEWLIN WILL WORK ON DIGGING PERMIT

PEGGY GRUBB WILL SET UP KICKOFF MEETING. (PROJECT MANAGER)

TUESDAY 10-13-92

WENT TO CHARLOTTE TO GET PERMIT STARTED FOR PHASE I SAMPLING. JOHN NEWLIN HAD ALREADY BEGUN TO GET UTILITY CLEARANCE STARTED. I ASKED TONY MILES ABOUT A PERMIT. HE SAID "DO NOT WORRY ABOUT IT" SO I COULD NOT GET A CLEAR PICTURE OF HOW THE PERMIT WOULD BE DONE, BUT FELT CONFIDENT HE WOULD HAVE THE UTILITIES MARKED OUTSIDE OF THE DRILLING RIG SO THAT THERE WOULD BE NO STANDBY TIME.

JOHN NEWLIN COPIED THE MAPS FOR ME. I GAVE HIM A COPY OF MY INITIAL 69 MARKED LOCATIONS ON THE MAP, AND OUTLINED GROUPS OF POINTS AND NUMBERED THEM IN ORDER OF IMPORTANCE FROM 1 TO 5. HE REFERRED TO THEM AS PHASES.

I ALSO CALLED ROY QUERETARO 782-5541 ABOUT DRIVER TRAINING ON THE FLIGHT LINE. DID NOT SET UP AN APPOINTMENT.

WEDNESDAY 10-14-92

LAMBERT LEWIS, TONY MILLS - GEO MARINE LAMBERT AND I WENT TO CARSWELL TO MARK OUR SAMPLE POINTS WITH FLAGS. WE WORKED FROM 10:00 TO 12:00, ATE LUNCH AND FOUND OUT WE HAD A UTILITIES MEETING ON BASE AT 2:00 pm.

THOSE PRESENT AT THE MEETING INCLUDE: EARL MARCH, GOLF COURSE MAINTENANCE; LARRY DAVIS, LONE STAR GAS; BUBBA PLUNK, City OF FORT WORTH; HENRY WHITELY, PULL PIPELINE; Lt. MANNING, USAF ENVIRONMENTAL; JIM HURLEY, CHIEF OF CONTRACT MANAGEMENT, USAF; A COMMUNICATIONS PERSON; USAF UTILITIES PERSON; LAMBERT LEWIS AND TONY MILLS OF GEO-MARINE; PEGGY GRIGGS, PROJECT MANAGEMENT OF COE.

DISCUSSION CONTENT OF MEETING:

Sgt. NEWLIN explained the purpose of the project and the equipment that will be used. He showed those present the areas of interest and gave each a map with 5 outlined "phases". He told them to have each phase cleared before the rig is ready to begin the phase.

It was also discussed that the core penetrometer has the capacity to penetrate any utility pipelines. They instructed us (Geo-Marine) to stay 10 to 15 feet away from the marked lines. The date of drilling were set to begin on the 20th or 21st of October and would last at least 2 weeks.

AFTER THE MEETING, SOME OF THE UTILITIES PEOPLE TALKED WITH TONY MILLS, Geo-Marine, about certain questionable areas on the golf course.

THE Discussion included the fact that the points on the map could change due to drilling conditions and convenience, and that anything in the vicinity of a flag should be clearly marked.

AFTER THE MEETING, TONY MILLS AND LAMBERT LEWIS CONTINUED MARKING SAMPLE LOCATIONS IN THE phase 1 AREA ALONG PANCHEY.

LEFT 3:30 pm

THURSDAY 10-15-92

LAMBERT LEWIS AND TONY MILLS, GEO-MARINE PROCEEDED TO MARK (25) SAMPLE LOCATIONS IN THE AREA OF THE GOLF COURSE SOUTH OF WHITE SETTLEMENT ROAD, AND ~~12~~ (10) LOCATIONS IN THE PHASE 3 AREA NORTH OF WHITE SETTLEMENT ROAD, and 11 Locations in phase 4 west of Roaring Springs Road.

TIME ON SITE AT CARSWELL 10:00

LUNCH 1:00 TO 1:30

LEAVE SITE AT 3:30

FRIDAY 10-16-92

LOUISE DELANO AND TONY MILLS, GEO-MARINE

ARRIVE 10:30

LEAVE 4:30

CONFIRM LOCATIONS AND MARK THE REMAINING POINTS IN Phase 2 and Phase 1, including an additional 2 points south of White Settlement Road.

10-20-92 KICKOFF MEETING IN CARSWELL AFB

9am on base
Present Frank Grey COE
John Newlin USAF
Lyle Wimmette } Geo-Marine
Louise Delano

Topics Discussed:
(1) Confirmed sampling start up date (10/21) so that utility representatives could coordinate and be present

(2) Requested additional background info, especially regarding data from golf course area monitor wells. GM received 2 IRP reports on loan through Frank Grey.

10-21-92 WEDNESDAY

ARRIVED 9:00
MET WITH FUGRO AND UTILITY PEOPLE
BUZ RUSSELL
MARK BENDER
Kenneth Petree - Chevron Pipeline
Henry Whitely & Shannon Eaton - Pride Pipeline
Earl Upchurch - Golf Course Maintenance
FUGRO ARRIVED 9:00

CAFB
001 SET UP TIME 10:25

TAGGED BOTTOM 10:52 19'
NO WATER 11:10

10:46 Talked w/ Frank Grey, USCOE, regarding decon water from Fugro rig. Frank Grey stated we should containerize decon water and dump into sanitary sewer/storm water line
LCW

002 ~~SET~~ ON LOCATION 11:15
BEGIN DRILLING 11:40
TAGGED 11:53 22.7'

11:30 SAFETY MEETING

LYLE WINNETTE (GMI) BUZ RUSSELL
TONY MILLS (GEO-MARINE) MARK BENDER
TERRY ROWAN
} FUGRO GEOSCIENCES INC.

SAMPLE #	TIME ON LOCATION	TIME DRILLING / TD	DEPTH	SAMPLE #	TIME of sample
001	10:25 - 11:15		19'	N/A	
002	11:15 - 12:55	1	22.7'	CAFB-002	water at 7'
003	1:40 - 2:55		23'	CAFB-003	water at 13' 2:45
004	~~2:55~~ 3:10-4:25	3:15 / 3:26	13.'		4:15

* THE ABOVE LOCATIONS WERE PUNCHED FIRST WITH THE FRICTION CONE, THEN THE WATER SAMPLER.

THE FOLLOWING

005	4:30 - 5:10	4:40 / 4:50	~~22'~~ 21.8		4:50
006	THIS LOCATION WAS THE FUGRO DEMONSTRATION SITE. 10 FT TO BEDROCK & NO WATER. LITHOLOGY AVAILABLE.				

left Site @ 5:23p

THESE SAMPLES WERE TAKEN TO GEO-MARINE TO BE DELIVERED TO NDRC ON THE FOLLOWING DAY. TCM 10/30/92

12:15 Collected RINSATE # RB-102192 2 [illegible]
12:30 USED NDRC TRIP BLANKS # ~~R~~ TB-102192 2 [illegible]

12:45 - Sample CAFB-002
12:55
1:40 - 12:55 - 1:40 lunch
1:40 - 1:55 push to 23'
at Sample location CAFB-003
For other sample collection information, see Table on adjacent page.
CAFB-004 - Slow water recharge waited 10 minutes & decided to remove pipe and sample with larger bailer. Sample was collected at 4:15p.
1:50 EARL UPCHURCH - Golf course - Carmelly to discuss FAIRWAY #10. PUT HOLE SOUTH OF GOLF CART TRAIL.

Sample Number	Time on Location	Time Drilling Time TD	DEPTH TO BED	Time of Sample	~~Time of~~ Comments
CAFB-007	* 9:38 - 10:15	10:08	3 FT (4.6 FT)		* NO SAMPLE SHALLOW BEDROCK
008	10:25 - 11:05	10:33 10:45	21'	10:50	
009	11:09 - 11:33	11:17 11:21	5.28'		NO WATER
010	11:50 - 12:32	11:58 12:07	16'	12:15	2 DUPLICATES (1 was COE 1 was CAFB-006)
011	1310 - 1340	1310 1319	11.6'	13:31	WATER WAS SLOW COMING IN. near creek.
012	1350 - 14:30	1358 1400	6.42'		DRY HOLE
014	14:50 - 15:25	15:05 15:13	13.2'	15:20	
015	15:30 - 16:15	15:38 15:50	23.8'	16:15	~~DRY HOLE~~ used BAILER IN OPEN HOLE
016	16:23 - 17:03	16:30 16:38	15.9'		DRY HOLE
017	17:10				
018	17:35 - 18:00	17:42 17:46	19'		COME BACK TOMORROW A.M.

TONY MILLS AND LOUISE DELAND BROUGHT SAMPLES BACK TO GMI TO BE DELIVERED TO NDRC THE NEXT DAY. TCM 10/30/92

THURSDAY 10-22-92

ARRIVED 9:30

FUGRO 8:30

* AT SITE 007 WE HIT ROCK AT 3 feet - moved 5.2 feet north to try again.

x AT SITE 008 WE MOVED 51 FEET WEST OF ORIGINAL FLAG, AND NEAR THE ROAD FOR CONVENIENCE. [TIE CORP OF ENGINEER SAMPLE WAS CAFB-010] THE DUPLICATE WAS CAFB-006

LUNCH 12:33 TO 1314 RINSATE BLANKS & COE TRIP BLANKS RB-102292 TB102292

CAFB-012 (1420) DID NOT MAKE WATER IN 20 minutes, PULLED OFF SITE TO TRY LARGER BAILER

14:40 CAFB-013 WAS SKIPPED - NO UTILITY MARKINGS

DECIDED TO WAIT ON 017 SINCE UTILITIES WERE NOT MARKED ON PUTTING GREEN. 018 WAS DRY, WILL WAIT UNTIL TOMORROW TO SAMPLE IT.

LEAVE SITE AT 18:25

~~AT~~ AT ~~14:30~~ 13:40 BEFORE REACHING CAFB-012

xxx SGT. NEWLIN BROUGHT DRILLING PERMIT TO BUZ RUSSELL, FUGRO GEOSCI. INC., WHO FILED IT IN HIS BRIEFCASE. TONY MILLS ASKED SGT. NEWLIN IF THE ENTIRE GOLF COURSE WAS CLEARED FOR UTILITIES. HE SAID IT WAS, AND INSTRUCTED GEO-MARINE TO complete MARKING THE REST OF THE GOLF COURSE AS SOON AS POSSIBLE. (Tim Hurley needs a copy of the final

SAMPLE NUMBER	TIME ON LOCATION	TIME: DRILLING TD	DEPTH TO BEDROCK	TIME OF SAMPLE	COMMENTS
CAFB-019	09:07 - 1150	9:13 - 9:22	23.3'	0970	
020	1100 - 1030	10:11 - 10:42	11.5'		DRY HOLE
021	1035 - 1115	10:48 - 11:26	18.5'		DRY
022	1120 - 1150	11:37	11.9'		NO SAMPLE
023	1200 - 1230	12:01 - 12:15	18.86'		NO SAMPLE
024	1300 - 1330	13:07 - 13:12	8.65'		NO SAMPLE
025	1330 - 1410	13:44 - 13:47	13.67'		NO WATER
026	1415 - 1445	14:20 - 14:27	18.5		NO WATER
027	1448	14:50 - 14:53	6.5		NO WATER

LOUISE DELANO DELIVERED THESE SAMPLES TO NDRC ON SATURDAY. TCM 10/30/92

FRIDAY 10-23-92

[illegible] BENDER (FUGRO [illegible])

8:30 ARRIVED AT CARSWELL GL [illegible]

8:40 AT CAFB-018 - NO WATER, PULLED TUBING OUT OF HOLE.

9:05 [illegible] RINSATE BLANK

1:10 [illegible] TRIP BLANK

1235 TO 1300 LUNCH

1000 LOUISE DELANO TALKED TO [illegible] NEWCOMB [illegible] SITES [illegible] - HE SAID HE WOULD GET SOMEONE TO CHECK MILLIES.

1512 TONY MILLS SIGNED BUZ RUSSELL'S TIME SHEET -

1530 QUIT & GO HOME. (FUGRO)

1530 TO 1715 LOUISE DELANO AND TONY MILLS, GEO-MARINE, FLAGGED 7 more locations in [illegible] and 5 in [illegible] 5 [illegible].

1715 - gone home

SAMPLE LOCATIONS	Time on Location	Time: Drilling / TD	DEPTH TO BEDROCK	TIME OF SAMPLE	Comments
CAFB-028	0900 - 0945	0912 / 0920	19.35'		DRY HOLE
029			10.32'		DRY HOLE.
030	1020 - 1050	1026 / 1032	18.04'		DRY
032	1053 - 1123		19.68'		DRY, missed one flag
031	1130 - 1200	1135 / 1141	19.22'		DRY
033	1205 - 1240	1220 / 1230	22.30'		DRY
LUNCH 034	~~[illegible]~~ - 1425	1400 / ~~[illegible]~~	23.60'		DRY
035	1430 - 1455	1435 / 1441	20.36'		DRY
036	1500 - 1520	1510 / 1514	7.50'		DRY
037	1525 - 1623	1600 / 1606	15.70'		DRY
038	1630 - 1715	1646 / 1710	19.20'		DRY

LOUISE DELANO TOOK SAMPLES WITH HER TO GMI, TO BE DELIVERED ON TUESDAY.

TCM 10/30/92

Monday 10-26-92 G.W. SAMPLING

0845 - Tony Mills, Geomarine arrived

- Fugro arrived - Bob Russell
Mark Bender
John Rearden

0905 - Rinsate blank RB-102692

0950 - Earl McCharch and Tony Mills ride to SW part of golf course to find best routes to flags.

1045 - Called Louise Delano about drilling in a different area. Decided to continue near school.

1525-1558
Shut down for electric storm & w.d. decon

1630-1645 w.d. decon

1745 Go Home

Tony Mills 10/30/92

SAMPLE LOCATION	TIME ON LOCATION	TIME drilling / TD	DEPTH	TIME OF SAMPLE	Comments
CAFB-					
039	07:10 - 0750	07:16 / 07:25	21'		DRY HOLE
040	0753 - 0820	756 / 0803	25.3'		DRY HOLE
041	0822 - 0900	0827 / 0838	23'		DRY HOLE
042	0915 - 1215	1145 / 1153	7.38'		DRY HOLE NEAR 016
043	1220 - 1248	1227 / 1235	16.'		DRY HOLE
043	1253 - 1343	1313 / 1320	16.46		DRY HOLE
044	1345 - 1410	1350 / 1358	14.66'		DRY
045	1415 - 1500	1432 / 1442	23.85'	1448	H2O depth 19.2'
046	1505 - 1538	1512 / 1518	18.66'		Dry
047	1545 - 1620	1604 / 1608	6.40'		Dry
047A	1623 - 1715	1645 / 1655	17.29'		DRY

LOUISE DELANO TOOK SAMPLES BACK TO GMI, AND WERE DELIVERED ON WEDNESDAY.

TCM 10/30/92

TUESDAY 10-27-92

ARRIVED 7:00 TONY MILLS, GEO-MARINE

6:50 FUGRO BILL RUSSELL
MARK BENDER
JOHN REARDEN

7:05 RINSATE BLANK RB-102792

7:10 CALIBRATE HNU

8:00 LEFT MESSAGE FOR SGT NEWLIN (ENT)?
CONCERNING OUR LOCATION OF SAMPLING TODAY

0900 BEGAN WAITING FOR DECON MAN TO GET BACK WITH PARTS FOR DECON EQUIP.

1130 SET UP ON 042. DECON HOSE FIXED
900 TO 1130 OFF TIME - FUGRO

1200 ATE LUNCH WHILE WAITING ON WATER AT 042

1315 WAIT 20 min FOR DECONNED WATER SAMP. SAMPLER

1440 recalibrated HNU - OK

1455 TRIP BLANK TB-102792

1545-1600 W.O. decon'ed equipment

1730 - GMI LEFT SITE.

1800 - FUGRO LEFT SITE

Tony Mills 10/30/92

SAMPLE LOCATION	TIME AT LOCATION	TIME DRILLING TO	DEPTH TO BEDROCK (FEET)	TIME of SAMPLE	COMMENTS
CAFB-048	0710-0745	0718 / 0726	20.27		DRY
049	0750 0815	0755 / 0803	17.5		DRY
050	0820-0905	0843 / 0855	12.69'	0900	
051	0920-0950	0920 / 0930	15'	0945	
052	0955 1015	1001 / 1003	9.9'		DRY
053	1020	1045 / 1052	15.84'	WAIT FOR DECON	WET SAND HOLE CAVED IN SAME HOLE
"	1130 1205				DRY
054	1215 1300		8.36		DRY
055	1305 1350	1334 / 1337	7.64		DRY
056	1353 1403	1400 / 1403	7.05	1407	
057	1410 1440	1420 / 1426	13.'		DRY
058	1443 1515	1447 / 1449	8'		DRY- MUDDY BOTTOM
059	1520 1545	1525 / 1528	12.2'		DRY
060	1549 1613	1553 / 1556	12.6'	1600	
061	1615 1645	1622 / 1628	12.2		DRY

NDRC PICKED UP THESE SAMPLES AT
8:12 THURS. 10-29-92

WEDNESDAY 10-28-92

ARRIVED 6:50 TONY MILLS - GEOMARINE
6:45 FUGRO - BUD RUSSELL - MARK BENDER JOHN REHRDEN
7:00 CALIBRATE HNU S 3.06
7:05 EQUIPMENT BLANK RB-102892
7:20 BUD RUSSELL GAVE ME ESTIMATED CHARGES FOR MON. $2265, TUES $2385 AND WED - FRI LAST WEEK WILL BE FAXED TO KYLE WINNETTE - GMI - TONY MILLS
7:55 CALLED JOHN NEWLIN TO INFORM HIM OF OUR LOCATION
0925 TRIP BLANK TB-102892
0830 RAY THOMAS, GULF COURSE SHOWED TONY MILLS HOW TO GET TO LOCATIONS 051 TO 053
12:15 LUNCH TO ~~1245~~ 1230
1300 TO 330 WAIT FOR DECON [HAD TO FILL WATER TANK, LEFT AT 1220]
1700 TONY MILLS LEFT JOB SITE
1830 FUGRO LEFT SITE (GROUTING WILL ONLY CHARGE TO 1730

Tony C. Mills
10/30/92

SAMPLE LOCATION	TIME ON LOCATION	TIME DRILLING / TD	DEPTH	TIME OF SAMPLE	COMMENTS
CAFB 062	0720 - 0755	728 / 738	14.66'		DRY
063	0758 0835		7.12	945	~~DRY~~ * duplicate AND COE QA/QC open hole
064	0837 0905	0846 / 0852	10.46'	955	~~DRY~~ * open hole
065	0910	0915	17.38		DRY
066	1005 - 1115	1020	18.13		DRY CORP OF ENGINEERS EXHIBIT
019	1120 -	1130 / 1138	23.8'		DRY, TRIED AGAIN
"		1222	24.17		DRY AGAIN

1235 - STOP TO EAT LUNCH
1250 - GONE TO FLIGHT LINE TRAINING.

GMI { LYLE WINNETTE, LOUISE DELANO, TONY MILLS } FUGRO { BUZ RUSSELL, MARK BENDER, JOHN REARDEN }

CAFB 067	1530 TM 1625	1600 / 1605	10.52'	1620	TOOK SAMPLE FROM OPEN HOLE
068	1628 - 1710	1632 / 1635	15.12'		DRY

NDRC IS EXPECTED TO PICK UP SAMPLES AT 8:00, 10-30-92.

LYLE WINNETTE AND LOUISE DELANO TOOK COE SAMPLE NO CAFB-063 TO CORP LAB.

* EACH OF TODAY'S SAMPLES WERE TAKEN FROM OPEN HOLE. WATER MIGHT HAVE COME FROM INFILTRATION OF RAINWATER CONTAINED IN A ZONE ABOVE THE SCREEN.

Tony C. Mills 10/29/92

THURSDAY 10-29-92

ARRIVED 7:00 TONY MILLS GEO-MARINE
FUGRO BUZ RUSSELL
MARK BENDER
JOHN REARDEN

** RAINED LAST NIGHT 2 1/4"

7:05 EQUIPMENT BLANK RB-102992

7:15 CALIBRATE HNU SPAN 3.22

FUGRO BILL FOR WED $2512.00

8:12 NDRC PICKED UP WED'S SAMPLES.

8:15-20 TONY MILLS CALLED JOHN NEWLIN ABOUT TODAYS PLANS.

10:05 CORP OF ENGINEERS CAME TODAY JIM DRYSDALE, RANDY NEWBERT FRANK GREY, Cathleen Low

10:40 TRIP BLANK NDRC TB-102992

10:45 TRIP BLANK CORP TB-102992

1120 TO 1235 RESAMPLE AT 019 BECAUSE NDRC BROKE BOTH VIALS. THIS ONE IS ON THEM.

~~8~~ TM 1530 - BACK FROM FLIGHT LINE TRAINING TO CAFB-019.

1730 - FUGRO AND GMI LEFT SITE.

Tony C. Mills 10/30/92

~~Time~~ SAMPLE LOCATION	TIME ON LOCATION	TIME DRILLING TO	DEPTH	TIME OF SAMPLE	COMMENTS
CAFB - 1069	0725 - 0758	0732 0740	5.77'	0750	
070	0807 0900		9'	0845 ~~0845~~	
071	0906 0937	0908 0911	11.5'	0935	TOOK SAMPLE FROM OPEN HOLE WAITED FOR WATER.
072	0940 1025	0956	10.82'		CALLED OUT IN 3' ~~[illegible]~~ WATER WAS
073	1040 - 1125	1045 1050	9.84'		DRY - MADE CALL WHILE WAIT NO.
074	1130 1200	1137 1144	11.05'	~~1135~~ 1150 + ON	
075	1202 1241	1207 1212	13.12'	1215	
076	1250 1315	1255 1305	5.2'		DRY
077	1318	1339 1338	11.38'	1355	~~DRY~~ Got OPEN HOLE SAMPLE.

TONY MILLS WILL TAKE SAMPLES TO NDRC LAB ON WAY TO PLANO TODAY 10/30/92

BUD WILL NOT BE HERE MONDAY. WILL BE ED ESCOCHEA - FUGRO GEOSCIENCES

Tony C. Mills 10/30/92

FRIDAY 10-30-92

ARRIVED 0700 TONY MILLS GEO-MARINE

FUGRO BUD RUNDELL

MIKE BENDEIC

JOHN BOWDEN

0740 CALIBRATE HAND SONAR 3.12

0804 MET NDRC AT VISITOR CENTER TO TAKE SAMPLES TO LAB.

0815 TONY MILLS CALLED POT NEWLIN TO GET AN UPDATE ON ACTIVITIES.

0830 SANDY DAVIS - LOVE SINKINS CHECK BY AND SAID ALL ROADS WERE CLEAR.

** 1100 TONY MILLS CALLED FOLSOM AIRMAN NEWLIN STAY OUTSIDE OF 50' FROM THE HOLES AND THEIR CONTRACTOR WILL TAKE CARE OF THE RUTS. ALSO DO NOT WORRY ABOUT BREAKING THE SIDEWALK. THE BASE CONTRACTING OFFICE WILL TAKE CARE OF IT.

1220 TO 1235 EAT LUNCH

14:30 TONY MILLS GMI LEAVE SITE.

14:45 FUGRO WILL LEAVE SITE.

THURSDAY CHARGE FROM FUGRO. $2527.00

TODAYS CHARGE " " $1911.00

16:11 DROPPED SAMPLES OFF AT NDRC LAB.

Tony C. Mills 10-30-92

SG. AIRMAN NEWLIN

SAMPLE LOCATION	TIME ON LOCATION	TIME DRILLING / TD	DEPTH TO BEDROCK	TIME OF SAMPLE	COMMENTS
CAFB-078	9:05 - 9:48	9:17 / 928	18.5'		DRY
079	9:50 - 10:20		~~16.3~~ 20.3		**
080	10:20 - 11:25	1032 / 1041	18.5'	1110	TOOK SAMPLE W/ LARGE BAILER THROUGH OPEN HOLE
079	11:30 - 12:10	1132 / 1142	16.3'	1155	Duplicates on COE.
081	12:13 - 12:55	1218 / 1230	13.7'	1245	OPEN HOLE 2' OF WATER. PULLED UP 2' AT A TIME.
082 TM	~~0100~~ 1300 - 1335	1305 / 1309	11.5		DRY
083	1400 - 1455	1416 / 1426	13.21'	1440	
084	1500 - 1535	1514 / 1519	11.5'		DRY
085	1600 - 1615		3'		HIT LIMESTONE NO SAMPLE.

LOUISE DELANO TOOK NDRC SAMPLES TO THE LAB ON THE WAY TO PLANO. USCOE SAMPLES WILL BE TAKEN TOMORROW a.m. TUES - 10-03-92.

MONDAY 10-11-02-92

ARRIVED 8:00 FUGRO - EDWARD ESCOCHEA
MARK BENDER
JOHN REARDEN

8:50 TONY MILLS - GEOMARINE

0905 CALIBRTED HNU.

0910 EQUIPMENT BLANK RB-110292

** CAFB 079 IS IN A PILE OF CONCRETE RUBBLE. THE SAMPLE WENT DOWN 2 FT BEFORE HITTING SOMETHING. DECIDED TO MOVE ON TO NEXT ONE UNTIL WE KNOW MORE ABOUT THE LOCATION AND UTILITIES.

1000 CALLED LOUISE DELANO TO BRING A BARREL.

1010 TALKED TO SR AIRMAN NEWLIN (LEFT MESSAGE INFORMING HIM OF OUR LOCATION)

TRIP BLANK TAKEN AT 1140, TB-110292

DUPLICATES TAKEN AND COE QA/QC AT 1155. COE TRIP BLANK TB-110292 at 1210.

1335 TO 1355 - LUNCH.

1400 CAFB-079 HAD AN ORGANIC VAPOR READING <1 PPM. IT WAS 5 TO 20 PPM AT 1215.

~~1335~~ 1440 LOUISE DELANO, GMI CAME OUT. TOOK REPORTS BACK TO LT. MANNING.

FUGRO LEFT AT 1645 TO GET GROUT.

TONY MILLS AND LOUISE DELANO LEFT SITE AT 1650.

Tony P Mills 11-02-92

SAMPLE LOCATION	TIME ON LOCATION	TIME DRILLING TD	DEPTH TO BEDROCK	TIME OF SAMPLE	COMMENTS
CAFB-086	0780 - 0740	0824	3'		HIT SOMETHING AT 3'. STOCKPILE AREA.
087	~~0840~~ - 820	0835	17.3'	0845	
088	0950 - 0853	0858	15.2'	0930	5 1/2 FEET OF WATER. SAMPLED OPEN HOLE.
089	0917 - 0920	0903	9'		DRY
013	0950 - 1010	0932	6.2'		DRY
090	~~1027~~ - 1035	1015	14.7'	1120	
091	1130 - 1145	1020	3.93'		DRY
092	1205 - 1208	1113	13.4	1230	OPEN HOLE
	1235	1153			
		1212			
		1218			

TONY MILLS WILL TAKE SAMPLES TO NDRC LAB IN RICHARDSON THIS AFTERNOON.

1400 TONY MILLS CALLED Sr. AIRMAN NEWLIN TO LET HIM KNOW THE JOB IS DONE. TOLD HIM FUGRO WILL REPAIR THE TRUCK IN THE PARKING LOT NEAR THE MAIN GATE.

1410 TONY MILLS ALSO CALLED FRANK GREY TO INFORM HIM OF THE COMPLETION OF THE JOB. FRANK SAID HE WOULD CALL US ABOUT WHO AND WHAT WOULD HAPPEN TO THE BARRELS.

1521 BROUGHT SAMPLES TO LAB. TURNED IN COOLER #505.

Tony C Mills
11-03-92

TUESDAY 11-03-92

ARRIVED 7:00 TONY MILLS - GAI

6:30 FUGRO ED ESCOCHEA
MARK BENDER
JOHN REARDEN

CALIBRATE HNU 7:20, SPAN 3.09

7:40 TO 8:20 CALLED AIRMAN NEWLIN. HE MET US AT THE PARKING LOT INSIDE SOUTHWEST GATE. CHECKED UTILITIES FOR US. ONLY A STORM DRAIN TO WORRY ABOUT.

TRIP BLANK AT 0850, TB-110392

RINSATE BLANK AT 0900, RB-110392

0940 - CAFB-089 HEADSPACE READ 20-25ppm.

1030 - CAFB-013 " " 10-20 ppm

1130 - 090 " " 3ppm

1230 BEGIN DECONING AFTER LEAVING LOCATION 090

1300 FINISHED WITH SAMPLING AND BACK TO DECON AREA. FUGRO WILL MAKE SURE ALL HOLES ARE GROUTED. FUGRO WILL REPAIR THEIR DRIVESHAFT AND LEAVE THE RIG PARKED UNTIL REPAIRED.

1400 FUGRO WILL HAVE JOB COMPLETED. GROUTING, DECON AND CLEANUP.

1345 TONY MILLS LEFT SITE.

Tony C Mills
11-03-92

WEDNESDAY 11-04-92

0830 - MAILED SHERP TO FRANK GREY AT USCOE FT. WORTH. (3 COPIES) THE SHERP WAS COMPLETED AND AVAILABLE ON SITE DURING PHASE I G.W. SAMPLING. Tony C. Mills
Geo-Marine

1130 FRANK GREY, USCOE POC called. He told us to take a sample of each Decon barrel and send it to the lab. Leave the barrels in the parking lot until we get the results. If they show no contamination, pour it down the sanitary sewer. Tony C. Mills

APPENDIX E

Safety, Health, and Emergency Response Plan (SHERP)

SAFETY, HEALTH, AND EMERGENCY RESPONSE PLAN (SHERP)

PHASE I & PHASE II - GROUNDWATER SAMPLING

FOR

US AIR FORCE PLANT NO. 4
FORT WORTH, TEXAS

Prepared for:

Department of the Army
Fort Worth District Corps of Engineers
Fort Worth, Texas 76102-0300

Contract # DACA63-91-D-0061

Prepared by:

Geo-Marine, Inc.
550 East 15th Street
Plano Texas 75074
(214) 423-5480

October 1992

1.0 FIELD ACTIVITIES

The Phase I and Phase II Groundwater Sampling field programs at U.S. Air Force Plant No. 4 will include the following elements:

- Locate 90 client-determined groundwater sampling locations (Phase I)
- Locate an additional ± 140 groundwater sampling locations based on the results of Phase I (Phase II)
- Accurately plot sampling locations on base map (Phases I & II)
- Check all sampling sites for underground utilties and other structures with appropriate private utility and government personnel (Phases I & II)
- Sample groundwater for TCE and other analyses using truck-mounted penetrometer sampler (Phases I & II)
- Backfill all holes with bentonite and repair surface to pre-investigation condition (Phases I & II)
- Monitor breathing space air with HNU at each sample location for elevated levels of organic vapors (Phases I & II)

2.0 RESOURCES

Reference documents used in the development of this Safety, Health, and Emergency Response Plan (SHERP) include:

- OSHA regulations in 29 CFR 1910
- US Army Corps of Engineers Safety and Health Requirements Manual EM 385-1-1
- Geo-Marine, Inc. Corporate Safety Manual
- various hazardous material characteristics summaries

3.0 KEY PERSONNEL

Geo-Marine, Inc. (GMI) and subcontract personnel responsible for the safe completion of this project include:

» GMI Corporate Safety Committee Chair - Mary Alice Garza

» GMI Project Manager - Lyle Winnette

» GMI Field Supervisor - Louise Delano

» GMI Sampler - Tony Mills

» Site Safety Officer - Tony Mills

» Sampling Equipment Subcontractor Supervisor - not available

» Sampling Equipment Subcontractor Operator - not available

3.1 Corporate Safety Committee Chair/Project Manager

The GMI Corporate Safety Committee Chair and Project Manager will have the ultimate responsibility for implementation of all parts of the SHERP and to make certain that all applicable federal, state, and local safety regulations and guidelines are followed.

3.2 Field Supervisor

The Field Supervisor will observe field activities of GMI and subcontractor personnel to insure that safety and health procedures outlined in this SHERP are followed. The Field Supervisor shall be responsible for the daily calibration of the HNu and the measuring of background ambient air for organic vapors in the vicinity of each site and for the recording of such information.

3.3 Site Safety Officer

The Site Safety Officer will oversee all field procedures to check that SHERP guidelines are followed. The Site Safety Officer has the authority to invoke disciplinary action in the event any stipulations of the SHERP are willfully ignored. Specifically, the responsibilities of the Site Safety Officer include:

organizing the field sampling area so that support facilities are in uncontaminated areas

introducing the field operations to the local emergency response/accident personnel

overseeing appropriate use and care of personal protective equipment (PPE)

monitoring external physical conditions, especially temperature, wind, possibility of electrical storms, etc.

running site safety meetings as needed

responsible for all verbal and written notification of the COE in the event of any emergencies, accidents, or injuries

3.4 Field Sampler

The Field Sampler will make certain that the appropriate PPE is worn and used and that the samples are collected with decontaminated equipment using procedures which minimize the potential of exposure via either respiration or eye/skin contact. The Field Sampler will also monitor organic vapor levels in breathing air space whenever this task is delegated to him.

3.5 Subcontractor Supervisor and Equipment Operator

Subcontractor personnel will operate the sampler in a safe manner and will insure that the appropriate PPE is worn and used and that proper decontamination procedures are carried out. They will insure that each sampling site is left clean and undisturbed.

3.6 Field Team

Each member of the field team shall individually has the responsibility to read, understand, and follow each section of this SHERP. Each team member will attend all site safety meetings called by the Site Safety Officer. Any unsafe work practices will be reported to the Safety Officer.

4.0 PERSONAL PROTECTIVE EQUIPMENT

The appropriate level of PPE for this project will be either level C or level D. The determinant will be the concentration of airborne organic vapors measured in the atmosphere in the sampling location area.

4.1 Level D PPE

Level D protection includes long sleeve shirt and trousers, hard hat, steel-toed boots, and gloves. When splashing is likely, boots and gloves should be made of rubber and clothes and skin protected with liquid-resistant coveralls like tyveks. Goggles or safety glasses will be available on site for eye protection.

4.2 Level C PPE

Level C protection includes all the elements of level D plus the addition of an air purifying respirator with the appropriate chemical cartridges, either half or full face.

5.0 DOCUMENTS

The GMI Project Manager will maintain safety and health records on file which document the following for each team member:

occupational health examination within the last 12 months

completed an OSHA-approved 40-hour hazardous material handling course or 8-hour refresher within the last 12 months

successful respirator fit-testing performed

Copies of documents for the GMI team are attached.

GEO-MARINE, INC.
SITE SAFETY PLAN

GENERAL INFORMATION

Project Title/Number: GROUNDWATER SURVEY AT US AIR FORCE PLANT NO. 4

Project Manager: LYLE WINNETTE

Project Location(s): FORT WORTH, TEXAS

Plan Prepared by: LOUISE DELANO Date: Oct. 20, 1992

Plan Approved By: LYLE WINNETTE Date: Oct. 21, 1992

Plan Reviewed by Site Safety Officer: TONY MILLS Date: Oct. 21, 1992

Scope/Objective of Work: SAMPLE GROUNDWATER AT 90 CLIENT-DETERMINED SITES FOR ANALYSIS FOR TCE (AND OTHER ORGANIC COMPOUNDS) IN ORDER TO ESTABLISH BOUNDARIES OF PLUME OF AFFECTED WATER. BASED ON THE RESULTS, RECOMMEND AN ADDITIONAL NUMBER OF SAMPLING SITES (APPROXIMATELY 140) TO MORE PRECISELY DEFINE THE EXTENT OF CONTAMINATION.

Proposed Dates of Field Activities: Oct. 21 - Nov. 6, 1992 - Phase I

Summary:

Overall Chemical Hazard:	low [ ]	moderate [X]	serious [ ]	unknown [ ]
Overall Physical Hazard:	low [X]	moderate [ ]	serious [ ]	unknown [ ]

GEO-MARINE, INC.
SITE SAFETY PLAN

SITE/WASTE CHARACTERISTICS

Waste Type(s):

gas/vapor [ ] liquid [X] sludge [ ] solid [ ]

Characteristics:

Flammable/ Ignitable [ ] volatile [X] corrosive [ ] acutely toxic [ ]

explosive [ ] reactive [ ] carcinogen [ ] radioactive [ ]

other:_____

Physical Hazards:

overhead [ ] confined space [ ] below grade [ ] trip/ fall [X]

puncture [ ] burn [ ] cut [ ] splash [X]

noise [ ] other:_____

Brief site history/description, including unusual features (see Scope of Work for details):

A CONFIRMED PLUME OF TCE HAS BEEN MIGRATING ACROSS THE BASE FROM MULTIPLE SOURCES PRESUMED TO BE LOCATED AT PLANT #4 (GENERAL DYNAMICS) AND A DRUM STORAGE AREA ADJACENT TO THE WEST SIDE OF THE GOLF COURSE.

Locations of chemical/wastes: EXTENT OF PLUME NOT YET DELINEATED

Estimated volumes(s) of chemical/wastes: VOLUME OF CHEMICALS UNKNOWN

Site currently in operation yes [X] no [ ]

GEO-MARINE, INC.
SITE SAFETY PLAN

HAZARD EVALUATION

List hazard by task (i.e. drilling, sampling, etc.); number tasks; assign physical and chemical hazard(s) and evaluation (s):

NO.	TASK	CHEMICAL HAZARD/EVALUATION	PHYSICAL HAZARD/EVALUATION
1	air monitoring	fumes/slight	none/none
2	"punching" holes	fumes/slight	heavy equipment usage/slight
3	collecting samples	splashing/slight	none/none
4	hole completion	none/none	minor/slight
5	equipment decon	splashing/slight	steam burn/slight

Completed Hazard Evaluation forms attached for each major known contaminant?

yes [X] no [ ]

If not, why?

_____

_____

_____

HAZARD CONTROL

Task-associated chemical hazards on the site include fumes and possible splashing by contaminated water. Both are considered slight. In the case of splashing, they can be prevented or mitigated by watchfulness, care, and the appropiate use of PPE. Fume accumulation is unlikely in the open air setting of the sampling locations; however, the consistent and regular use of an air monitor will detect any above-background levels of organic vapors so that chemical respirators can be put on and/or the site evacuated.

GEO-MARINE, INC.
SITE SAFETY PLAN

SITE SAFETY WORK PLAN

Site Control: attach map or sketch of site

perimeter identified [X]	work area(s) identified [X] (by sample points pending utility clearance)
contaminated area(s) [ ] (not yet delineated)	decontamination station(s) [ ] (will move with sampler truck)

Anticipated Level of Protection to be Used (cross-reference with task numbers from Hazard Evaluation section):

Task No.	Anticipated Protection Level*
1	level D
2	level D
3	level D
4	level D
5	level D

* with capability to go immediately to level C if conditions warrant

Modifications: _____

Notes:

1.) Anticipated amounts and contamination levels of hazardous materials do not require the specific designation of site control zones.

2.) All sampling procedures will be performed outdoors in an open air setting on level ground. Confined space situations will not be encountered.

SITE SAFETY WORK PLAN (cont.)

Action Levels for Evacuation of Work Zone for Reassessment of Conditions:

Level D: O_2 < 19.5% or > 25%
explosive atmosphere > 10% LEL
organic vapors ≥ 25 ppm (potential carcinogen)
particulates > __ mg/m NOT APPLICABLE
other _____

Level C: O_2 < 19.5% or > 25%
explosive atmosphere > 25% LEL
unknown organic vapor ≥ 100 ppm (OSHA PEL)
particulates > __ mg/m NOT APPLICABLE
other _____

Air monitoring to check for the above listed organic vapor action levels will be performed at each sample location using an HNu. The HNu will be calibrated daily using accepted calibration procedures.

If field team members are operating in level D PPE and organic vapors are 3 ppm above background, they will either upgrade to level C PPE, including APRs with chemical cartridges, or evacuate the site at the discretion of the Site Safety Officer.

If field team members are operating in level C PPE and organic vapors exceed 5 ppm above background, they will immediately evacuate the site.

Air monitoring forms are attached.

SITE SAFETY WORK PLAN (cont.)

Decontamination Solutions & Procedures: The cone-penetrometer contractor will use a vacuum system to decontaminate the tubing and cones as they are pulled out of a contaminated ground-water location. Hand sampling equipment will be decontaminated with a non-phosphate, non-volatile cleaner and distilled water final rinse.

Personnel Decon Protocol: All disposable PPE will will be double-bagged, sealed, and stored in 55-gallon drums until analytic results are reviewed to determine appropriate disposal methods. Goggles, outer gloves, and APR (if needed) will be cleaned with appropriate cleaners/sanitizers.

Work Limitations (time of day, weather, etc.): Work limitations include: weekdays 8 A.M. to 5 P.M. (set by client) and electrical storms. In case of temperature-induced stress, take frequent breaks, consume adequate fluids, and monitor body temperature.

Disposal of Investigation-Derived Materials (decon waste, cuttings, etc.): All investigation-derived waste materials, including but not limited to: (1) sampled water not retained for analyses, (2) hole cuttings, and (3) decon waste water, will be contained on site in sealed 55-gallon drums until analytic results indicate proper mode and location of treatment and/or disposal.

Sample Handling Procedures (including PPE): Samples will be collected by personnel wearing protective coveralls and latex surgical gloves. Samples will be handled with care and using minimal time.

GEO-MARINE, INC.
SITE SAFETY PLAN

EMERGENCY INFORMATION

Local Resources phone numbers/names of individuals/addresses as applicable

Ambulance 911

Hospital Emergency Room 882-3333
(map with route to hospital is attached)

Poison Control Center 1-800-441-0040

Police (local, county, state) 911 (emergency) 335-4222 (non-emergency)

Fire Department 911 (emergency) 332-2131 (non-emergency)

Airport Meacham Airport 624-1127

Regulatory Agency Contact (EPA, TWC, etc.) EPA 214-655-6444 TWC (district) 214-298-6171

Laboratory US Army Corps of Engineers Southwestern Division Laboratory, 4815 Cass St., Dallas, TX 75235-8011 CONTACT: Cathy Carter at 905-9130

Client Contact Frank Grey (817) 334-9924

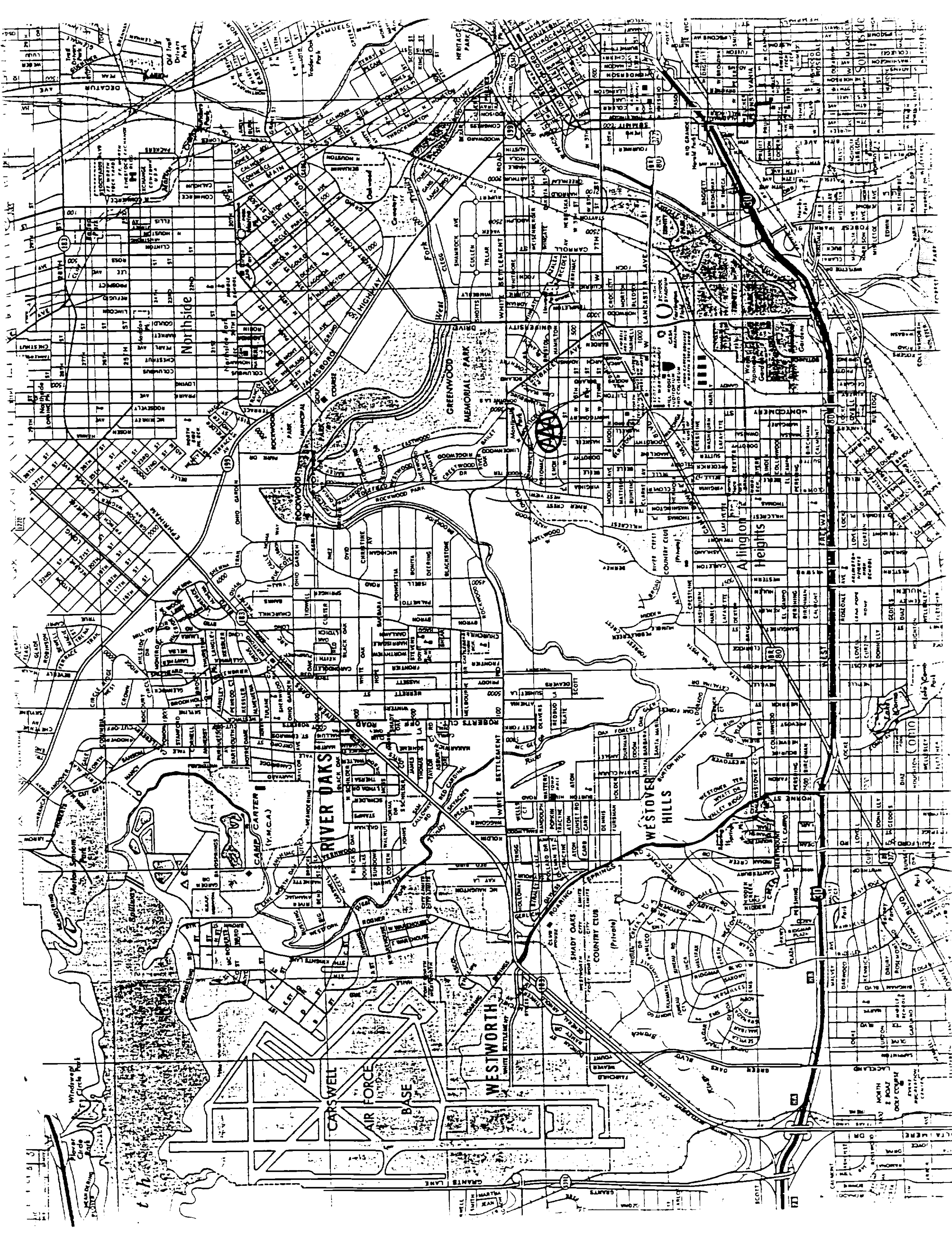
Site Resources phone numbers/names of individuals/addresses as applicable

Site Contact (817) 782-5000 (Carswell switchboard)

Site Emergency Contact Bobby Hernandez (Environmental) 782-6264 Secretary 782-6207

Water Supply Source available on site

Local Telephone Number/Location (on site) John Newlin (Construction Management Office) 782-6272



Northside
GREENWOOD MEMORIAL PARK
RIVER OAKS
WESTOVER HILLS
Arlington Heights
CARSWELL AIR FORCE BASE
WESTWORTH
SHADY OAKS COUNTRY CLUB (Private)
RIVER CREST COUNTRY CLUB (Private)
CAMP CARTER (Y.M.C.A.)
WHITE SETTLEMENT ROAD
JACKSBORO HIGHWAY
DECATUR AVE
UNIVERSITY DRIVE
LANCASTER AVE
WEST FREEWAY
MONTGOMERY
ROCKWOOD PARK
EPHRIHAM
CHURCHILL
ROBERTS CUT OFF

GEO-MARINE INC.
HAZARDOUS COMMUNICATION PROGRAM

PROJECT NAME: Groundwater Survey, US Air Force Plant No. 4, Fort Worth, Texas

PROJECT LOCATION: Carswell Air Force Base, Fort Worth, Texas

PROJECT NUMBER: 1161-052

DATE(S): 10/20/92 —

This written hazardous communication program follows the requirements specified in 29 CFR 1910.1200 (OSHA) and includes the following components:

I. proper labelling of all containers of hazardous chemicals which includes accurate identification of contents, appropriate hazard warnings, and complete name and address of manufacturer

II. complete and readily available list of all chemicals present on site

III. readily available material safety data sheets (MSDS) for all chemicals either used or produced at the site

IV. employee training which includes:

- detection methods for hazardous chemicals
- monitoring methods for hazardous chemicals
- emergency procedures in the event of a release
- safe work habits
- types of personal protective equipment (PPE) and the appropriate usage of PPE

I. Are all containers of hazardous chemicals on site properly labelled?

yes no not applicable/reason

II. Is there a complete list of all hazardous chemicals on site readily available?

yes no not applicable/reason

III. Are there MSDS sheets readily available for all hazardous chemicals used or produced on site?

yes no not applicable/reason

IV. Employee Training:

OSHA 40 Hour Training?

yes no not applicable/reason

Other training? (specify)

What hazardous chemical detection method(s) are used on site?
None - samples will be transported of site for laboratory analyses.

What hazardous chemical monitoring method(s) are used on site?
HNu will be used for monitoring air space on a regular schedule

What emergency procedures are in place in the event of a release?
emergency phone numbers

fire: 911 police: 911 ambulance: 911

route to nearest hospital (attach map):
Roaring Spring Rd. southeast from base to I-30. East on I-30 to Summit exit. South on Summit to Pennsylvania. East one block to Harris Methodist Hospital at 1301 Pennsylvania Ave.

What level of PPE is used at the site? (include specifics of clothing and equipment):
Level D with hardhats, steel-toes boots, safety goggles, and latex gloves.
Rubber boots, rain suits, and impervious coveralls will be available.
APR with organic vapor cartridges (black) will be carried in case action level exceeded.

Printed name of person completing form: Louise Delano Title: ENV. GEOL.

Signature: L. L. Delano

Date: 10/20/92

GEO-MARINE INC.
HAZARDOUS & TOXIC MATERIALS PLAN
SITE SAFETY REVIEW

PROJECT NAME: CARSWELL WATER SAMPLING PROJECT NUMBER: 1161-052
Site Location: Fort Worth, Tx.
Date: 10/21/92 Time: _____ Location of review: Carswell AFB

GMI Representative(s): Lyle Winnette, Tony Mills

Client Representative(s): Buz (J.W.) Russell, Mark Bender, Terry Rowan

Meeting Conducted by: Lyle Winnette

Meeting Objective(s): _____

Chemicals Anticipated: TCE Contaminated water
Other Hazardous Substance(s) and/or Condition(s) Anticipated: Unknown

TOPICS DISCUSSED:
Physical Hazards ✓
Chemical Hazards ✓
Radiation Hazards N.A.
Personal Protective Clothing/Equipment ✓
Emergency Procedures ✓
Specific Individual Responsibilities ✓
Decontamination Procedures ✓
Special Site Considerations ✓

Checklist
Emergency information reviewed by ALL team members? ✓
Route to nearest hospital known by ALL team members? ✓
Site safety plan on site and readily available to ALL team members? ✓
Copy(ies) of appropriate licensing/certification available? ✓

Signatures of those present:

J.W. Russell	J. W. Russell
Mark A. Bender	MARK A. BENDER
Terry Rowan	TERRY ROWAN
Lyle Winnette	LYLE WINNETTE
Tony C. Mills	TONY C. MILLS

GEO-MARINE, INC.
SITE SAFETY PLAN
EQUIPMENT LIST

PPE

Level A

Item	No(s).
SCBA	
spare air tanks	
encapsulating suit (type _____)	
surgical gloves	
gloves (type _____)	
outer work gloves	
neoprene safety boots	
steel-toed boots	
booties	
hard hat	
5-minute escape cooling vest	

Level C

Item	No(s).
respirator (type _____)	
cartridge (type _____)	
5-minute escape mask	
protective coveralls (type _____)	
rain suit available	
butyl apron	
surgical gloves	
gloves (type _____)	
outer work gloves	
neoprene safety boots	
steel-toed boots	
booties	
hard hat with face shield	

Level B

Item	No(s).
SCBA	
spare air tanks	
protective coverall (type _____)	
rain suit	
butyl apron	
surgical gloves	
gloves (type _____)	
outer work gloves	
neoprene safety boots	
steel-toed boots	
booties	
hard hat with face shield	

Level D

Item	No(s).
respirator available (type _____)	✓
cartridges available (type _____)	✓
5-minute escape mask available	✓
protective coverall (type _____)	✓
splash apron	
rain suit available	
neoprene safety boots	✓
steel-toed boots	✓
booties	✓
work gloves	✓
surgical gloves	✓
hardhat	✓
safety glasses or goggles	✓

EQUIPMENT LIST (cont.)

GENERAL INSTRUMENTS	No(s).
OVA (model no._____)	
HNu (model no._____)	✓
O^2 explosimeter with calibration kit	
magnetometer (model no. _____)	
pipe locator	
Draeger tubes (type _____)	
heat stress monitor	
noise equipment (type _____)	
monitox cyanide	
personal sampling pumps	
conductivity meter	
pH meter	
metal detector	

RADIATION	No(s).
Geiger counter	
ion chamber	
alert dosimeter	
pocket dosimeter	
portable ratemeter	
scaler/ratemeter (type _____)	
micro meter	

FIRST AID	No(s).
first aid kit	✓
oxygen administrator	
stretcher	
portable eye wash	
blood pressure monitor	
thermometer	
blanket	

EQUIPMENT LIST (cont.)

VEHICLE	No(s).
vehicle (description _____)	
gas ( )	
oil ( )	
antifreeze ( )	
battery water level ( )	
windshield washing fluid ( )	
tire pressure ( )	
tire pressure - spare(s) ( )	
other _____ ( )	
vehicle insurance proof ( )	
vehicle registration current ( )	
vehicle inspection current ( )	
tool kit	✓
hydraulic jack	✓
spare tire(s)	✓
lug wrench	✓
tow chain	✓
fire extinguisher (date tested/filled _____)	✓
generator	
steam cleaner	

DECON	No(s).
wash tubs	
buckets	✓
scrub brushes	✓
pressurized sprayer	✓
detergent (type _____)	✓
solvent (type _____)	
plastic sheeting	✓
containment dams	
tarps and poles	
trash bags	✓
trash containers	
masking tape	
duct tape	✓
paper towels	✓
face mask sanitizer	
respirator cleaners	
goggle cleaners	
chairs	
step ladder	
distilled water	✓

EQUIPMENT LIST (cont.)

SAMPLING AND SHORT-TERM SAMPLE STORAGE	No(s).
clear glass bottles	
8 oz	
16 oz.	
32 oz.	
64 oz.	
amber glass bottles (1 liter)	
VOA vials	✓
acid for preservation (type: _____)	✓
funnel	✓
string	
hand bailer	
2 inch	
4 inch	
bottle labels	✓
water proof pen	✓
chain-of-custody forms	✓
sample description forms	
custody seals	
QA/QC seals	
baggies	
spoons	
knives	
measuring tape	
filter paper	
coolers	✓
ice	✓
personaL pump sampling supplies	
thieving rods with bulbs	

SAMPLE SHIPMENT	No(s).
heavy duty plastic coolers	
paint cans with lids, 7 clips each	
shipping labels	
DOT labels	
labels UP	
FRAGILE	
HAZARDOUS	
other _____	
strapping tape	
clear packing tape	
express shipping forms	
vermiculite	
"bubble" wrap	

EQUIPMENT LIST (cont.)

MISCELLANEOUS	No(s).
surveyor's tape	
100-foot metal tape	
flagging	✓
stakes	✓
surveying flags	
surveying meter stick	
compass (type silva)	✓
measuring ("wonder") wheel	✓
300 foot nylon rope	
nylon string	
camera	✓
film	✓
banner tape	
binoculars	
megaphone	
walkie-talkies	
chaining pin and ring	
bailing pump	
55-gallon storage drums	
drum dolly	
bung wrench	
wheel barrow	
pick	
shovel	
soil auger	
weather radio	

TEXAS ENGINEERING EXTENSION SERVICE
THE TEXAS A&M UNIVERSITY SYSTEM
Occupational and Environmental Safety Training Division

This is to certify that

Tony C. Mills

has satisfactorily completed the 40 hour Hazardous Materials Emergency Response Training in accordance with 29 CFR 1910.120

August 31 - September 4, 1992
Date

446-62-1135
Certificate Number

Division Head

Director, Texas Engineering Extension Service

CURA Incorporated

certifies that

L. Louise Delano
006-48-1402

has successfully completed
an Annual Refresher for
Occupational Safety and Health Training
for Hazardous Waste Operations

as required by
Occupational Safety and Health Administration
Title 29 of Code of Federal Regulations, Part 1910 Section 120
Given on February 11, 1992 at Dallas, Texas

Richard Wilson
Training Manager

© GOES 462-1/2

LITHO IN U.S.A.

Economic Environmental Services, Inc.

Certificate of Completion

This is to certify that

Lyle Winnette

461-94-3130

has successfully completed an

8 Hr. Training Course in

29 CFR Part 1910.120

Hazardous Waste Operations and Emergency Response

on this 7th day of February, 1992.

Thomas Hewitt Lee

Trainer

No. 920314

J. L. KELLEY, M.D.
A PROFESSIONAL ASSOCIATION
Family Practice
10611 Garland Rd.
Suite 113
Dallas, Texas 75218
(214) 328-3151

COMPREHENSIVE EMPLOYEE HEALTH SCREENING EXAM

DIPLOMATE, AMERICAN BOARD OF FAMILY PRACTICE

Name: Lyle Winnette Date: 3/01/9

D.O.B.: 4/25/53

Blood Pressure: 110/80

Weight: 198#

Visual acuity	RT:	LT:
w/o corr'n	20/200	20/200
w/ corrn	20/20	20/20

Summary of physical findings: Non-specific left hip arthralgia
Tendinitis, both shoulders

PA Chest X-Ray: Normal

Laboratory tests (copies attached)

Complete Blood Count Normal

Urinalysis Normal

SMAC (Blood Chemistries) Normal

Blood Lead Less than 5 ug/ml normal

Methemoglobin 3% normal

Audiogram 055. normal

Spirometry Normal

Electrocardiogram Normal

This employee is/is not qualified to work in a hazardous waste environment.

J.L. Kelley, M.D.
JLK: jah

RUSSELL R. SMITH, M.D.

Diplomate, American Board of Family Practice

2828 W. Parker Rd., Suite 103 - B
Plano, Texas 75075
Telephone (214) 612-0220

June 12, 1992

Mr. Lyle Winnette
HAZMAT Department
Geo-Marine
550 E. 15th Street
Plano, TX 75074

RE: LOUISE DELANO

Dear Lyle:

I saw your employee, Louise Delano, in my office on May 11, 1992. She presented for a complete physical examination including chest x-ray, pulmonary function tests and audiometric testing to meet the OSHA requirements for her position.

My impression, based on her history and physical exam, is that Louise is qualified to wear a respiratory and work in the field per the requirements of her job.

Please don't hesitate to call me if you have questions.

Sincerely,

Russell R. Smith, M.D.

RRS/ac

GEO-MARINE INC.

HAZARD EVALUATION OF CHEMICALS

Project Number/Name: 1161-052 / GROUNDWATER SURVEY at U.S. AIR FORCE PLANT No. 4, FORT WORTH, TEXAS Date: 10-9-92

Chemical Name: TRICHLOROETHENE DOT Name/UN Number: 1710 CAS Number: 79-01-6

References Consulted: (circle):

NIOSH/OSHA Pocket Guide Verschueren Merck Hazardline Chris ACGIH

Toxic & Hazardous Safety Manual Other CRC HANDBOOK

Chemical Properties:

Chemical Formula: $CHCl=CCl_2$ Odor Characteristic: CHLOROFORM LIKE ODOR Flammable Limits: 11 TO 41 % BURNS W/ DIFFICULTY

Molecular Weight: 131.4 Physical State: LIQUID Solubility (Water): NON-SOL. Boiling Point: 189°F

Flash Point: 90° F Freezing Point: -99°F Specific Gravity: 1.46 Vapor Pressure/Density: 58 mm

Incompatibilities: STRONG CAUSTICS CHEMICALLY ACTIVE METALS: Na, Be, Li, Mg, Ti, Ba LEL: 11 % UEL: 41%

Biological Properties

TLV-TWA: 50 ppm PEL: 50 ppm Odor/Odor Threshold: 21.4 ppm

IDLH: Human: 1000 ppm Aquatic: Rat/Mouse:

Route(s) of Exposure: inhalation, ingestion, skin/eye contact

Carcinogen: SUSPECTED Teratogen: Mutagen:

Handling Recommendations (including personal protective clothing, equipment, & measures): USE goggles and impervious clothing if possibility of splashing; USE Respirators if strong fumes identified.

Monitoring Recommendations: BREATHING AREA MONITORING AT EACH LOCATION WITH HNu OR OVA.

Disposal/Waste Treatment: DO NOT DISPOSE OF CHEMICALS ON THE GROUND OR IN WATER.

Health Hazard & First Aid: IRRIGATE EYES IMMEDIATELY IF SPLASHED; SEEK IMMEDIATE MEDICAL ATTENTION IF INGESTED; WASH SKIN WITH WATER FOR 15 MINUTES IF SPLASHED; REMOVE TO FRESH AIR AND ADMINISTER RESUSCITATION IF NECESSARY OR GIVE OXYGEN WHEN BREATHING IS DIFFICULT.

Symptoms: Acute: VERTIGO, NAUSEA, EYE/SKIN IRRITATION, CARDIAC ARRHYTHMIA

Chronic: TARGET ORGANS INCLUDE RESPIRATORY SYSTEM, HEART, LIVER, KIDNEYS, SKIN

Mallinckrodt
Material Safety Data

Emergency Phone Number: 314-982-5000

Mallinckrodt provides information in good faith but makes no representation as to its completeness or accuracy. Individuals receiving this information must exercise their independent judgment in determining its appropriateness for a particular purpose.

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Mallinckrodt, Inc., Science Products Division, P.O. Box M, Paris, KY 40361

TRICHLOROETHYLENE

PRODUCT IDENTIFICATION:

Synonyms: Trichloroethene; TCE; acetylene trichloride

Formula CAS No.: 79-01-6

Molecular Weight: 131.39

Chemical Formula: C_2HCl_3

Hazardous Ingredients: Not applicable.

PRECAUTIONARY MEASURES

WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION. AFFECTS CENTRAL NERVOUS SYSTEM. POSSIBLE CANCER HAZARD BASED ON TESTS WITH LABORATORY ANIMALS. EXPOSURE MAY CREATE A CANCER RISK.

Do not get in eyes, on skin, or on clothing.
Do not breathe vapor.
Keep container closed.
Use with adequate ventilation.
Wash thoroughly after handling.

EMERGENCY/FIRST AID

If swallowed, induce vomiting immediately by giving two glasses of water and sticking finger down throat. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes. In all cases call a physician. Note to physician: Do not administer adrenaline or epinephrine to a victim of chlorinated solvent poisoning. SEE SECTION 5.

DOT Hazard Class: ORM-A

SECTION 1 Physical Data

Appearance: Clear, colorless liquid.

Odor: Chloroform-like.

Solubility: Practically insoluble in water. Readily miscible in organic solvents.

Boiling Point: 87°C (188.6°F).

Melting Point: -73°C (-99.4°F).

Specific Gravity: 1.45

Vapor Density (Air = 1): 4.5

Vapor Pressure (mm Hg): 57.8 @ 20°C (68°F).

Evaporation Rate: No information found.

SECTION 2 Fire and Explosion Information

Fire:
Flashpoint: None by standard methods.
Flammable limits in air, % by volume at 57°C (135°F): lel: 12.5, uel: 90.
Autoignition temperature: 410°C (770°F).

Explosion:
A strong ignition source, e.g., a welding torch, can produce ignition.

Fire Extinguishing Media:
Use water spray to keep fire exposed containers cool. If substance does ignite, use CO*2, dry chemical or foam.

Special Information:
Dry chemical, foam or carbon dioxide. Water spray may be used to keep fire exposed containers cool.

SECTION 3 Reactivity Data

Stability:
Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:
Decomposed by heat or flame and in the presence of oxygen and light, especially UV radiation. Can form carbon monoxide, phosgene, and emit corrosive fumes of hydrochloric acid.

Hazardous Polymerization:
This substance does not polymerize.

Incompatibilities:
Alkali hydroxides, powdered metals, liquid oxygen.

SECTION 4 Leak/Spill Disposal Information

Ventilate area of leak or spill. Clean-up personnel require protective clothing.
Contain and recover liquid when possible.

Larger Spills: absorb with vermiculite, dry sand, earth, or similar material for disposal as hazardous waste in a RCRA approved facility.

Do Not Flush To Sewer.

Reportable Quantity (RQ)(CWA/CERCLA): 1000 lbs.

Ensure compliance with local, state and federal regulations.

NFPA Ratings: Health: 2 Flammability: 1 Reactivity: 0

SECTION 5 Health Hazard Information

A. EXPOSURE / HEALTH EFFECTS

Inhalation:
Acute exposure causes depression of the central nervous system that may include symptoms of visual disturbances and mental confusion, incoordination, headache, nausea, euphoria, and dizziness. Inhalation of high concentrations could cause unconsciousness and death.

Ingestion:
Low to moderately toxic. May cause effects similar to inhalation. May cause coughing, abdominal pain, diarrhea, dizziness, unconsciousness. Kidney failure can result in severe cases. Estimated fatal dose is 3-5 mls/kg.

Skin Contact:
May cause irritation. Continued skin contact has a defatting action and can produce rough, dry, red skin resulting in secondary infection.

Eye Contact:
Vapors may cause severe irritation with redness and pain. Splashes may cause eye damage.

Chronic Exposure:
Chronic exposures may cause liver and kidney damage and nervous system effects. Workers chronically exposed may exhibit central nervous system depression, intolerance to alcohol, and increased cardiac output.

Aggrevation of Pre-existing Conditions:
Persons with pre-existing skin disorders or eye problems, or impaired liver, kidney or respiratory function may be more susceptible to the effects of the substance.

B. FIRST AID

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion:
If swallowed, induce vomiting immediately by giving two glasses of water and sticking finger down throat. Never give anything by mouth to an unconscious person. Call physician immediately.

Skin Exposure:
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Call a physician immediately.

Eye Exposure:
Wash eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

C. TOXICITY DATA (RTECS, 1982)

Oral rat LD50: 4920 mg/kg. Mutation references cited. Reproductive effects cited. Tumorigenic effects cited. Carcinogenic determination: limited evidence in experimental animals (IARC Supplement 4, 1982) Aquatic Toxicity Rating: TL 96: 1000-100 ppm.

SECTION 6 Occupational Control Measures

Airborne Exposure Limits:
-OSHA Permissible Exposure Limit (PEL):
100 ppm (TWA); 200 ppm (Ceiling);
300 ppm/5M/2H (Peak).
-ACGIH Threshold Limit Value (TLV):
50 ppm (TWA) 200 ppm (STEL).

Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, "Industrial Ventilation, A Manual of Recommended Practices", most recent edition, for details.

Personal Respirators: (NIOSH Approved)
If the TLV is exceeded a full facepiece chemical cartridge respirator may be worn, in general, up to 100 times the TLV or the maximum use concentration specified by the respirator supplier, whichever is less. Alternatively, a supplied air full facepiece respirator or airlined hood may be worn.

Skin Protection:
Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls to prevent skin contact.

Eye Protection:
Use chemical safety goggles and/or a full face shield where splashing is possible. Contact lenses should not be worn when working with this material. Maintain eye wash fountain and quick-drench facilities in work area.

SECTION 7 Storage and Special Information

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage.

GEO-MARINE, INC.

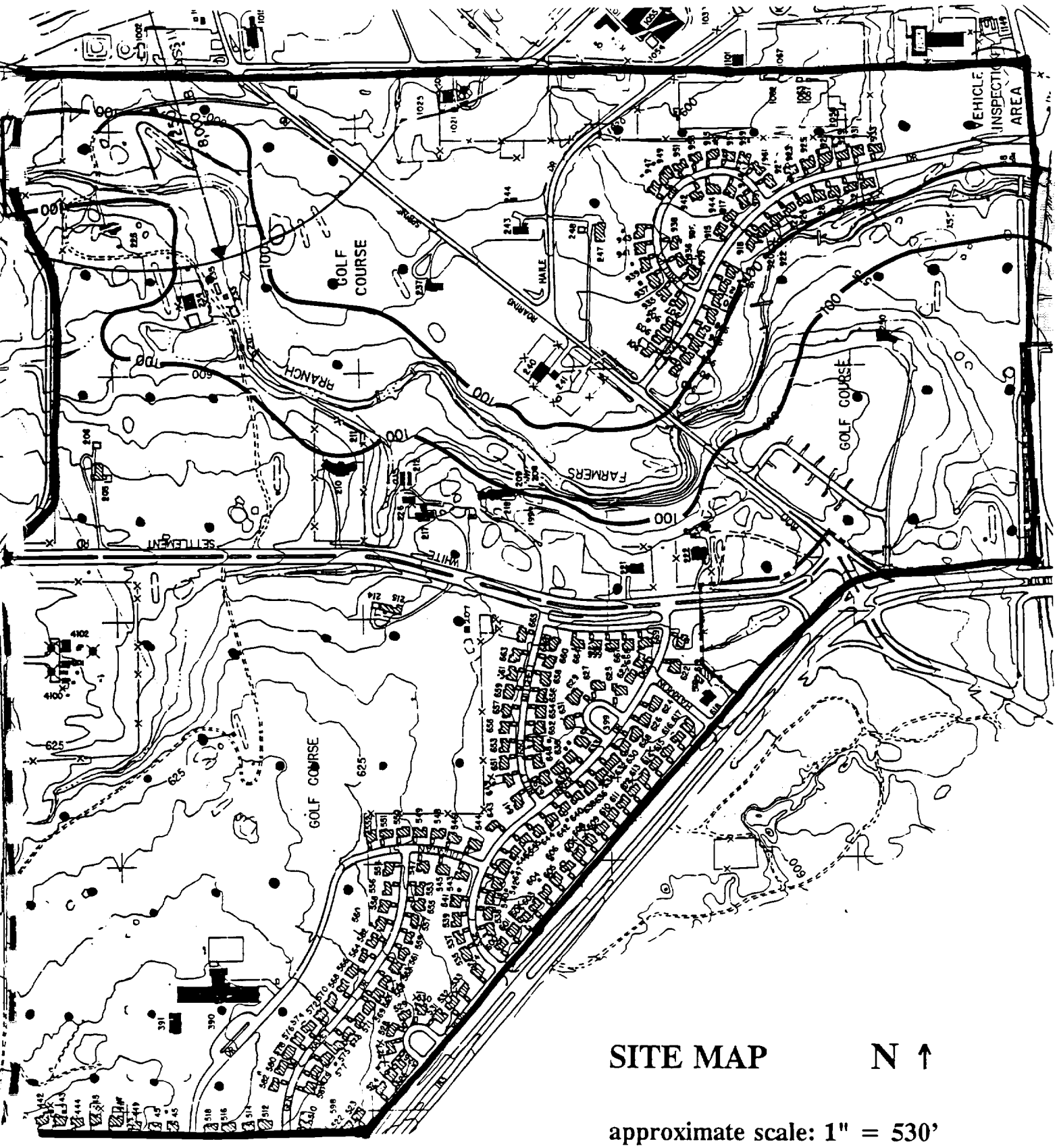
AIR MONITORING FORMS (daily calibration unless noted)

Contaminant of Interest: TCE (trichloroethylene)

Type of Sample (area, personal): area

Equipment Make & Model: HNU Systems, Inc. model PI-101

DATE	TIME	INSTRUMENT READING	SAMPLER INITIALS



SITE MAP **N ↑**

approximate scale: 1" = 530'

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ADMINISTRATIVE RECORD

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