GW - 126

REPORTS

YEAR(S):

1991

SITE REMEDIATION REPORT
HOMCO Location 151 Facility
HOMCO International, Inc.
Farmington, New Mexico

July 19, 1991

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1.0 EXECUTIVE SUMMARY

Buys and Associates, Inc. (B&A) was contracted by HOMCO International, Inc. to perform remedial activities in March 1991 at the HOMCO Location 151 facility in Farmington, New Mexico. A Phase II site investigation was conducted at this facility by B&A in June 1990 as a follow-up to a Phase I site investigation conducted by Sweetwater Corporation in November 1989. Results of the Phase II investigation indicated that certain areas of the yard contained total petroleum hydrocarbons and benzene in concentrations which exceeded the State of New Mexico Oil Conservation Division's (NMOCD) action limits. B&A recommended in the Phase II Site Investigation Report (B&A, September 1990) that remedial action was required in two general areas of the HOMCO yard, including the three abandoned industrial leach fields, and an isolated sludge disposal area in the northeast corner of the yard.

The remedial effort was implemented by HOMCO in cooperation with the NMOCD and the United States Environmental Protection Agency's (USEPA) Underground Injection Control (UIC) permit program. Because discharge of industrial waste water is regulated under the UIC permit program, and permits are very difficult to obtain, HOMCO International, Inc. no longer allows leach fields as an industrial waste water disposal option. In addition, the NMOCD requires that any leach field containing sludges or liquids with benzene or total petroleum hydrocarbons (TPH) in concentrations exceeding NMOCD action limits must either:

1. Be removed; or
2. Have adequate documentation collected to verify that the quality of the local ground water is not being adversely affected by contaminant migration from the leach field.

Remedial activities were conducted between March 6 and March 14, 1991. Approximately 20 cubic yards (yds^3) of soil was excavated from the sludge disposal area in the northeast corner of the yard, and approximately 15 yds^3 of contaminated soil was excavated from the leach field north of the HOMCO Wireline Services (HWS) building. Approximately 1680 yds^3 of hydrocarbon-contaminated soil was excavated from below two concrete pads at the north end of the HOMCO Fishing Tools Operations (HFTO) building. All of the hydrocarbon-contaminated soils were hauled to an approved disposal facility (Envirotech landfill) and disposed of as oil-conmtaminated wastes after laboratory analyses confirmed the concentrations of benzene and TPH in the sludges were below NMOCD action limits.

Two leach field holding tanks and two industrial waste-water sumps were removed during the site remediation. The holding tanks were located north of the HWS building and northwest of the HFTO building, and the sumps were located under the concrete pads on the west and north sides of the HFTO building. The sludge in the units was disposed of at the Envirotech landfill as hydrocarbon-contaminated waste after laboratory analyses confirmed the concentrations of benzene and TPH in the sludges were below NMOCD action limits.

Eight drums containing industrial sump sludges generated during the oil/water separator installation in September 1990 were sampled and analyzed for benzene and TPH. The contents were then solidified with the soils excavated from the northeast corner of the yard and hauled to Envirotech for disposal.

A portion of the area excavated north of the HFTO building was compacted and tested to meet engineering and construction requirements for the construction of a proposed building addition.

Upon completion of the HWS and HFTO leach field excavations, verification samples were collected to confirm that desired cleanup levels had been achieved. The analytical results indicated that the concentrations of benzene and TPH were below the NMOCD action limits and no additional excavation was necessary. Analytical results indicated that neither benzene nor TPH were present in any of the samples in significant concentrations. However, a black stained layer approximately 3-feet below grade was left in place along the south. The seam continued south under the building and west under the entrance to the yard. Significant concentrations of volatile organics were recorded along the stained seam with an organic vapor meter (OVM). This material was not included in the verification composite because any further excavation along the south wall would have undermined the foundation and jeopardized the structural integrity of the building. The nature and extent of contamination along the seam toward the south and southwest will be investigated at a later date when a proposed building addition is constructed or the indoor industrial sump is removed.

2.0 INTRODUCTION

2.1 SITE DESCRIPTION

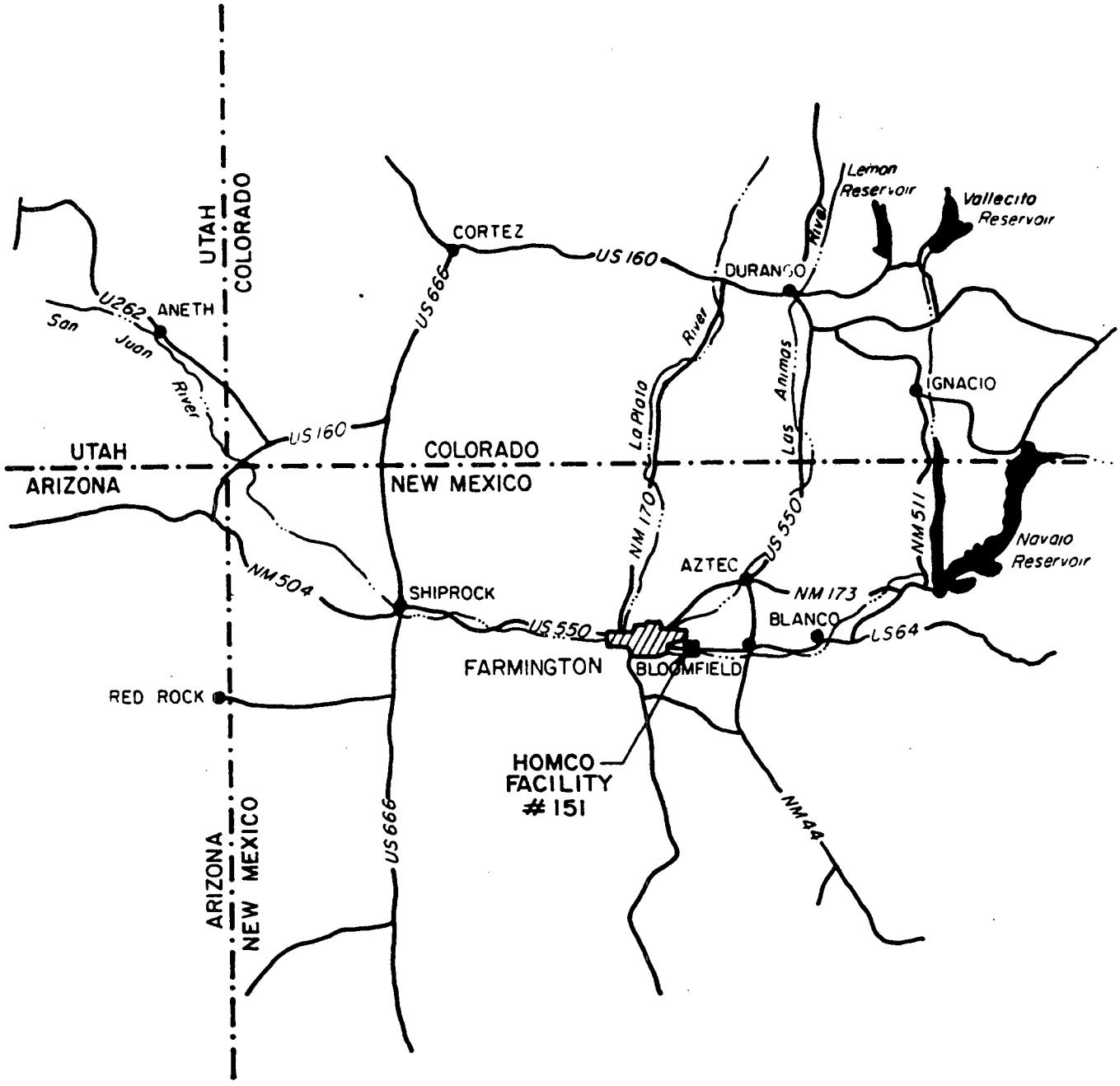
The HOMCO facility is situated in the southwest corner of the northwest corner of Section 19, Township 29 North, Range 12 West in San Juan County, New Mexico. The site is located at 298 U.S. Highway 64, just west of Farmington, New Mexico (Figure 2-1) on a tract of approximately 4.5 acres of land.

The site is bordered to the south by U.S. Highway 64; to the east by Magcobar (a drilling mud company); to the northeast by Weskem (a drilling mud company); to the north by Walters drilling company; to the northwest by another drilling mud company; and to the west by two office buildings located across a public street (Figure 2-2).

The site lies at an approximate elevation of 5380 feet above mean sea level and is located near Echo Ditch, which runs just south of U.S. Highway 64 and approximately one half mile north-northeast of the San Juan River. The property is relatively flat and drains to the south, towards the drainage ditch on the north side of Highway 64. The north, and part of the east edges of the property are bordered by a sandstone bluff. The majority of the 151 yard is surfaced with road base/gravel, however, there are concrete slabs adjacent to portions of both the HWS and HFTO buildings.

Two structures are located on the property, the HOMCO Fishing Tools Operations (HFTO) building and the HOMCO Wireline Services (HWS) building. The HFTO building is the center of plant operations, and houses the administrative offices. The HWS building contains a water pump/hot water heater system which is used to wash logging tools, wireline trucks and passenger vehicles. Significantly dirtier equipment is steam cleaned in the main shop located in the HFTO building. Steam cleaning operations conducted in each building are separate. Estimated total water usage for both operations is 15,000 to 20,000 gallons (gals) per month.

The construction of an addition to the HFTO building has been approved. Sixty feet will be added to the north end of the existing structure to accommodate new painting and steam cleaning facilities, and to increase available space for equipment storage.



BUYS & ASSOC.	
FIGURE 2-1 GENERAL LOCATION MAP	
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DATE: 7-15-90	SHEET: 1 of 1

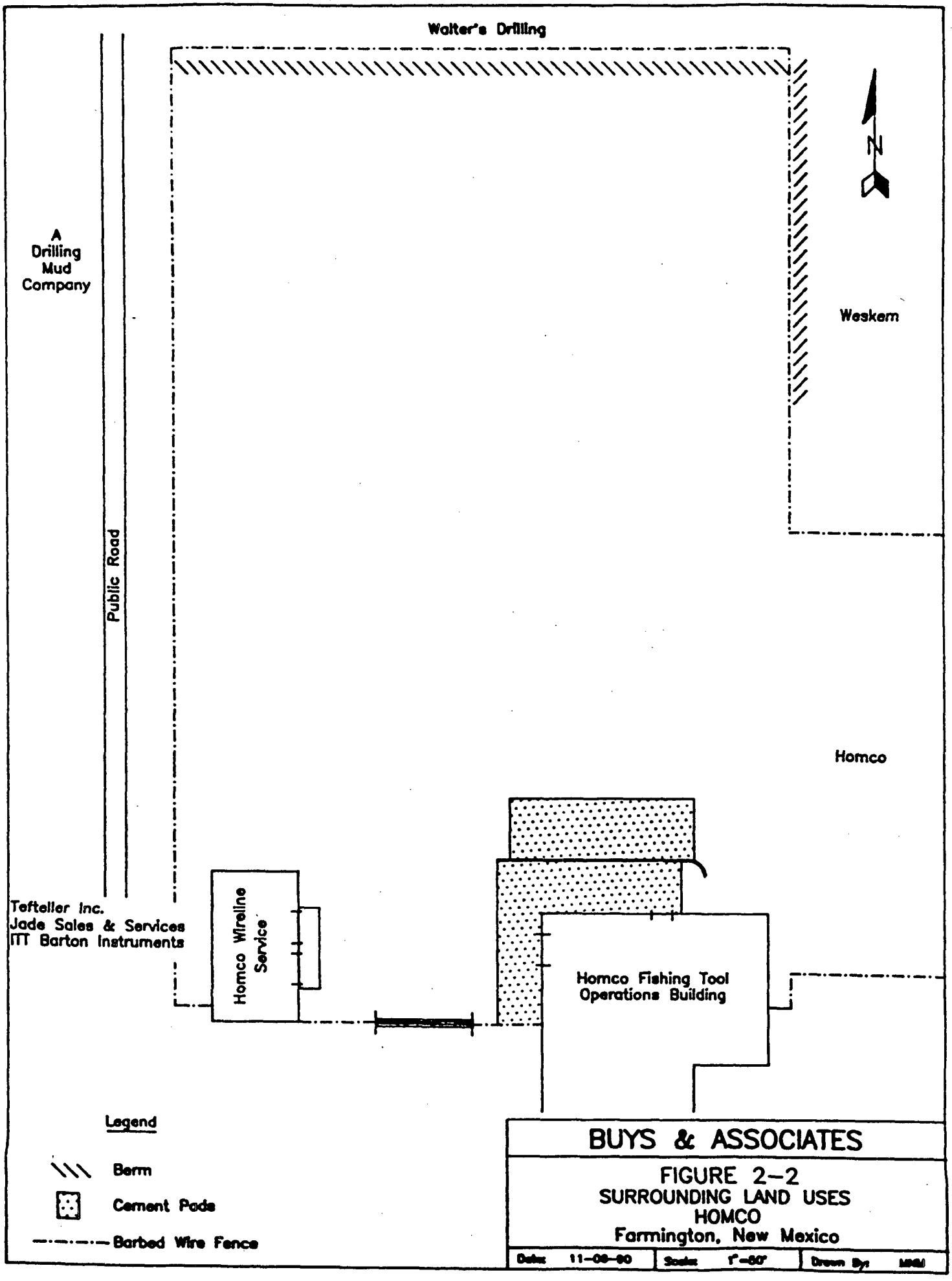

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FIGURE 2-2
SURROUNDING LAND USES
HOMCO
Farmington, New Mexico

Date: 11-08-90	Scale: 1"=60'	Drawn By: MRM

2.2 REMEDIAL OBJECTIVE AND SCOPE OF WORK

The objective of the remedial effort was to eliminate the potential for future ground-water contamination caused by the vertical migration of leachate from the facility's industrial leach fields, and from a disposal area in the northeast corner of the yard where HOMCO had stockpiled hydrocarbon-contaminated sludge from several of the on-site industrial sumps.

The original scope of work was presented by B&A in the HOMCO Facility Remediation Work Plan (B&A, November, 1990). The method and approach of the remedial effort was designed based on information collected during previous investigations (Sweetwater, 1989, and B&A, 1990). The scope of work encompassed the excavation of hydrocarbon-contaminated soils from the three abandoned industrial leach fields and the area in the northeast corner of the yard. Two concrete pads located at the north end of the HFTO building were removed during the remedial effort to expose one of the abandoned leach fields.

3.0 BACKGROUND

3.1 SITE HISTORY AND USE

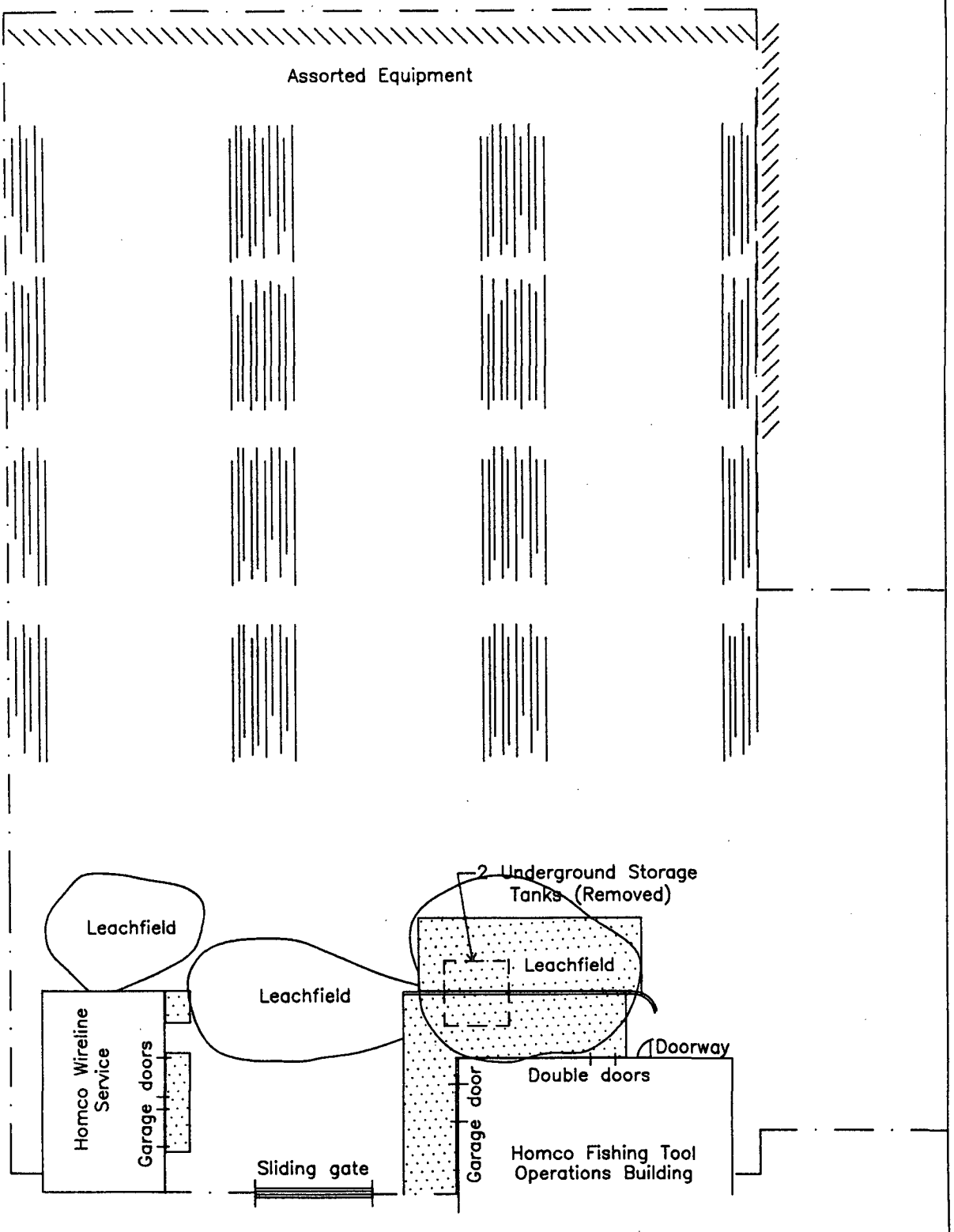
HOMCO Location 151 is operated primarily as an oilfield equipment rental and storage yard for tools and pipe used in HOMCO's fishing tool operations. HOMCO has occupied the facility since 1975. Prior to that, the facility was operated by Triple A Fishing Tool Company.

3.2 PROCESSES AND WASTE

Between September 19 and 25, 1990, a Water Maze oil/water separator was installed in the HFTO building. The separator processes and recycles wash water used for steam cleaning operations. As of September 25, 1990, HOMCO ceased discharging all waste water to the industrial leach fields at the site. These leach fields were located to the north of the HWS building, and to the north and west-northwest of the HFTO building. Diagrams illustrating leach field configurations and details regarding the exact locations and designs of the distribution systems were never prepared. Approximate locations are presented in Figure 3-1, based on information gathered during personnel interviews conducted and field conditions encountered during the Phase II site investigation.

In the past, the HWS leach field (Figure 3-1) may have received both industrial steam cleaning and sanitary waste waters. According to HOMCO employees, a separate sanitary septic system was used in the past to direct domestic waste from the HWS building to a presently unknown leach field location. The septic leach field reportedly failed and the system was discontinued, after which the sanitary wastes may have been rerouted to the industrial leach field. At present, all sanitary and industrial waste waters are disposed of separately. Sanitary wastes are disposed of in a septic leach field located off of the northeast corner of the building. As of September, 1990, industrial waste water is transferred via a 2-inch diameter PVC pipe to the oil/water separator in the HFTO building where it is recycled (Figure 3-2) and used for steam cleaning purposes.

Industrial wastes from the HFTO building were initially routed to a leach field distribution system which was abandoned in 1980, due to insufficient percolation rates. Industrial waste water was then directed to an alternate leach field located west-northwest of the building (Figure 3-1). Waste



Legend

Berm

Pipe Racks

Cement Pads

Fence

N

0 50' 100'

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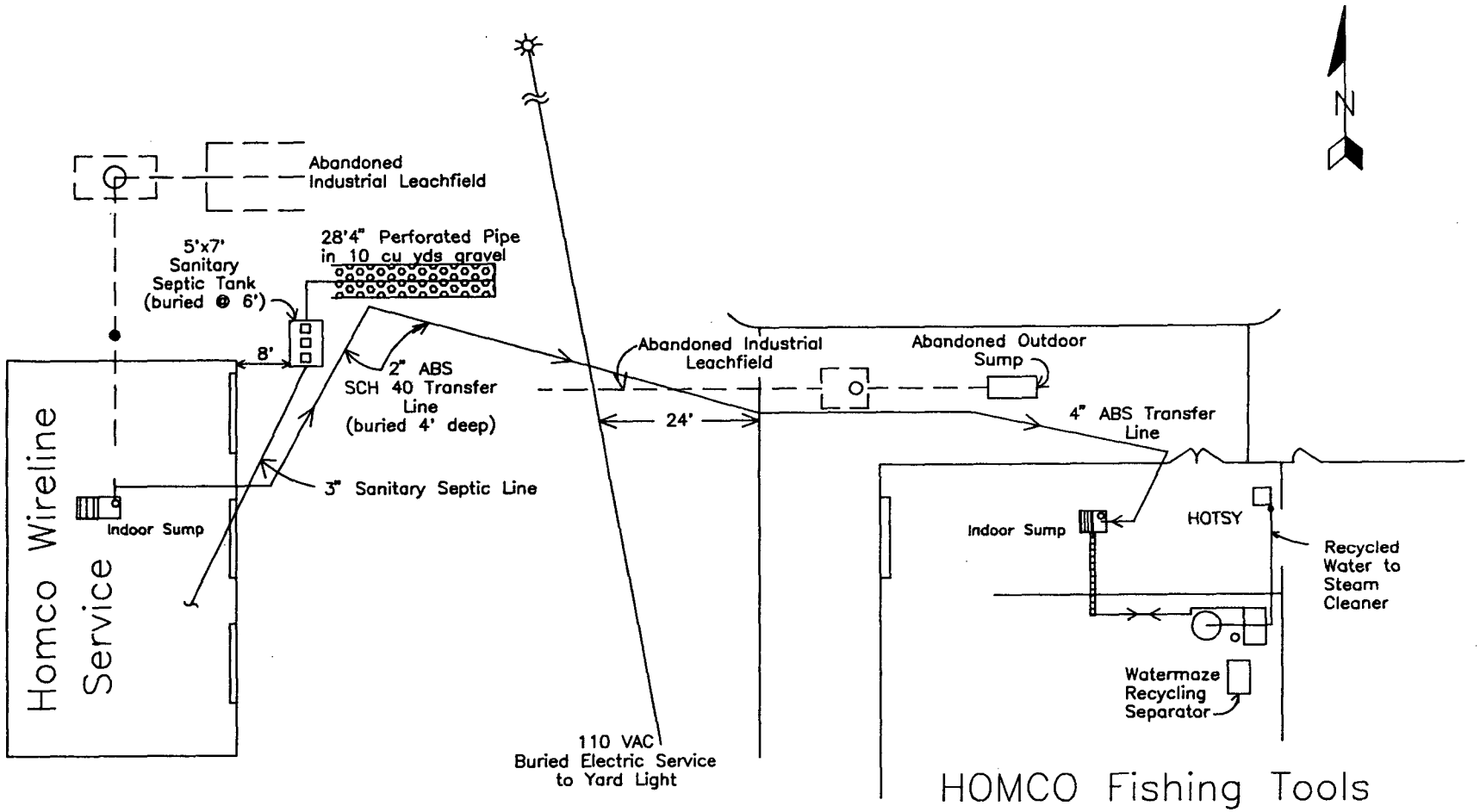
FIGURE 3-1

APPROXIMATE LOCATIONS OF LEACHFIELDS
HOMCO
Farmington, New Mexico

Date: 11-06-90	Scale: 1"= 50'	Drawn By: MNM



0 60 Feet

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FIGURE 3–2
WASTE–WATER DISTRIBUTION SYSTEM
HOMCO
Farmington, New Mexico

Date: 11–06–90	Scale: 1"=30'	Drawn By: MNM

water generated in the HFTO building flowed from an indoor sump to an outdoor sump and was then routed to a holding tank prior to being discharged to the leach field via a perforated polyvinylchloride (PVC) pipe. Sanitary wastes from the HFTO building are discharged to a separate septic system located near the southeast corner of the building.

Currently one 2000-gallon (gal), aboveground storage tank is used by the facility to store and dispense diesel fuel. Two, 2000-gal underground storage tanks, one containing gasoline and the other containing diesel, were removed from the northwest corner of the HFTO building in July 1989 by Environmental Group Incorporated (EGI). In a closure report documenting tank removal operations, EGI stated that the diesel tank had leaked into the soil adjacent to the tank. In a remediation effort approved by the State of New Mexico Environmental Improvement Division (EID), the diesel-contaminated soil was excavated and spread out over the yard to promote hydrocarbon volatilization.

3.3 ENVIRONMENTAL SETTING

3.3.1 Physiography

The HOMCO facility is situated in the San Juan Basin in the Navajo Section of the Colorado Plateau physiographic province. The San Juan Basin is a structural depression containing deep Tertiary fill, resting on rocks from the Upper Cretaceous. This vicinity is characterized by alluvial fans and flood plains in the entrenched, narrow valleys of the Las Animas and San Juan Rivers (Stone, et al., 1983).

3.3.2 Regional Geology

The San Juan Basin was formed during the Late Cretaceous-early Tertiary Laramide Orogeny as a depression near the eastern edge of the Colorado Plateau. According to lithologic information from oil wells in the basin, a maximum stratigraphic thickness of 14,423 feet (ft) was recorded near the center of the structure during the drilling of a well. Jurassic and Cretaceous age sedimentary rocks crop out around the rim of the basin, and in a broad area in the southern and western portions of the basin. Tertiary sedimentary rocks are exposed over most of the central basin, Quaternary deposits are observed along major valleys, and Jurassic strata were deposited in various desert environments (dune fields, playas, saline lakes, and wet alluvial aprons). The Early

Cretaceous was marked by alternating periods of alluvial/ fluvial deposition and local nondeposition or erosion. The sequence of marine and nonmarine coastal deposits which constitute the Upper Cretaceous resulted from the fluctuating shoreline of an inland sea which crossed the area now occupied by the San Juan Basin. The Tertiary was marked by periods of structural activity especially during the Paleocene. The late Eocene/early Oligocene was marked by extensive erosional activity which resulted in as much as 1,000-ft of the San Jose formation being stripped away. Quaternary deposits include the outwash terraces along the San Juan River and its tributaries, the growth and migration of sand dunes, and the cutting and filling of alluvial channels throughout the area.

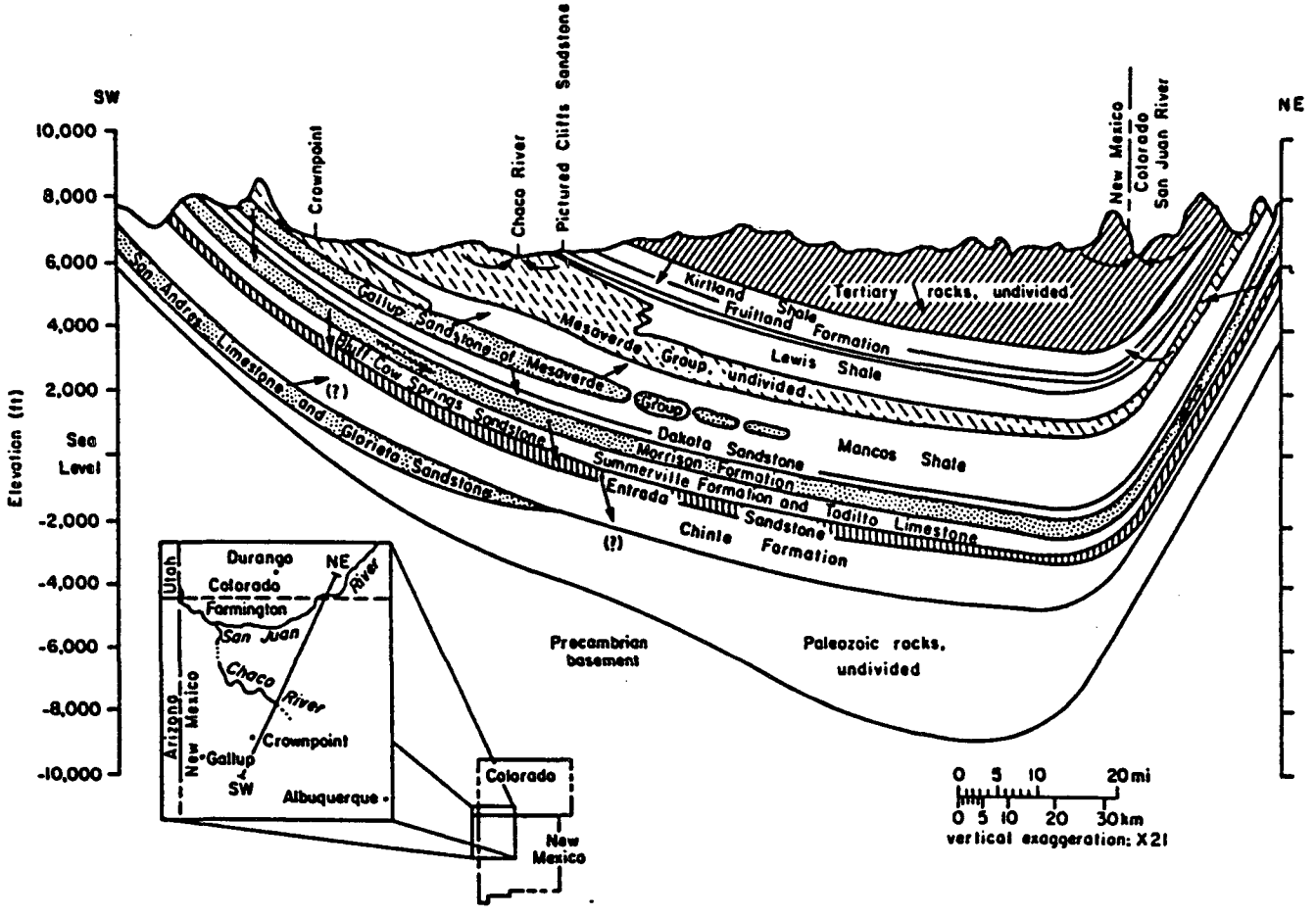
3.3.3 Regional Hydrogeology

The ground-water resources of the San Juan Basin are principally derived from wells set in Quaternary surficial valley-fill deposits and sandstones from the Tertiary, Cretaceous, Jurassic, and Triassic. Water-supply wells set in the Glorieta Sandstone and San Andres Limestone (Permian) along the northern flank of the Zuni Mountains are used extensively to provide water for stock and domestic purposes, but may also provide municipal and industrial water supplies. The ground water in these aquifers generally occurs under confined conditions. The major hydrostratigraphic units of the San Juan Basin are illustrated in Figure 3-3.

Regional ground water generally flows from topographically high recharge areas consisting of outcrops along mountain flanks, to topographically low discharge areas consisting of outcrops along the San Juan River Valley and tributaries of the Rio Grande River. Numerous alluvial-filled ephemeral stream channels in the region act as additional recharge and discharge areas.

3.3.4 Local Geology

The site rests on alluvial sands and gravels which contain well-rounded cobbles and boulders. The alluvium is underlain by sandstones and mudstones of the Nacimiento formation which are encountered at an average depth of approximately 5-ft below grade. The Nacimiento appears to dip southward across the site toward the San Juan River. The sandstones are medium to very coarse-grained, immature to submature arkoses. The mudstones typically display popcorn weathering characteristic of swelling clays.



BUYS & ASSOC.

FIGURE 3-3

Major Hydrostratigraphic Units of the San Juan Basin

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3.3.5 Local Hydrogeology

Reported yields of wells screened in the Nacimiento formation range from 16 to 100 gallons per minute (gpm). No aquifer test results collected in this area are available for the Nacimiento formation, however, transmissivities of 100 ft^2/day are anticipated for some of the coarser, continuous sandstone bodies. Specific conductivity values less than 1,500 μmhos were measured in ground water from wells screened in these extensive sandstones.

Accurate characterization of the local ground-water regime is precluded by the absence of shallow wells in the immediate vicinity, and the lack of ground-water data from field operations at the HOMCO facility. Personnel from Walter's Drilling located immediately north of HOMCO's property believe that ground water may be as shallow as 30- to 40-ft below grade, based on field observations made during the drilling of a test hole on their property. However, no documentation is available to confirm this statement. The regional direction of ground-water flow is to the south, towards the San Juan River.

3.4 PREVIOUS SITE INVESTIGATIONS

A Phase I site investigation was conducted at the HOMCO facility during the fall of 1989 to determine the nature of contamination present at the facility. A follow-up Phase II site investigation was completed in June 1990, to characterize the vertical extent of contamination identified during Phase I.

3.4.1 Phase I Site Investigation

The Phase I site investigation was completed by Sweetwater Corporation of Houston, Texas in November 1989. The study consisted of a soil sampling and analysis program, and an inspection of the facility and operations performed on site. The yard was divided into square grid sections 100-ft on each side, from each of which one surficial soil sample was collected from a depth ranging between 8- to 12-inches below grade. Three other soil samples were collected from areas which exhibited surface staining (Sweetwater, 1989).

Phase I soil samples were analyzed for TPH, pH, leaching potential, and various metals using Environmental Protection Agency (EPA) methods. A solvent scan and a Resource Conservation

and Recovery Act (RCRA) profile were also performed. Only TPH and solvents were detected at elevated concentrations in the Phase I samples.

Sweetwater concluded that present, and potentially past, storage, inspection, cleaning and disposal practices contributed to the contamination found at the site. Modification of operations and implementation of management controls were recommended to minimize or eliminate introduction of contaminants in the future. Additional sampling was also recommended to determine the extent of contamination detected during Phase I.

3.4.2 Phase II Site Investigation

A Phase II site investigation was designed and implemented by B&A based on the conclusions and recommendations presented in the Sweetwater Phase I Site Assessment report (November 21, 1989). Phase II activities consisted of three site visits, a waste survey, a soil sampling and analysis program, and leachfield excavation and sampling.

Five soil samples (including one duplicate collected for QA/QC purposes), three sludge samples, two liquid samples (including one QA/QC duplicate), and two Safety Kleen solvent standard samples were submitted to Core Laboratories in Aurora, Colorado for analysis.

All samples, excluding the two solvent samples collected as standards, were analyzed for TPH and EP toxicity metals. The soil sample collected from the northeast corner of the yard (in the area where sludge from several of the industrial sumps on site had been dumped), the accompanying QA/QC duplicate, and all sludge and liquid samples collected during excavation of the leach field pits were also analyzed for the Safety Kleen solvent. This was performed using a characteristic gas chromatograph "fingerprint" derived from two samples of the solvent collected for quantitative comparison.

Results of the Phase II investigation indicated that remedial attention was required in two general areas of the yard: the HWS and HFTO abandoned industrial leach fields; and the sludge disposal area in the northeast corner of the yard. In-place closure was recommended for the abandoned industrial leach fields and removal of the contaminated surficial soil was recommended for the

northeast corner of the yard. In addition, management controls and procedural modifications were recommended to prevent these and other potential contaminant sources at the site from adversely impacting the environment in the future.

4.0 REMEDIAL APPROACH

The HOMCO Location 151 Site Remediation Work Plan was prepared at the verbal request of HOMCO in November, 1990. The method and approach of the remedial effort was designed based on results from the Phase II site investigation conducted by B&A in June, 1990. The site Health and Safety Plan was prepared in accordance with Occupational Safety and Health (OSHA) regulations established for Hazardous Waste Operations and Emergency Response (29 CFR 1910.120).

4.1 WASTE REMOVAL

4.1.1 General

According to the NMOCD, any leach field containing sludges or liquids contaminated with TPH or benzene in concentrations exceeding NMOCD action standards must be removed, or adequate documentation must be obtained to show that the quality of the local ground water is not being adversely affected by contaminant migration from the leach field(s). Source removal was chosen as the method of remediation to avoid the difficult and costly task of penetrating the shallow, massive sandstones and mudstones of the Nacimiento formation at the site in order to collect ground-water quality data. In addition, the cost of disposing the excavated waste was reduced by the availability of a local, certified facility (Envirotech landfill) which is permitted by the State of New Mexico to receive hydrocarbon-contaminated wastes.

The originally proposed areas of excavation are shown in Figure 4-1. The areas include three abandoned industrial leach fields (Areas A and B) and an isolated area in the northeast corner of the yard (Area C) where HOMCO disposed of sludge removed from several of the industrial sumps at the site. The leach fields were located underneath two concrete pads at the north end of the HFTO building (Area A), at the northwest corner of the HFTO building (Area B), and to the north of the HWS building (Area B).

All excavation activities were performed under the direct supervision of a B&A representative. B&A contracted Ivy's Remodeling Service out of Farmington, New Mexico to provide the personnel and equipment necessary to remove the concrete pads at the north end of the HFTO building; haul the concrete off to a proper disposal site; transport the excavated, hydrocarbon-contaminated soils

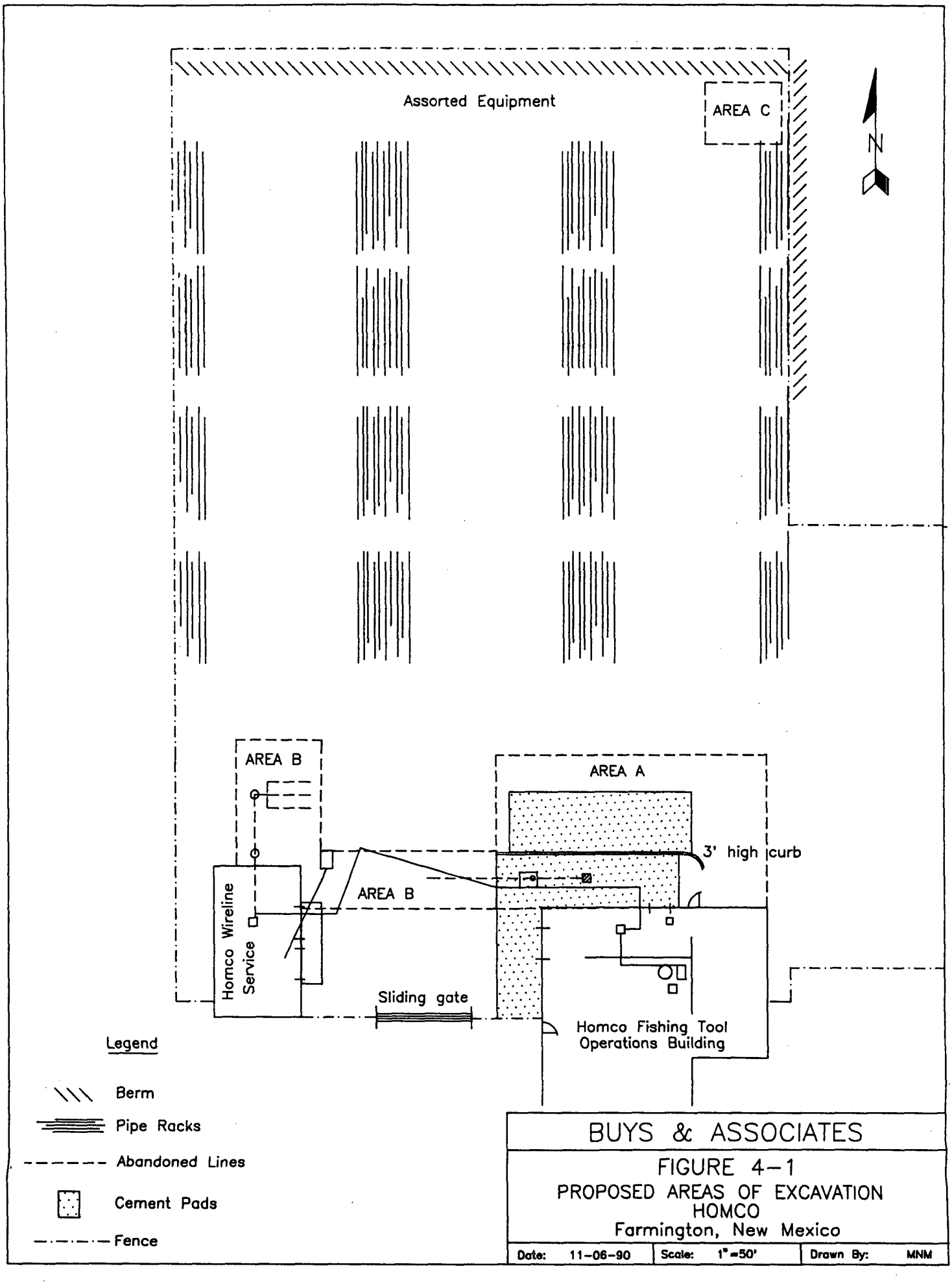

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FIGURE 4-1
PROPOSED AREAS OF EXCAVATION
HOMCO
Farmington, New Mexico

Date: 11-06-90	Scale: 1"=50'	Drawn By: MNM

to the Envirotech disposal facility; and haul in clean roadbase for backfilling. B&A contracted Environmental Chemical Corporation (ECC) out of Denver, Colorado to provide health and safety-trained personnel to arrange for and operate the equipment necessary to perform all proposed excavation activities, and backfill all excavations to grade, compacting where necessary. B&A took photographs throughout the site remediation activities. Copies of the photographs are provided in Appendix A.

B&A was responsible for monitoring the excavated soils and the breathing zone for volatile organics using an organic vapor meter (OVM). OVM responses were recorded in the field log book and used to determine the proper level of respiratory protection. The instrument was also used in conjunction with visual observations to determine the horizontal and vertical extent of each excavation, and to locate sampling points.

4.1.2 Kickoff Meeting

Representatives of B&A, HOMCO, Envirotech, and the NMOCD met at the HOMCO yard on March 7, 1991 to discuss the objectives and approach of the proposed remedial activities. During the meeting, the NMOCD approved of disposing excavated soils directly into the Envirotech landfill because existing analytical data (Phase II results) showed that although the concentration of benzene in the proposed areas of remediation exceeded the NMOCD action limit, it was not significant enough to warrant treatment (volatilization) prior to disposal. However, the State requested that two composite clearance samples be collected from each excavation (one from the sidewalls and one from the base) prior to backfilling in some areas, to ensure that the soils left in place did not contain contaminants of concern in concentrations greater than NMOCD action limits. The NMOCD requested that the sidewall samples be analyzed for TPH using EPA Method 8015 Modified, and the base samples be analyzed for TPH using EPA Method 8015 Modified and TCLP benzene.

4.1.3 Excavation of Area C

Area C was excavated with a backhoe on March 7, 1991. The excavation was oriented north-south and was approximately 10-ft wide by 20-ft long by 2-ft deep (Photograph A-1). Area C was excavated from north to south and contained loose, silty sand with minor amounts of clay from zero

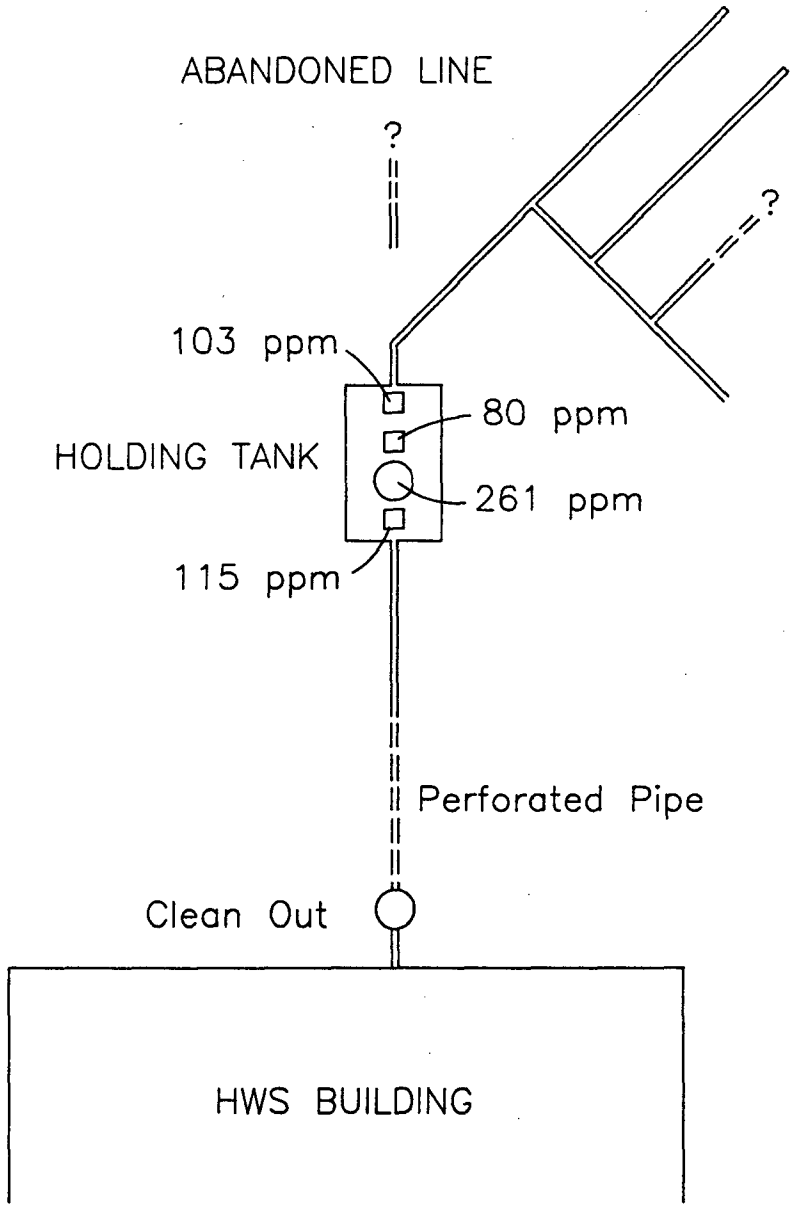
to two feet below grade. A very loose, coarse-grained, iron-stained sand was encountered at approximately the 2-ft depth. In some areas, the sand was present as a moderately-well cemented sandstone. Black staining was observed throughout the excavation in moist, clayey zones. OVM responses ranged from 28 parts per million (ppm) at the surface to 72 and 99 ppm in the stained soils encountered in the zero to two foot interval. Per the recommendation of the NMOCD, the excavation was halted after all detectable signs of contamination (stained or odiferous soils) were removed. The OVM was used to screen the soils for organic vapors. Soils emitting vapors in concentrations greater than 50 parts per million (ppm) were removed from the pit and disposed of as hydrocarbon-contaminated waste at the Envirotech facility. Soils below the 50 ppm limit were considered clean and used to backfill the excavation.

Per the approval of the NMOCD, clearance samples were not collected from Area C due to the lack of visibly significant contamination and existing analytical data. The maximum OVM response observed over the base and sidewalls of the completed excavation was 43.3 ppm.

4.1.4 Excavation of Area B

Area B was excavated on March 7 and 8, 1991 with a backhoe. The excavation began with the exposure of the leach field holding tank. The top of the 5-ft wide by 8-ft long by 6-ft deep concrete tank (Photograph A-2) was exposed approximately 2-ft below grade, about 22-ft north of the HWS building (Figure 4-2). The tank was almost full of water which smelled like septic waste. The top of the tank had four removable lids (Photograph A-2) through which the contents were observed and OVM responses recorded. Figure 4-2 illustrates the configuration of the leach field, including the tank and the distribution of OVM responses observed. A maximum concentration of 261 ppm was recorded on the OVM through the round lid. Garcia's Septic Service transferred the water (approximately 1500 gals) from the holding tank into an open-topped mud tank supplied by HOMCO (Photographs A-3 and A-4). Approximately one foot of black sludge was exposed at the bottom of the tank (Photograph A-5) once the water was removed.

The HWS tank was removed in two halves (top and bottom). The bottom half was divided into two compartments by a concrete wall (Photograph A-6). Approximately one foot of a black, oily sludge was present at the bottom of both compartments. Both halves of the tank were removed



BUYS & ASSOCIATES		
FIGURE 4-2 HWS LEACH FIELD CONFIGURATION AND DISTRIBUTION OF OVM RESPONSES HOMCO Location 151 Remediation Farmington, New Mexico		
Date: 3-25-91	Scale: 1"=10'	Drawn by: NM

from the excavation intact and placed on the ground surface just north of the pit. Black stained soils exposed below where the tank had been located were excavated with the backhoe to its maximum reach (approximately 13-ft below grade). Although the soils were heavily stained, no significant OVM responses were observed (maximum 24 ppm). A Caterpillar trackhoe with a 25-ft reach was used to extend the excavation to a depth of 17-ft below grade where the black staining diminished. The maximum OVM response observed in the black stained sand was 59 ppm.

The stained soil (approximately 20 cubic yards (yds^3)) was stockpiled separately from the rest of the excavated material and disposed of at the Envirotech landfill. A composite sample of the black sand was collected from approximately 13-ft below grade and sent to Core Laboratory for benzene and TPH analyses. The sample contained non-detectable and insignificant concentrations of benzene and TPH, respectively, suggesting that sanitary septic wastes were the cause of the discoloration. Analytical results from the verification sample HWSINDCLER collected below the black staining (17-ft below grade) confirmed that cleanup levels had been achieved and no further remediation was required in this area. Laboratory results are summarized in Table 4-1.

As requested by the NMOCD, all clearance samples were submitted for benzene and TPH analyses using EPA Methods 8240 and 8015 Modified, respectively. Due to miscommunication with the laboratory, however, the samples were analyzed for TPH using EPA Method 418.1, and total benzene by EPA Method GC 8020. The NMOCD was made aware of the situation and approved the use of the 418.1 analytical method. The results of the total benzene analyses were converted to TCLP equivalents using a 20:1 ratio. If the converted analytical results had indicated that the TCLP benzene regulatory threshold had been exceeded, resampling would have been performed by the TCLP method. Converted benzene concentrations for samples collected during the site remediation at the HOMCO Farmington facility were below the TCLP benzene regulatory threshold, therefore no resampling was necessary. A detailed discussion of analytical results is presented in Section 5.0 of this report. The sample contained non-detectable and insignificant concentrations of benzene and TPH, respectively.

The HWS leach field was excavated after the holding tank was exposed and the effluent line exiting the north side of the concrete tank was located. The excavation followed the path of the

TABLE 5-1
Summary of Analytical Results
HOMCO Location 151 Remediation
Farmington, New Mexico

SAMPLE ID (Depth)	SAMPLE MATRIX	BENZENE	ETHYL BENZENE	XYLENES	TOTAL PETROLEUM HYDROCARBONS
HWSINDSOIL (13-ft)	SOIL	BDL*	NA	NA	36
HWSINDCLER (17-ft)	SOIL	BDL*	NA	NA	34
HFTOSOWALL (3-ft)	SOIL	BDL**	NA	NA	784
HFTOSOLVNT	SOIL	ND**	0.24	1.4	NA
HFTOBASECL	SOIL	BDL*	NA	NA	NA
HFTOSIDECL	SOIL	BDL*	NA	NA	64
HFTODRUMSL	SLUDGE	BDL**	NA	NA	78,800
HWSINDSLDG	SLUDGE	BDL**	NA	NA	1,930
OUTDRSLDGE	SLUDGE	BDL**	NA	NA	30,800
HWSSMPWTR1-3	WATER	BDL	NA	NA	1
HFTSMPWTR1-3	WATER	0.001	NA	NA	1

All units in mg/Kg
BDL - Below Laboratory Detection Limit of 0.005 mg/Kg*
*BDL** - Below Laboratory Detection Limit of 0.5 mg/Kg*
NA - Not Analyzed
ND - Not Detected

A:\REMEDIAL.WK1

perforated line towards the northeast where it split off to the south and then back to the northeast. Figure 4-2 illustrates the configuration of the leach-field lines which were exposed during the excavation.

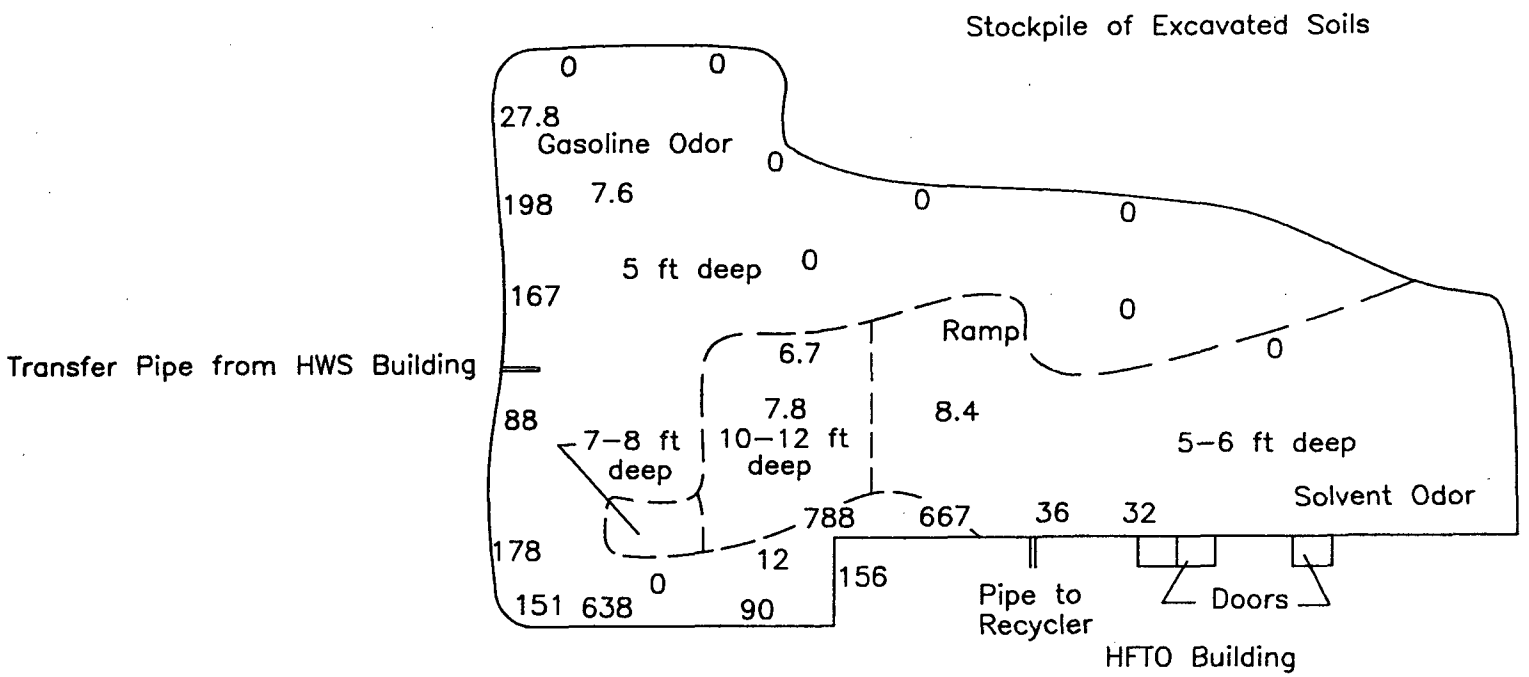
The perforated PVC pipe and gravel bed in which it was laid were dry and displayed no visible signs of contamination. No significant OVM responses were observed during the excavation of the leach field. The NMOCD visited the site during the remediation and approved backfilling the excavation without exposing any more of the system. This decision was made based on the lack of visible contamination and low OVM responses. The "clean" excavated material (less than 50 ppm) supplemented with clean road base hauled in from an off-site source (Foutz Construction) was used as backfill. Area B is considered closed based on field observations, OVM responses, and analytical results.

4.1.5 Excavation of Area A

4.1.5.1 *General*

Area A was remediated from March 7 to 12, 1991 with a Caterpillar front end loader and trackhoe. The remediation involved the demolition and removal of two concrete pads and the excavation of an abandoned leach field buried below the pads. Farnsworth Enterprises removed the concrete pads with the front end loader (Photograph A-7) approximately one day ahead of schedule. As a result, B&A arranged for Farnsworth to continue the remediation of Area A while ECC completed the remediation of the HWS leach field. Farnsworth used the loader to remove a layer of loose alluvial sands and gravels (approximately 5-ft thick) from the area previously covered by concrete. The loader met refusal at approximately 5-ft below grade where the Nacimiento sandstone was encountered. All excavations below this depth were completed with the trackhoe.

Subsurface contamination was encountered throughout the excavation of Area A. Figure 4-3 illustrates the extent of the Area A excavation and the distribution of OVM responses recorded in the base and sidewalls after the remediation was completed. Significant concentrations of organic vapors ranging from 113 to over 2,000 ppm were observed in three general areas: below the HFTO holding tank; below the northwest corner of the concrete pads where two, 2,000-gal



LEGEND

638 OVM Response

— — — Line separating areas of different depths

N

BUYS & ASSOCIATES

FIGURE 4-3

EXTENT OF AREA A EXCAVATION AND DISTRIBUTION OF OVM RESPONSES

HOMCO Location 151 Remediation
Farmington, New Mexico

Date: 3-31-91	Scale: 1"=20'	Drawn by: NM

underground storage tanks (USTs) had been buried; and under the north wall and concrete pad west of the HFTO building.

4.1.5.2 *Holding Tank Removal*

The top of the fill below the western half of the concrete pads was stained black (Photograph A-8) and had a strong hydrocarbon odor. The maximum OVM response observed in the shallow fill was 119 ppm. OVM responses increased with depth to 340 ppm approximately 5-ft below the northwest corner of the concrete pads. The holding tank for the HFTO leach field was exposed at the northwest corner of the HFTO building (Photograph A-9). The tank contained approximately 1000-gals of water and an undeterminable amount of sludge. Garcia's Septic Service transferred the water to a second, open-topped mud tank provided by HOMCO for temporary storage.

Once the waste water was removed from the tank, the trackhoe was used to excavate the fill and sandstone from around the sides of the tank. Significant OVM responses sustained in the breathing zone and extremely strong hydrocarbon odors experienced during this stage of the excavation prompted field personnel to upgrade to Level C respiratory protection. The fill was stained black (Photograph A-10) and coated with an oily film. OVM responses ranged from 638 ppm at the northwest corner of the tank, to over 2000 ppm at the southeast corner and along the north side of the tank. The concrete walls were weak and fell apart as the unit was exposed (Photograph A-11). The sludge and remaining liquid inside of the holding tank spilled out into the surrounding contaminated soils (Photograph A-12) as the unit was lifted from the ground. ECC solidified the sludge by mixing it in with contaminated soils removed from around the tank. The sandstone below the tank was excavated to a depth (approximately 10- to 12- ft below grade) where OVM responses were less than 10 ppm (Figure 4-3) and stained soils were no longer present. The soils which emitted organic vapors in concentrations above 2000 ppm were stockpiled separately and analyzed for total benzene by EPA Method GC 8020 and TPH by EPA Method 418.1 prior to being disposed of at the Envirotech facility. As previously discussed, the NMOCD had initially requested that benzene be analyzed by EPA Method 8240 TCLP. However, due to miscommunication with the laboratory, EPA Method GC 8020 was instead. The concentration of total benzene was converted to the TCLP equilavent as discussed in Section 4.0. Benzene was not detected at a

concentration above the laboratory detection limit of 0.500 mg/Kg. Because none of the converted concentrations exceeded the TCLP threshold limit for benzene, resampling using the 8240 method was not required. TPH was detected at a concentration of 784 mg/Kg.

4.1.5.3 *Northwest Corner*

Strong gasoline odors were observed during the excavation of the northwest corner of Area A (Figure 4-3), close to where two underground storage tanks had been removed in 1989. OVM responses ranged from 1424 ppm to 1922 ppm in the soils excavated from approximately 5-ft below grade. Crew members upgraded to level C respiratory protection due to high OVM readings and extremely strong gasoline odors in the breathing zone. Excavation of the west end of the north sidewall ended approximately 60-ft north of the west end of the south sidewall (Figure 4-4), where maximum OVM readings recorded in the base and sidewall soils were below 50 ppm.

A seam of loose rock resembling a leach field bed was exposed approximately 3-ft below grade in the north wall, approximately 15-ft east of the northwest corner of the excavation (Figure 4-3). The gravel most likely represents the tail end of an abandoned leach field which was probably excavated by Sweetwater Corporation during the removal of the two underground storage tanks in 1989. The rest of the leach field bed would have been laid closer to the building and removed with the tanks. According to HOMCO personnel, a perforated PVC pipe used to extend towards the north from the northwest corner of the HFTO building. The fact that no piping or gravel was encountered during the excavation of Area A supports the theory that the majority of the leach field was removed by Sweetwater and the gravel exposed in the north wall is all that was left behind. Because OVM responses in the gravel unit were insignificant, the extent of the gravel was not investigated.

4.1.5.4 *South Wall*

The extent of the excavation along the south wall is shown in Figure 4-3. Heavy hydrocarbon contamination was observed in a seam of cobbly gravel encountered approximately 3-ft below grade, starting about 43-ft west of the northeast corner of the HFTO building, and continuing past the southwest corner of the excavation (Photographs A-13 and A-14). The contamination appeared to persist southward under the building for an unknown distance. The extent of the contamination

was not investigated due to the likelihood of undermining the foundation and jeopardizing the structural integrity of the building. OVM responses recorded along the seam ranged from 32 ppm at the east end to 788 ppm under the northwest corner of the building. The sand and gravel in the seam were coated with an oily film and had a strong hydrocarbon odor.

The outdoor sump located at the north end of the concrete pad to the west of the HFTO building was removed along with the section of concrete in which it was laid (Photograph A-15). According to HOMCO, the sump had been used in the past to receive waste-water runoff from outdoor steam cleaning operations, but had since been abandoned when steam cleaning operations were moved indoors. Sludge contained within the sump was shoveled out into 55-gal drums prior to its removal. At B&A's request, HOMCO tried to remove a stationary crane from the section of concrete containing the sump. The crane was so deeply rooted that HOMCO had to cut the stem at the base and leave the footer in the ground. During the removal of the sump, ECC damaged one panel of the warehouse wall with the bucket of the trackhoe (Photograph A-16). At HOMCO's request, ECC used the trackhoe to remove the base of the crane, during which time two more of the warehouse wall panels were damaged (Photograph A-17). Once the base was removed, the excavation was extended to the north edge of the next section of concrete, under which the black seam of contaminated gravel persisted (Photograph A-18). The excavation was not continued past this point to avoid interfering with vehicular access to the warehouse door.

During the initial stage of the Area A excavation, the 2-inch (in) diameter PVC line connecting the HWS sump with the oil-water separator in the HFTO building was broken off flush with the north wall of the HFTO building (Photograph A-13). Liquid intermittently drained out of the pipe and collected in the deepest portions of the excavation until a plug was inserted in the pipe prior to backfilling. The pipe was hooked back up to the HWS building by Compton's Plumbing during the backfilling and compaction process (Photograph A-19).

Approximately 100 yds^3 of very loose, well sorted, medium- to coarse-grained sand which smelled like solvent was removed from the southeast corner of the excavation (Figure 4-3). The sand was stockpiled separately on plastic sheeting in the northeast corner of the yard until the nature of the contamination could be determined through laboratory analysis. Organic vapors were recorded with the OVM over the stockpile at a concentration of 739 ppm. One composite sample was collected and sent to Core Laboratory for a solvent scan using EPA Method 8240. Ethylbenzene and xylenes

were identified in the sample, however, no chlorinated compounds were found. Analytical results are discussed in Section 5.0 of this report.

4.2 DRUM DISPOSAL

Eight drums containing industrial sump sludges collected during the oil/water separator installation in September, 1990 were stored in the northwest corner of the yard. A composite sample of the waste was collected and sent to Core Laboratory for benzene and TPH analyses. Analytical methods for benzene and TPH were modified for samples collected during the site remediation, as discussed previously. Although TPH was detected at a high concentration (78,800 mg/Kg), benzene was not detected above the laboratory detection limit. Upon receipt of the analytical results, the sludges in the drums were mixed in with the pile of dry, contaminated soil excavated from Area C and hauled to the Envirotech landfill for disposal.

4.2 WASTE DISPOSAL

The contaminated soils removed during the excavation of Areas A, B, and C were hauled to the Envirotech landfill, located approximately 11-miles south of Bloomfield, New Mexico. The facility is certified by the NMOCD to accept oil-contaminated wastes.

5.0 RESULTS OF THE REMEDIATION

5.1 ANALYTICAL RESULTS

A total of six soil, three sludge, and two water samples were collected during the remedial effort and sent to Core Laboratory in Aurora, Colorado for analysis. With the exception of one soil sample (HFTOSOLVNT), all of the samples were analyzed for total benzene by EPA Method 8020, and TPH by EPA Method 418.1. Sample HFTOSOLVNT was analyzed for solvents by EPA Method 8240. Laboratory results are summarized in Table 4-1. Field observations and the distribution of OVM responses recorded in the field are shown in Figure 4-3. A complete laboratory analytical report is presented in Appendix B.

5.1.1 HWS Excavation

Two clearance grab samples (HWSINDSOIL and HWSINDCLER) were composited from beneath the HWS holding tank at depths of 13-ft and 17-ft below grade, respectively. As requested by the NMOCD, the samples were analyzed for TPH and benzene. Benzene was not detected at concentrations above the laboratory detection limit, and TPH was detected at 36 ppm and 34 ppm, respectively. One sludge sample (HWSINDSLDG) and one water sample (HWSSMPWTR1-3) were collected from the HWS holding tank. The sludge contained benzene at a concentration below the laboratory detection limit of 0.005 mg/Kg, and TPH at a concentration of 1,930 mg/Kg. The water sample contained TPH at a concentration of 1 mg/L and benzene at a concentration below the laboratory detection limit of 0.01 mg/L.

5.1.2 HFTO Excavation

One composite soil sample (HFTOSOWALL) was collected from the soils around the HFTO holding tank to qualify the elevated OVM responses (>2000 ppm) observed in the area. The sample was collected below the northwest corner of the HFTO building, along the south wall of the excavation. TPH was detected in the sample at a concentration of 784 mg/Kg. The concentration of benzene was below the laboratory detection limit of 0.500 mg/Kg.

One sample (HFTSMPWTR1-3) was collected from the water pumped from the HFTO holding tank. The sample contained both benzene and TPH at concentrations of 0.001 mg/L. One sludge sample was collected from the HFTO outdoor sump located under the north end of the concrete

pad on the west side of the building. The sample contained benzene at a concentration below the laboratory detection limit of 0.500 mg/Kg, and TPH at a concentration of 30,800 mg/Kg.

Upon completion of the excavation of Area A, two clearance samples (HFTOBASECL and HFTOSIDECL) were collected to characterize the level of contamination in the soils being left in place. HFTOBASECL was composited from representative soils along the base of the pit and analyzed for total benzene by EPA Method 8020 and TPH by EPA Method 418.1. HFTOSIDECL was composited from the sidewalls of the pit and analyzed for TPH only, per the NMOCD's approval. The concentration of benzene in both samples was below the laboratory detection limit of 0.005 mg/Kg, and the concentration of TPH in sidewall sample was 64 mg/Kg. A representative portion of the contaminated seam along the south wall was not included in the sidewall composite because further excavation to the south would have undermined the building's foundation.

5.1.3 Drum Sampling

One composite sample (HFTODRUMSL) was collected from the contents of eight, 55-gal drums stored in the northwest corner of the yard. The drums contained sludge cleaned out of several of the industrial sumps used at the site. The sample contained benzene at a concentration below the laboratory detection limit of 0.500 mg/Kg, and TPH at a concentration of 78,800 mg/Kg.

5.2 INTERPRETATION OF ANALYTICAL RESULTS

5.2.1 HWS Leach Field and Holding Tank

During the excavation of the HWS leach field, only one isolated segment of the perforated PVC pipe had visibly stained soils below it. The soils were black and saturated but did not register on the OVM. The rest of the leach field was dry with no signs of staining or odors. Stained soils were encountered below the HWS holding tank, however, they did not contain significant concentrations of either benzene or TPH. OVM responses recorded in the sand did not exceed 59 ppm. Because the leach field may have received sanitary waste water in the past, it is likely that the staining and low concentrations of organic vapors were caused by sanitary wastes.

According to HWS personnel, the holding tank had never been pumped because the volume of waste water and sludge generated from HWS operations was never enough to fill the tank. This

might explain why the leach field itself was dry and apparently uncontaminated. However, it is more likely that the leach field system never operated correctly and the waste water discharged prior to making it to the holding tank. Evidence of this was encountered during the installation of the separator in September, 1990, when a 10-ft section of perforated pipe was found next to the building, leading from a clean-out north of the building to the holding tank (Figure 4-2).

5.2.2 HFTO Excavation

Soils contaminated with hydrocarbons, solvents, and gasoline were encountered throughout the excavation of Area A. Several sources of the hydrocarbon contamination were identified, including the effluent from the HFTO outdoor sump, leakage from the HFTO building's indoor industrial sump, and leakage from the HFTO holding tank. The absence of any buried drums, containers, drainage pipes, or sumps in the solvent-contaminated area suggests that the solvents were introduced via the ground surface. The two most likely sources of the solvent contamination are leaky drums filled with Naphtha and other solvents which were stored on the ground surface east of the paint shop door, and paint shop wastes discharged directly on the ground surface. The gasoline-contamination is most likely the result of spillage or overfilling associated with a UST which was removed from the area in 1989. Actual leakage from the UST is not a likely source of the gasoline contamination, as this tank appeared to be intact when it was removed during UST closure activities.

6.0 CONCLUSIONS AND RECOMMENDATIONS

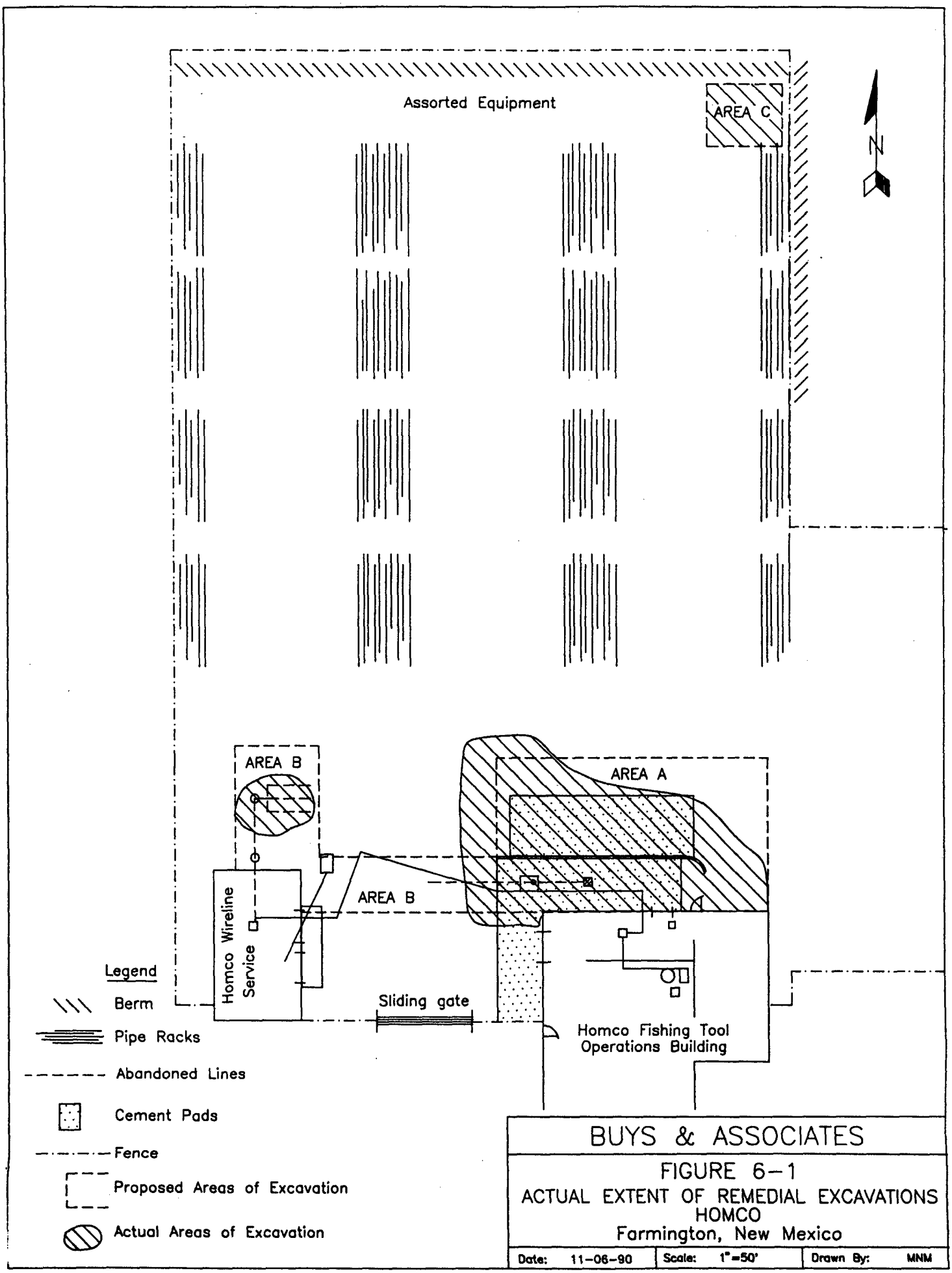
6.1 CONCLUSIONS

Areas A, C, and part of Area B are considered closed based on field observations, OVM monitoring results, and laboratory analytical results. The closure of the part of Area B which includes the leach field north of the HWS building, was approved by the NMOCD based on the apparent lack of contamination. Figure 6-1 shows the actual extent of excavations completed during the site remediation program.

The sources of contamination and the bulk of contaminated soils in Area A have been removed and replaced with clean backfill material. The backfill was compacted and tested in accordance with accepted engineering practices in preparation for the construction of the HFTO building addition. Per the approval of the NMOCD, the Area C excavation was halted when all of the stained soils had been removed and OVM responses were consistently below 50 ppm. The area was backfilled with clean road base material from an off-site source.

The area designated as Area B (Figure 6-1) has been partially remediated. The majority of the leach field north of the HWS building was exposed and found to be clean based on the lack of staining, odors, or significant OVM responses. The NMOCD visited the site during the leach field remediation and approved closing the excavation prior to exposing any more of the drainage lines due to the lack of visible or otherwise obvious contamination present. The exposed lines were removed and the excavation backfilled with the clean, excavated soils supplemented with clean road base from an off-site source. The holding tank for the leach field was removed along with approximately 20 yds^3 of stained soils and replaced with clean soils.

The rest of Area B which included the leach field located to the west of the northwest corner of the HFTO building was not fully remediated because excavation of this area would have likely required the removal of portions of the shop floor and the active concrete apron in front of the overhead door. An excavation of this magnitude would have significantly impeded HOMCO's daily operations.



BUYS & ASSOCIATES

FIGURE 6-1
ACTUAL EXTENT OF REMEDIAL EXCAVATIONS
HOMCO
Farmington, New Mexico

Date: 11-06-90	Scale: 1"=50'	Drawn By: MNM

When the proposed building addition is constructed, the current sump arrangement and much of the existing concrete floor in the wash bay will be removed prior to the installation of a new sump. Investigation and remediation of the remaining contamination can then be performed without interfering with HOMCO's daily operations.

The contaminated soils and sludges generated during the site remediation did not contain benzene at any concentration above the TCLP threshold limit of 0.005 ppm. As a result, the soils were disposed of at the Envirotech disposal facility, located 11-miles south of Bloomfield, New Mexico. The waste water was removed from the two holding tanks (approximately 2500-gals) and treated by Mesa Oil of Albuquerque, New Mexico. The treated waste water was accepted by the City of Albuquerque for final treatment at the local waste water treatment plant.

6.2 RECOMMENDATIONS

Based on field observations made during the excavation of Area A, it is evident that the contamination encountered under the concrete pads north of the HFTO building extends southward underneath the building. The concrete floor and apron of the building limits the infiltration of surface water and the resultant hydraulic head which helps to keep the contaminants stationary. The indoor sump at the north end of the building has been leaking for an unknown length of time. At present, the sump is scheduled to be removed during the construction of the HFTO building addition, at which time a new sump will be installed along with a leak detection system. The soils under the sump will be evaluated when the new sump is installed.

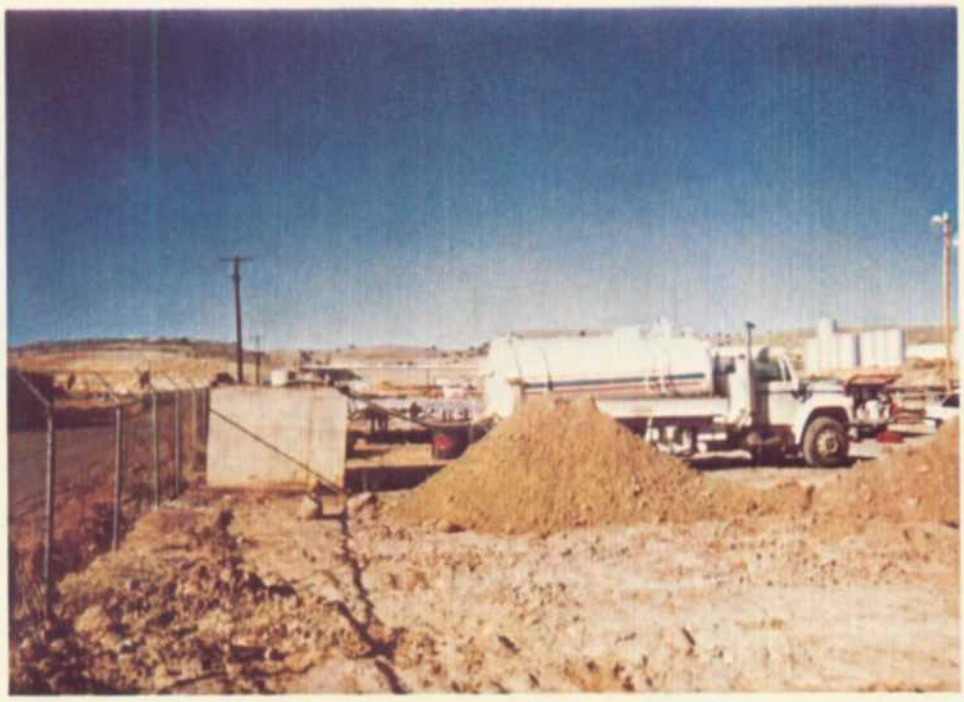
The extent of contamination under the HFTO building, and the parking lot and yard entrance west of the HFTO building should be investigated further. A backhoe should be to characterize the extent of shallow contamination by excavating test pits to the south and west of the area excavated during this remedial effort. A percussion hammer rig should be used to drill exploratory borings along the west side of the building to characterize the vertical extent of contamination. A percussion rig is recommended as it is the only type of rig that has the capability of penetrating the Nacimiento sandstone/mudstone unit encountered at approximately 4- to 6-ft below grade at the site.

APPENDIX A
Site Photographs

A-1. Area C Excavation

A-2. HWS Building's Industrial Leach Field Holding Tank

A-3. Transferring HWS Building's Holding Tank Water to Truck



A-4. Pumping HWS Building's Holding Tank Water into Mud Tank

A-5. Shovel Used to Measure Sludge Thickness in HWS Building's Holding Tank

A-6. Removal of Top Half of HWS Building's Holding Tank

A-7. Demolition of HFTO Building's Concrete Pads

A-8. Stained Soils Exposed from Underneath HFTO Buildings's Concrete Pads

A-9. HFTO Building's Industrial Leach Field Holding Tank

A-10. Excavation of HFTO Building's Holding Tank

A-11. Removal of HFTO Building's Holding Tank

A-12. Sludge from HFTO Building's Holding Tank

A-13. Contamination along the South Wall of Area A and Inlet to HFTO Building's Separator

A-14. Contamination Along South Wall of Area A Excavation

A-15. HFTO Building's Outdoor Sump

A-16. Damage to HFTO Building After Sump Removal

A-17. Damage to HFTO Building After Removal of the Base of the Crane

A-18. Contamination in Southwest Corner of Area A Excavation

A-19. Transfer Line Between HWS Sump and HFTO Building's Oil/Water Separator

APPENDIX B
Laboratory Analytical Reports

Western Atlas International

CORE LABORATORIES

ANALYTICAL REPORT

910415

FOR

BUYS & ASSOCIATES, INC.
Nannette Martin
6574 S. Broadway Suite 200
Littleton, CO 80121

03/18/91

Western Atlas International

CORE LABORATORIES

LABORATORY TESTS RESULTS
03/18/91

JOB NUMBER: 910415 CUSTOMER: BUYS & ASSOCIATES, INC. ATTN: Nannette Martin

CLIENT I.D.....: 200-10 HOMCO FARMINGTON 151
DATE SAMPLED.....: 03/08/91
TIME SAMPLED.....: 13:55
WORK DESCRIPTION...: EXC HWSINDSOIL 13FT

LABORATORY I.D...: 910415-0001
DATE RECEIVED....: 03/11/91
TIME RECEIVED....: 16:25
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Moisture (@ 104 Deg. C)	10.7	0.1	%		03/12/91	MW
Benzene	<5	5	ug/Kg	EPA 8010	03/12/91	PCM
Total Petroleum Hydrocarbon	36	10	mg/Kg	418.1	03/12/91	MW

APPROVED BY:

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

Western Atlas International

CORE LABORATORIES

LABORATORY TESTS RESULTS
03/18/91

JOB NUMBER: 910415 CUSTOMER: BUYS & ASSOCIATES, INC. ATTN: Nannette Martin

CLIENT I.D.....: 200-10 HOMCO FARMINGTON 151
DATE SAMPLED.....: 03/09/91
TIME SAMPLED.....: 14:20
WORK DESCRIPTION...: EXC HWSINDCLER 17FT

LABORATORY I.D...: 910415-0002
DATE RECEIVED....: 03/11/91
TIME RECEIVED....: 16:25
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Moisture (@ 104 Deg. C)	7.5	0.1	%		03/12/91	MW
Benzene	<5	5	ug/Kg	EPA 8010	03/12/91	PCM
Total Petroleum Hydrocarbon	34	10	mg/Kg	418.1	03/12/91	MW

APPROVED BY: Debbie Cook

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Western Atlas International

CORE LABORATORIES

LABORATORY TESTS RESULTS
03/18/91

JOB NUMBER: 910415 CUSTOMER: BUYS & ASSOCIATES, INC. ATTN: Nannette Martin

CLIENT I.D.....: 200-10 HOMCO FARMINGTON 151
DATE SAMPLED.....: 03/09/91
TIME SAMPLED.....: 10:50
WORK DESCRIPTION...: DRUM HFTODRUMSL

LABORATORY I.D...: 910415-0003
DATE RECEIVED....: 03/11/91
TIME RECEIVED....: 16:25
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Moisture (@ 104 Deg. C)	66.7	0.1	%		03/12/91	MW
Benzene	<500	500	ug/Kg	EPA 8010	03/12/91	PCM
Total Petroleum Hydrocarbon	78800	10	mg/Kg	418.1	03/12/91	MW

APPROVED BY: Debbie Capps

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Western Atlas International

CORE LABORATORIES

LABORATORY TESTS RESULTS
03/18/91

JOB NUMBER: 910415 CUSTOMER: BUYS & ASSOCIATES, INC. ATTN: Nannette Martin

CLIENT I.D.....: 200-10 HOMOCO FARMINGTON 151
DATE SAMPLED.....: 03/09/91
TIME SAMPLED.....: 10:15
WORK DESCRIPTION...: SUMP HWSINDSLDG

LABORATORY I.D...: 910415-0004
DATE RECEIVED....: 03/11/91
TIME RECEIVED....: 16:25
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Moisture (@ 104 Deg. C)	70.6	0.1	%		03/12/91	MW
Benzene	<500	500	ug/Kg	EPA 8010	03/12/91	PCM
Total Petroleum Hydrocarbon	1930	10	mg/Kg	418.1	03/12/91	MW

APPROVED BY: Cathie Clozek

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(303) 751-1780

Western Atlas International

CORE LABORATORIES

LABORATORY TESTS RESULTS
03/18/91

JOB NUMBER: 910415 CUSTOMER: BUYS & ASSOCIATES, INC. ATTN: Nannette Martin

CLIENT I.D.....: 200-10 HOMOCO FARMINGTON 151
DATE SAMPLED.....: 03/09/91
TIME SAMPLED.....: 15:05
WORK DESCRIPTION...: EXC HFTOSOWALL 3FT

LABORATORY I.D...: 910415-0005
DATE RECEIVED....: 03/11/91
TIME RECEIVED....: 16:25
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Moisture (@ 104 Deg. C)	20.2	0.1	%		03/12/91	MW
Benzene	<500	500	ug/Kg	EPA 8010	03/12/91	PCM
Total Petroleum Hydrocarbon	784	10	mg/Kg	418.1	03/12/91	MW

APPROVED BY: Debbie Cagle

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Aurora, CO 80012
(303) 751-1780

BUYS & ASSOCIATES

CHAIN OF CUSTODY RECORD

6574 S. Broadway, Suite 200
Littleton, CO 80121
(303) 730-2500

Project No.	Project Name
200-10	HOMCO FARMINGTON 151

SAMPLERS: (Signature) N Mart 3-9-91

SITE TYPE	SITE IDENTIFICATION	SAMPLE DATE	TIME MILITARY STANDARD	SAMPLE DEPTH (FEET)	SAMPLE TECH.	ANALYSIS REQUIRED: TPH MOD 8015	ANALYSIS REQUIRED: BENZENE TOL	NUMBER OF CONTAINERS	REMARKS
EXC	HWSINDSOIL	3-8-91	1355	13'	G	X	X	1	
EXC	HWSIND CLER	3-9-91	1420	17'	G	X	X	1	
DRUM	HFTODRUMSL	3-9-91	1050	—	C	X	X	1	
SUMP	HWSINDSLDG	3-9-91	1015	—	C	X	X	1	
EXC	HFTOSOWALL	3-9-91	1505	3'	G	X	X	1	1800+ ppm-OVM

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
N Mart	3-10-91 0800	C. Bernardi	C. Bernardi	03-11-91 1533	Ron E Hemingway
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Recieved for Laboratory by: (Signature)	Date/Time		
Relinquished by: (Signature)	Date/Time	Recieved for Laboratory by: (Signature)	Date/Time		
		Beverly McAdams	3-11-91	16:25	

SAMPLE SPLIT DATE _____

SAMPLE EXTRACTION DATE _____

SAMPLE ANALYSIS DATE _____

Western Atlas International
A Litton Dresser Company

CORE LABORATORIES

A N A L Y T I C A L R E P O R T

910437

FOR

BUYS & ASSOCIATES, INC.
Nannette Martin
6574 S. Broadway Suite 200
Littleton, CO 80121

03/26/91

Western Atlas International
A Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
03/26/91

JOB NUMBER: 910433 CUSTOMER: BUYS & ASSOCIATES, INC. ATTN: Nannette Martin

CLIENT I.D.....: 200-10 HOMCO 151
DATE SAMPLED.....: 03/12/91
TIME SAMPLED.....: 17:15
WORK DESCRIPTION...: HFTSMPWTR1-3 (SUMP)

LABORATORY I.D...: 910433-0001
DATE RECEIVED....: 03/14/91
TIME RECEIVED....: 10:30
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Benzene	1	1	ug/L	8020 (2)	03/25/91	PCM
Total Petroleum Hydrocarbon	1	1	mg/L	418.1 (1)	03/25/91	MW

APPROVED BY: _____

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

Western Atlas International
A Litton Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
03/26/91

JOB NUMBER: 910433 CUSTOMER: BUYS & ASSOCIATES, INC. ATTN: Nannette Martin

CLIENT I.D.....: 200-10 HOMCO 151
DATE SAMPLED.....: 03/12/91
TIME SAMPLED.....: 17:20
WORK DESCRIPTION...: HWSSMPWTR1-3 (SUMP)

LABORATORY I.D...: 910433-0002
DATE RECEIVED....: 03/14/91
TIME RECEIVED....: 10:30
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Benzene	<10	10	ug/L	8020 (2)	03/25/91	PCM
Total Petroleum Hydrocarbon	1	1	mg/L	418.1 (1)	03/25/91	MW

APPROVED BY: _____

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

Western Atlas International
A Litton Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
03/26/91

JOB NUMBER: 910433 CUSTOMER: BUYS & ASSOCIATES, INC. ATTN: Nannette Martin

CLIENT I.D.....: 200-10 HOMCO 151
DATE SAMPLED.....: / /
TIME SAMPLED.....: :
WORK DESCRIPTION...: TRIP BLANK

LABORATORY I.D...: 910433-0003
DATE RECEIVED....: 03/14/91
TIME RECEIVED....: 10:30
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Benzene	<1	1	ug/L	8020 (2)	03/25/91	PCM

APPROVED BY: [signature]

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

BUYS & ASSOCIATES

CHAIN OF CUSTODY RECORD

6574 S. Broadway, Suite 200
Littleton, CO 80121
(303) 730-2500

Project No. 200-10

Project Name: Homco 151

SAMPLERS: (Signature) [signature] 3-12-91

SITE TYPE	SITE IDENTIFICATION	SAMPLE DATE	TIME MILITARY STANDARD	SAMPLE DEPTH (FEET)	SAMPLE TECH.	ANALYSIS REQUIRED: TCLP Benzene	ANALYSIS REQUIRED: TPH Mod 8015	NUMBER OF CONTAINERS	REMARKS
SUMP	HETSMPWTR1	3-12-91	1715	N/A	—	X	X	1	1 Liter *
SUMP	HETSMPWTR2	3-12-91	1718	N/A	—	X	X	1	40-ml Amber *
SUMP	HETSMPWTR3	3-12-91	1719	N/A	—	X	X	1	40-ml Amber *
SUMP	HWSSMPWTR1	3-12-91	1720	N/A	—	X	X	1	1 Liter
SUMP	HWSSMPWTR2	3-12-91	1722	N/A	—	X	X	1	40 ml-clear
SUMP	HWSSMPWTR3	3-12-91	1724	N/A	—	X	X	1	40 ml-clear

*-No sample tag

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
[signature]	3/13/91	Fed Express			

Relinquished by: (Signature)	Date/Time	Recieved for Laboratory by: (Signature)	Date/Time
		[signature]	3-14-91 10:30

SAMPLE SPLIT DATE _____

SAMPLE EXTRACTION DATE _____

SAMPLE ANALYSIS DATE _____

Western Atlas International
A Dresser Company

CORE LABORATORIES

A N A L Y T I C A L R E P O R T

910433

FOR

BUYS & ASSOCIATES, INC.
Nannette Martin
6574 S. Broadway Suite 200
Littleton, CO 80121

03/26/91

Western Atlas International
A Litton/Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
03/26/91

JOB NUMBER: 910437 CUSTOMER: BUYS & ASSOCIATES, INC. ATTN: Nannette Martin

CLIENT I.D.....: 200-10 HOMCO 151
DATE SAMPLED.....: 03/10/91
TIME SAMPLED.....: 16:40
WORK DESCRIPTION...: HFTOSOLVNT SOIL

LABORATORY I.D...: 910437-0001
DATE RECEIVED....: 03/14/91
TIME RECEIVED....: 10:30
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
GC/MS SOLVENT SCREEN - VOLATILES		*5		8240 (2)	03/16/91	DFM
Acetone	ND	500	ug/Kg			
Benzene	ND	5	ug/Kg			
Carbon disulfide	ND	25	ug/Kg			
Carbon tetrachloride	ND	25	ug/Kg			
Chlorobenzene	ND	25	ug/Kg			
1,2-Dichlorobenzene	ND	25	ug/Kg			
Ethylbenzene	240	125	ug/Kg			
Methylene chloride	ND	25	ug/Kg			
2-Butanone	ND	500	ug/Kg			
2-Hexanone	ND	250	ug/Kg			
Tetrachloroethene	ND	25	ug/Kg			
Toluene	ND	25	ug/Kg			
1,1,1-Trichloroethane	ND	25	ug/Kg			
1,1,2-Trichloroethane	ND	25	ug/Kg			
Trichloroethene	ND	25	ug/Kg			
Trichlorofluoromethane	ND	25	ug/Kg			
112-Trichloro-122-trifluoromethane	ND	25	ug/Kg			
Xylenes-total	1400	125	ug/Kg			

APPROVED BY: _____

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

Western Atlas International
A Litton Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
03/26/91

JOB NUMBER: 910437 CUSTOMER: BUYS & ASSOCIATES, INC. ATTN: Nannette Martin

CLIENT I.D.....: 200-10 HOMCO 151
DATE SAMPLED.....: 03/12/91
TIME SAMPLED.....: 10:20
WORK DESCRIPTION...: HFTOSIDECL SOIL

LABORATORY I.D...: 910437-0002
DATE RECEIVED....: 03/14/91
TIME RECEIVED....: 10:30
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Benzene	<5	5	ug/Kg	8020 (2)	03/25/91	PCM
Total Petroleum Hydrocarbon	64	10	mg/Kg	418.1	03/18/91	MW

APPROVED BY: Debbie Cizek

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

Western Atlas International
A Litton/Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
03/26/91

JOB NUMBER: 910437 CUSTOMER: BUYS & ASSOCIATES, INC. ATTN: Nannette Martin

CLIENT I.D.....: 200-10 HOMCO 151
DATE SAMPLED.....: 03/12/91
TIME SAMPLED.....: 10:30
WORK DESCRIPTION...: HFTOBASECL SOIL

LABORATORY I.D...: 910437-0003
DATE RECEIVED....: 03/14/91
TIME RECEIVED....: 10:30
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Benzene	<5	5	ug/Kg	8020 (2)	03/25/91	PCM

APPROVED BY: Debbie Cagle

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

Western Atlas International
A Litton/Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
03/26/91

JOB NUMBER: 910437 CUSTOMER: BUYS & ASSOCIATES, INC. ATTN: Nannette Martin

CLIENT I.D.....: 200-10 HOMCO 151
DATE SAMPLED.....: 03/12/91
TIME SAMPLED.....: 17:25
WORK DESCRIPTION...: OUTDRSLUDGE

LABORATORY I.D...: 910437-0004
DATE RECEIVED....: 03/14/91
TIME RECEIVED....: 10:30
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Benzene	<500	500	ug/Kg	8020 (2)	03/25/91	PCM
Total Petroleum Hydrocarbon	30800	10	mg/Kg	418.1	03/18/91	MW

APPROVED BY: Debbie Clayton

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

4/18-1

BUYS & ASSOCIATES

CHAIN OF CUSTODY RECORD

6574 S. Broadway, Suite 200
Littleton, CO 80121
(303) 730-2500

Project No. 20010

Project Name HOMCO 151

SAMPLERS: (Signature) N Mart

SITE TYPE	SITE IDENTIFICATION	SAMPLE DATE	TIME MILITARY STANDARD	SAMPLE DEPTH (FEET)	SAMPLE TECH.	ANALYSIS REQUIRED: 8240 Solvent Scan	TCLP Benzene	TPH 8015 Mod						NUMBER OF CONTAINERS	REMARKS
EXC	HFTOSOLVNT	3-10-91	1640	5	C	X								1	
EXC	HFTOSIDECL	3-12-91	1020	NA	C		X	X						1	
EXC	HFTOBASECL	3-12-91	1030	NA	C		X							1	
EXC	OUTDRSLUDGE	3-12-91	1725	NA	G		X	X						1	

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
N Mart	3-13-91	Fed Express			
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Recieved for Laboratory by: (Signature)	Date/Time		
Relinquished by: (Signature)	Date/Time	Recieved for Laboratory by: (Signature)	Date/Time		
		Laurel Nyquist	3-14-91 10:30		

3-14-91 DPN

SAMPLE SPLIT DATE _____

SAMPLE EXTRACTION DATE _____

SAMPLE ANALYSIS DATE _____