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REPORT OF REMEDIAL ACTION AT AN INACTIVE DISPOSAL SITE
TEXACO, INC.
GLENHAM, NEW YORK

Submitted to:

Texaco, Inc.
Glenham, New York

O.H. Materials Corp.

James Harrigan
Project Manager

John L. Leporati, P.E.
New York State License No. 47204
Project Engineer

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TABLE OF CONTENTS

TABLE OF CONTENTS (CONTINUED)

FIGURES

TABLES

TABLE OF CONTENTS (CONTINUED)

TABLES (CONTINUED)

SUMMARY

1 - This report presents a summary of the actions taken to remediate and restore a Texaco Inc. (TEXACO) inactive disposal site in Glenham, Dutchess County, New York, in fulfillment of the Remedial Action Plan approved by the New York State Department of Environmental Conservation (NYSDEC) on June 10, 1985, and as subsequently modified with NYSDEC approval.

2 - In July 1985, TEXACO retained O.H. Materials Corp. (OHM) to implement the Remedial Action Plan. Implementation of the plan by OHM began in August 1985 and was completed in June 1986.

3 - The Remedial Action Plan identified a number of disposal areas which were designated as follows:

- o Container Disposal Site (CDS)
- o Old Sludge Lagoon (OSL)
- o Disposal Pit (DP)
- o Chemical Burial Site 1 (CBS-1)
- o Chemical Burial Site 2 (CBS-2)
- o Chemical Burial Site 3 (CBS-3)

During the course of the remedial action, additional buried materials were uncovered between and to the north of CBS-1 and CBS-2. Consequently, in accordance with a January 1986 NYSDEC-approved modification to the Remedial Action Plan, this additional disposal area, designated the Open Dig Area (ODA), was also remediated. These areas are all shown on Figures 1.3 and 1.4 (see pages 1-4 and 1-5).

4 - The Remedial Action Plan called for the excavated materials to be disposed at the CECOS International Inc. (CECOS) landfill in Niagara Falls, New York. Physical limitations, as agreed to with the NYSDEC, determined the extent of excavation. These limitations involved excavating until all buried waste materials and potentially contaminated soils were removed. Excavation, however, was in no case to extend below bedrock or seasonal, historical low water in a vertical plane and 2 feet beyond the boundaries of the excavation site in the lateral plane. Moreover, excavation in the chemical burial sites was to take place inside a portable steel, aluminum, and fiberglass building with an air-treatment system designed to collect and purify vapors, and thus minimize the possibility of vapors migrating off site.

5 - Table 1 presents a summary of the materials (i.e. buried wastes and potentially contaminated soil) removed from the site for various activities carried out during the remedial action, and disposed at the CECOS landfill. Overall, 1,195 truckloads containing a total of 25,298.25 tons of material were removed.

TABLE 1

SUMMARY OF MATERIALS REMOVED AT THE SITE AND DISPOSED AT THE CECOS LANDFILL

Activity	Time Period	No. of Truck-loads	Weight of Material (Tons)
Trash removal	08-18-85 - 12-12-85	5	79.76
CDS	09-03-85 - 10-23-85	566	11,805.04
OSL	10-24-85 - 01-04-86	133	2,699.76
CBS-3	10-24-85 - 11-14-85	104	2,047.12
CBS-2	11-13-85 - 01-14-86	260	5,276.46
DP	12-28-85 - 01-02-86	3	62.13
CBS-1	01-03-86 - 01-16-86	39	1,652.44
ODA	01-14-86 - 03-08-86	83	1,639.74
Container Crushing	02-03-86	1	18.32
Demobilization Residue	03-18-86	1	17.48
Total		1,195	25,298.25

6 - Trash removal was one of the initial activities. The Remedial Action Plan had called for the off-site disposal of miscellaneous trash and debris at a local landfill. Because of the unavailability of a landfill at the time of the remediation, however, the Remedial Action Plan was modified in October 1985 with the approval of the NYSDEC. This modification provided for the disposal at CECOS of any trash and debris that gave an indication of probable contamination after sensory inspection or air-quality monitoring (i.e. for volatile organics). Further, the October 1985 modification allowed for the use of the remaining trash and debris as backfill.

On this basis, the trash removal effort generated five truckloads containing 79.76 tons of materials considered to be potentially contaminated. This material was characterized as contaminated soil-nonhazardous and disposed at CECOS's Secure Sludge Management Facility, commonly known as Cell A. All other trash and debris was staged at the site and ultimately used as backfill.

7 - Remediation of the CDS took place between September 3 and October 23, 1985, generating 11,805.04 tons of material which was characterized as contaminated soil-nonhazardous and disposed at CECOS's Cell A. The CDS excavation was carried out in a series of trenches. Each trench was subjected to joint inspection by representatives of TEXACO, the NYSDEC, and OHM. Backfilling of each trench was not permitted to begin until all parties were in agreement that the physical limitations of the Remedial Action Plan had been achieved.

Air-quality monitoring was conducted throughout the site and its perimeter during the course of the CDS excavation. During that period, a total of 6,319 measurements were made for volatile organics using photoionization detection instrumentation (PID), and for total cyanides and sulfides with appropriate instruments. In all cases, cyanides and sulfides were below the detection limits of the instrumentation (i.e., 10 parts per million [ppm]). High humidity conditions during the first 2 weeks of work at CDS affected the PID instrumentation, causing it to malfunction. Thus, excluding measurements taken during these first 2 weeks, of a total of 1,479 PID measurements, 61 (4.1 percent) exceeded 1 ppm and 18 (1.2 percent) exceeded 5 ppm. Over 95 percent of the measurements were, therefore, below instrument detection limits (i.e. 1 ppm). There were no readings above 10 ppm. Moreover, the higher PID measurements, occurring after the first 2 weeks of work at CDS, were in almost all cases also attributable to days with relatively high humidity conditions.

8 - Remediation of the OSL took place between October 24, 1985 and January 4, 1986, generating 2,699.76 tons of material which was characterized as contaminated soil-nonhazardous and disposed at CECOS's Cell A. In contrast to the approach utilized at the CDS, backfilling at the OSL (and also at the chemical burial sites) did not begin until the OSL had been completely excavated. TEXACO, the NYSDEC, and OHM inspected the OSL on December 30, 1985. Backfilling began on January 1, 1986, and was completed on January 4, 1986. Air-quality monitoring was conducted on and around the site throughout the period of the remediation of the OSL. Measurements of volatile organics by a PID, cyanides, and sulfides were, for the most part, below

detection limits. To the extent there were detectable measurements, these were related to work at CBS-3 and CBS-2 which was being carried out concurrently with work at the OSL.

9 - Remediation of CBS-3 took place between October 24 and November 14, 1985, generating 2,047.12 tons of material which was disposed at the CECOS landfill. Of this total quantity, 2,005.15 tons were characterized as contaminated soil-nonhazardous. The remaining 41.97 tons were characterized as hazardous because these materials were excavated from a portion of CBS-3 which, based upon review of historical records, was suspected of having received listed hazardous wastes (i.e. peroxide, hydroperoxide, hydrazine, cyclohexane, and benzene).

The actual CBS-3 excavation was completed on November 11 when bedrock was reached. CBS-3 was the only excavation which terminated on bedrock. Following joint inspection by TEXACO, the NYSDEC, and OHM, backfilling commenced and was completed on November 14.

During remediation of CBS-3, 3,441 measurements for volatile organics, sulfides, and cyanides were taken throughout the site and its perimeter. In all cases, sulfides and cyanides were below detection limits. Of the PID measurements, only 10 (0.9 percent) exceeded 1 ppm. There were two PID measurements greater than 5 ppm, both associated with local conditions well within the site boundary: a measurement of 6 ppm in the vicinity of the loadout pad on November 4 and a mesurement of 7 ppm immediately outside the excavation building on November 8.

10 - Remediation of CBS-2 occurred between November 13, 1985, and January 14, 1986, generating 5,276.46 tons of material which was disposed at the CECOS landfill. Of this total tonnage, 5,195.95 tons were characterized as contaminated soil-nonhazardous. The remaining 80.51 tons were characterized as hazardous because these materials were excavated from a portion of CBS-2 which, based upon review of the historical record, was suspected of having received a listed hazardous waste, vinyldine chloride.

Excavation at CBS-2 was completed on January 7, 1986. The excavation did penetrate the water table which, for most of the time during the CBS-2 excavation, exceeded seasonal low water table levels. The final inspection of the CBS-2 excavation took place on January 10, 1986, at which time representatives of TEXACO, the NYSDEC, and OHM agreed that all buried materials had been removed and the excavation appeared free of any indication of potential contamination. Backfilling was then initiated and was completed on January 14.

During CBS-2 remediation activities, 4,140 measurements for volatile organics, sulfides, and cyanides were taken throughout the site and its perimeter. All cyanide and sulfide measurements were below detection limits. There were 29 PID measurements (2.1 percent) above 1 ppm and three PID measurements above 5 ppm. The measurements above 5 ppm were related to local conditions well within the site boundaries. Measurements taken on November 21 showed 5.6 ppm in the near vicinity of the loadout pad, and 6.2 ppm immediately outside the CBS-2 excavation building. A measurement of 8 ppm immediately outside the excavation building was recorded on November 22.

11 - The DP, which was believed to have been used for the disposal of liquid wastes, was remediated between December 28, 1985, and January 2, 1986. A total of 62.13 tons of material were removed from the DP, characterized as contaminated soil-nonhazardous, and disposal at the CECOS landfill.

12 - Remediation of CBS-1 took place between January 3 and January 16, 1986, generating 1,652.44 tons of material which was disposed at the CECOS landfill. All material removed from CBS-1 was characterized as contaminated soil-nonhazardous.

Water table levels for most of the CBS-1 excavation were slightly above seasonal, historical low water levels. However, because the water table was still below the buried debris being excavated (i.e. a minimum of 6.8 feet below grade), the excavation only slightly penetrated the water table. The site was jointly inspected by representatives of TEXACO, the NYSDEC, and OHM on January 13, and all agreed the excavation was free of buried materials and any signs of potential contamination. Backfilling commenced on January 14 and was completed on January 16.

During CBS-1 excavation activities, 1,620 measurements for volatile organics, sulfides, and cyanides were taken. All sulfide and cyanide measurements were below detection limits. Similarly, all PID measurements were below 1 ppm.

13 - The ODA was remediated between January 14 and March 8, 1986, generating 1,639.74 tons of material which were disposed at the CECOS landfill as contaminated soil-nonhazardous.

During excavation of the ODA, 3,270 measurements of volatile organics, sulfides, and cyanides were taken. All sulfide and cyanide measurements were below detection limits. Only two PID measurements were above

1 ppm: measurements of 30 ppm on January 27 and 200 ppm on February 6, both taken directly over excavated, open drums. These high measurements were strictly local in their occurrence; all other PID measurements at the site on those days and during the entire course of ODA work were below 1 ppm. Both drums and the surrounding soil were overpacked in clean drums, characterized as hazardous waste, and disposed at the CECOS landfill.

On February 21, a drum containing phenol was uncovered. The phenol drum and surrounding soil were overpacked in three drums. These three drums were transported via the Advanced Environmental Technology Corp. (AETC) storage facility in Flanders, New Jersey (EPA I.D. No. NJD080631369), to Stablex Inc. in Rock Hill, South Carolina (EPA I.D. No. SCD044442333), where they were incinerated. The wastewater generated from decontamination of the equipment used to handle the phenol drum and surrounding soil was placed in a separate clean drum which was shipped to Frontier Systems Inc. in Niagara Falls, New York (EPA I.D. No. NYD048815703), for wastewater treatment, also via AETC's storage facility in Flanders, New Jersey.

14 - There were 559 intact containers uncovered during the various site excavations. The contents of these containers were unknown. The containers were crushed on the loadout pad and within the excavation building in accordance with a procedure approved by the NYSDEC. The crushed container material was mixed with a combination of dry sand and lime, resulting in a mixture containing less than 5 percent crushed-container material by weight (less than 100 pounds container material per ton of sand and lime). The residual mixture (i.e., crushed-container material, sand, and lime) weighed 18.32 tons, was characterized as hazardous waste, and was disposed at the CECOS landfill.

15 - There were 57 cylinders and lecture bottles which were uncovered during excavation of the various sites. One of the cylinders was identified as being the property of the Union Carbide Corporation (UCC). UCC removed this cylinder from the site. Two of the remaining cylinders, as a result of on-site sampling, were found to be empty. The remaining 54 cylinders were shipped off site for sampling and analyses. A federal Department of Transportation exception for transportation of these unknowns for laboratory analysis was obtained to allow for proper shipment of these materials. When the results of analyses are complete, the cylinders will be disposed in accordance with all applicable federal and state regulations.

16 - Demobilization took place gradually in relation to the decreasing needs of the project for personnel and equipment. It extended from the middle of February to the end of the third week of March. During demobilization, one last load of material for disposal at CECOS was generated. This load, weighing 17.48 tons, consisted of the pool liner and stabilized sludge from the one remaining liquid storage pool, along with miscellaneous debris generated as part of demobilization.

Final grading of the site also took place in preparation for hydroseeding of the site. Hydroseeding was carried out during the week of June 23, 1986.

17 - During the course of the project, wastewater was produced from the washing of vehicles and equipment, and water was also produced through excavation site dewatering. Overall, ninety-one 5,000-gallon-capacity tanker truckloads of water were removed from the site. The water was shipped to du Pont's Chambers Works in Deepwater, New Jersey (EPA I.D. No. NJD002385703), for wastewater treatment.

1.0 INTRODUCTION

This report describes the actions taken to remediate and restore a Texaco Inc. (TEXACO) inactive disposal site in Glenham, Dutchess County, New York (see Figures 1.1 and 1.2). The site had been used in the past by the Texaco Research Center Beacon (TRCB) for the disposal of small quantities of chemicals and materials generated as by-products of research and development activities and the routine operations and maintenance of the facility.

At TRCB's request, O.H. Materials Corp. (OHM) prepared a Site Investigation Report (Section 10.0, Reference 1) and a Remedial Action Plan (Section 10.0, Reference 2), both dated February 8, 1985. With minor revisions, the Remedial Action Plan was approved by the New York State Department of Environmental Conservation (NYSDEC) on June 10, 1985. It was implemented, as revised, by OHM from August 1985 through March 1986.

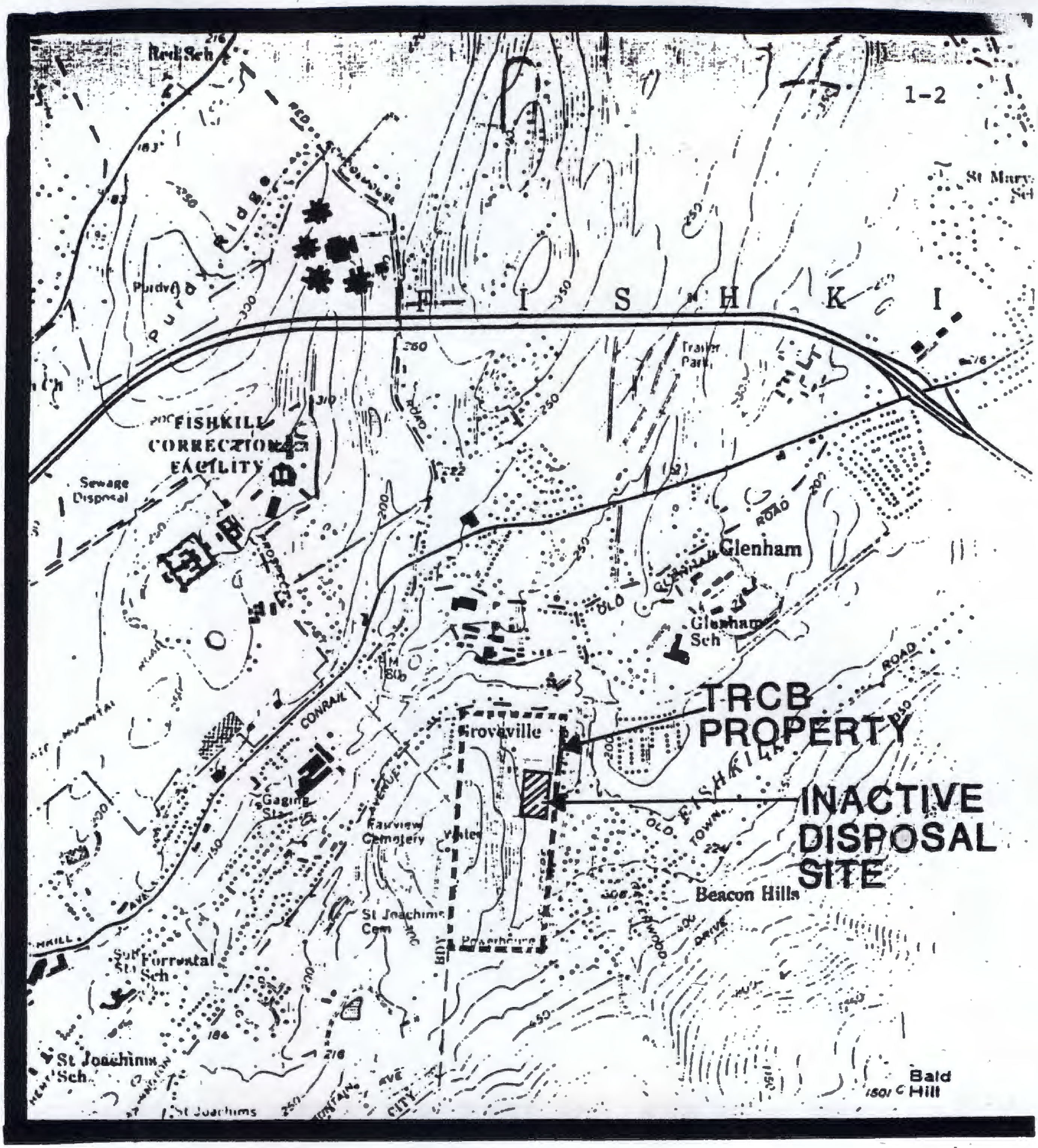
The Remedial Action Plan identified several disposal areas (shown on Figure 1.3) designated by TRCB as follows:

- Container Disposal Site (CDS)
- Old Sludge Lagoon (OSL)
- Disposal Pit (DP)
- Chemical Burial Site 1 (CBS-1)
- Chemical Burial Site 2 (CBS-2)
- Chemical Burial Site 3 (CBS-3)

The plan called for the excavation and removal of contaminated materials within each individual area. Excavation in the chemical burial sites was to take place inside a portable steel, aluminum, and fiberglass building containing an air-treatment system designed to collect and purify vapors, and thus minimize the possibility of vapors migrating off site. The excavated soil in bulk and any containers were to be transported to and disposed at the CECOS International Inc. (CECOS) landfill in Niagara Falls, New York. Miscellaneous materials (i.e., trash and debris) were to be transported to a nearby landfill as determined by TEXACO.

During the course of the remedial action, additional buried materials were uncovered between and to the north of CBS-1 and CBS-2. This disposal area was designated as the Open Dig Area (ODA, Figure 1.4). Materials were excavated from the ODA and then disposed at the CECOS landfill.

The objective of this report is to discuss the work carried out by OHM and the data generated. The voluminous air-quality monitoring and water-level measurement data, as well as the solid and liquid manifest records, are on file at TRCB and are available for review. In addition, OHM



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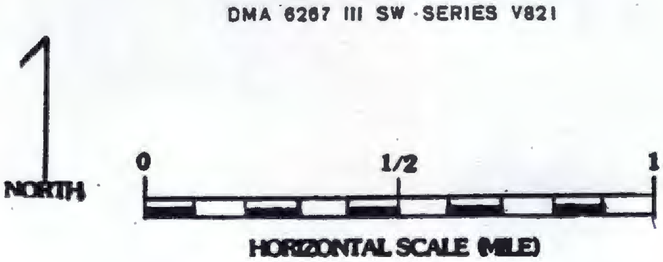


FIGURE 1.1
SITE LOCATION
INACTIVE DISPOSAL SITE
TEXACO RESEARCH CENTER
BEACON
PREPARED FOR
TEXACO INC.
GLENHAM, NEW YORK

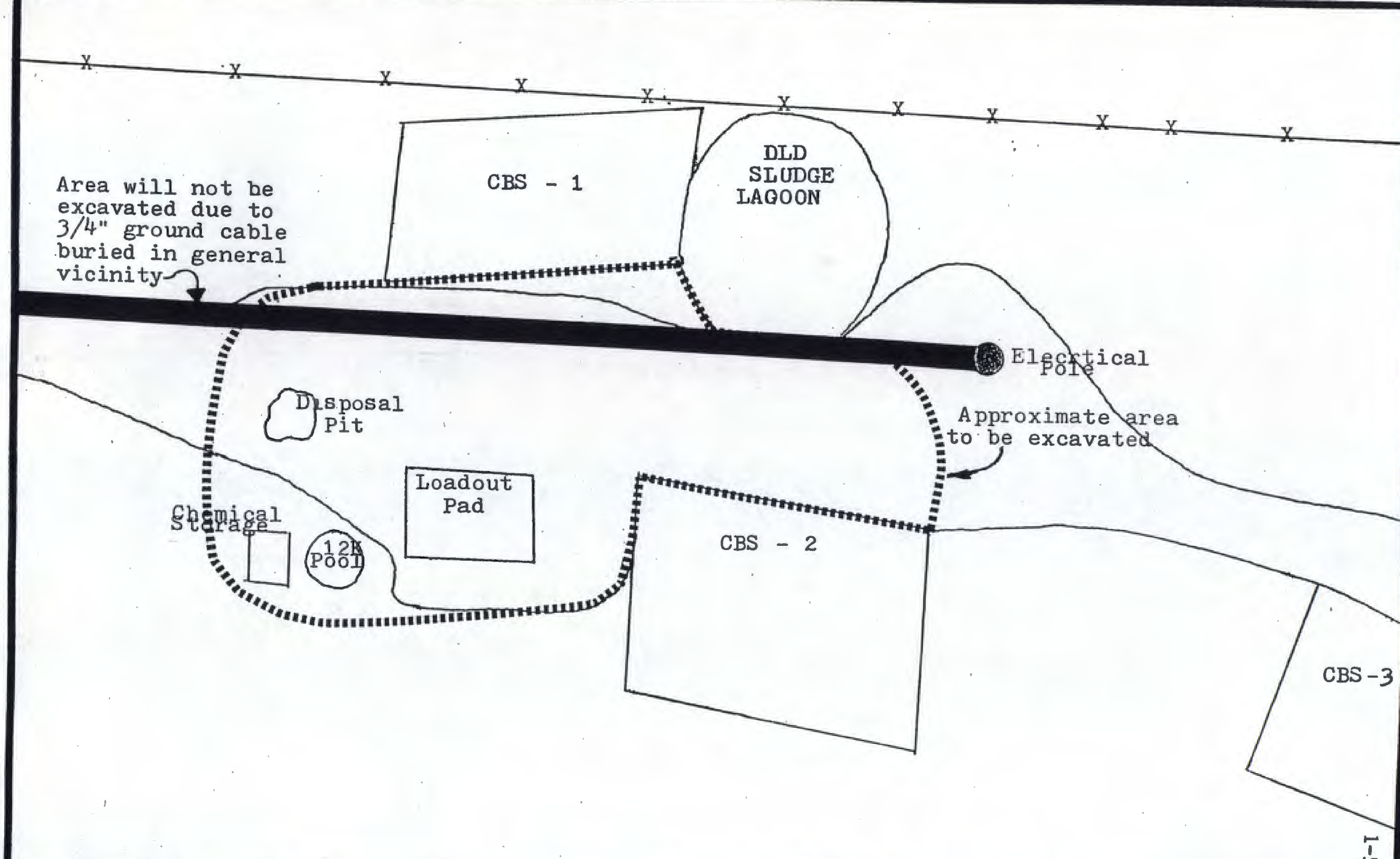


FIGURE 1.4

SCALE 1" = 50'	DRAWN BY ME	NO.	DATE	REVISION	BY	OPEN DIG EXCAVATION TEXACO RESEARCH CENTER BEACON	O. H. MATERIALS CO. EMERGENCY RESPONSE AND ENVIRONMENTAL RESTORATION BOX 551 419-423-3526 FINDLAY, OHIO 800/537-9540
DATE 1/21/86	CHECKED						PROJECT 2997
SHEET 11 of 11	APPROVED ME						DRAWING
							REVISION

prepared weekly detailed progress reports during the entire period of the project. These reports are also on file at TRCB.

This report is organized to present the major work activities in roughly the chronological order in which they were performed, as follows:

Section/Activity

2.0 Mobilization and Setup
3.0 Trash Removal
4.0 Old Sludge Lagoon
5.0 Container Disposal Site
6.0 Chemical Burial Sites and Disposal Pit
7.0 Open Dig Area
8.0 Containers and Cylinders
9.0 Demobilization and Site Restoration

Summaries of the air-quality monitoring and water-level measurement data obtained throughout the course of the remedial action are presented as part of the discussion of each of the remediation activities. The site safety and contingency plans, along with any modifications to these plans developed during the remediation, are presented in Appendix A.

Prior to mobilization and setup, a soil sampling and analysis program was conducted to develop waste characterizations required in connection with the land burial of excavated materials. On July 18 and 19, 1985, a total of 22 samples were taken at the various disposal areas, as follows: 10 at CDS, 3 at CBS-3, 2 at CBS-2, 1 at the OSL, and 6 at CBS-1 and the DP. Sample depths ranged from 2 1/2 feet to 7 1/2 feet and were at times determined by reaching ground water or hitting an impenetrable object. The samples were analyzed by the RECRA Research, Inc. (RECRA) laboratory in Amherst, New York, and the results of these analyses were reported to OHM on August 29, 1985. A copy of the RECRA report is presented as Appendix B.

Based on the assessment of the RECRA analytical data by TEXACO and OHM, it was concluded that the materials excavated from the various disposal areas would be, for the most part, nonhazardous. Consequently, all materials removed from the disposal areas were designated as contaminated soil-nonhazardous unless there was a reasonable basis, either from historical records or subsequent analytical data, to suspect the materials contained a listed hazardous waste. In such an event, the excavated materials were designated as a hazardous waste.

2.0 MOBILIZATION AND SETUP

Mobilization and setup took place from August 13, through September 3, 1985. This phase included the mobilization of project personnel, equipment, and support facilities such as the office, galley, and decontamination trailers, as well as construction/installation of the decontamination pad, truck staging/loadout area pad, truck scale, and site drainage system. The site layout after completion of mobilization and setup is depicted in Figure 2.1. Specific activities that were carried out during this period included:

Mobilizing Personnel - Key personnel included a site supervisor, project engineer, project chemist, foreman, and equipment operating engineers.

Upgrading Access Roads - Stone was spread over the surface of existing dirt and gravel access roads to accommodate the heavy vehicle traffic anticipated.

Clearing Brush - Brush was cleared in and near the CDS area. During this activity monitoring well UC-1 (Figure 1.3) was damaged. In April 1986, this well was replaced by another well at the same location, and this new well is currently in use.

Installing Utilities - Arrangements were made for on-site electric and telephone service and a potable water supply provided by TEXACO.

Constructing Site Drainage System - Diversion trenches and berms were constructed in the vicinity of the various disposal sites to divert runon, contain runoff, and reduce possible infiltration.

Constructing Decontamination Pad and Washwater Sump - A concrete decontamination pad with curbing on all sides was constructed. The pad was sloped to a sump where washwater could be stored prior to being pumped to a storage pool.

Constructing Staging/Loadout Area Pad - A concrete staging/loadout pad measuring approximately 60 feet by 30 feet was constructed. The objective of this pad was to eliminate the potential for contamination of clean soil under the staging area and to create an adequate area for stockpiling material.

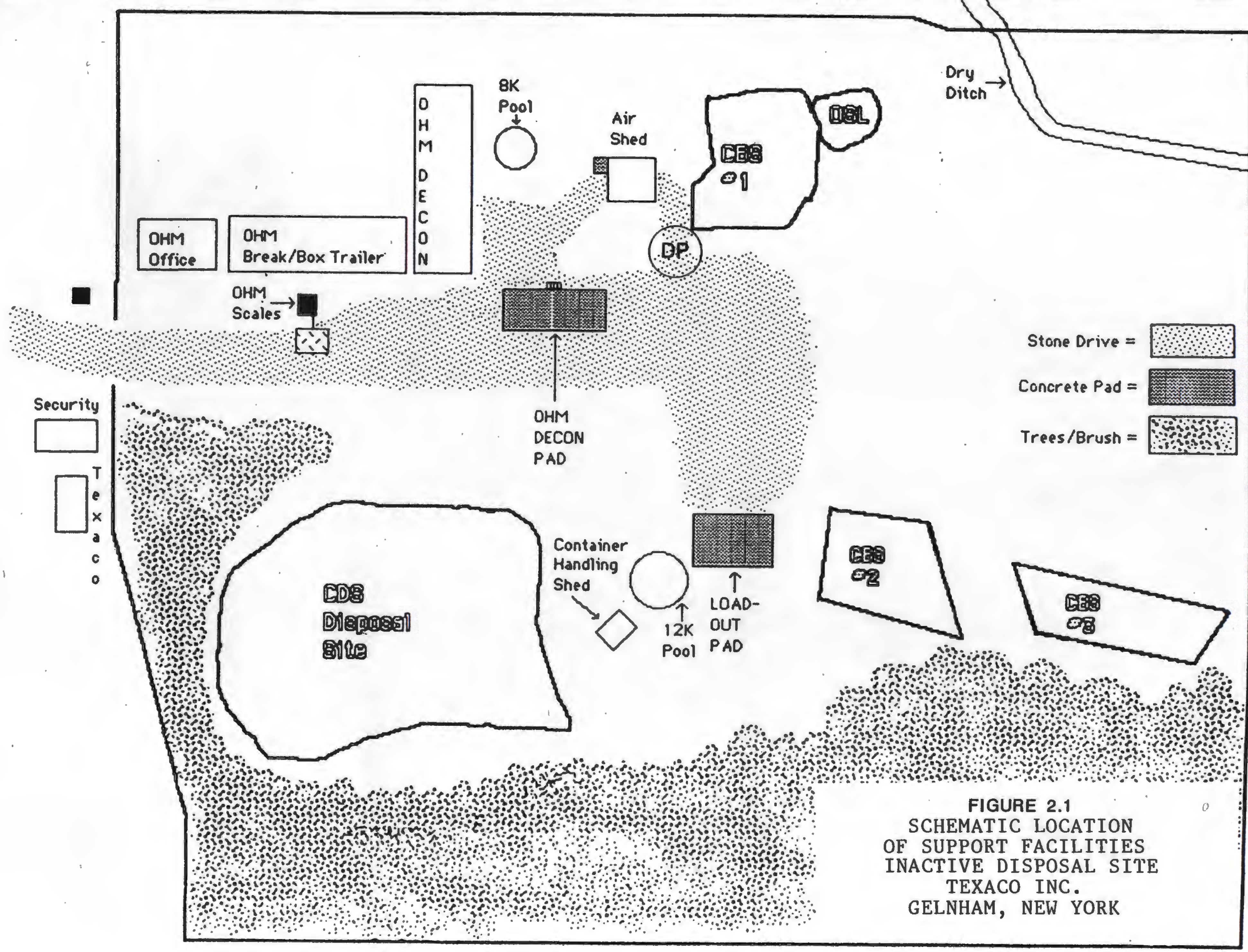


FIGURE 2.1
SCHEMATIC LOCATION
OF SUPPORT FACILITIES
INACTIVE DISPOSAL SITE
TEXACO INC.
GELNHAM, NEW YORK

Setting Up Truck Scale - An axle scale was set up to weigh trucks both prior to and after loading to assure compliance with highway weight limitations.

Setting Up Support Trailers - Trailers were set up at the site for use as a field office, personnel decontamination area, protective clothing and equipment storage area, crew member eating and break area, and a point from which security guards could control ingress to and egress from the site.

Designating Transition Building - A temporary building was provided for workers' use while changing into personal protective clothing prior to entering the disposal site area and to store self-contained breathing apparatus and air cylinders.

Designating Container Handling/Storage Facility - A temporary building was provided to store, sample, and package containers segregated during excavation.

Erecting Water Storage Pools - 8,000- and 12,000-gallon storage pools were erected to store water collected prior to being transported for off-site disposal.

It should be noted that, during construction of the staging/loadout pad, several empty containers were uncovered. These containers and the immediate surrounding soil were staged at the CDS for subsequent off-site disposal with CDS materials. In addition, an open drum containing a white powder was uncovered. This drum was overpacked in a clean drum and staged at the Container Handling/Storage Facility for future off-site disposal. Prior to overpacking, a sample of the white powder was taken. Laboratory analyses determined the substance to be a nonhazardous silica gel. Air-quality monitoring in the vicinity of the uncovered drum with a photoionization detector (PID) and with hydrogen sulfide and cyanide monitors showed no increases above background levels.

3.0 TRASH REMOVAL

The Remedial Action Plan called for the removal of all trash, debris, and brush material before commencing any excavation of contaminated materials.

TRCB had used four areas specifically for the disposal of trash. These were designated as Trash Areas A, B, C and D (Trash Areas-A, -B, -C, and -D, Figure 1.3). The Site Investigation Report concluded that these areas had not been used for disposal of hazardous materials and that the trash could be disposed at a sanitary landfill. A suitable sanitary landfill, however, could not be found within the needed time frame, and it became necessary to modify the Remedial Action Plan. The modification, which was approved by the NYSDEC, provided for:

1. Staging materials from Trash Areas-A, -B, and -D and any miscellaneous trash and debris at the site, which was in any way questionable as to cleanliness based on sensory inspections or air quality monitoring, at the CDS for subsequent off-site disposal along with CDS materials

2. Staging temporarily the remaining trash and debris from Trash Areas-A, -B, -D and from the site in general at the site of Trash Area-A

3. Excavating the more remote Trash Area-C, at a later stage in the project, with off-site disposal at CECOS of any Trash Area-C materials which were determined to be questionable as to cleanliness based on sensory inspection or air monitoring

4. Using the temporarily staged nonhazardous trash and debris at the Trash Area-A site, along with clean materials excavated at the Trash Area-C site, as fill at the Trash Area-C excavation

In accordance with this modification, Work Items (1) and (2) above were carried out concurrently with mobilization and setup. Work at Trash Area-C was initiated on September 14, 1985, with a preliminary investigation to determine the extent of trash and debris at the site and to determine the overall boundaries of the excavation that would be required for disposal of all trash pile materials at this site.

As part of this investigation, four trenching excavations were made in Trash Area-C which uncovered several drums, all of which were either open headed or partially crushed and broken. Based upon conclusions OHM drew in its Site Investigation Report, it is likely these drums contained sand to place on top of ice in winter, or were used for the disposal of grass clippings and trash, both of which were routine operations. In addition to these drums, a black powder, most likely ash, and several bricks were found. TEXACO decided that materials like these (i.e, empty containers, bagged materials, or visually stained or odiferous materials) should be separately staged for subsequent disposal at the CECOS landfill, even though no evidence of contamination in this area had been determined in the OHM Site Investigation Report.

The actual remediation activities at Trash Area-C began on October 26, 1985, with the preparation of a stone access road to the trash pile. Excavation was initiated on October 27. Any material which was questionable as to cleanliness was separately staged from material considered to be clean. Notwithstanding the nonhazardous nature of Trash Area-C materials based upon the OHM Site Investigation Report, as a precautionary measure, all work was carried out using Level C personal protective clothing and air-purifying respirators. Soiled clothing and equipment were transported from Trash Area-C in the bucket of a front-end loader for off-site disposal or for cleaning at the decontamination facility set up by OHM for the project. Vehicle washing also took place at this facility. (See Appendix A for the Site Safety Plan developed for work at Trash Area-C.)

As part of the excavation on October 27, one drum, containing bags of white powder, was found. This powder was subsequently identified as nonhazardous silica gel which had also been present near the loadout pad and analytically tested. At the time it was uncovered, however, because its appearance was similar to that of asbestos, breathing-air equipment was used on October 28, and a separate staging area was established for this material and any similar material that might be found. No additional material with these characteristics was uncovered. The material found on October 27 was ultimately disposed at the CECOS landfill, characterized as contaminated soil-nonhazardous. Work at Trash Area-C was temporarily suspended after October 28 because of equipment needs for other aspects of the project.

PID measurements taken on October 28 were all below equipment detection limits (1 part per million [ppm]), including readings taken directly over two drums that were uncovered that day. In addition, cyanide and sulfide measurements were below equipment detection limits (10 ppm). Measurements on October 29, after work had stopped, showed that volatile organic, cyanide, and sulfide concentrations were all below detection limits.

Work resumed at Trash Area-C on December 2, 1985. As at the initiation of remediation work at Trash Area-C in October, Level C personal protective gear was utilized. All materials TEXACO had previously designated (i.e. containers, bagged materials, visually stained, or odiferous materials) were transported from the staging area to the loadout pad for disposal at CECOS. The only containers found were empty bottles (mostly soft drink bottles) and broken/crushed drums. No intact containers or drums were found.

On December 4, after the site was completely cleared of all trash, debris, and discarded materials, it was back-filled with clean soil, along with trash, and debris which had been removed from Trash Area-C and the other trash pile areas and previously staged at the Trash Area-A site.

The air-quality measurements taken from December 2 through 4 show maximum hourly PID measurements on two occasions (out of total of 10) to be 1 ppm. All other PID hourly measurements were below instrument detection limits. Cyanides and sulfides were below detection limits in all cases. Because of the low PID measurements, crew members backfilled the site in Level D protection.

The material that was removed from Trash Area-C and stored at the loadout pad was removed for disposal to the CECOS landfill on December 12. Five truckloads containing 79.76 tons of material, characterized as contaminated soil-nonhazardous, were disposed at CECOS's Secure Sludge Management Facility (Facility I.D. No. 32B22) located in Niagara Falls, New York. This facility is commonly referred to as CECOS's Cell A. Table C.1 in Appendix C presents a tabulation of the work order number and material weight for each truckload.

4.0 CONTAINER DISPOSAL SITE

A description of remediation activities at the CDS is provided in the subsections below.

4.1 REMEDIATION PROCEDURE

The excavation was carried out in a series of trenches. Material was excavated using a trackhoe and transported to the loadout pad using a front-end loader. The bucket of the loader was equipped with a lid to prevent spillage of contaminated soil. Any intact containers or cylinders encountered by the trackhoe were transferred to the front-end loader bucket and transported to the Container Handling/ Storage Facility. Monitoring wells in the vicinity of the CDS, as well as in the vicinity of the other excavation sites, were secured with metal drums to prevent damage to the well casings.

All OHM personnel working at this excavation site wore Level B personal protective equipment, including the operator of the loader used to transport the excavated materials. The operator loading trucks and performing the backfill operation wore Level C safety gear, as did personnel involved in truck loading and truck decontamination. All safety measures were in compliance with the OHM Site Safety Plan approved by the NYSDEC (see Appendix A).

In accordance with the Remedial Action Plan, physical limits were to determine the depth as well as the lateral extent of excavation. The first requirement was that the excavation would terminate if the top of bedrock was encountered. Soil would be removed from the top of bedrock to make it as soil-free as possible, but bedrock would not be excavated. The second requirement was that the excavation would terminate when the bottom of buried material or the low seasonal (year-round) water table was reached. Where the bottom of the buried material was higher than the low seasonal water table, all potentially contaminated soil between the buried material and the water table was to be removed. The lateral extent of excavation in any direction was to be 2 feet beyond the limit of any buried material.

Consequently, at the completion of the excavation of each individual trench, an inspection was conducted by representatives of TEXACO, NYSDEC, and OHM. When all parties concurred that all buried materials had been removed and that the bottom of the trench appeared free of potential contamination, the trench was immediately backfilled with clean fill material. Clean fill for backfilling was obtained from the high ground (i.e., 100 feet above the disposal site's elevation) at the western portion of the TEXACO recreation area (Figure 1.2).

On the loadout pad, a second front-end loader was used to maintain the stockpile and to loadout trucks for ultimate disposal. Material stockpiled on the loadout pad was covered with polyethylene at the end of each work day to protect it from rainfall and to reduce dust and odors. The trucks that were loaded with materials from the loadout pad were lined with polyethylene sheeting, tarped, and decontaminated prior to leaving the site. These trucks were restricted as to their hours of movement through the local school area. All material removed from the CDS was characterized as contaminated soil-nonhazardous and disposed at CECOS's Cell A.

4.2 REMEDIATION

Excavation at the CDS commenced on September 3, 1985, and was completed on October 19. Backfilling was completed on October 23. The last two truckloads of CDS material were removed from the loadout pad and transported to CECOS on October 21. Overall, a total of 566 truckloads containing 11,805.04 tons of material were removed. Table 4.1 presents the number of truckloads per day and the weight of material removed. Appendix C, Table C.2, includes a tabulation of the work order number and weight of material for each truckload of CDS materials.

4.3 AIR MONITORING

During the work at the CDS, air-quality monitoring was conducted daily using a PID and cyanide- and sulfide-detection instrumentation. Typically, measurements were taken at 20 sampling locations (see Figure 4.1) several times each day. Table 4.2 summarizes the air-quality monitoring for the September 3 through October 23, 1985, period of the CDS excavation. During that period, 2,123 measurements of each of volatile organics, cyanides, and sulfides were taken. In all cases, cyanide and sulfide measurements were below the detection limits of the instrumentation (10 ppm).

There were 399 PID measurements (18.8 percent) above 1 ppm, 195 PID measurements (9.2 percent) above 5 ppm, and 5 PID measurements (0.2 percent) above 10 ppm. However, the bulk of the higher PID measurements occurred during the first 2 weeks of work at CDS when instrument performance was affected by high humidity. Consequently, examining the period from September 19 through October 23 shows that, out of a total 1,479 PID measurements 61 (4.1 percent) exceeded 1 ppm, 18 (1.2 percent) exceeded 5 ppm, and there were no measurements above 10 ppm. Moreover, the higher PID measurements occurring after the first 2 weeks of work at CDS, were in almost all cases also attributable to days with relatively high humidity conditions.

TABLE 4.1

MATERIAL REMOVED FROM THE
CDS AND DISPOSED AT CECOS

Date	No. of Truck-loads	Weight (tons)	Date	No. of Truck-loads	Weight (tons)
9/4	7	155.60	9/26	13	279.57
9/5	6	30.83	9/28	11	237.08
9/6	8	159.71	9/30	18	375.08
9/9	12	234.15	10/1	18	379.38
9/10	8	158.04	10/2	6	127.97
9/11	21	436.60	10/8	24	486.28
9/12	12	249.41	10/9	11	221.18
9/13	17	362.77	10/10	25	509.57
9/14	2	43.47	10/11	10	206.72
9/16	22	464.74	10/12	10	213.22
9/17	19	398.77	10/14	21	433.04
9/18	30	631.51	10/15	19	415.92
9/19	17	356.50	10/16	28	579.62
9/20	28	597.59	10/17	15	304.95
9/21	3	61.72	10/18	28	569.04
9/23	28	598.18	10/19	20	398.41
9/24	19	395.63	10/20	5	101.29
9/25	23	490.08	10/21	2	41.42

TOTAL TRUCKLOADS = 566
TOTAL WEIGHT OF MATERIALS REMOVED = 11,805.04 tons

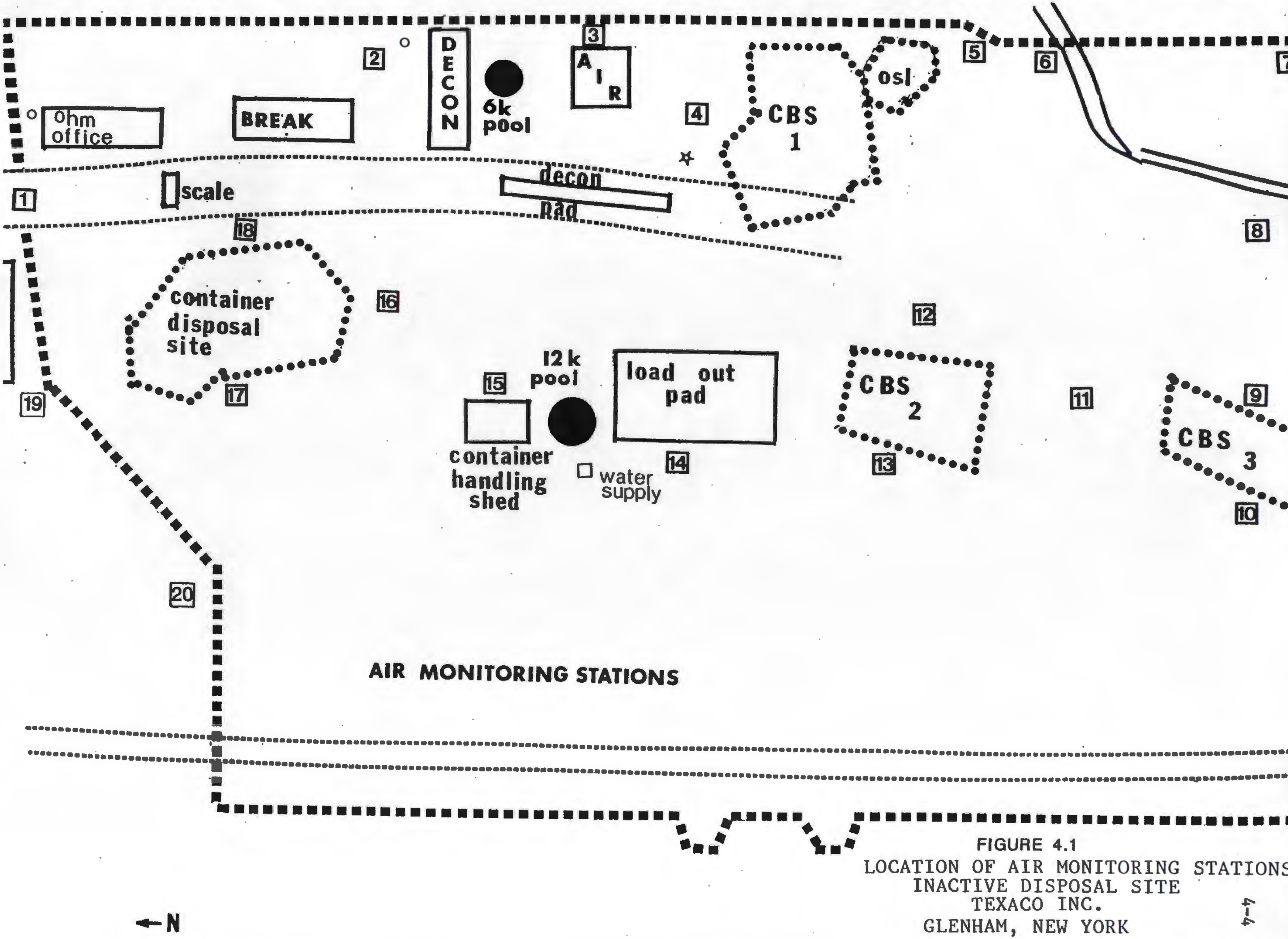


FIGURE 4.1
LOCATION OF AIR MONITORING STATIONS
INACTIVE DISPOSAL SITE
TEXACO INC.
GLENHAM, NEW YORK

TABLE 4.2

AIR MONITORING DATA FOR THE CDS

SEPTEMBER 3 THROUGH OCTOBER 23, 1985

Volatile Organics by Photoionization Detection

Total No. of Measurements	Measurements Above 1.0 ppm		Measurements Above 5.0 ppm		Measurements Above 10.0 ppm	
	No.	%	No.	%	No.	%
2,123	399	18.8	195	9.2	5	0.2
(Excluding measurements taken prior to September 19, 1985)						
1,479	61	4.1	18	1.2	0	0

Cyanides

Total number of measurements = 2,123

All measurements were below the detection limits of the instrumentation (10 ppm)

Sulfides

Total number of measurements = 2,123

All measurements were below the detection limits of the instrumentation (10 ppm)

4.4 WATER TABLE LEVELS

During the course of work at CDS, ground-water levels were very near to or below historical low water levels. Tables 4.3 and 4.4 present the water table depth records for several wells across the site. Measurements at Wells DC-1 and DC-2 in the vicinity of CDS showed ground-water levels to range between 0.9 feet below and 0.6 feet above historical low water.

There is a relatively high ground-water table in the CDS area and, consequently, the water-table depth below-grade ranged between 2.2 feet and 4.1 feet. It was necessary to frequently dewater the excavation site, probably because of the combination of the naturally occurring high water table and considerable precipitation during work at the CDS.

4.5 DISPOSAL OF LIQUIDS

Table 4.5 lists the tanker loads of liquids removed from the site during the course of the CDS remediation. There were 38 tanker shipments during the period with each tanker having a 5,000-gallon capacity. These liquids were a combination of decontamination washwater and liquid generated through the dewatering of the CDS excavation site. The liquid removed from the site was transported to the du Pont Company Chambers Works at Deepwater, New Jersey, for treatment and ultimate disposal.

TABLE 4.3

WATER TABLE DEPTH RECORD

Date	CDS Vicinity Wells: DC-1 Difference from Low Water (ft)	CDS Vicinity Wells: DC-1 Depth Below Grade (ft)	CDS Vicinity Wells: DC-2 Difference from Low Water (ft)	CDS Vicinity Wells: DC-2 Depth Below Grade (ft)	CBS-3 Vicinity Well: DB-16 Difference from Low Water (ft)	CBS-3 Vicinity Well: DB-16 Depth Below Grade (ft)
9/03	-0.7	4.1	-0.9	3.7	**	12
10/09	0.4	3.0	0.6	2.2	**	12
10/31	N/A*	N/A	N/A	N/A	**	12

*N/A - No measurements were obtained from these wells.

**Well dry, water table below top of bedrock

TABLE 4.4

WATER TABLE DEPTH RECORD

	CBS-2 Vicinity Wells				CBS-1 and the OSL Vicinity Wells			
	DB-13		DB-7		DB-8		DB-14	
Date	Diff. from Low Water (ft)	Depth Below Grade (ft)	Diff. from Low Water (ft)	Depth Below Grade (ft)	Diff. from Low Water (ft)	Depth Below Grade (ft)	Diff. from Low Water (ft)	Depth Below Grade (ft)
9/03	-0.9	12.0	-0.2	6.9	-4.5	12.1	-3.3	15.2
10/09	0.1	11.0	0.7	6.0	2.1	5.5	-2.8	14.7
10/31	-0.3	11.4	0.2	6.9	-2.5	10.1	N/A	N/A
11/19	0.2	10.9	0.9	5.9	0.1	7.5	N/A	N/A
11/20	0.2	10.9	0.7	6.0	-0.1	7.7	N/A	N/A
11/21	2.1	8.9	2.6	4.1	1.1	6.4	-0.3	12.2
11/23	2.1	8.9	2.6	4.1	0.9	6.7	0.2	11.7
11/24	2.0	9.1	2.5	4.2	0.9	6.7	0.3	11.6
11/25	-0.1	11.2	0.5	6.2	-1.2	8.8	-1.7	13.6
11/27	0.1	11.0	1.6	5.1	-0.9	8.5	-1.2	13.1
12/01	0.9	10.2	1.5	5.2	1.3	6.3	0.1	11.8
12/02	1.1	10.0	1.8	4.9	1.5	6.1	0.8	11.1
12/03	1.3	9.8	1.6	5.1	1.2	6.4	0.1	11.8
12/16	1.0	10.0	1.6	5.1	1.3	6.3	0.9	11.1
12/17	1.3	9.8	1.2	5.5	1.4	6.2	1.0	10.9
12/18	1.5	9.6	1.3	5.4	1.6	6.0	0.9	11.0
12/20	1.3	9.8	1.5	5.2	2.1	5.4	1.4	10.6
12/21	1.1	9.9	1.1	5.6	1.1	6.5	1.4	10.6
12/23	1.6	9.5	1.1	5.6	1.3	6.3	1.5	10.5
12/27	1.2	9.9	0.8	5.9	0.8	6.8	1.5	10.4
12/28	0.7	10.4	-0.7	7.4	-0.6	8.2	1.4	10.6
12/29	0.7	10.4	0.3	6.4	0.2	7.4	1.3	10.6
12/30	0.5	10.5	-0.7	7.4	0.1	7.5	1.4	10.6
12/31	0.6	10.5	0.3	6.4	-0.1	7.7	1.3	10.6
1/01	0.5	10.6	0.6	6.1	-0.3	7.9	0.5	11.4
1/02	0.6	10.5	0.7	6.0	-0.1	7.7	1.3	10.6
1/03	0.6	10.5	0.7	6.0	N/A*	N/A**	1.4	10.5
1/04	0.3	10.8	0.8	5.9	N/A	N/A	1.3	10.6
1/05	0.4	10.7	0.6	6.1	N/A	N/A	1.9	10.1
1/06	0.4	10.7	0.5	6.2	N/A	N/A	2.5	9.4
1/07	0.3	10.8	0.2	6.5	0.8	6.8***	2.1	9.8
1/08	0.3	10.8	0.3	6.4	0.0	7.6***	1.3	10.6
1/09	0.1	11.0	0.0	6.7	N/A	N/A	1.7	10.2
1/10	0.3	10.8	0.3	6.4	0.5	7.1***	1.8	10.1

TABLE 4.4 (CONTINUED)

WATER TABLE DEPTH RECORD

	CBS-2 Vicinity Wells				CBS-1 and the OSL Vicinity Wells			
	DB-13		DB-7		DB-8		DB-14	
Date	Diff. from Low Water (ft)	Depth Below Grade (ft)	Diff. from Low Water (ft)	Depth Below Grade (ft)	Diff. from Low Water (ft)	Depth Below Grade (ft)	Diff. from Low Water (ft)	Depth Below Grade (ft)
1/11	0.3	10.8	0.7	6.0	N/A	N/A	1.7	10.2
1/12	1.4	9.7	1.0	5.7	N/A	N/A	2.0	9.9
1/13	0.1	11.0	1.0	5.7	N/A	N/A	1.7	10.2
1/14	0.1	11.0	1.7	5.0	N/A	N/A	1.5	10.4
1/15	0.0	11.1	0.9	5.8	0.1	7.5***	1.4	10.5
1/16	0.1	11.0	0.9	5.8	N/A	N/A	1.3	10.6
1/18	0.1	11.0	1.0	5.7	N/A	N/A	1.7	10.2

* No measurements were obtained from these wells.

** Well DB-8 was removed during excavation, and measurements could no longer be taken.

*** Well DB-8 measurements were extrapolated based on measurement at Well DB-14.

TABLE 4.5

RECORD OF CDS WATER TRANSPORTED
TO THE CHAMBERS WORKS

SEPTEMBER 3 THROUGH OCTOBER 23, 1985

Date	Release Number	Date	Release Number
9/13	1	10/07	20
9/13	2	10/07	21
9/16	3	10/07	22
9/17	4	10/08	23
9/20	5	10/08	24
9/25	6	10/08	25
9/27	7	10/08	26
9/28	8	10/09	27
9/28	9	10/09	28
9/28	10	10/09	29
10/01	11	10/11	30
10/01	12	10/11	31
10/02	13	10/15	32
10/03	14	10/15	34
10/04	15	10/16	33
10/04	16	10/18	35
10/05	17	10/18	36
10/05	18	10/19	37
10/07	19	10/21	38

5.0 OLD SLUDGE LAGOON

Remediation and disposal activities at the OSL are discussed below.

5.1 REMEDIATION

Excavation at the OSL commenced on October 24, 1985. Material was excavated using a trackhoe and either transferred from the trackhoe to a loader or staged at the OSL site or at the loadout pad. The material was then loaded onto trucks.

The approach used for excavating and backfilling the OSL differed from the approach used at the CDS in that the OSL was not backfilled until it had been completely excavated. At the CDS, excavation was carried out in a series of trenches with each individual trench being inspected and backfilled prior to excavation at the succeeding trench. The small size of the OSL in comparison to the CDS allowed for its complete excavation prior to inspection and backfilling. Each truck containing OSL material was tarped and decontaminated before leaving the site, and all OSL material was characterized as contaminated soil-nonhazardous.

With the exception of the two truckloads removed on November 23, all materials from the OSL were disposed at CECOS's Cell A. Because of an incorrect coding of the manifests, the two truckloads on November 23 (representing 39.07 tons), were disposed at CECOS's Secure Chemical Management Facility (SCMF) at Niagara Falls, New York, which is an approved hazardous-waste disposal facility.

Excavation at the OSL was completed on December 27, 1985. Overall, a total of 133 truckloads containing 2,699.76 tons of material from the OSL were removed. Table 5.1 presents the number of truckloads removed daily and the weight of the material. Appendix C, Table C.3, presents the work order number and weight of materials for each truckload of OSL material.

The OSL was inspected and approved for backfilling by TEXACO, the NYSDEC, and OHM on December 30, 1985, and backfilling began on January 1, 1986. Backfilling was completed by January 4, 1986.

Prior to initiating backfilling operations, NYSDEC and OHM personnel prepared a composite sample made up of several aliquots drawn from the bottom of the OSL excavation. This composite sample was split by TEXACO and sent to NANCO Laboratories for independent analysis.

TABLE 5.1

MATERIAL REMOVED FROM THE OSL
AND DISPOSED AT CECOS

Date	No. of Truck-loads	Weight (tons)	Date	No. of Truck-loads	Weight (tons)
10/24	2	42.50	11/05	9	198.30
10/25	9	177.17	11/23	2	39.07
10/26	9	176.73	12/15	5	102.73
10/28	12	216.41	12/17	4	77.08
10/29	9	189.57	12/18	7	154.54
10/30	6	116.03	12/20	22	476.98
10/31	8	160.35	12/23	3	47.59
11/01	12	253.85	12/27	14	270.86

TOTAL NUMBER OF TRUCKLOADS = 133
TOTAL WEIGHT OF MATERIALS REMOVED = 2,699.76 TONS

5.2 AIR MONITORING

Air-quality monitoring was conducted on and around the site throughout remediation activities at the OSL. The results of this monitoring program are discussed as part of the discussions of work at CBS-3 and CBS-2 which was performed concurrently with work at OSL. In brief, air-quality measurements during work at the OSL were, for the most part, at or near background levels, or less than the detection limits of the instrumentation. To the extent that there were detectable measurements above background levels, these were attributable to conditions at the CBS-3 and CBS-2 excavation sites or at the loadout pad. These situations are discussed in the following section of the report as part of the CBS-3 and CBS-2 discussions.

5.3 WATER TABLE LEVELS

Water table levels during the OSL work are presented on Table 4.4. Readings at Well DB-8 are most representative of conditions at the OSL. As shown in Table 4.4, water levels at DB-8 increased from below historical low water near the end of October to 2.1 feet above historical low water on December 20, 1985. During that period, the water table rose from 10.1 feet below grade to 5.4 feet below grade. Between December 20 and the end of the month, water table levels decreased to 7 to 8 feet below grade.

As at the CDS, the OSL site had to be dewatered frequently. Because work at OSL was performed concurrently with work at CBS-3 and CBS-2, water removed during the period of OSL work represented a combination of water generated through the dewatering of the OSL, CBS-3, and CBS-2 as well as through site and equipment decontamination activities. Table 5.2 presents the record of water shipments from the site during the October 24, 1985, through January 13, 1986, period encompassing work at all three of the aforementioned sites as well as at CBS-1. During this period there were a total of 49 tanker shipments, each having a 5,000-gallon capacity. The water was shipped as nonhazardous. As with liquids from the CDS, these water shipments were disposed at du Pont's Chambers Works at Deepwater, New Jersey.

TABLE 5.2

RECORD OF WATER TRANSPORTED
TO THE CHAMBERS WORKS

OCTOBER 24, 1985, THROUGH JANUARY 13, 1986

Date	Release Number	Date	Release Number
10/30	39	12/15	64
11/06	40	12/15	65
11/13	41	12/15	66
11/13	42	12/20	67
11/19	43	12/20	68
11/19	44	12/22	69
11/20	45	12/23	70
11/20	46	12/23	71
11/21	47	12/23	72
11/21	48	12/27	73
11/22	49	12/27	74
11/26	50	12/28	75
12/02	51	12/28	76
12/02	52	12/28	77
12/03	53	12/28	78
12/04	54	12/30	79
12/13	55	01/02	80
12/13	56	01/03	81
12/13	57	01/04	82
12/14	58	01/04	83
12/14	59	01/05	84
12/14	60	01/06	85
12/14	61	01/08	86
12/14	62	01/13	87
12/14	63		

6.0 CHEMICAL BURIAL SITES AND DISPOSAL PIT

Remediation activities at CBS-1, -2, and -3 as well as the DP are described below.

6.1 REMEDIATION PROCEDURE

Excavation at the chemical burial sites was performed inside a portable building intended to contain fumes generated by excavation below the floor level. The building was approximately 40 feet long by 28 feet wide and consisted of a steel frame with aluminum and fiberglass wall and roof panels. There was a geotextile fabric draped over the siding to enhance the containment of fumes generated during excavation. The building was mounted on steel skids to allow it to be moved from site to site.

During excavation, the building was connected to an air-treatment system consisting of a 5,000 CFM, 25 Hp fan, 20-inch-diameter ducting, and two vapor-phase carbon cell units. The vapor-phase carbon cells were used to absorb organic compounds in gases released during the excavation. Additionally, the vents from the carbon units were kept at a distance from the building and were always directed away from the nearby residential areas.

The excavation procedure was similar to that implemented at the CDS with the exception that the trackhoe remained within the building and the loaders outside the building. Material was transferred from the trackhoe to the loader through the building entranceway after manually removing the polyethylene sheeting which covered the entranceway during excavation. As done at the CDS, the loader would then transport excavated materials to the loadout pad prior to its removal from the site.

Prior to initiating excavation within the building, the overburden at each burial site was removed and staged for subsequent use as clean backfill. This material was examined visually and with air-quality monitoring equipment to confirm its noncontamination.

Excavation proceeded from the south side of the site, starting with CBS-3, toward the northeast portion of the site, ending with CBS-1. Removal at each burial site was completed prior to initiating excavation at the next site. The DP, which appeared to be contiguous with CBS-1, was excavated in conjunction with work at CBS-1.

Excavation continued at each site until the physical limitations as defined by the Remedial Action Plan were reached. These limitations were previously discussed in connection with the CDS remediation (Section 4.0). They involved excavation until all buried materials and potentially contaminated soil were removed. Joint inspections were conducted by representatives of TEXACO, the NYSDEC, and OHM to determine the adequacy of excavation at each site. When all parties agreed that the physical limitations of the Remedial Action Plan were achieved, backfilling with clean fill commenced.

As during CDS excavation, work performed at the excavation sites was performed by personnel wearing Level B safety gear, including the operator of the loader transporting the excavated materials. Personnel involved in loading trucks, backfilling, and truck decontamination were attired in Level C safety gear.

6.2 CHEMICAL BURIAL SITE 3

6.2.1 Remediation

Excavation at CBS-3 commenced on October 24, 1985, with the first four truckloads of CBS-3 material being removed from the loadout pad on October 25. Excavation was completed on November 11, 1985, when bedrock was reached. CBS-3 was the only site excavated to bedrock. Overall, a total of 104 truckloads containing 2,047.12 tons of materials were removed from CBS-3 and disposed at the CECOS landfill. Table 6.1 presents a daily account of the number of truckloads and weight of material removed. Appendix C, Table C.4, presents the work order number and weight of material for each truckload of CBS-3 material.

Of the 104 truckloads, 102 truckloads containing 2,005.15 tons were designated as contaminated soil-nonhazardous. The remaining 41.97 tons represented the excavation of Cells 50 to 57 which took place on November 6. Based on a review of the historical record of material buried at CBS-3, these cells were suspected of having received listed hazardous wastes, (i.e., peroxides, hydroperoxides, hydrazines, cychohexane and benzene) and consequently, were characterized as a hazardous waste for disposal purposes. As a result, excavated materials from these cells were transported directly from the loader onto the transportation trucks, bypassing the loadout pad and precluding the intermingling of excavated materials from these cells with other excavated material. Designated as hazardous waste, the material from Cells 50 to 57 was disposed at CECOS's SCMF. In fact, notwithstanding the characterization of the bulk of CBS-3 material as contaminated soil-nonhazardous, it was TEXACO's intent to dispose all CBS-3 materials at the SCMF. Consequently, with the exception of the first four truckloads on October 25, which were inadvertently but correctly coded for disposal at CECOS's Cell A, all materials removed from CBS-3 were disposed at the CECOS SCMF.

TABLE 6.1

MATERIAL REMOVED FROM CBS-3
AND DISPOSED AT CECOS

Date	No. of Truck-loads	Weight (tons)	Date	No. of Truck-loads	Weight (tons)
10/25	4	67.65	11/5	6	124.48
10/29	1	19.01	11/6	17	338.42*
10/30	2	38.35	11/7	10	187.78
10/31	4	80.28	11/8	18	354.62
11/1	3	60.09	11/9	7	143.19
11/2	3	61.19	11/11	14	266.72
11/4	15	305.34			

TOTAL NUMBER OF TRUCKLOADS = 104
TOTAL WEIGHT OF MATERIAL REMOVED = 2,047.12

*Included 41.97 tons which were shipped as hazardous

On November 11, 1985, CBS-3 was inspected by TEXACO, the NYSDEC, and OHM and approved for backfilling. The excavation site was backfilled, starting on November 14, with clean fill made up of the overburden from CBS-3 and CBS-2 and soil excavated from a borrow area located on the western portion of the TEXACO recreation area.

As done at the OSL, prior to initiating backfilling, sampling of the CBS-3 excavation site by the NYSDEC was conducted. Four composite samples were obtained from 27 different sampling points throughout the bottom and side of the excavation. At the same time, background samples were taken approximately 280 feet west of the parking lot/tennis court in an undisturbed wooded area in the TEXACO recreation area near the site where backfill material was being obtained. These samples were split by TEXACO and submitted to NANCO Laboratories for independent analysis.

6.2.2 Air Monitoring

During the excavation at CBS-3, air-quality monitoring was conducted daily with volatile organics, sulfide, and cyanide detection instrumentation. Measurements were taken on the site, around the site perimeter, at the exhaust of the carbon filters, around the excavation building, and at the loadout pad. (See Figure 4.1 for the location of the monitoring stations). Table 6.2 summarizes the air monitoring data for this period. Overall during the October 24 through November 11 period, 3,441 measurements for volatile organics, sulfides, and cyanides were taken. In all cases, sulfides and cyanides were below the detection limits. Of the PID measurements, only 10 (0.9 percent) exceeded 1 ppm. There were two PID measurements greater then 5 ppm: a measurement of 6 ppm in the near vicinity of the loadout pad on November 4, and a measurement of 7 ppm in the near vicinity of CBS-3 on November 8. The measurement at the loadout pad occurred during loading operations and was attributed to the excavation of organics, oils, greases, and solvents which occurred earlier that day. The November 8 measurement may have been related to substances which were being excavated at that time.

On November 7, excavation within the containment building uncovered some soils having a mercaptan-like odor, thereby causing some odor problems. Mercaptan, an older chemical name which literally means "mercury-seizing," refers to any group of organic compounds resembling alcohols, but that have oxygen of the hydroxyl group replaced by sulfur. "Thiol" is the newer name of this chemical class which, in many cases, is characterized by a strong, repulsive odor similar to that of decayed cabbage. When the offensive soils were uncovered, excavation was stopped to determine the odor source, and air monitoring was conducted.

TABLE 6.2

AIR MONITORING DATA FOR CBS-3

OCTOBER 24 THROUGH NOVEMBER 11,1985

Volatile Organics by Photoionization Detection

No. of Measurements	Measurements Above 1.0 ppm		Measurements Above 5.0 ppm	
	No.	%	No.	%
1,147	10	0.9	2	0.2

Cyanides

Number of Measurements - 1,147

All measurements were below the detection limits of the instrumentation (10 ppm)

Sulfides

Number of Measurements - 1,147

All measurements were below the detection limits of the instrumentation (10 ppm)

On November 7, 213 measurements of volatile organics, cyanides, and sulfides were taken throughout the site and its perimeter, at the exhaust of the carbon filters, and in particular, around CBS-3. All measurements were either at background levels or below detection limits.

On November 8, an additional 393 measurements were taken. Of these measurements, there were only three volatile organics measurements above 1 ppm: the aforementioned reading of 7 ppm in the vicinity of CBS-3 and readings of 2 ppm and 1.7 ppm at the carbon cell vent.

During the afternoon on November 9, a small fire occurred inside the containment building when excavating unearthed a can containing a white powder. The can ruptured, issuing fire and smoke. For a brief period, to maintain personnel safety, the building was evacuated except for the equipment operator extinguishing the source material. The can was packed inside a stainless-steel drum with clean soil, capped, and transported to the storage shed and tagged. On November 9 and 10, 186 measurements of volatile organics, cyanides, and sulfides were recorded. There were six volatile organics measurements above 1 ppm, with a maximum measurement of 1.4 ppm in the near vicinity of the excavation building.

6.2.3 Water Table Levels

During the course of work at CBS-3 water table levels were below historical low water (See Table 4.3). The historical low water table elevation near CBS-3 is below the top of bedrock. Consequently, CBS-3 was excavated to bedrock.

6.3 CHEMICAL BURIAL SITE 2

6.3.1 Remediation

Excavation at CBS-2 commenced on November 13, 1985, with the removal of overburden and the staging of excavated materials on the loadout pad. Work at the site, however, was halted on November 14 because of adverse weather conditions (continuous rain). Excavation resumed on November 19, and the first three truckloads of CBS-2 material were removed from the site on November 20. Table 6.3 presents a daily summary of the number of truckloads and weight of material removed from CBS-2. Appendix C, Table C.5, includes a tabulation of the work order number and weight of material for each truck load of CBS-2 materials.

Overall, a total of 260 truckloads containing 5,276.46 tons of material were removed from CBS-2. Of this total, 256 truckloads containing 5,195.95 tons were

TABLE 6.3

MATERIAL REMOVED FROM CBS-2
AND DISPOSED AT CECOS

Date	No. of Truck-loads	Weight (tons)	Date	No. of Truck-loads	Weight (tons)
11/20	3	55.08	12/19	19	374.66
11/21	15	309.55	12/21	8	150.01
11/22	5	105.97	12/22	4	90.14
11/23	10	188.32	12/23	12	253.72
11/25	8	163.29	12/27	3	70.15
11/26	12	247.45	12/28	4	84.29
12/1	18	359.81	12/29	16	311.94*
12/2	13	261.61	12/30	5	116.74
12/13	22	453.43	12/31	8	151.48
12/14	10	215.11	1/2	9	157.54
12/16	18	382.08	1/5	3	52.86
12/17	18	379.77	1/7	5	95.45
12/18	12	246.01			

TOTAL NUMBER OF TRUCKLOADS = 260
TOTAL WEIGHT OF MATERIALS REMOVED = 5,276.46 TONS
*Includes 80.51 tons shipped as hazardous

designated as contaminated soil-nonhazardous. The remaining four loads, containing 80.51 tons, represented the excavation of Cells 1 through 4 which took place on December 29. The historical record had indicated that a listed hazardous waste, vinyldine chloride, may have been deposited in one of these cells and, as a precaution, all four cells were designated as a hazardous waste for disposal purposes. Using a procedure similar to that used at CBS-3, excavated material from these cells was transferred directly from the loader onto the transportation trucks, bypassing the loadout pad.

Designated as a hazardous waste, the material from these cells was disposed at the CECOS SCMF. As with CBS-3, it was TEXACO's intent, notwithstanding the nonhazardous characterization of the bulk of the CBS-2 waste material, to dispose all these materials at the CECOS SCMF. Because of restrictions imposed by CECOS resulting from the limited capacity of this facility, however, a shutdown of the project occurred between December 2 and 12. All waste materials disposed from December 12 onward which were designated as nonhazardous would only be permitted by CECOS to be disposed at its Cell A. Only materials characterized as hazardous could be disposed at the SCMF. Consequently, CBS-2 waste materials which were disposed on December 2 and before were disposed at the SCMF. CBS-2 materials disposed after December 12, with the exception of the materials removed from Cells 1 to 4, were disposed at CECOS's Cell A.

Excavation at CBS-2 was completed on January 7, 1986, and final inspection took place on January 10, 1986. At this inspection, representatives of TEXACO, the NYSDEC, and OHM concurred that all buried materials had been removed and that the excavation appeared free of any indication of contamination. At that time, all parties agreed that the site could be backfilled. Using soil taken from the hillside to the immediate west of CBS-2, backfilling was initiated on January 10 and completed on January 14.

Prior to commencing backfilling activities at CBS-2, the NYSDEC prepared a composite sample of the excavation site made up of aliquots from 22 different locations. This composite sample was split by TEXACO and sent to NANCO Laboratories for independent analysis.

6.3.2 Air Monitoring

Air-quality monitoring (volatile organics, cyanide, and sulfide measurements) was conducted daily on and around the site, at the exhaust of the carbon filters, and around the excavation building and loadout pad. Overall, during the November 13, 1985, through January 7, 1986, period, 4,140 measurements for volatile organics, sulfides, and cyanides were taken. Table 6.4 summarizes the results of these measurements. In all cases, sulfides and cyanides

TABLE 6.4

AIR MONITORING DATA
FOR CBS-2

NOVEMBER 13, 1985, THROUGH JANUARY 7, 1986

Volatile Organics by
Photoionization Detection

No. of Measurements	Measurements Above 1.0 ppm		Measurements Above 5.0 ppm	
	No.	%	No.	%
1,380	29	2.1	3	0.2

Cyanides

Number of Measurements - 1,380

All measurements were below the detection limits of the instrumentation (10 ppm)

Sulfides

Number of Measurements - 1,380

All measurements were below the detection limits of the instrumentation (10 ppm)

were below detection limits. Similarly, the bulk of the volatile organics measurements were either at background levels or below detection limits. Overall, there were only 29 measurements (2.1 percent) above 1 ppm. There were three measurements greater than 5 ppm: a measurement of 5.6 ppm in the near vicinity of the loadout pad and a measurement of 6.2 ppm right outside the CBS-2 excavation building, both recorded on November 21; and a measurement of 8 ppm, also outside the excavation building recorded on November 22.

While the higher measurements on November 21 cannot be attributed to any particular occurrence, the measurement on November 22 resulted from the fracture of a sealed glass container during the excavation. At the time of the fracture, a gaseous cloud was released, and the OHM chemist at the excavation site recorded a volatile organics measurement inside the excavation building of 20 ppm. Within 30 minutes, measurements were down to approximately 2 ppm. The OHM senior chemist and general foreman then examined the location of the gaseous release. They found pieces of what appeared to be sodium metal and a glass cylinder tube. These articles were placed in a green plastic bag and put into a sealed drum to keep them from the air. The drum was staged at the Container Handling/Storage Building for subsequent disposal.

After this occurrence on November 22, at the request of NYSDEC and with concurrence by TEXACO, work was suspended to examine the excavation building and to make modifications, as necessary, to improve the building's air tightness. Excavation within the building resumed on November 24 and proved to be quite effective from that point on.

In particular, this was evidenced by occurrences on December 27 and 28. Excavation on December 27 resulted in a slight odor release which was immediately remediated by application of activated carbon. On December 28, a small reaction occurred producing smoke which was contained for the most part within the building and exhausted through the carbon filters. On both days, PID measurements in the vicinity of the excavation building, including those directly downwind of the carbon filters, were below 1 ppm. In fact, on those 2 days, there was only one measurement above 1 ppm. This was a measurement of 3 ppm or December 27 which occurred at the loadout pad. This measurement was attributed to the exhaust from the loader operating on the loadout pad.

In addition to the occurrences of November 22 and December 27 and 28, which took place during the excavation process, there was one additional odor release on December 14 while repositioning the excavation building over CBS-2 to resume work after the project shutdown

(December 2 through 12). It is believed that a rubber-tired loader, used to move the building, broke through the soil surface and fractured a container just below the surface. OHM field chemists conducting routine perimeter air monitoring at that time noticed a mercaptan-like odor. The odor was carried by a strong, gusty northwest wind to the residential areas nearby. One of the residents noticed the odor and, concerned that it might have resulted from a natural gas leak, brought it to the attention of the local fire department. As a result, OHM met with a representative of the fire department and described the apparent source of the odor. In addition, to eliminate the odor problem, the soil believed to contain the source material was moved to the loadout pad and covered with polyethylene sheeting. A TEXACO representative relayed this information to the nearby resident.

On December 15, in an attempt to load out this material, four trucks were loaded. Odors were again released which were detected by local residents. Consequently, the loadout effort was halted and the odorous soils were restored to the loadout pad and again, covered with polyethylene sheeting. On December 16, after loadout pad materials were blended with other soil, activated carbon, and methyl ethyl acetate (i.e., banana oil), all the materials on the loadout pad were removed without incident. TEXACO answered and responded to resident phone calls throughout these occurrences.

During the December 14 through 16 period, 564 measurements of volatile organics, cyanides, and sulfides were taken. All cyanides and sulfides were below detection limits. All PID readings were either at background levels or below 1.0 ppm.

6.3.3 Water Table Levels

Table 4.4 summarizes the water table depth record in the vicinity of CBS-2 (Wells DB-13 and DB-7). Water levels rose during the CBS-2 excavation from almost historical low water at the start of the excavation in mid-November, to 2.0 to 2.6 feet above historical low water in late November.

During the latter part of December and in early January, water levels decreased, reaching less than 0.5 feet above historical low water during the later stages of the excavation (January 7). Correspondingly, the water table ranged between 8.9 and 11.2 feet below grade at DB-13 and between 4.1 and 7.4 feet below grade at DB-7.

Because of the proximity of the water table to grade, particularly in the northeastern portion of CBS-2, and because of surface infiltration, it was necessary to frequently dewater the excavation site. Ground water removed from the excavation was disposed, along with decontamination washwater and water removed from the OSL excavation, at du Pont's Chambers Works. Table 5.2 presents a record of shipments during this period.

6.4 CHEMICAL BURIAL SITE 1 AND THE DISPOSAL PIT

6.4.1 Remediation

The DP which had been used for miscellaneous liquid disposal was located adjacent to CBS-1. The exploratory excavation of slit trenches to uncover the DP was initiated on December 26. This effort was unsuccessful but was resumed on December 28 when the DP was actually located. The excavation of the DP was performed on December 30 and 31. The procedure used was similar to that used for excavation of the OSL which consisted of an open excavation with direct loading of trucks at the disposal site. A total of three truckloads containing 62.13 tons of material were removed from the DP. During the excavation in the DP area, five scattered drums were uncovered. These drums, along with material excavated at the DP, were disposed at CECOS's Cell A. Appendix C, Table C.6, presents the work order number and weight of material for each truckload of DP materials. The DP was backfilled with clean soil.

On January 1, in an attempt to define the boundaries of CBS-1, exploratory excavations were performed in the vicinity of the southeast boundary of CBS-1, adjacent to the chain-link fence at the eastern property line. These excavations only uncovered clean soil, indicating that CBS-1 did not extend to the property line. On January 2, the excavation building was positioned over the area of the exploratory excavations. Actual excavation within the building commenced on January 3 with the excavation being carried out in trench-like fashion. Each individual trench was excavated from south to north, and excavation proceeded from trench to trench in an east-to-west direction. The first trench immediately adjacent to the property line contained mostly clean soil and it was concluded, at that time, that excavation was taking place outside the CBS-1 site. Excavation did proceed, however, with excavated materials being subjected to sensory and air-quality monitoring inspections. Soil determined to be clean based on these inspections was stockpiled south of the OSL to be used as backfill material. All other excavated materials were transferred to the loadout pad for ultimate disposal. As excavation proceeded from east to west, there were signs that the site had been used for waste burial and in fact, after the first 3 days (after January 5) of excavation at CBS-1, excavated materials were transported to the loadout pad.

CBS-1 did not exhibit the well-defined cell structure that was found to exist at both CBS-2 and CBS-3. (This may have been because CBS-1 was the first of the burial sites and TEXACO may have modified its disposal approach after filling CBS-1.) Thus, while apparently contaminated materials were found, they could not be identified as being part of any particular cell. This precluded the disposal of materials in Cells 16 and 17, which had been suspected of having received a listed hazardous waste, phenol, as hazardous. Two drums of phenol had been identified in TEXACO's historical records as having been disposed in these cells. These cells could not be identified, and there were no other signs of phenol waste materials. No cells containing two drums were excavated. All materials transported to the loadout pad from CBS-1 were disposed at CECOS's Cell A.

Table 6.5 presents a daily summary of the number of truckloads and weight of material removed from CBS-1. Appendix C, Table C.6, includes a tabulation of the work order number and weight of material for each of these truckloads. Overall, a total of 89 loads containing 1,652.44 tons of material were removed from CBS-1. The site was jointly inspected by representatives of TEXACO, the NYSDEC, and OHM on January 13, and all were in agreement that the site was free of buried materials and signs of contamination and that the site could be backfilled. Backfilling with clean soil was initiated on January 14 and continued to January 16.

Prior to commencing backfilling operations at CBS-1, the NYSDEC prepared a composite sample of the excavation site made up of aliquots from 20 different locations. This composite sample was split by TEXACO and sent to NANCO Laboratories for independent analysis.

6.4.2 Air Monitoring

Air-quality monitoring (PID, cyanide, and sulfide measurements) was conducted daily during work at CBS-1. Overall, during the January 1 through January 13 period, 1,620 measurements for volatile organics, sulfides, and cyanides were taken. In all cases, sulfides and cyanides were below detection limits. Similarly, all the volatile organics measurements were below 1.0 ppm.

6.4.3 Water Table Levels

Table 4.4 summarizes the water table depth record in the vicinity of CBS-1 (Wells DB-8 and DB-14). Because Well DB-8 was removed during the initial stages of work at CBS-1, water levels at DB-8 have been extrapolated from readings at DB-14. Extrapolated water levels at DB-8,

TABLE 6.5

MATERIAL REMOVED FROM CBS-1
AND DISPOSED AT CECOS

Date	No. of Truck-loads	Weight (tons)
1/4	4	88.33
1/5	3	49.84
1/7	15	270.88
1/8	15	288.29
1/9	10	197.70
1/10	12	224.63
1/11	10	181.06
1/12	4	73.66
1/13	12	202.37
1/14	4	75.68

TOTAL NUMBER OF TRUCKLOADS = 89
TOTAL WEIGHT OF MATERIALS REMOVED = 1,652.44 TONS

for the period of the CBS-1 excavation, ranged between 0.1 feet below historical low water (7.7 feet below grade) and 0.8 feet above historical low water (6.8 feet below grade). At DB-14, water level readings ranged between 1.3 feet above historical low water (10.6 feet below grade) to 2.5 feet above historical low water (9.4 feet below grade).

7.0 OPEN DIG AREA

The following subsections discuss the discovery of and activities at the Open Dig Area (ODA).

7.1 REMEDIATION

Upon completion of the excavations at CBS-3, CBS-2, and CBS-1, slit trenches were dug extending outward from the boundaries of the excavation sites to confirm the removal of buried material. Several of the trenches east of CBS-2 and west of CBS-1 contained empty tetraethyl lead cans, broken glass, and miscellaneous construction debris. When these findings were considered in light of the broken containers, drums, and debris uncovered during construction of the load-out pad located just north of CBS-2, it was concluded that the area between CBS-1 and CBS-2 and extending to the north of the loadout pad should be examined in case it had been used for the sporadic disposal of debris and trash. TEXACO and OHM decided on a plan to excavate this entire area to be sure no contaminated waste would be left on site at the conclusion of the remediation. With the approval of the NYSDEC, TEXACO authorized OHM to begin remediating this area on January 13. The area was designated at that time as the ODA (see Figure 1.4).

The procedure that was agreed upon involved excavating the area as an open dig (in effect, without using the excavation building). It included segregating from noncontaminated soil and debris soil determined to be contaminated through sensory inspection (i.e. for containers or odorous or stained soils) and through a PID screen for volatile organics. Any contaminated soil was placed on the loadout pad for ultimate disposal at the CECOS landfill. The noncontaminated soil was stockpiled south of CBS-2 for further inspection by the NYSDEC and TEXACO. If the stockpiled soil was confirmed as clean, it was slated for use as backfill material.

Excavation of the ODA commenced on January 14 with four truckloads being removed. Overall, a total of 83 truckloads, containing 1,639.74 tons of ODA materials were removed from the site. The last three truckloads were removed on February 27. Backfilling, which was carried out continually to minimize the extent of the unfilled portions of the open excavation, was completed on March 8.

Table 7.1 presents a daily summary of the number of truckloads and weight of material removed from the ODA. Appendix C, Table C.7, includes a tabulation of the work order number and weight of material for each load.

TABLE 7.1

MATERIAL REMOVED FROM THE ODA AND DISPOSED AT CECOS

Date	Number of Truckloads	Weight (tons)
1/14	4	79.05
1/15	16	301.37
1/22	7	144.66
1/24	10	175.70
1/29	13	274.46
1/30	5	118.56
2/5	8	144.51
2/15	4	84.61
2/20	4	76.04
2/21	2	43.78
2/22	7	141.10
2/27	3	55.90

TOTAL NUMBER OF TRUCKLOADS REMOVED = 83
TOTAL WEIGHT OF MATERIAL REMOVED = 1639.74 TONS

During the course of the ODA remediation, two intact cylinders were uncovered and transported to the Container Storage/Handling Facility for ultimate disposal (see Section 8.2). In addition, during excavation of soil north of CBS-2 on January 21, a mercaptan-like odor was detected. This soil was placed on the loadout pad and methyl ethyl acetate (i.e. banana oil) and activated carbon were placed on the soil to control the odor. The soil pile was then covered with a polyethylene sheeting to further retard the odors. Once the odors were abated, the soil was loaded onto trucks for off-site disposal.

On January 25, excavation produced a small release of white smoke. The situation was remediated by mixing the source material with soil generated during excavation. The resultant soil combination was transported to the loadout pad for off-site disposal without any further smoke being released.

On February 21, a drum, which was later determined to contain phenol, was uncovered. The drum was ruptured during the excavation, and phenol, in crystalline form, was spilled on the soil surrounding the drum. The drum was sampled and then overpacked in a clean drum. The surrounding soil and lining material used to contain any spillage during overpacking were placed in two additional drums. A fourth drum was filled with washwater used to decontaminate the equipment that had been used to excavate the phenol drum and surrounding soil. The three drums containing phenol and soil were transported by the Advanced Environmental Technology Corporation (AETC) via AETC's storage facility in Flanders, New Jersey to Stablex Inc. (EPA I.D. No. SCD044442333) in Rock Hill, South Carolina where they were incinerated. The drum containing decontamination washwater was shipped to Frontier Systems Inc. in Buffalo for wastewater treatment also via AETC's storage facility.

7.2 AIR MONITORING

During the January 14 through February 27 period of ODA excavation, 3,270 air-quality measurements for volatile organics, sulfides, and cyanides were taken. In all cases, sulfides and cyanides were below detection limits. Similarly, almost all volatile organics measurements were below the detection limits (1 ppm). There were only two volatile organics measurements above 1 ppm. One, a measurement of 30 ppm on January 27, was taken directly over an excavated drum. On February 6, measurements reached as high as 200 ppm; these were also taken over an open drum. The source material was overpacked in clean drums and staged at the Container Storage/Handling Facility for future disposal.

7.3 DISPOSAL OF LIQUIDS

During remediation of the ODA, three 5,000-gallon tank truckloads of decontamination washwater were shipped to du Pont's Chambers Works in Deepwater, New Jersey, for ultimate disposal.

8.0 CONTAINERS AND CYLINDERS

Disposal of containers and cylinders discovered during the various excavation activities is discussed below.

8.1 CONTAINERS

Containers uncovered during the site excavations which were intact were stored at the Container Storage/Handling Facility. These containers were disposed in accordance with procedures jointly developed by OHM, TEXACO, and the NYSDEC. Container disposal was governed by "Handling Procedures for Crushing and Disposal of Containers," dated January 30, 1986, which is included in Appendix D.

The first step in the procedure involved the segregation of containers with known contents (based on an intact label or an obvious indication that the contents were oil or a fuel product) from those with unknown contents. The containers with known contents were to be labpacked and transported to CECOS for disposal. Actual container segregation was performed on January 29, 1986. Of 559 containers in storage, none with any reasonable degree of confidence could be characterized as known. Consequently, because of possible safety implications in any attempt to identify these containers, they were all disposed as unknowns.

The procedure for crushing and disposal of containers of unknown contents involved the remote opening and stabilization of the containers. This was similar to a procedure recommended by USEPA, with the exception that the containers would be remotely opened by fracturing with a trackhoe instead of fracturing with a low-mass projectile (i.e., bullet). Using this approach, the containers would be opened remotely and the contents collected, stabilized, and readily handled in an inert sorbent media (i.e., lime and sand). There were inherent risks, however, of reactions during the crushing process due to substances such as fuming acid, air and water reactives, spontaneous combustibles, low-flash-point materials, and shock-sensitive materials coming in contact with air, water, and/or other substances.

To reduce the hazards of such reactions, the container-crushing process was carried out on the concrete loadout pad and within the containment building that had been utilized to enclose excavation at the burial sites. The building was connected with hoses to the carbon adsorption treatment system so that gases emitted during the crushing process would be treated to remove smoke or vapors caused by reactions.

Air monitoring for total volatile organics, sulfides, and cyanides was performed inside and outside the building and at the exhaust of the carbon adsorption units. Lower explosive limits and oxygen levels were also monitored within the building. The trackhoe operator was provided with breathing apparatus and a fireproof suit and worked in an enclosed cab with an explosion shield. He was the only worker inside the building during crushing. All other workers in the vicinity of the crushing building wore Level B protective gear and remained outside the building during crushing.

Container crushing took place on February 3. It was carried out in a series of eight crushes. Table 8.1 presents the characteristics of the containers comprising each of the crushes. During the crushing, there was only one incident of fumes from a chemical reaction and, during this incident, PID measurements inside the crushing building and at the carbon filters were below detectable limits.

Prior to container crushing, a dry sand/lime mixture was placed on the loadout pad to absorb, neutralize, and stabilize the contents of the containers. After a series of containers had been crushed, the final mixture contained less than 5 percent crushed container material by weight (less than 100 pounds container material per ton of sand/lime).

In addition to the containers listed on Table 8.1, five 55-gallon drums containing soil and debris generated during the various excavations were included as part of the eighth crush.

After crushing was complete, the lime/sand/container mixture was transferred to a secure rolloff dumpster for disposal at CECOS. Because the nature of the material was unknown, the tailgate of the rolloff was sealed and caulked, and the rolloff was lined with a double plastic liner. The rolloff was also provided with a waterproof tarp to protect it from the elements.

On February 5, 1985, the contents of the rolloff were sampled, and the samples were shipped to RECRA Environmental Laboratories in Amherst, New York, for analysis. The results of the laboratory analyses are included in Appendix E. Following review of the laboratory results, the contents of the rolloff were approved for disposal at the CECOS landfill as a hazardous waste. Accordingly, the contents of the rolloff were removed from the TRCB site on March 15, 1986 (Manifest No. NYA 3491673), and transported to CECOS for disposal at the SCMF. With the approval of CECOS and the NYSDEC, several empty drums in storage at the site were added to this truckload. This load contained 18.32 tons of material.

8.2 CYLINDERS

Cylinders which were uncovered during the various site investigations were stored at the Container Storage/ Handling Facility. These cylinders were removed from

TABLE 8.1
CONTAINER CRUSHING CHARACTERISTICS

FEBRUARY 3, 1986

Crush No.	Contents	Quantity of Containers	Size
1	Empty	50	1 pint
		7	1 pint to 1 gal.
2	Solids	75	1 pint
		54	1 pint to 1 gal.
3	Aqueous	2	1 pint to 1 gal.
		5	1-5 gal.
4	Organics	154	1 pint
5	Organics	156	1 pint to 1 gal.
		11	1-5 gal.
6	Organics	2	5 gal.
7	Tins	4	1-5 gal.
8	Miscellaneous	39	Various

the site in accordance with procedures developed by OHM and approved by TEXACO and the NYSDEC. Cylinder removal was governed by "Cylinder Handling Procedures," dated March 4, 1986, which is included in Appendix F.

Because cylinder content was in most cases unknown, Gollob Analytical Service of Berkeley Heights, New Jersey, a specialized cylinder-handling firm, was retained to sample and analytically identify the contents of each cylinder. Prior to being sampled, the cylinders were divided into two major categories, as follows:

- o Those to be transported off site to Gollob's laboratory for sampling and analysis

- o Those to be sampled on site for analysis at Gollob's laboratory

AETC was retained to oversee the packaging of and to transport the cylinders and cylinder samples to Gollob's laboratory.

On-site sampling and packaging of cylinders for transportation to Gollob's laboratory was conducted on March 4, 1986. Representatives of TEXACO, the NYSDEC, Gollob, AETC, and OHM were present during the sampling and packaging. Of the 57 cylinders in storage, one cylinder, a Linde bottle containing nitric oxide, was identified as being the property of the Union Carbide Corporation (UCC). This cylinder was not sampled but was retained in storage at the site. It was subsequently removed by UCC.

Three of the cylinders were sampled on site. Two of these were determined to be empty. They are currently in storage at the TRCB and will be disposed in accordance with applicable federal and state regulations. The third cylinder sampled on site contained water. As a precautionary measure, however, TEXACO shipped this cylinder to Gollob's laboratory for re-analysis. All other cylinders (a total of 53) were shipped to Gollob for sampling and analysis. Pending the results of the Gollob analysis, all cylinders at the laboratory will be disposed in accordance with applicable federal and state regulations. An exemption for transporting the cylinders was obtained from the Federal Department of Transportation. This was required to allow for proper placarding of the cylinders which otherwise could not be done since the cylinders' contents were unknown.

9.0 DEMOBILIZATION AND SITE RESTORATION

Demobilization involved the reassignment of project personnel and the dismantling, decontamination, and removal of all project equipment and facilities. Site restoration involved (1) grading of the areas that had been excavated to provide for effective surface drainage to minimize infiltration and (2) hydroseeding all excavated areas to establish a vegetative cover and prevent erosion.

9.1 DEMOBILIZATION

The demobilization phase was initiated during the second week in February 1986 with the demolishing of the loadout pad. The loadout pad had been decontaminated the week before, following its use for container crushing. It was demolished and removed so that the area beneath could be excavated and remediated as part of the ODA remediation. The remnants of the loadout pad were staged on site and used as backfill for the ODA excavation.

From mid-February through the third week of March, personnel were demobilized from the site gradually in response to the decreasing needs of the project. The last group of personnel departed the site on March 21, 1986.

In similar gradual fashion, in February and March, equipment and facilities were dismantled, decontaminated, and removed. These included such items as the truck scale, backhoes, loaders, steam lasers, storage pools, various trailers, Container Handling/Storage Building, and excavation building. Electrical, telephone, and water-supply services for project use were also disconnected during this period.

During the week of March 10, the vapor-phase spent carbon was removed from the carbon adsorption units. The spent carbon was transferred to 28 drums which were removed from the site on March 19, 1986, by the Yellow Freight Trucking Company for transportation to ASI in Morgantown, West Virginia. At ASI, the spent carbon was regenerated for reuse.

On March 18, 1986, the one remaining storage pool was dewatered and shipped in the last tanker truckload for disposal at du Pont's Chambers Works. Including this last tanker truckload, a total of 91 tanker truckloads of water were shipped to the du Pont facility. Following dewatering of the storage pool, the residual sludge in the pool was stabilized by mixing it with kiln dust and sand. The pool liner and stabilized sludge, along with miscellaneous debris at the site, were loaded onto the last truck for shipment of solid materials to CECOS. The contents of this last truckload, which weighed 17.48 tons, were designated as contaminated soil-nonhazardous and disposed at CECOS's Cell A.

9.2 SITE RESTORATION

Grading at each of the excavation sites was performed as part of the backfilling of each site. In addition, during March, after completion of the backfilling of the ODA, an effort was undertaken to grade the entire area encompassing all of the excavation sites. Because the ground surface was very wet, this effort was stopped. Final grading of the site was carried out by Sunup Enterprises, Inc. when ground conditions were more favorable. Hydroseeding of the site was performed by Old Oak Landscaping Inc. during the week of June 23, 1986. The regrading and seeding was completed on June 24, 1986.

9.3 MONITORING WELL REPLACEMENT

During excavation, five monitoring wells were damaged or removed:

- UC-1 - damaged during brush cleaning
- DB-13 - damaged during excavation activities
- DB-7, DB-8, and DB-10 were removed since they were located in areas requiring excavation

These wells were replaced after the remediation was completed. The replacement wells were installed as close as possible in location and depth to the original wells. These wells were designated UC-1A, DB-13A, DB-8A, DB-7A, and DB-10A.

9.4 POST REMEDIAL MONITORING

Post remedial monitoring is being conducted in accordance with the Remedial Action Plan. Nine on-site monitoring locations will be sampled quarterly for 1 year. A report will be prepared at the completion of the monitoring program which will include conclusions and recommendations.

10.0 REFERENCES

1. James R. Quince and Robert F. Weiss-Malik. Report/Site Investigation/Inactive Disposal Site/Texaco, Inc., Glenham, New York. O.H. Materials Corp., February 8, 1985.

2. James R. Quince and Robert F. Weiss-Malik. Remedial Action Plan/Inactive Disposal Site/Texaco, Inc., Glenham, New York. O.H. Materials Corp., February 8, 1985.

APPENDIX A

SITE SAFETY AND CONTINGENCY PLANS

SITE SAFETY PLAN FOR
REMEDIAL SERVICES TEXACO, INC.
BEACON, NEW YORK, RESEARCH CENTER

PROJECT NO. 1767

Submitted to:

Texaco, Inc.
Glenham, New York

O.H. Materials Co.

Fred Halvorsen

Fred Halvorsen, Ph.D., P.E., C.I.H.
Director, Health and Safety

August 14, 1985
(Revised August 29, 1985)
(Revised September 16, 1985)
Project File No. 1767

TABLE OF CONTENTS

1.0 SITE DESCRIPTION/SCOPE OF WORK

1.1 SITE DESCRIPTION

The site is an inactive hazardous waste disposal site encompassing approximately 1.4 acres. The materials disposed of at the site consisted of small quantities of chemicals and materials generated in laboratory research and development activities and through routine operation and maintenance of a facility. Some wastes were buried in small cells 4 feet by 6 feet by 6 feet deep and crushed with heavy equipment. A list of chemicals known to be buried at the site is attached as Appendix A.

The inactive disposals site includes the following distinct areas:

- o Container Disposal Site (CDS)
  - This area is believed to be the oldest disposal location, is poorly defined, and generally considered to contain empty containers (these are believed to be laboratory glassware, drums, and debris) visible at the ground surface. The character and amount of materials disposed in this site is generally unknown.
  - The area encompasses approximately 0.6 acres and is located in a low lying portion of the site.
- o Old Sludge Lagoon (OSL)
  - This area was used for disposal of sludges from the Texaco, Inc. (TEXACO) wastewater treatment system for 1959 through 1963. It is believed that small quantities of laboratory solvents were also disposed of in the OSL.
  - The impoundment was unlined and the extent of this site is fairly well defined by an earthen berm.
- o Chemical Burial Site (CBS-1, CBS-2, CBS-3)
  - Three separate areas were utilized for the disposal of laboratory wastes at various times. The area utilized from July 1961 through March 1966 has been designated CBS-1.

- CBS-2 is the area utilized between June 1966 and June 1970.

- CBS-3 represents the disposal area utilized from September 1970 through November 1977.

o Disposal Pit (DP)

- This area was apparently used for the disposal of liquids. Various salts, phosphates, alkylated phenols, aromatic solvents, trichlorethylene, and rinsed TEL containers comprise the known wastes in this area.

- The exact method of disposal of these materials is unknown and the location is poorly defined, but is contiguous to CBS-1.

- For the purpose of remediation, CBS-1 and the disposal pit will be considered one work area.

OHM has examined the existing records and identified some of the various types of wastes deposited in a few cells. However, the contents of 169 cells are currently "unidentified." The possible unknown materials include heavy metals, reactives, gas cylinders, and other difficult-to-handle substances.

1.2 OHM SCOPE OF WORK

The OHM scope of work includes excavation of all burial sites, removal of hazardous wastes and contaminated soil, control of water at the site, disposal of excavated materials off site, and restoration of the site by backfilling with clean soil, grading and reseeding.

During excavation of the CBS, a portable vapor containment structure will be used to prevent or limit potential vapor emissions from materials uncovered on the site. Additionally, during all excavation, between each shovelfull of earth, the excavated earth and digging area will be carefully inspected for intact containers. Any intact containers found will be carefully removed to prevent rupture and release of potentially harmful vapors.

2.0 SITE HAZARDS

A wide variety of laboratory waste, chemical waste, and sludge was buried at the site over the years. There is the possibility of exposure to flammables, toxics, corrosives, and reactive and explosive materials in both the vapor and solid phase. A partial listing of products which were known to have been buried at the site is attached as Appendix A.

The unknown nature of the material buried necessitates stringent respiratory and contact protection, careful excavation and handling of containers found during excavation, and contingency plans for non-routine situations which may arise.

3.0 WORK ZONES

3.1 EXCLUSION ZONE (RED ZONE)

The exclusion zone shall consist of the waste disposal areas and a perimeter approximately 10 feet outside those areas. Additionally, the container handling and storage facility and the area of the contaminated water pools will be considered an exclusion zone. All personnel entering the exclusion zone where work is in progress shall be in Level "B" protection as outlined in Section 4.0, Protective Equipment. All personnel will decontaminate upon leaving the exclusion zone. Only a single personnel decontamination station will be set up adjacent to the concrete decontamination pad. A boot wash station will be set up at each exclusion zone. Each exclusion zone will be marked with red hazard tape.

3.2 CONTAMINATION REDUCTION ZONE (YELLOW ZONE)

An equipment and personnel decontamination station will be established to prevent cross contamination and permit decontamination of personnel and equipment. All personnel working in the contamination reduction zone shall wear Level "C" protection. The decontamination station shall be marked with yellow hazard tape.

All areas between the exclusion zone (red zone) and support zone (blue zone) shall be considered part of the contamination reduction zone.

3.3 SUPPORT ZONE (BLUE ZONE)

The support zone is a clean zone where office and clean work is accomplished. The guard trailer, administration trailer, truck scale, decontamination trailer, equipment trailer, and crew trailer shall be located in the support zone. Personnel will not enter the support zone from an exclusion zone until they decontaminate.

3.4 ACTION LEVELS FOR CHANGING ZONE BOUNDARIES

Periodic air monitoring at the perimeter of each zone will be periodically conducted as outlined in Section 5.0, Air Monitoring. Action levels for enlarging zone boundaries are established as follows:

Zone	PID Reading
Exclusion zone	21 ppm or greater
Contamination reduction zone	5 to 20 ppm
Support zone	less than 5 ppm

4.0 PROTECTIVE EQUIPMENT

4.1 LEVEL "B" PROTECTION

Level "B" protection shall be worn by all personnel actively working in soil removal operations, those in other areas of the exclusion zone, those handling containers, and whenever a high hazard exists as determined by the OHM site supervisor. A minimum level "B" protection is specified for all workers with the following supplemental contact protection provided upon the decision of the job site supervisor or corporate health and safety staff.

Minimum level "B" protection will consist of:

- Hard hat
- Survivair SCBA operated in pressure-demand mode or airline with escape bottle
- Tyvek suit
- Sample gloves taped to Tyvek suit
- Steel-toed boots or shoes
- Foot-wear protection: Either vinyl disposable booties or attached booties of a Saranex suit
- Job-issue cotton coveralls

Supplementing this protection will be:

- Saranex suits with attached booties required for personnel on foot
- PVC acid suits if chemical splashes are anticipated in addition to Saranex
- Rain suits if weather conditions warrent
- PVC or Nitrile outer gloves to supplement one or more pairs of sample gloves
- Cotton outer gloves to supplement vinyl sample gloves (for operators)
- Robar boots to supplement Saranex or vinyl booties for foot personnel
- Face shields for foot personnel not enclosed in equipment cabs

4.2 LEVEL "C" PROTECTION

Level "C" protection shall be worn by personnel engaged in waste loading, sampling, site monitoring, and decontamination of equipment. A minimum level "C" protection is specified for all workers with the following supplental contact protection provided upon the decision of the job site supervisor or corporate health and safety staff.

Minimum level "C" protection will consist of:

- Hard hat
- Job-issue coveralls
- Tyvek suit
- Sample gloves taped to Tyvek suit
- Vinyl booties taped to Tyvek suit
- Steel-toed boots or shoes
- Full-face AO respirator with R-53HE* cartridges (cartridges charged daily)

*For organic vapors, chlorine, hydrogen chloride, sulfur dioxide, radionucliedes, radon daughters, dusts, fumes, mists, asbestos, and pesticides

Supplementing this protection will be

- Saranex suits for anticipated casual contact with liquid chemicals
- PVC acid suit if chemical splashes are anticipated in addition to Saranex
- Rain suits for decontaminating vehicles in addition to Saranex
- Face shields for personnel not enclosed in equipment cabs
- Nitrile or PVC outer gloves
- Robar boots for foot personnel

4.3 VISITORS

Visitors in general will not be permitted to enter the site. Administrative visitors authorized by TEXACO may tour the site but must adhere to the following rules:

1. No visitors are permitted inside the exclusion zone when active work is taking place.

2. Visitors must be in minimum level "C" protection when outside the exclusion zone.

3. Visitors inside the exclusion zone when no active work is taking place must be in level "B" protection.

Visitors must be fit tested and be under a medical monitoring program to don respirators. This testing and monitoring is the responsibility of their employers.

4.4 LEVEL "D" PROTECTION

All personnel at the site will wear hard hats, safety glasses, and steel-toed boots or shoes, even in the support area.

4.5 PERSONNEL DECONTAMINATION

One personnel decontamination station will be established to decontaminate personnel after working in the exclusion zone. The station should be located adjacent to the equipment decontamination pad to make effective use of the water collection and treatment system located there. To ensure that cross contamination is reduced, a boot wash station will be placed at the access point to each disposal area exclusion zone. Personnel leaving each exclusion zone shall decontaminate their boots in a boot wash, and then proceed to the personnel decontamination station. The decontamination station will be set up to handle a progressive decontamination as personnel pass from the exclusion zone to the support zone. Upon reaching the support zone, personnel will have stripped and decontaminated to a clean level and may proceed to the shower trailer or another clean area. The decontamination procedure is as follows.

4.5.1 Level "B" Protection Decontamination

- Wash, rinse, and remove outer boots. These boots will be stacked to dry.

- Remove hard hat, wash, rinse, and stack to dry

- Remove SCBA, wash, rinse, and hang to dry. Remove exterior gloves, wash, rinse, and hang to dry

- o Remove and discard Saranex suit
- o Remove and discard Tyvek suit and sample gloves
- o Proceed to decontamination trailer for shower, if end of day (showers to be taken on site). Hands, face, arms, and neck will be washed before breaks or lunch.

4.5.2 Level "C" Decontamination

- o Remove Robars, wash, rinse, and stack to dry
- o Remove hard hat, wash, rinse, and stack to dry
- o Remove outer gloves, wash, rinse, and stack to dry
- o Remove and discard Saranex suit
- o Remove respirator, wash, rinse, and stack to dry
- o Remove and discard sample gloves
- o Remove and discard vinyl booties, if worn
- o Remove and discard Tyvek suit
- o Proceed to decontamination trailer for shower at end of day. Hands, face, arms, and neck will be washed before breaks or lunch.

4.5.3 Level "C" Decontamination of "Tourists"

Personnel touring the site for information only need to wash and rinse boots at a boot wash station to be established at the area immediately adjacent to the support zone.

4.6 EQUIPMENT DECONTAMINATION

OHM will construct a 15- by 50-foot concrete equipment decontamination pad on site. The pad will be sloped and provided with a sump for moving washwater and rinsewater to the water treatment system. High-pressure washers will be used to decontaminate equipment prior to removing equipment from the site. The pad will be decontaminated following the completion of the work on site.

The site supervisor shall certify that all equipment is decontaminated before leaving the site or before moving the equipment from a contaminated zone to a noncontaminated zone.

6.0 SAFETY EMERGENCY EQUIPMENT

6.1 SITE SAFETY CENTER

A safety center will be set up in the support zone immediately adjacent to the contamination reduction zone with the following equipment readily available and ready for immediate use:

- First-aid kit
- Eye wash
- Safety splash shower/charged hose
- Fire extinguisher (20-pound ABC)
- Wind sock
- Audible alarm
- Fire hose charged to 70 psi

A stretcher shall be available in the decontamination trailer.

6.2 OTHER SAFETY EQUIPMENT

First-aid kits and fire extinguishers shall be located in the office trailer and decontamination trailer. Four fire extinguishers shall be placed around the site. One charged hose or safety shower shall be located conspicuously in the exclusion zone where work is in progress. A wind sock and an audible alarm will be kept in areas where work is in progress.

All heavy equipment will be fitted with fire extinguishers.

6.3 EMERGENCY NUMBERS

The following emergency number shall be posted by each telephone on site:

- 831-3400 -- Call this number and TEXACO will initiate emergency procedures in accordance with TEXACO's Emergency Contingency Plan.

7.0 EMERGENCY PROCEDURES

A separate contingency plan will be available for emergency procedures.

8.0 GENERAL SAFETY

8.1 MEDICAL MONITORING

All OHM personnel participate in a stringent medical monitoring program. No additional medical monitoring is deemed necessary for this project unless an unusual exposure occurs or on-site monitoring indicates the need for specific medical monitoring. An OHM employee who is a certified industrial hygienist will visit the site for routine safety inspections on a biweekly basis and assess the need for additional medical monitoring upon each visit.

8.2 SITE SAFETY OFFICIAL

The site supervisor is the designated OHM safety official on site responsible for carrying out this safety plan.

8.3 SITE INSPECTIONS

On a biweekly basis, a corporate safety official will visit the site for a safety inspection. As indicated in 8.1, this safety official will be a certified industrial hygienist and will visit at least once every 2 weeks.

8.4 SAFETY MEETINGS/SAFETY LOG

Each day before work begins, a safety meeting shall be held to outline the work for the day, discuss safety aspects, and outline potential hazards. A different safety topic will also be discussed including: site chemical hazards, respiratory protection, electrical safety, air monitoring, pinch points, driving safety, decontamination, etc.

A safety log shall be maintained which will list all training topics and those in attendance.

8.5 "BUDDY" SYSTEM

All work in the exclusion zone will use the "Buddy" System. Prior to entering the exclusion zone, buddies will be assigned. Buddies will keep in visual contact with their respective buddy.

8.6 SAFETY REASSESSMENT

Weekly, a safety assessment shall be made considering all hazards at the site and reviewing safety procedures in effect. This assessment shall include location of safety equipment, any accidents which have occurred, work procedure, air monitoring requirements, medical monitoring, etc. The assessment shall be noted in the safety log.

APPENDIX A

CHEMICALS KNOWN TO HAVE BEEN BURIED AT SITE

APPENDIX A

CHEMICALS KNOWN TO HAVE BEEN BURIED AT SITE

CHEMICAL BURIAL SITE NO. 1

This site was documented as receiving the following:

- o Vinylidine chloride (one small bottle)
- o Perfluors guanidine (two 10-gallon cylinders)
- o Tetrafluorohydrazine

These wastes are documented for 4 of the 99 individual disposal cells at this site. The remaining cells are marked "unidentified."

CHEMICAL BURIAL SITE NO. 2

This site was documented as receiving:

- o Spent sulfuric acid (two 15-gallon carboys)
- o Phenols (two 55-gallon drums)
- o Plastic exhaust bags
- o Old automobile mufflers

These materials are documented as being disposed in 3 of 93 individual cells at this site. Of the remaining 90 cells, 1 is marked as "danger," 1 is marked as "explosive," and the remaining 88 are marked as "unidentified."

CHEMICAL BURIAL SITE NO. 3

This site was documented as receiving:

- o Peroxides
- o Hydroperoxides
- o Hydrazines
- o Silica gel
- o Attapulgus clay
- o Petroleum sulfonates (one drum)
- o Molecular sieves
- o Cyclohexane
- o Paraffins
- o Benzene
- o Nitric oxide (one large cylinder)

These wastes were documented for 8 of 81 cells at this site. The remaining cells are marked as "unidentified."

DISPOSAL PIT

The Disposal Pit was reportedly used for liquids disposal. TEXACO has indicated that the pit may have received the following materials:

- Amines
- Imidazolines
- Diamines
- Amides
- Cyanuric chloride
- Tri-n-propyl borate
- Sodium cyanide solution
- Primene salts
- Alkylated phenols
- Aromatic solvents
- Calcium salts
- Boron-fluoride cpds
- Zinc salts
- Cadmium salts
- Ferratone
- Lead salts
- Barium salts
- Phos.-sulfur-chloride cpds
- Amines
- Sodium metal
- Sodium sulfide
- Urea
- Ammonium nitrate
- Phosphates
- Potassium chloride
- Tetraethyl lead cans, empty (rinsed)
- Trichloroethylene

OLD SLUDGE LAGOON

This site was used for disposal of sludges from the TRCB wastewater treatment systems (sanitary and laboratory). These sludges reportedly contain small quantities of solvents used in the lab.

SITE SAFETY PLAN
TRASH PILE AREA C

1.0 SITE DESCRIPTION

Trash Pile Area C (TPA-C) is an area approximately 200 yards west of CBS-2 and CBS-3 which contains a small amount of trash, stained soil, and distressed metal containers. This debris will be segregated into nonhazardous soil, contaminated soil, and clean soil.

The area excavated will measure approximately 70 feet by 70 feet with a depth of down to 8 feet (actual grade of terrain, estimated depth to undisturbed soil).

2.0 SITE HAZARDS

Material buried is believed to be debris and trash with no known hazardous materials. A possibility of exposure to organic vapors may exist.

The assumed nature of the materials indicates that a relatively low level of vapor will exist, making minimum respiratory and contact protection necessary.

3.0 WORK ZONES

TPA-C shall be divided into three work zones:

- o Exclusion Zone
- o Contamination Reduction Zone
- o Support Zone

3.1 EXCLUSION ZONE

The exclusion zone shall consist of the trash pile area and a perimeter approximately 10 feet wide outside this area. All personnel entering the exclusion zone where work is in process shall wear Level C protection as stated in Section 4.0 of the Site Safety Plan.

3.2 CONTAMINATION REDUCTION ZONE

All personnel will be decontaminated upon entering the contamination reduction zone. A boot-wash station will be set up for personnel decontamination. Equipment tracks and buckets will be scraped and wiped with diesel fuel. Equipment will be decontaminated a second time on the decontamination pad as soon as it arrives at the main work area and prior to being removed from the site.

3.3 SUPPORT ZONE

The support zone is a clean zone. Personnel will not enter the support zone from the contamination reduction zone until they decontaminate.

4.0 AIR MONITORING

The project chemist will monitor the air continuously during active soil excavation with a PID calibrated in ppm and a sulfide detector to check for low-range release of materials. The readings shall be noted in the Air Monitoring Log, noting time of day, location, weather conditions, readings obtained, persons taking readings, and approximate wind directions.

If high instrument readings, as outlined in the Site Safety Plan are encountered, work will temporarily stop. A joint decision will be made regarding what further course of action will be taken.

5.0 CONTAINER HANDLING

If full or partially full containers of liquids or solids are found, they will be hand segregated and then taken and put in a container storage building.

SITE CONTINGENCY PLAN FOR
REMEDIAL SERVICES TEXACO, INC.
BEACON, NEW YORK, RESEARCH CENTER

PROJECT NO. 1767

Submitted to:

Texaco, Inc.
Glenham, New York

O.H. Materials Co.

Fred Halvorsen, Ph. D., P.E., C.I.H.
Director, Health and Safety

August 14, 1985
Project File No. 1767

TABLE OF CONTENTS

1.0 NEED FOR CONTINGENCY PLAN

O.H. Materials Co. (OHM) has completed several thousand cleanups involving hazardous materials and hazardous wastes without serious incident. Through ambient air monitoring, strategic placement of emergency equipment, rigorous specification of protective clothing, respiratory protection, and careful work practices, serious exposures have been averted. The OHM philosophy is to prevent any potential untoward release which may affect personnel on site or off site, and the environment.

However, emergencies do sometimes occur, even under carefully controlled conditions. To prevent uncontrolled vapor releases and vapor odors in areas on site where vapors may be expected, a portable building will be constructed with a vapor phase carbon scrubbing system. It is expected that this should handle any vapor release which may occur. Even while a vapor release is therefore considered an extremely unlikely event, it is necessary and prudent to specify contingency plans for a vapor release as well as other potential emergencies.

OHM personnel should familiarize themselves with the following contingency plan for various potential emergencies which may arise. In the event of an emergency the actions required in this contingency plan should be used as a guide for response.

2.0 POTENTIAL EMERGENCIES

The following potential emergencies are considered. Preventative measures, corrective response measures, and notification requirements are listed for each.

Section	Event
4.1	Handling of intact containers found during excavation
4.2	Chemical reaction
4.3	Gas release
4.4	Fire
4.5	Explosives handling
4.6	Leaking container
4.7	Medical emergencies
4.8	Transportation incidents
4.9	Evacuation notification

3.0 TEXACO RESEARCH CENTER, BEACON, NEW YORK HAZARDOUS WASTE CONTINGENCY PLAN (REVISED 12/19/84)

The Texaco Research Center (TEXACO) has a detailed plan for dealing with emergencies at the facility. This plan should be read and understood by OHM personnel. Emergencies not addressed in Section 2.0 which may occur are addressed in the TEXACO plan.

Additionally, the TEXACO plan should be consulted if an emergency occurs for further information.

4.0 SPECIFIC CONTINGENCY PLANS

For each potential emergency, three sections are briefly addressed:

- <u>Preventative Measures</u>: Lists those measures which should prevent or limit the emergency
- <u>Response</u>: Specific actions for OHM personnel to take
- <u>Notification</u>: Lists response organizations or person who should be notified

4.1 HANDLING OF INTACT CONTAINERS OR CYLINDERS

4.1.1 Preventative Measures

During excavation, there is a possibility that intact containers may be found. If containers are unearthed, work shall be halted until it has been determined that the container can be safely handled and how it can best be handled. If possible, the product will be identified and the hazards considered based on quantity, container condition, and product stability. For example, a container may be moved intact, product transferred to a new container, or the container overpacked. Once stabilized, the container can be moved to a staging area on site for disposal.

4.1.2 Response

OHM personnel will take measures necessary to handle intact containers. All necessary personnel will be removed from the area. TEXACO personnel will be notified. An air monitoring station will be set up downwind to check for vapor release. A charged water hose set on fine spray will be brought up for personnel protection. A (20-pound ABC) fire extinguisher will be available. If deemed appropriate, a neutralization medium will be made available. For large containers, the grappler head will be fitted to the CAT 215 for remote handling.

4.1.3 Notification

Texaco Project Manager/Project Engineer/Safety Specialist

Harold Weiss/Mike Gallagher/Rod Wilson
Office: (914) 831-3400

4.2 CHEMICAL REACTION

4.2.1 Preventative Measures

OHM personnel are outfitted with appropriate contact and respiratory protection to minimize personal danger should an unexpected chemical reaction occur. When possible, isolate known incompatible reactive chemicals from each other and from unknown chemicals which may be reactive. Have neutralizing agents such as water, sand, and alum available.

4.2.2 Response

Dilute reacting materials with water, sand or alum (for neutralization of acids). If possible, separate reacting chemicals. If reaction is due to the addition of an unknown chemical of another unknown chemical, discontinue addition. If severe and uncontrollable, evacuate immediate area.

4.2.3 Notification

- OHM employees on site
- Texaco Project Manager/Project Engineer/Safety Specialist
  Harold Weiss/Mike Gallagher/Rod Wilson
  Office (914) 831-3400
- Texaco Emergency Team
  831-3400
- Glenham Fire Department
  (914) 471-5433 or 471-1414

4.3 TOXIC GAS RELEASE

4.3.1 Preventative Measures

- Workers should wear protective clothing, gloves, and SCBA or respirators
- Ascertain wind direction and set up route for evacuation

4.3.2 Corrective Response Measures

- Evacuate area
- When safe to do so, attempt to seal gas leak. Example: put lid back on drum leaking toxic fumes. Then, properly dispose of gas-filled drum or cylinder.

4.3.3 Notification

- OHM employees on site
- Notify job site supervisor, emergency coordinator, Glenham Fire Department and TEXACO

4.4 FIRE

4.4.1 Preventative Measures

- Sources of ignition will be kept away from hazardous waste storage areas because flammable materials are handled or stored in these areas
- Air will be monitored for explosivity on a regular basis
- "No Smoking" signs will be conspicuously posted
- There will be no smoking inside fenced area
- Fire extinguisher (20-pound ABC) and fire hoses will be placed in area

4.4.2 Corrective Response Measures

- If fire is small, attempt to put it out using firefighting equipment in area. Be sure to have others helping.
- If fire is uncontrollable, evacuate area immediately

4.4.3 Notification

- OHM employees on site
- Notify Texaco Emergency Team
  831-3400
- Notify:
  - Emergency coordinator
  - Glenham Fire Department
  - State Police Department

4.5 MEDICAL EMERGENCIES

4.5.1 Preventative Measures

First-aid kits with oxygen, eye wash stations, and splash showers will be available on site for initial response to medical emergencies. A stretcher is available in the decontamination trailer.

4.5.2 Response

If a medical emergency occurs, all personnel shall respond to mitigate the emergency. The site supervisor shall direct medical treatment. Personnel injured in an exclusion zone will be decontaminated as best as possible before moving the injured party to the support zone. If necessary, an ambulance will be called to transport the injured party.

If the emergency involves exposure to a chemical the injured party shall be kept under a splash shower for at least 15 minutes while help is being summoned.

4.5.2 Notification

Ambulance Service

TRBC Team
831-3400

Beacon Volunteer Ambulance Corps, Inc.
Delavan Avenue
Beacon, New York
(914) 473-0021

Sloper-Willen Community Ambulance Service
MacFarland Road
Wappingers Falls, New York
(914) 297-3777 *Have advanced life support ambulance with paramedics

Hospitals

Julia L. Butterfield Hospital
Paulding Avenue
Cold Spring, New York
(914) 2654-3642

Comments:

a. Has a place for a helicopter to land

b. Does not have a burn center

c. Has an agreement for transfer with Westchester Medical Center

Highland Hospital
Beacon, New York
(914) 831-3500

Comments:

a. Does not have helicopter pad, but can accommodate a helicopter

b. Has a transfer agreement with Westchester Medical Center

c. Closest to site

St. Francis Hospital
Poughkeepsie, New York
(914) 471-2000

Comments:

a. Has no helicopter pad, but can accommodate a helicopter

b. Transfers severe burn cases to Albany Medical Center

St. Lukes Hospital
Newburgh, New York
(914) 561-4400

Comments:

a. Has helicopter pad

b. Transfers severe burn cases to Albany Medical Center

Westchester Medical Center
Route 100A
Valhalla, New York
(914) 347-7600

Comments:

a. Has both a burn center and a helicopter pad

4.6 EXPLOSIVES

4.6.1 Preventative Measures

- "No Smoking" signs on site
- Air will be monitored for presence of explosive vapors
- Texaco emergency team available

- o Firefighting equipment will be stationed nearby
- o If material is known to be explosive, handle material away from all other drums or chemicals
- o Use nonsparking tools

4.6.2 Corrective Response Measures

- o Evacuate area
- o Rescue workers in immediate area
- o Remove and repack debris into drums
- o Decontaminate injured parties
- o Bring in bomb trailer, if necessary for transport

4.6.3 Notification

- o All OHM employees
- o Texaco Emergency Coordinator
  Project Manager
- o Glenham Fire Department
  (914) 471-5433
  or
  Dutchess Co. Fire Alarm Headquarters
  (914) 471-1414
- o Ambulance
  Beacon, New York (914) 473-0021
  Wappingers Falls, New York (914) 297-3777

4.7 LEAKING CONTAINERS

4.7.1 Preventative Measures

- o Have absorbent materials, vacuum pumps, shovels, and visqueen available
- o Check for leaks on a regular basis
- o Move leaking drums to diked concrete pads
- o Have overpacks and grappling equipment available

4.7.2 Corrective Response Measures

- o Apply absorbent material, shovel absorbed materials into new drums

- o Overpack remaining drums
- o If a liquid spill is severe, use vacuum pumps to pump liquid into new containers

4.7.3 Notification

- o OHM employees on site
- o Texaco Emergency Team

4.8 TRANSPORTATION INCIDENTS

4.8.1 Preventative Measures

- o All transportation personnel will be off site during the loading procedure or will be required to wear appropriate protective clothing and equipment.
- o Transportation from site to an approved disposal facility will take place by container trucks.
- o Trucks will be tarped and have sealed tailgates.
- o Trucks will be decontaminated prior to leaving the site.
- o Loading of trucks with any container and solidified materials will occur directly adjacent to the loadout pad.

4.8.2 Corrective Response Measures

- o Equipment available for use in the event of a spill includes:
  - Backhoe
  - Front-end loader (tracked)
  - Pollution control truck equipped with boom, absorbent pads, generator, light plant, and miscellaneous tools
  - Small dump track
  - Vacuum unit
  - Personnel and safety equipment

4.8.3 Corrective Response Plan (In transit)

In transit, spills can occur in the truck mode. Routes will be identified prior to shipment. In the event of a transportation accident involving waste from the TEXACO project, the driver will be required to immediately notify the project site. The manifest will state the project site phone number and require immediate notification.

At that time, the project manager will make all appropriate notifications that have been made by the carrier (e.g., agencies, NRC) and take steps to implement a cleanup of the spill, if required.

4.8.4 Notification

- o All OHM employees
- o Texaco Emergency Team

4.9 EMERGENCY EVACUATION DISCUSSION

4.9.1 Preventative Measures

Certain emergencies on site will require that personnel in the local area be evacuated for their own protection. OHM personnel do not have the authority or responsibility to initiate an evacuation of the local populace. OHM personnel do have the responsibility to notify both the local civilian emergency response personnel (Fire Chief) and TEXACO personnel if work undertaken by them may lead to circumstances necessitating an evacuation.

4.9.2 Corrective Response Measures

If a fire, gas release, chemical reaction, or potential for these events is found to exist on site, and the effect of this event could create a hazardous situation off site, then the OHM site supervisor should notify TEXACO and local officials. The information should include:

- o Description of emergency
- o Assessment of hazard
- o Action being taken

4.9.3 Notification

- o OHM personnel on site
- o Texaco Project Manager

- o Glenham Fire Department
- o State Police Department

After notification, OHM, TEXACO and Fire personnel will determine the necessary course of action.

SITE CONTINGENCY PLAN

In the event of an unusual vapor release or reaction, the following steps and procedures will be followed.

1. The excavation field chemist shall notify the senior foreman and site supervisor by radio that there has been a release or reaction. He shall advise of the severity, describing the extent of release.

2. If safe, the Koehring operator shall remain in the building to minimize the reaction by: using inert materials to cover the reaction, transporting the material to the intake of the blower pit hose, or moving the blower intake hose to the reaction.

3. The site supervisor shall notify the appropriate TEXACO/NYSDEC representative of the release and its present situation, and if necessary, request assistance in identifying the nature of the material to control further releases or reactions.

4. Based upon the excavation field chemist's visual assessment and meter readings at the perimeter, the senior foreman, site supervisor, and chemist shall decide how to proceed. The air monitoring chemist shall enter the exclusion zone in Level B protection.

5. Downwind, PID, cyanide, and hydrogen sulfide readings will be taken immediately and as the above decisions are being made. Readings shall be taken outside the building to the perimeter of the site. These readings (including wind direction) will be relayed by radio to the site supervisor and the appropriate TEXACO/NYSDEC representatives.

6. Continuous radio contact will be maintained between the field chemist and site supervisor until the proper remedial action has been completed.

7. Appropriate emergency response personnel such as the fire department, hospital, police, and TEXACO's brigade shall be summoned by joint decision between OHM/TEXACO/NYSDEC.

8. After neutralization or other similar remedial actions, the chemists will identify the most suitable containment method and proceed accordingly. This process will be done in consultation with a TEXACO chemist when possible. If the chemical which produced the reaction is containerized, it shall be transported to the container handling shed and labeled accordingly.

9. The supervisor will be updated on the current status of the release/reaction at all times. He shall authorize the resumption of work. Work will resume cautiously, taking care to observe additional reactions/releases. The site supervisor will authorize the resumption of work and be advised when "normal" operations commence.

APPENDIX B

RECRA RESEARCH, INC., AUGUST 29, 1985,
REPORT ON THE LABORATORY RESULTS
OF THE ANALYSIS OF SOIL SAMPLES TAKEN
ON JULY 18 AND 19, 1985

3/2485

RECRA RESEARCH, INC.

Hazardous Waste And Toxic Substance Control

August 29, 1985

O.H. Materials Company
P.O. Box 551
Findlay, OH 45839

Attn: Mr. Greg Githens

RE: Texaco Beacon
Recra Research Quote #85-354

Dear Mr. Githens:

Please find enclosed the report regarding the chemical and physical analyses performed on the samples labelled 001-022 and composites 1-5, received at Recra Research, Inc., on July 22, 1985.

If you have any questions or if I can be of further assistance to you, please do not hesitate to contact me. We look forward to being of continued service to you in the future.

Sincerely,

RECRA RESEARCH, INC.

Constance A. Finocchi

Constance A. Finocchi
Laboratory Supervisor
Waste Materials Management Group

I.D. #5W-121

CAF/rp

2/2485

LANDBURIAL CERTIFICATION ANALYSES
performed for
O.H. MATERIALS COMPANY

Results for Composite: #1
Representing Individual Samples: 001, 002, 003, 004
005, 006, 007, 008
009, 010

Report Date: 8-27-85
I.D.#: 5W-121

PARAMETER	RESULTS
Total Organic Halogen (Appendix A; as weight % chlorine)	<0.1
Aromatic Organics (Appendix B; as weight %)	
Non-Polar	0.04
Polar	<0.01
Total Organic Nitrogen (Appendix C; as weight % nitrogen)	<0.1
Low Molecular Weight Organics (Appendix D; as weight %)	<0.3

COMMENT: The above analyses were performed in accordance with New York State Department of Environmental Conservation "Approved Analytical Procedures for Determining the Content of Constituents Banned from Landburial, January, 1985."

Constance O. Finocchi 8/29/85
Signed Date

RECRA RESEARCH, INC.

1/2485

LANDBURIAL CERTIFICATION ANALYSES
performed for
O.H. MATERIALS COMPANY

Results for Composite: #2
Representing Individual Samples: 011, 012, 013

Report Date: 8-27-85
I.D.#: 5W-121

PARAMETER	RESULTS
Total Organic Halogen (Appendix A; as weight % chlorine)	<0.1
Aromatic Organics (Appendix B; as weight %)	
Non-Polar	<0.01
Polar	<0.01
Total Organic Nitrogen (Appendix C; as weight % nitrogen)	<0.1
Low Molecular Weight Organics (Appendix D; as weight %)	<0.3

COMMENT: The above analyses were performed in accordance with New York State Department of Environmental Conservation "Approved Analytical Procedures for Determining the Content of Constituents Banned from Landburial, January, 1985."

Constance A. Finocchi 8/29/85
Signed Date

RECRA RESEARCH, INC.

1/2485

LANDBURIAL CERTIFICATION ANALYSES
performed for
O.H. MATERIALS COMPANY

Results for Composite: #3
Representing Individual Samples: 014, 015

Report Date: 8-27-85
I.D.#: 5W-121

PARAMETER	RESULTS
Total Organic Halogen (Appendix A; as weight % chlorine)	<0.1
Aromatic Organics (Appendix B; as weight %) Non-Polar Polar	 <0.01 <0.01
Total Organic Nitrogen (Appendix C; as weight % nitrogen)	<0.1
Low Molecular Weight Organics (Appendix D; as weight %)	<0.3

COMMENT: The above analyses were performed in accordance with New York State Department of Environmental Conservation "Approved Analytical Procedures for Determining the Content of Constituents Banned from Landburial, January, 1985."

Constance A. Finocchi 8/29/85
Signed Date

RECRA RESEARCH, INC.

1/2485

LANDBURIAL CERTIFICATION ANALYSES
performed for
O.H. MATERIALS COMPANY

Results for Composite: #4
Representing Individual Sample: 016

Report Date: 8-27-85
I.D.#: 5W-121

PARAMETER	RESULTS
Total Organic Halogen (Appendix A; as weight % chlorine)	<0.1
Aromatic Organics (Appendix B; as weight %)	
Non-Polar	<0.01
Polar	<0.01
Total Organic Nitrogen (Appendix C; as weight % nitrogen)	<0.1
Low Molecular Weight Organics (Appendix D; as weight %)	<0.3

COMMENT: The above analyses were performed in accordance with New York State Department of Environmental Conservation "Approved Analytical Procedures for Determining the Content of Constituents Banned from Landburial, January, 1985."

Constance A. Finocchi   8/29/85
Signed   Date

RECRA RESEARCH, INC.

LANDBURIAL CERTIFICATION ANALYSES
performed for
O.H. MATERIALS COMPANY

Results for Composite: #5
Representing Individual Samples: 017, 018, 019, 020, 021, 022

Report Date: 8-27-85
I.D.#: 5W-121

PARAMETER	RESULTS
Total Organic Halogen (Appendix A; as weight % chlorine)	<0.1
Aromatic Organics (Appendix B; as weight %)	
Non-Polar	<0.01
Polar	<0.01
Total Organic Nitrogen (Appendix C; as weight % nitrogen)	<0.1
Low Molecular Weight Organics (Appendix D; as weight %)	<0.3

COMMENT: The above analyses were performed in accordance with New York State Department of Environmental Conservation "Approved Analytical Procedures for Determining the Content of Constituents Banned from Landburial, January, 1985."

Constance A. Finocchi 8/29/85
Signed Date

RECRA RESEARCH, INC.

2/2485

WASTE CHARACTERIZATION
performed for
O.H. MATERIALS COMPANY

Summary of Results for Sample: 001

Report Date: 8-27-85
I.D.#: 5W121

PARAMETER	RESULTS
PHYSICAL PROPERTIES	
Density @ 25°C (g/ml)	0.9
Flash Point (°F)	
Run I:	>200
Run II:	>200
Total Residue @ 103°C (% by wt.)	6.9
Ash Weight @ 650°C (% by wt.)	88.2
Reactivity:	84.0
@ pH 2.0	No apparent reaction
@ pH 12.5	No apparent reaction
GENERAL COMPOSITION	
Cyanide Spot Test	Negative
Sulfide Spot Test	Negative
Oxidizer Spot Test	Negative

COMMENT: These analyses were performed in accordance with EPA/ASTM methodologies, where applicable. This sample was analyzed for evaluation as a landburial candidate.

FOR RECRA RESEARCH, INC. Constance A. Finocchi

DATE 8/29/85

RECRA RESEARCH, INC.

ANALYTICAL RESULTS

O. H. MATERIALS

Report Date: 8/29/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION 001
Leachable Organic Carbon	µg/g	8/13/85	1,640

FOR RECRA ENVIRONMENTAL LABORATORIES O. V. Zim

DATE 8/29/85

I.D. #85-855/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT

Report Date: 8/8/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION 5W121 001	EPA MAXIMUM CONCENTRATION (mg/l)
Total Arsenic	mg/l	7/30/85	<0.005	5.0
Total Barium	mg/l	7/30/85	0.12	100.0
Total Cadmium	mg/l	7/31/85	<0.005	1.0
Total Chromium	mg/l	7/31/85	<0.005	5.0
Total Lead	mg/l	8/5/85	<0.1	5.0
Total Mercury	mg/l	8/4/85	<0.001	0.2
Total Selenium	mg/l	7/30/85	<0.005	1.0
Total Silver	mg/l	8/1/85	<0.01	5.0

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Farris

DATE 8/8/85

I.D. #85-775/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT
QUALITY CONTROL

Report Date: 8/8/85

RECOVERY ANALYSIS OF
SAMPLE 5W121 001

PARAMETER	µg OF SPIKE	µg RECOVERED	% RECOVERY
Total Arsenic	25	26	104
	50	55	110
Total Barium	2,500	2,400	96
	5,000	4,700	94
Total Cadmium	2,000	2,020	101
	3,000	3,060	102
Total Chromium	5,000	5,150	103
	10,000	10,500	105
Total Lead	5,000	5,000	100
	10,000	10,100	101
Total Mercury	0.2	0.21	105
	0.4	0.408	102
Total Selenium	25	29	116
	50	54	108
Total Silver	5,000	4,900	98
	10,000	9,800	98

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. [signature]

DATE 8/8/85

I.D. #85-775/5W-121

RCRA HAZARDOUS CHARACTERISTICS EVALUATION
performed for
O.H. MATERIALS COMPANY

Sample I.D.: 001

Report Date: 8-27-85
I.D.#: 5W-121

An evaluation of the sample for the characteristics of a hazardous waste as defined by 40 CFR Part 261 Subpart C is given below. (Note: The sample was not evaluated to determine if it is a listed hazardous waste under 40 CFR Part 261 Subpart D).

HAZARDOUS CHARACTERISTIC	DOES THE WASTE EXHIBIT THE CHARACTERISTIC?	REASON OR COMMENT
Ignitability	No	Its flash point was higher than 60°C (140°F). The sample was not a pyrophoric or spontaneously combustible liquid, a flammable compressed gas or an oxidizer. The sample was not analyzed to determine alcohol content.
Corrosivity	No	The sample was not a liquid.
Reactivity	No	The sample did not exhibit characteristics 1 through 5 or 7 of a reactive waste described in 40 CFR §261.23. The sample was not tested to determine if it was an explosive described in characteristics 6 and 8 of 40 CFR 261.23 (definition of a reactive waste).
Extraction Procedure Toxicity	Not for Metals	The EP Toxicity extract contained none of the metal contaminants listed in 40 CFR §261.24 (EP Toxicity Definition) above their maximum allowable concentrations. The extract was not tested for the pesticides or herbicides listed in the section.

1/2485

WASTE CHARACTERIZATION
performed for
O.H. MATERIALS COMPANY

Summary of Results for Sample: 002

Report Date: 8-27-85
I.D.#: 5W-121

PARAMETER	RESULTS
PHYSICAL PROPERTIES	
Density @ 25°C (g/ml)	1.5
Flash Point (°F)	
Run I:	>200
Run II:	>200
Leachable pH (Std. Units)	6.9
Total Residue @ 103°C (% by wt.)	75.5
Ash Weight @ 650°C (% by wt.)	71.5
Reactivity:	
@ pH 2.0	No apparent reaction
@ pH 12.5	No apparent reaction
GENERAL COMPOSITION	
Cyanide Spot Test	Negative
Sulfide Spot Test	Negative
Oxidizer Spot Test	Negative

COMMENT: These analyses were performed in accordance with EPA/ASTM methodologies, where applicable. This sample was analyzed for evaluation as a landburial candidate.

FOR RECRA RESEARCH, INC. Constance A. Finocchi

DATE 8/29/85

RECRA RESEARCH, INC.

ANALYTICAL RESULTS

O. H. MATERIALS

Report Date: 8/29/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION 002
Leachable Organic Carbon	µg/g	8/13/85	4,880

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Finn

DATE 8/29/85

I.D. #85-855/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT

Report Date: 8/8/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION 5W121 002	EPA MAXIMUM CONCENTRATION (mg/1)
Total Arsenic	mg/1	7/30/85	<0.005	5.0
Total Barium	mg/1	7/30/85	0.07	100.0
Total Cadmium	mg/1	7/31/85	<0.005	1.0
Total Chromium	mg/1	7/31/85	<0.005	5.0
Total Lead	mg/1	8/5/85	<0.1	5.0
Total Mercury	mg/1	8/4/85	<0.001	0.2
Total Selenium	mg/1	7/30/85	<0.005	1.0
Total Silver	mg/1	8/1/85	<0.01	5.0

FOR RECRA ENVIRONMENTAL LABORATORIES

DATE 8/8/85

I.D. #85-775/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT
QUALITY CONTROL

Report Date: 8/8/85

RECOVERY ANALYSIS OF
SAMPLE 5W121 002

PARAMETER	µg OF SPIKE	µg RECOVERED	% RECOVERY
Total Arsenic	25	25	100
	50	50	100
Total Barium	2,500	2,500	100
	5,000	5,000	100
Total Cadmium	2,000	2,000	100
	3,000	2,970	99
Total Chromium	5,000	5,000	100
	10,000	10,300	103
Total Lead	5,000	4,850	97
	10,000	9,500	95
Total Mercury	0.2	0.188	94
	0.4	0.38	95
Total Selenium	25	25	100
	50	53	106
Total Silver	5,000	4,700	94
	10,000	9,200	92

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Finn

DATE 8/8/85

I.D. #85-775/5W-121

RECRA ENVIRONMENTAL LABORATORIES

RCRA HAZARDOUS CHARACTERISTICS EVALUATION
performed for
O.H. MATERIALS COMPANY

Sample I.D.: 002

Report Date: 8-27-85
I.D.#: 5W-121

An evaluation of the sample for the characteristics of a hazardous waste as defined by 40 CFR Part 261 Subpart C is given below. (Note: The sample was not evaluated to determine if it is a listed hazardous waste under 40 CFR Part 261 Subpart D).

HAZARDOUS CHARACTERISTIC	DOES THE WASTE EXHIBIT THE CHARACTERISTIC?	REASON OR COMMENT
Ignitability	No	Its flash point was higher than 60°C (140°F). The sample was not a pyrophoric or spontaneously combustible liquid, a flammable compressed gas or an oxidizer. The sample was not analyzed to determine alcohol content.
Corrosivity	No	The sample was not a liquid.
Reactivity	No	The samples did not exhibit characteristics 1 through 5 or 7 of a reactive waste described in 40 CFR §261.23. The sample was not tested to determine if it was an explosive described in characteristics 6 and 8 of 40 CFR 261.23 (definition of a reactive waste).
Extraction Procedure Toxicity	Not for Metals	The EP Toxicity extract contained none of the metal contaminants listed in 40 CFR §261.24 (EP Toxicity Definition) above their maximum allowable concentrations. The extract was not tested for the pesticides or herbicides listed in the section.

1/2485

WASTE CHARACTERIZATION
performed for
O.H. MATERIALS COMPANY

Summary of Results for Sample: 003

Report Date: 8-27-85
I.D.#: 5W-121

PARAMETER	RESULTS
PHYSICAL PROPERTIES	
Density @ 25°C (g/ml)	1.3
Flash Point (°F)	
Run I:	>200
Run II:	>200
Leachable pH (Std. Units)	6.3
Total Residue @ 103°C (% by wt.)	75.5
Ash Weight @ 650°C (% by wt.)	68.2
Reactivity:	
@ pH 2.0	No apparent reaction
@ pH 12.5	No apparent reaction
GENERAL COMPOSITION	
Cyanide Spot Test	Negative
Sulfide Spot Test	Negative
Oxidizer Spot Test	Negative

COMMENT: These analyses were performed in accordance with EPA/ASTM methodologies, where applicable. This sample was analyzed for evaluation as a landburial candidate.

FOR RECRA RESEARCH, INC. Constance A. Finocchi

DATE 8/29/85

RECRA RESEARCH, INC.

ANALYTICAL RESULTS

O. H. MATERIALS

Report Date: 8/29/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION
			003
Leachable Organic Carbon	µg/g	8/13/85	3,250

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Firm

DATE 8/29/85

I.D. #85-855/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT

Report Date: 8/8/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION 5W121 003	EPA MAXIMUM CONCENTRATION (mg/1)
Total Arsenic	mg/1	7/30/85	<0.005	5.0
Total Barium	mg/1	7/30/85	0.12	100.0
Total Cadmium	mg/1	7/31/85	<0.005	1.0
Total Chromium	mg/1	7/31/85	0.005	5.0
Total Lead	mg/1	8/5/85	<0.1	5.0
Total Mercury	mg/1	8/4/85	<0.001	0.2
Total Selenium	mg/1	7/30/85	<0.005	1.0
Total Silver	mg/1	8/1/85	<0.01	5.0

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Finn

DATE 8/8/85

I.D. #85-775/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT
QUALITY CONTROL

Report Date: 8/8/85

RECOVERY ANALYSIS OF
SAMPLE 5W121 003

PARAMETER	μg OF SPIKE	μg RECOVERED	% RECOVERY
Total Arsenic	25	25	100
	50	51	102
Total Barium	2,500	2,325	93
	5,000	5,000	100
Total Cadmium	2,000	1,960	98
	3,000	2,940	98
Total Chromium	5,000	4,950	99
	10,000	10,100	101
Total Lead	5,000	4,950	99
	10,000	9,700	97
Total Mercury	0.2	0.202	101
	0.4	0.388	97
Total Selenium	25	28	112
	50	56	112
Total Silver	5,000	4,900	98
	10,000	9,700	97

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Z[illegible]

DATE 8/8/85

I.D. #85-775/5W-121

RECRA ENVIRONMENTAL LABORATORIES

RCRA HAZARDOUS CHARACTERISTICS EVALUATION
performed for
O.H. MATERIALS COMPANY

Sample I.D.: 003

Report Date: 8-27-85
I.D.#: 5W-121

An evaluation of the sample for the characteristics of a hazardous waste as defined by 40 CFR Part 261 Subpart C is given below. (Note: The sample was not evaluated to determine if it is a listed hazardous waste under 40 CFR Part 261 Subpart D).

HAZARDOUS CHARACTERISTIC	DOES THE WASTE EXHIBIT THE CHARACTERISTIC?	REASON OR COMMENT
Ignitability	No	Its flash point was higher than 60°C (140°F). The sample was not a pyrophoric or spontaneously combustible liquid, a flammable compressed gas or an oxidizer. The sample was not analyzed to determine alcohol content.
Corrosivity	No	The sample was not a liquid.
Reactivity	No	The sample did not exhibit characteristics 1 through 5 or 7 of a reactive waste described in 40 CFR §261.23. The sample was not tested to determine if it was an explosive described in characteristics 6 and 8 of 40 CFR 261.23 (definition of a reactive waste).
Extraction Procedure Toxicity	Not for Metals	The EP Toxicity extract contained none of the metal contaminants listed in 40 CFR §261.24 (EP Toxicity Definition) above their maximum allowable concentrations. The extract was not tested for the pesticides or herbicides listed in the section.

WASTE CHARACTERIZATION
performed for
O.H. MATERIALS COMPANY

Summary of Results for Sample: 004

Report Date: 8-27-85
I.D.#: 5W-121

PARAMETER	RESULTS
PHYSICAL PROPERTIES	
Density @ 25°C (g/ml)	1.1
Flash Point (°F)	
Run I:	>200
Run II:	>200
Leachable pH (Std. Units)	7.8
Total Residue @ 103°C (% by wt.)	78.0
Ash Weight @ 650°C (% by wt.)	68.0
Reactivity:	
@ pH 2.0	No apparent reaction
@ pH 12.5	No apparent reaction
GENERAL COMPOSITION	
Cyanide Spot Test	Negative
Sulfide Spot Test	Negative
Oxidizer Spot Test	Negative

COMMENT: These analyses were performed in accordance with EPA/ASTM methodologies, where applicable. This sample was analyzed for evaluation as a landburial candidate.

FOR RECRA RESEARCH, INC. Constance A. Finocchi

DATE 8/29/85

RECRA RESEARCH, INC.

ANALYTICAL RESULTS

O. H. MATERIALS

Report Date: 8/29/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION 004
Leachable Organic Carbon	µg/g	8/13/85	2,910

FOR RECRA ENVIRONMENTAL LABORATORIES D V. Firm

DATE 8/29/85

I.D. #85-855/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT

Report Date: 8/8/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION	EPA MAXIMUM CONCENTRATION (mg/l)
			5W121 004	
Total Arsenic	mg/l	7/30/85	<0.005	5.0
Total Barium	mg/l	7/30/85	0.38	100.0
Total Cadmium	mg/l	7/31/85	0.007	1.0
Total Chromium	mg/l	7/31/85	0.006	5.0
Total Lead	mg/l	8/5/85	<0.1	5.0
Total Mercury	mg/l	8/4/85	<0.001	0.2
Total Selenium	mg/l	7/30/85	<0.005	1.0
Total Silver	mg/l	8/1/85	<0.01	5.0

FOR RECRA ENVIRONMENTAL LABORATORIES

DATE 8/8/85

I.D. #85-775/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT
QUALITY CONTROL

Report Date: 8/8/85

RECOVERY ANALYSIS OF
SAMPLE 5W121 007

PARAMETER	µg OF SPIKE	µg RECOVERED	% RECOVERY
Total Arsenic	25	23	92
	50	48	96
Total Barium	2,500	2,225	89
	5,000	4,950	99
Total Cadmium	2,000	1,960	98
	3,000	2,850	95
Total Chromium	5,000	5,000	100
	10,000	10,000	100
Total Lead	5,000	5,150	103
	10,000	10,200	102
Total Mercury	0.2	0.21	105
	0.4	0.388	97
Total Selenium	25	18	72
	50	37	74
Total Silver	5,000	4,700	94
	10,000	9,300	93

FOR RECRA ENVIRONMENTAL LABORATORIES R. V. Fsinn

DATE 8/8/85

I.D. #85-776/5W-121

RECRA ENVIRONMENTAL LABORATORIES

RCRA HAZARDOUS CHARACTERISTICS EVALUATION
performed for
O.H. MATERIALS COMPANY

Sample I.D.: 007

Report Date: 8-27-85
I.D.#: 5W-121

An evaluation of the sample for the characteristics of a hazardous waste as defined by 40 CFR Part 261 Subpart C is given below. (Note: The sample was not evaluated to determine if it is a listed hazardous waste under 40 CFR Part 261 Subpart D).

HAZARDOUS CHARACTERISTIC	DOES THE WASTE EXHIBIT THE CHARACTERISTIC?	REASON OR COMMENT
Ignitability	No	Its flash point was higher than 60°C (140°F). The sample was not a pyrophoric or spontaneously combustible liquid, a flammable compressed gas or an oxidizer. The sample was not analyzed to determine alcohol content.
Corrosivity	No	The sample was not a liquid.
Reactivity	No	The sample did not exhibit characteristics 1 through 5 or 7 of a reactive waste described in 40 CFR §261.23. The sample was not tested to determine if it was an explosive described in characteristics 6 and 8 of 40 CFR 261.23 (definition of a reactive waste).
Extraction Procedure Toxicity	Yes	The EP Toxicity extract contained 102 mg/l of Total Lead which is above the maximum allowable extract concentration of 5.0 gm/l for Total Lead. The extract was not tested for the pesticides or herbicides listed in this section.

Based on the above evaluation, the following EPA hazardous waste number is applicable to this sample: D008 signifying lead contamination.

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT
QUALITY CONTROL

Report Date: 8/8/85

RECOVERY ANALYSIS OF
SAMPLE 5W121 004

PARAMETER	µg OF SPIKE	µg RECOVERED	% RECOVERY
Total Arsenic	25	25	100
	50	49	98
Total Barium	2,500	2,375	95
	5,000	4,450	89
Total Cadmium	2,000	1,980	99
	3,000	3,000	100
Total Chromium	5,000	5,000	100
	10,000	10,300	103
Total Lead	5,000	4,750	95
	10,000	9,600	96
Total Mercury	0.2	0.202	101
	0.4	0.36	90
Total Selenium	25	29	116
	50	55	110
Total Silver	5,000	4,850	97
	10,000	9,900	99

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Fin[illegible]

DATE 8/8/85

I.D. #85-775/5W-121

1/2485

RCRA HAZARDOUS CHARACTERISTICS EVALUATION
performed for
O.H. MATERIALS COMPANY

Sample I.D.: 004

Report Date: 8-27-85
I.D.#: 5W-121

An evaluation of the sample for the characteristics of a hazardous waste as defined by 40 CFR Part 261 Subpart C is given below. (Note: The sample was not evaluated to determine if it is a listed hazardous waste under 40 CFR Part 261 Subpart D).

HAZARDOUS CHARACTERISTIC	DOES THE WASTE EXHIBIT THE CHARACTERISTIC?	REASON OR COMMENT
Ignitability	No	Its flash point was higher than 60°C (140°F). The sample was not a pyrophoric or spontaneously combustible liquid, a flammable compressed gas or an oxidizer. The sample was not analyzed to determine alcohol content.
Corrosivity	No	The sample was not a liquid.
Reactivity	No	The sample did not exhibit characteristics 1 through 5 or 7 of a reactive waste described in 40 CFR §261.23. The sample was not tested to determine if it was an explosive described in characteristics 6 and 8 of 40 CFR 261.23 (definition of a reactive waste).
Extraction Procedure Toxicity	Not for Metals	The EP Toxicity extract contained none of the metal contaminants listed in 40 CFR §261.24 (EP Toxicity Definition) above their maximum allowable concentrations. The extract was not tested for the pesticides or herbicides listed in the section.

1/2485

WASTE CHARACTERIZATION
performed for
O.H. MATERIALS COMPANY

Summary of Results for Sample: 005

Report Date: 8-27-85
I.D.#: 5W-121

PARAMETER	RESULTS
PHYSICAL PROPERTIES	
Density @ 25°C (g/ml)	1.2
Flash Point (°F)	
Run I:	>200
Run II:	>200
Leachable pH (Std. Units)	5.6
Total Residue @ 103°C (% by wt.)	81.7
Ash Weight @ 650°C (% by wt.)	77.4
Reactivity:	
@ pH 2.0	No apparent reaction
@ pH 12.5	No apparent reaction
GENERAL COMPOSITION	
Cyanide Spot Test	Negative
Sulfide Spot Test	Negative
Oxidizer Spot Test	Negative

COMMENT: These analyses were performed in accordance with EPA/ASTM methodologies, where applicable. This sample was analyzed for evaluation as a landburial candidate.

FOR RECRA RESEARCH, INC. Constance A. Finocchi

DATE 8/29/85

RECRA RESEARCH, INC.

ANALYTICAL RESULTS

O. H. MATERIALS

Report Date: 8/29/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION
			005
Leachable Organic Carbon	μg/g	8/13/85	1,550

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Finn

DATE 8/29/85

I.D. #85-855/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT

Report Date: 8/8/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION 5W121 005	EPA MAXIMUM CONCENTRATION (mg/1)
Total Arsenic	mg/1	7/30/85	<0.005	5.0
Total Barium	mg/1	7/30/85	0.17	100.0
Total Cadmium	mg/1	7/31/85	<0.005	1.0
Total Chromium	mg/1	7/31/85	<0.005	5.0
Total Lead	mg/1	8/5/85	<0.1	5.0
Total Mercury	mg/1	8/4/85	<0.001	0.2
Total Selenium	mg/1	7/30/85	<0.005	1.0
Total Silver	mg/1	8/1/85	<0.01	5.0

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. [illegible]

DATE 8/8/85

I.D. #85-775/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT
QUALITY CONTROL

Report Date: 8/8/85

RECOVERY ANALYSIS OF
SAMPLE 5W121 005

PARAMETER	µg OF SPIKE	µg RECOVERED	% RECOVERY
Total Arsenic	25	23	92
	50	49	98
Total Barium	2,500	2,075	83
	5,000	4,400	88
Total Cadmium	2,000	2,000	100
	3,000	2,910	97
Total Chromium	5,000	5,200	104
	10,000	10,100	101
Total Lead	5,000	4,800	96
	10,000	9,500	95
Total Mercury	0.2	0.19	95
	0.4	0.392	98
Total Selenium	25	23	92
	50	49	98
Total Silver	5,000	4,700	94
	10,000	9,200	92

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. F[illegible]

DATE 8/8/85

I.D. #85-775/5W-121

RECRA ENVIRONMENTAL LABORATORIES

2/2485

RCRA HAZARDOUS CHARACTERISTICS EVALUATION
performed for
O.H. MATERIALS COMPANY

Sample I.D.: 005

Report Date: 8-27-85
I.D.#: 5W-121

An evaluation of the sample for the characteristics of a hazardous waste as defined by 40 CFR Part 261 Subpart C is given below. (Note: The sample was not evaluated to determine if it is a listed hazardous waste under 40 CFR Part 261 Subpart D).

HAZARDOUS CHARACTERISTIC	DOES THE WASTE EXHIBIT THE CHARACTERISTIC?	REASON OR COMMENT
Ignitability	No	Its flash point was higher than 60°C (140°F). The sample was not a pyrophoric or spontaneously combustible liquid, a flammable compressed gas or an oxidizer. The sample was not analyzed to determine alcohol content.
Corrosivity	No	The sample was not a liquid.
Reactivity	No	The sample did not exhibit characteristics 1 through 5 or 7 of a reactive waste described in 40 CFR §261.23. The sample was not tested to determine if it was an explosive described in characteristics 6 and 8 of 40 CFR 261.23 (definition of a reactive waste).
Extraction Procedure Toxicity	Not for Metals	The EP Toxicity extract contained none of the metal contaminants listed in 40 CFR §261.24 (EP Toxicity Definition) above their maximum allowable concentrations. The extract was not tested for the pesticides or herbicides listed in the section.

WASTE CHARACTERIZATION
performed for
O.H. MATERIALS COMPANY

Summary of Results for Sample: 006

Report Date: 8-27-85
I.D.#: 5W-121

PARAMETER	RESULTS
PHYSICAL PROPERTIES	
Density @ 25°C (g/ml)	1.0
Flash Point (°F)	
Run I:	>200
Run II:	>200
Leachable pH (Std. Units)	7.7
Total Residue @ 103°C (% by wt.)	78.4
Ash Weight @ 650°C (% by wt.)	70.4
Reactivity:	
@ pH 2.0	No apparent reaction
@ pH 12.5	No apparent reaction
GENERAL COMPOSITION	
Cyanide Spot Test	Negative
Sulfide Spot Test	Negative
Oxidizer Spot Test	Negative

COMMENT: These analyses were performed in accordance with EPA/ASTM methodologies, where applicable. This sample was analyzed for evaluation as a landburial candidate.

FOR RECRA RESEARCH, INC. Constance A. Finocchi

DATE 8/29/85

RECRA RESEARCH, INC.

ANALYTICAL RESULTS

O. H. MATERIALS

Report Date: 8/29/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION
			006
Leachable Organic Carbon	µg/g	8/13/85	3,760

FOR RECRA ENVIRONMENTAL LABORATORIES ____________________

DATE 8/29/85

I.D. #85-855/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT

Report Date: 8/8/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION 5W121 006	EPA MAXIMUM CONCENTRATION (mg/l)
Total Arsenic	mg/l	7/30/85	<0.005	5.0
Total Barium	mg/l	7/30/85	0.45	100.0
Total Cadmium	mg/l	7/31/85	0.013	1.0
Total Chromium	mg/l	7/31/85	<0.005	5.0
Total Lead	mg/l	8/5/85	0.59	5.0
Total Mercury	mg/l	8/4/85	<0.001	0.2
Total Selenium	mg/l	7/30/85	<0.005	1.0
Total Silver	mg/l	8/1/85	<0.01	5.0

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Fmin

DATE 8/8/85

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT
QUALITY CONTROL

Report Date: 8/8/85

RECOVERY ANALYSIS OF
SAMPLE 5W121 006

PARAMETER	µg OF SPIKE	µg RECOVERED	% RECOVERY
Total Arsenic	25	27	108
	50	53	106
Total Barium	2,500	2,375	95
	5,000	4,600	92
Total Cadmium	2,000	1,940	97
	3,000	2,880	96
Total Chromium	5,000	5,050	101
	10,000	9,900	99
Total Lead	5,000	5,100	102
	10,000	10,000	100
Total Mercury	0.2	0.19	95
	0.4	0.392	98
Total Selenium	25	28	112
	50	56	112
Total Silver	5,000	4,850	97
	10,000	9,700	97

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Fin

DATE 8/5/85

RCRA HAZARDOUS CHARACTERISTICS EVALUATION
performed for
O.H. MATERIALS COMPANY

Sample I.D.: 006

Report Date: 8-27-85
I.D.#: 5W-121

An evaluation of the sample for the characteristics of a hazardous waste as defined by 40 CFR Part 261 Subpart C is given below. (Note: The sample was not evaluated to determine if it is a listed hazardous waste under 40 CFR Part 261 Subpart D).

HAZARDOUS CHARACTERISTIC	DOES THE WASTE EXHIBIT THE CHARACTERISTIC?	REASON OR COMMENT
Ignitability	No	Its flash point was higher than 60°C (140°F). The sample was not a pyrophoric or spontaneously combustible liquid, a flammable compressed gas or an oxidizer. The sample was not analyzed to determine alcohol content.
Corrosivity	No	The sample was not a liquid.
Reactivity	No	The sample did not exhibit characteristics 1 through 5 or 7 of a reactive waste described in 40 CFR §261.23. The sample was not tested to determine if it was an explosive described in characteristics 6 and 8 of 40 CFR 261.23 (definition of a reactive waste).
Extraction Procedure Toxicity	Not for Metals	The EP Toxicity extract contained none of the metal contaminants listed in 40 CFR §261.24 (EP Toxicity Definition) above their maximum allowable concentrations. The extract was not tested for the pesticides or herbicides listed in the section.

1/2485

WASTE CHARACTERIZATION
performed for
O.H. MATERIALS COMPANY

Summary of Results for Sample: 007

Report Date: 8-27-85
I.D.#: 5W-121

PARAMETER	RESULTS
PHYSICAL PROPERTIES	
Density @ 25°C (g/ml)	1.7
Flash Point (°F)	
Run I:	>200
Run II:	>200
Leachable pH (Std. Units)	6.8
Total Residue @ 103°C (% by wt.)	81.5
Ash Weight @ 650°C (% by wt.)	70.0
Reactivity:	
@ pH 2.0	No apparent reaction
@ pH 12.5	No apparent reaction
GENERAL COMPOSITION	
Cyanide Spot Test	Negative
Sulfide Spot Test	Negative
Oxidizer Spot Test	Negative

COMMENT: These analyses were performed in accordance with EPA/ASTM methodologies, where applicable. This sample was analyzed for evaluation as a landburial candidate.

FOR RECRA RESEARCH, INC. Constance A. Finocchi

DATE 8/29/85

RECRA RESEARCH, INC.

ANALYTICAL RESULTS

O. H. MATERIALS

Report Date: 8/29/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION 007
Leachable Organic Carbon	µg/g	8/13/85	564

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Fin

DATE 8/29/85

I.D. #85-855/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT

Report Date: 8/8/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION 5W121 007	EPA MAXIMUM CONCENTRATION (mg/l)
Total Arsenic	mg/l	7/30/85	<0.005	5.0
Total Barium	mg/l	7/30/85	0.39	100.0
Total Cadmium	mg/l	7/31/85	0.015	1.0
Total Chromium	mg/l	7/31/85	0.005	5.0
Total Lead	mg/l	8/1/85	102	5.0
Total Mercury	mg/l	8/6/85	<0.001	0.2
Total Selenium	mg/l	7/30/85	<0.005	1.0
Total Silver	mg/l	8/1/85	<0.01	5.0

FOR RECRA ENVIRONMENTAL LABORATORIES

DATE 8/8/85

I.D. #85-776/5W-121

RECRA ENVIRONMENTAL LABORATORIES

WASTE CHARACTERIZATION
performed for
O.H. MATERIALS COMPANY

Summary of Results for Sample: 008

Report Date: 8-27-85
I.D.#: 5W-121

PARAMETER	RESULTS
PHYSICAL PROPERTIES	
Density @ 25°C (g/ml)	1.1
Flash Point (°F)	
Run I:	>200
Run II:	>200
Leachable pH (Std. Units)	7.9
Total Residue @ 103°C (% by wt.)	84.0
Ash Weight @ 650°C (% by wt.)	76.3
Reactivity:	
@ pH 2.0	No apparent reaction
@ pH 12.5	No apparent reaction
GENERAL COMPOSITION	
Cyanide Spot Test	Negative
Sulfide Spot Test	Negative
Oxidizer Spot Test	Negative

COMMENT: These analyses were performed in accordance with EPA/ASTM methodologies, where applicable. This sample was analyzed for evaluation as a landburial candidate.

FOR RECRA RESEARCH, INC. Constance A. Finocchi

DATE 8/29/85

RECRA RESEARCH, INC.

ANALYTICAL RESULTS

O. H. MATERIALS

Report Date: 8/29/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION
			008
Leachable Organic Carbon	µg/g	8/13/85	2,890

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Zum

DATE 8/29/85

I.D. #85-855/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT

Report Date: 8/8/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION 5W121 008	EPA MAXIMUM CONCENTRATION (mg/1)
Total Arsenic	mg/1	7/30/85	<0.005	5.0
Total Barium	mg/1	7/30/85	0.17	100.0
Total Cadmium	mg/1	7/31/85	<0.005	1.0
Total Chromium	mg/1	7/31/85	<0.005	5.0
Total Lead	mg/1	8/5/85	<0.1	5.0
Total Mercury	mg/1	8/4/85	<0.001	0.2
Total Selenium	mg/1	7/30/85	<0.005	1.0
Total Silver	mg/1	8/1/85	<0.01	5.0

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Fmin

DATE 8/8/85

I.D. #85-775/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT
QUALITY CONTROL

Report Date: 8/8/85

RECOVERY ANALYSIS OF
SAMPLE 5W121 008

PARAMETER	µg OF SPIKE	µg RECOVERED	% RECOVERY
Total Arsenic	25	25.5	102
	50	56	112
Total Barium	2,500	2,500	100
	5,000	5,200	104
Total Cadmium	2,000	2,080	104
	3,000	3,000	100
Total Chromium	5,000	5,150	103
	10,000	10,500	105
Total Lead	5,000	5,000	100
	10,000	10,200	102
Total Mercury	0.2	0.196	98
	0.4	0.392	98
Total Selenium	25	28	112
	50	55	110
Total Silver	5,000	4,800	96
	10,000	9,600	96

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. F[illegible]

DATE 8/8/85

1/2485

RCRA HAZARDOUS CHARACTERISTICS EVALUATION
performed for
O.H. MATERIALS COMPANY

Sample I.D.: 008

Report Date: 8-27-85
I.D.#: 5W-121

An evaluation of the sample for the characteristics of a hazardous waste as defined by 40 CFR Part 261 Subpart C is given below. (Note: The sample was not evaluated to determine if it is a listed hazardous waste under 40 CFR Part 261 Subpart D).

HAZARDOUS CHARACTERISTIC	DOES THE WASTE EXHIBIT THE CHARACTERISTIC?	REASON OR COMMENT
Ignitability	No	Its flash point was higher than 60°C (140°F). The sample was not a pyrophoric or spontaneously combustible liquid, a flammable compressed gas or an oxidizer. The sample was not analyzed to determine alcohol content.
Corrosivity	No	The sample was not a liquid.
Reactivity	No	The sample did not exhibit characteristics 1 through 5 or 7 of a reactive waste described in 40 CFR §261.23. The sample was not tested to determine if it was an explosive described in characteristics 6 and 8 of 40 CFR 261.23 (definition of a reactive waste).
Extraction Procedure Toxicity	Not for Metals	The EP Toxicity extract contained none of the metal contaminants listed in 40 CFR §261.24 (EP Toxicity Definition) above their maximum allowable concentrations. The extract was not tested for the pesticides or herbicides listed in the section.

1/2485

WASTE CHARACTERIZATION
performed for
O.H. MATERIALS COMPANY

Summary of Results for Sample: 009

Report Date: 8-27-85
I.D.#: 5W-121

PARAMETER	RESULTS
PHYSICAL PROPERTIES	
Density @ 25°C (g/ml)	1.3
Flash Point (°F)	
Run I:	>200
Run II:	>200
Leachable pH (Std. Units)	6.0
Total Residue @ 103°C (% by wt.)	81.2
Ash Weight @ 650°C (% by wt.)	76.4
Reactivity:	
@ pH 2.0	No apparent reaction
@ pH 12.5	No apparent reaction
GENERAL COMPOSITION	
Cyanide Spot Test	Negative
Sulfide Spot Test	Negative
Oxidizer Spot Test	Negative

COMMENT: These analyses were performed in accordance with EPA/ASTM methodologies, where applicable. This sample was analyzed for evaluation as a landburial candidate.

FOR RECRA RESEARCH, INC. Constance A. Finocchi

DATE 8/29/85

RECRA RESEARCH, INC.

ANALYTICAL RESULTS

O. H. MATERIALS

Report Date: 8/29/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION 009
Leachable Organic Carbon	µg/g	8/13/85	1,020

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Fain

DATE 8/29/85

I.D. #85-855/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT

Report Date: 8/8/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION 5W121 009	EPA MAXIMUM CONCENTRATION (mg/l)
Total Arsenic	mg/l	7/30/85	<0.005	5.0
Total Barium	mg/l	7/30/85	0.09	100.0
Total Cadmium	mg/l	7/31/85	<0.005	1.0
Total Chromium	mg/l	7/31/85	<0.005	5.0
Total Lead	mg/l	8/5/85	<0.1	5.0
Total Mercury	mg/l	8/4/85	<0.001	0.2
Total Selenium	mg/l	7/30/85	<0.005	1.0
Total Silver	mg/l	8/1/85	<0.01	5.0

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Z[illegible]

DATE 8/8/85

I.D. #85-775/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT
QUALITY CONTROL

Report Date: 8/8/85

RECOVERY ANALYSIS OF
SAMPLE 5W121 009

PARAMETER	µg OF SPIKE	µg RECOVERED	% RECOVERY
Total Arsenic	25	29	116
	50	53	106
Total Barium	2,500	2,525	101
	5,000	4,600	92
Total Cadmium	2,000	2,040	102
	3,000	3,000	100
Total Chromium	5,000	5,250	105
	10,000	10,400	104
Total Lead	5,000	5,000	100
	10,000	10,000	100
Total Mercury	0.2	0.194	97
	0.4	0.368	92
Total Selenium	25	21	84
	50	40	80
Total Silver	5,000	4,700	94
	10,000	9,400	94

FOR RECRA ENVIRONMENTAL LABORATORIES [signature]

DATE 8/8/85

I.D. #85-775/5W-121

RECRA ENVIRONMENTAL LABORATORIES

RCRA HAZARDOUS CHARACTERISTICS EVALUATION
performed for
O.H. MATERIALS COMPANY

Sample I.D.: 009

Report Date: 8-27-85
I.D.#: 5W-121

An evaluation of the sample for the characteristics of a hazardous waste as defined by 40 CFR Part 261 Subpart C is given below. (Note: The sample was not evaluated to determine if it is a listed hazardous waste under 40 CFR Part 261 Subpart D).

HAZARDOUS CHARACTERISTIC	DOES THE WASTE EXHIBIT THE CHARACTERISTIC?	REASON OR COMMENT
Ignitability	No	Its flash point was higher than 60°C (140°F). The sample was not a pyrophoric or spontaneously combustible liquid, a flammable compressed gas or an oxidizer. The sample was not analyzed to determine alcohol content.
Corrosivity	No	The sample was not a liquid.
Reactivity	No	The sample did not exhibit characteristics 1 through 5 or 7 of a reactive waste described in 40 CFR §261.23. The sample was not tested to determine if it was an explosive described in characteristics 6 and 8 of 40 CFR 261.23 (definition of a reactive waste).
Extraction Procedure Toxicity	Not for Metals	The EP Toxicity extract contained none of the metal contaminants listed in 40 CFR §261.24 (EP Toxicity Definition) above their maximum allowable concentrations. The extract was not tested for the pesticides or herbicides listed in the section.

1/2485

WASTE CHARACTERIZATION
performed for
O.H. MATERIALS COMPANY

Summary of Results for Sample: 010

Report Date: 8-27-85
I.D.#: 5W-121

PARAMETER	RESULTS
PHYSICAL PROPERTIES	
Density @ 25°C (g/ml)	1.4
Flash Point (°F)	
Run I:	>200
Run II:	>200
Leachable pH (Std. Units)	8.1
Total Residue @ 103°C (% by wt.)	84.8
Ash Weight @ 650°C (% by wt.)	81.1
Reactivity:	
@ pH 2.0	No apparent reaction
@ pH 12.5	No apparent reaction
GENERAL COMPOSITION	
Cyanide Spot Test	Negative
Sulfide Spot Test	Negative
Oxidizer Spot Test	Negative

COMMENT: These analyses were performed in accordance with EPA/ASTM methodologies, where applicable. This sample was analyzed for evaluation as a landburial candidate.

FOR RECRA RESEARCH, INC. Constance A. Finocchi

DATE 8/29/85

RECRA RESEARCH, INC.

ANALYTICAL RESULTS

O. H. MATERIALS

Report Date: 8/29/85

PARAMETER	UNITS OF MEASURE	EXTRACTION DATE	ANALYSIS DATE	SAMPLE IDENTIFICATION 010
Halogenated Organic Scan (ECD)	μg/g dry as Chlorine; Lindane Standard	8/14/85	8/26/85	0.75
Total Polychlorinated Biphenyls	μg/g dry as Aroclor 1254	8/14/85	8/26/85	<2
Leachable Organic Carbon	μg/g	-	8/13/85	1,530
Dry Weight (103°C)	%	-	-	84

FOR RECRA ENVIRONMENTAL LABORATORIES Frederick Boyle

DATE 8/29/85

D. V. Fixim

8/29/85

I.D. #85-855/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT

Report Date: 8/8/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION 5W121 010	EPA MAXIMUM CONCENTRATION (mg/l)
Total Arsenic	mg/l	7/30/85	<0.005	5.0
Total Barium	mg/l	7/30/85	0.16	100.0
Total Cadmium	mg/l	7/31/85	<0.005	1.0
Total Chromium	mg/l	7/31/85	<0.005	5.0
Total Lead	mg/l	8/1/85	<0.1	5.0
Total Mercury	mg/l	8/6/85	<0.001	0.2
Total Selenium	mg/l	7/30/85	<0.005	1.0
Total Silver	mg/l	8/1/85	<0.01	5.0

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Fin

DATE 8/8/85

I.D. #85-776/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT
QUALITY CONTROL

Report Date: 8/8/85

RECOVERY ANALYSIS OF
SAMPLE 5W121 010

PARAMETER	µg OF SPIKE	µg RECOVERED	% RECOVERY
Total Arsenic	25	27	108
	50	53	106
Total Barium	2,500	2,550	102
	5,000	4,650	93
Total Cadmium	2,000	2,000	100
	3,000	2,940	98
Total Chromium	5,000	5,050	101
	10,000	10,100	101
Total Lead	5,000	5,050	101
	10,000	10,000	100
Total Mercury	0.2	0.196	98
	0.4	0.388	97
Total Selenium	25	23	92
	50	49	98
Total Silver	5,000	4,850	97
	10,000	9,700	97

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Finn

DATE 8/8/85

I.D. #85-776/5W-121

RECRA ENVIRONMENTAL LABORATORIES

RCRA HAZARDOUS CHARACTERISTICS EVALUATION
performed for
O.H. MATERIALS COMPANY

Sample I.D.: 010

Report Date: 8-27-85
I.D.#: 5W-121

An evaluation of the sample for the characteristics of a hazardous waste as defined by 40 CFR Part 261 Subpart C is given below. (Note: The sample was not evaluated to determine if it is a listed hazardous waste under 40 CFR Part 261 Subpart D).

HAZARDOUS CHARACTERISTIC	DOES THE WASTE EXHIBIT THE CHARACTERISTIC?	REASON OR COMMENT
Ignitability	No	Its flash point was higher than 60°C (140°F). The sample was not a pyrophoric or spontaneously combustible liquid, a flammable compressed gas or an oxidizer. The sample was not analyzed to determine alcohol content.
Corrosivity	No	The sample was not a liquid.
Reactivity	No	The sample did not exhibit characteristics 1 through 5 or 7 of a reactive waste described in 40 CFR §261.23. The sample was not tested to determine if it was an explosive described in characteristics 6 and 8 of 40 CFR 261.23 (definition of a reactive waste).
Extraction Procedure Toxicity	Not for Metals	The EP Toxicity extract contained none of the metal contaminants listed in 40 CFR §261.24 (EP Toxicity Definition) above their maximum allowable concentrations. The extract was not tested for the pesticides or herbicides listed in the section.

1/2485

WASTE CHARACTERIZATION
performed for
O.H. MATERIALS COMPANY

Summary of Results for Sample: 011

Report Date: 8-27-85
I.D.#: 5W-121

PARAMETER	RESULTS
PHYSICAL PROPERTIES	
Density @ 25°C (g/ml)	1.5
Flash Point (°F)	
Run I:	>200
Run II:	>200
Leachable pH (Std. Units)	6.8
Total Residue @ 103°C (% by wt.)	85.6
Ash Weight @ 650°C (% by wt.)	82.6
Reactivity:	
@ pH 2.0	No apparent reaction
@ pH 12.5	No apparent reaction
GENERAL COMPOSITION	
Cyanide Spot Test	Negative
Sulfide Spot Test	Negative
Oxidizer Spot Test	Negative

COMMENT: These analyses were performed in accordance with EPA/ASTM methodologies, where applicable. This sample was analyzed for evaluation as a landburial candidate.

FOR RECRA RESEARCH, INC. Constance A. Finocchi

DATE 8/29/85

RECRA RESEARCH, INC.

ANALYTICAL RESULTS

O. H. MATERIALS

Report Date: 8/29/85

PARAMETER	UNITS OF MEASURE	EXTRACTION DATE	ANALYSIS DATE	SAMPLE IDENTIFICATION 011
Halogenated Organic Scan (ECD)	µg/g dry as Chlorine; Lindane Standard	8/14/85	8/27/85	15
Total Polychlorinated Biphenyls	µg/g dry as Aroclor 1254	8/14/85	8/26/85	<0.5
Leachable Organic Carbon	µg/g	-	8/13/85	2,120
Dry Weight (103°C)	%	-	-	87.2

FOR RECRA ENVIRONMENTAL LABORATORIES Frederick Bogle

DATE 8/29/85

D. V. Zini

8/29/85

I.D. #85-855/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT

Report Date: 8/8/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION 5W121 011	EPA MAXIMUM CONCENTRATION (mg/1)
Total Arsenic	mg/1	7/30/85	<0.005	5.0
Total Barium	mg/1	7/30/85	0.06	100.0
Total Cadmium	mg/1	7/31/85	<0.005	1.0
Total Chromium	mg/1	7/31/85	<0.005	5.0
Total Lead	mg/1	8/5/85	<0.1	5.0
Total Mercury	mg/1	8/4/85	<0.001	0.2
Total Selenium	mg/1	7/30/85	<0.005	1.0
Total Silver	mg/1	8/1/85	<0.01	5.0

FOR RECRA ENVIRONMENTAL LABORATORIES ____________

DATE 8/8/85

I.D. #85-775/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT
QUALITY CONTROL

Report Date: 8/8/85

RECOVERY ANALYSIS OF
SAMPLE 5W121 011

PARAMETER	μg OF SPIKE	μg RECOVERED	% RECOVERY
Total Arsenic	25	28	112
	50	59	118
Total Barium	2,500	2,300	92
	5,000	4,600	92
Total Cadmium	2,000	1,920	96
	3,000	2,880	96
Total Chromium	5,000	5,000	100
	10,000	10,200	102
Total Lead	5,000	5,100	102
	10,000	10,200	102
Total Mercury	0.2	0.184	92
	0.4	0.376	94
Total Selenium	25	24	96
	50	49	98
Total Silver	5,000	4,850	97
	10,000	9,700	97

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Finn

DATE 8/8/85

I.D. #85-775/5W-121

RECRA ENVIRONMENTAL LABORATORIES

RCRA HAZARDOUS CHARACTERISTICS EVALUATION
performed for
O.H. MATERIALS COMPANY

Sample I.D.: 011

Report Date: 8-27-85
I.D.#: 5W-121

An evaluation of the sample for the characteristics of a hazardous waste as defined by 40 CFR Part 261 Subpart C is given below. (Note: The sample was not evaluated to determine if it is a listed hazardous waste under 40 CFR Part 261 Subpart D).

HAZARDOUS CHARACTERISTIC	DOES THE WASTE EXHIBIT THE CHARACTERISTIC?	REASON OR COMMENT
Ignitability	No	Its flash point was higher than 60°C (140°F). The sample was not a pyrophoric or spontaneously combustible liquid, a flammable compressed gas or an oxidizer. The sample was not analyzed to determine alcohol content.
Corrosivity	No	The sample was not a liquid.
Reactivity	No	The sample did not exhibit characteristics 1 through 5 or 7 of a reactive waste described in 40 CFR §261.23. The sample was not tested to determine if it was an explosive described in characteristics 6 and 8 of 40 CFR 261.23 (definition of a reactive waste).
Extraction Procedure Toxicity	Not for Metals	The EP Toxicity extract contained none of the metal contaminants listed in 40 CFR §261.24 (EP Toxicity Definition) above their maximum allowable concentrations. The extract was not tested for the pesticides or herbicides listed in the section.

1/2485

WASTE CHARACTERIZATION
performed for
O.H. MATERIALS COMPANY

Summary of Results for Sample: 014

Report Date: 8-27-85
I.D.#: 5W-121

PARAMETER	RESULTS
PHYSICAL PROPERTIES	
Density @ 25°C (g/ml)	1.2
Flash Point (°F)	
Run I:	>200
Run II:	>200
Leachable pH (Std. Units)	5.7
Total Residue @ 103°C (% by wt.)	89.0
Ash Weight @ 650°C (% by wt.)	87.2
Reactivity:	
@ pH 2.0	No apparent reaction
@ pH 12.5	No apparent reaction
GENERAL COMPOSITION	
Cyanide Spot Test	Negative
Sulfide Spot Test	Negative
Oxidizer Spot Test	Negative

COMMENT: These analyses were performed in accordance with EPA/ASTM methodologies, where applicable. This sample was analyzed for evaluation as a landburial candidate.

FOR RECRA RESEARCH, INC. Constance A. Finocchi

DATE 8/29/85

RECRA RESEARCH, INC.

ANALYTICAL RESULTS

O. H. MATERIALS

Report Date: 8/29/85

PARAMETER	UNITS OF MEASURE	EXTRACTION DATE	ANALYSIS DATE	SAMPLE IDENTIFICATION 014
Halogenated Organic Scan (ECD)	µg/g dry as Chlorine; Lindane Standard	8/14/85	8/23/85	0.79
Total Polychlorinated Biphenyls	µg/g dry as Aroclor 1254	8/14/85	8/23/85	<0.5
Leachable Organic Carbon	µg/g	-	8/22/85	535
Dry Weight (103°C)	%	-	-	88.9

FOR RECRA ENVIRONMENTAL LABORATORIES Frederick Bozek

DATE 8/29/85

R. N. Finn

8/29/85

I.D. #85-855/5W-121

RECRA ENVIRONMENTAL LABORATORIES

1/2485

WASTE CHARACTERIZATION
performed for
O.H. MATERIALS COMPANY

Summary of Results for Sample: 012

Report Date: 8-27-85
I.D.#: 5W-121

PARAMETER	RESULTS
PHYSICAL PROPERTIES	
Density @ 25°C (g/ml)	1.3
Flash Point (°F)	
Run I:	>200
Run II:	>200
Leachable pH (Std. Units)	5.5
Total Residue @ 103°C (% by wt.)	88.1
Ash Weight @ 650°C (% by wt.)	86.1
Reactivity:	
@ pH 2.0	No apparent reaction
@ pH 12.5	No apparent reaction
GENERAL COMPOSITION	
Cyanide Spot Test	Negative
Sulfide Spot Test	Negative
Oxidizer Spot Test	Negative

COMMENT: These analyses were performed in accordance with EPA/ASTM methodologies, where applicable. This sample was analyzed for evaluation as a landburial candidate.

FOR RECRA RESEARCH, INC. Constance A. Finocchi

DATE 8/29/85

RECRA RESEARCH, INC.

ANALYTICAL RESULTS

O. H. MATERIALS

Report Date: 8/29/85

PARAMETER	UNITS OF MEASURE	EXTRACTION DATE	ANALYSIS DATE	SAMPLE IDENTIFICATION 012
Halogenated Organic Scan (ECD)	µg/g dry as Chlorine; Lindane Standard	8/14/85	8/23/85	0.33
Total Polychlorinated Biphenyls	µg/g dry as Aroclor 1254	8/14/85	8/23/85	<0.5
Leachable Organic Carbon	µg/g	-	8/14/85	1,890
Dry Weight (103°C)	%	-	-	88.4

FOR RECRA ENVIRONMENTAL LABORATORIES Frederick Bozek

DATE 8/29/85

R. V. Zinn

8/29/85

I.D. #85-855/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT

Report Date: 8/8/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION 5W121 012	EPA MAXIMUM CONCENTRATION (mg/1)
Total Arsenic	mg/1	7/30/85	<0.005	5.0
Total Barium	mg/1	7/30/85	0.08	100.0
Total Cadmium	mg/1	7/31/85	<0.005	1.0
Total Chromium	mg/1	7/31/85	<0.005	5.0
Total Lead	mg/1	8/5/85	<0.1	5.0
Total Mercury	mg/1	8/4/85	<0.001	0.2
Total Selenium	mg/1	7/30/85	<0.005	1.0
Total Silver	mg/1	8/1/85	<0.01	5.0

FOR RECRA ENVIRONMENTAL LABORATORIES ____________

DATE 8/5/85

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT
QUALITY CONTROL

Report Date: 8/8/85

RECOVERY ANALYSIS OF
SAMPLE 5W121 012

PARAMETER	µg OF SPIKE	µg RECOVERED	% RECOVERY
Total Arsenic	25	26	104
	50	53	106
Total Barium	2,500	2,525	101
	5,000	5,100	102
Total Cadmium	2,000	2,000	100
	3,000	2,940	98
Total Chromium	5,000	5,200	104
	10,000	10,900	109
Total Lead	5,000	5,100	102
	10,000	10,100	101
Total Mercury	0.2	0.192	96
	0.4	0.376	94
Total Selenium	25	25	100
	50	49	98
Total Silver	5,000	4,850	97
	10,000	9,300	93

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Fein

DATE 8/8/85

I.D. #85-775/5W-121

RECRA ENVIRONMENTAL LABORATORIES

RCRA HAZARDOUS CHARACTERISTICS EVALUATION
performed for
O.H. MATERIALS COMPANY

Sample I.D.: 012

Report Date: 8-27-85
I.D.#: 5W-121

An evaluation of the sample for the characteristics of a hazardous waste as defined by 40 CFR Part 261 Subpart C is given below. (Note: The sample was not evaluated to determine if it is a listed hazardous waste under 40 CFR Part 261 Subpart D).

HAZARDOUS CHARACTERISTIC	DOES THE WASTE EXHIBIT THE CHARACTERISTIC?	REASON OR COMMENT
Ignitability	No	Its flash point was higher than 60°C (140°F). The sample was not a pyrophoric or spontaneously combustible liquid, a flammable compressed gas or an oxidizer. The sample was not analyzed to determine alcohol content.
Corrosivity	No	The sample was not a liquid.
Reactivity	No	The sample did not exhibit characteristics 1 through 5 or 7 of a reactive waste described in 40 CFR §261.23. The sample was not tested to determine if it was an explosive described in characteristics 6 and 8 of 40 CFR 261.23 (definition of a reactive waste).
Extraction Procedure Toxicity	Not for Metals	The EP Toxicity extract contained none of the metal contaminants listed in 40 CFR §261.24 (EP Toxicity Definition) above their maximum allowable concentrations. The extract was not tested for the pesticides or herbicides listed in the section.

WASTE CHARACTERIZATION
performed for
O.H. MATERIALS COMPANY

Summary of Results for Sample: 013

Report Date: 8-27-85
I.D.#: 5W-121

PARAMETER	RESULTS
PHYSICAL PROPERTIES	
Density @ 25°C (g/ml)	1.9
Flash Point (°F)	
Run I:	>200
Run II:	>200
Leachable pH (Std. Units)	5.6
Total Residue @ 103°C (% by wt.)	83.7
Ash Weight @ 650°C (% by wt.)	81.3
Reactivity:	
@ pH 2.0	No apparent reaction
@ pH 12.5	No apparent reaction
GENERAL COMPOSITION	
Cyanide Spot Test	Negative
Sulfide Spot Test	Negative
Oxidizer Spot Test	Negative

COMMENT: These analyses were performed in accordance with EPA/ASTM methodologies, where applicable. This sample was analyzed for evaluation as a landburial candidate.

FOR RECRA RESEARCH, INC. Constance A. Finocchi

DATE 8/29/85

RECRA RESEARCH, INC.

ANALYTICAL RESULTS

O. H. MATERIALS

Report Date: 8/29/85

PARAMETER	UNITS OF MEASURE	EXTRACTION DATE	ANALYSIS DATE	SAMPLE IDENTIFICATION 013
Halogenated Organic Scan (ECD)	µg/g dry as Chlorine; Lindane Standard	8/14/85	8/23/85	7.6
Total Polychlorinated Biphenyls	µg/g dry as Aroclor 1254	8/14/85	8/23/85	<4
Leachable Organic Carbon	µg/g	-	8/22/85	806
Dry Weight (103°C)	%	-	-	80.1

FOR RECRA ENVIRONMENTAL LABORATORIES Frederick Boyle

DATE 8/29/85

D. V. Zinn

8/29/85

I.D. #85-855/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT

Report Date: 8/8/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION 5W121 013	EPA MAXIMUM CONCENTRATION (mg/l)
Total Arsenic	mg/l	7/30/85	<0.005	5.0
Total Barium	mg/l	7/30/85	0.16	100.0
Total Cadmium	mg/l	7/31/85	<0.005	1.0
Total Chromium	mg/l	7/31/85	<0.005	5.0
Total Lead	mg/l	8/1/85	<0.1	5.0
Total Mercury	mg/l	8/6/85	<0.001	0.2
Total Selenium	mg/l	7/30/85	<0.005	1.0
Total Silver	mg/l	8/1/85	<0.01	5.0

FOR RECRA ENVIRONMENTAL LABORATORIES D.V. Fin

DATE 8/8/85

I.D. #85-776/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT
QUALITY CONTROL

Report Date: 8/8/85

RECOVERY ANALYSIS OF
SAMPLE 5W121 013

PARAMETER	µg OF SPIKE	µg RECOVERED	% RECOVERY
Total Arsenic	25	24	96
	50	55	110
Total Barium	2,500	2,350	94
	5,000	4,900	98
Total Cadmium	2,000	2,000	100
	3,000	2,970	99
Total Chromium	5,000	5,100	102
	10,000	10,300	103
Total Lead	5,000	5,000	100
	10,000	10,000	100
Total Mercury	0.2	0.212	106
	0.4	0.404	101
Total Selenium	25	18	72
	50	43	86
Total Silver	5,000	4,800	96
	10,000	9,900	99

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Fin

DATE 8/8/85

RCRA HAZARDOUS CHARACTERISTICS EVALUATION
performed for
O.H. MATERIALS COMPANY

Sample I.D.: 013

Report Date: 8-27-85
I.D.#: 5W-121

An evaluation of the sample for the characteristics of a hazardous waste as defined by 40 CFR Part 261 Subpart C is given below. (Note: The sample was not evaluated to determine if it is a listed hazardous waste under 40 CFR Part 261 Subpart D).

HAZARDOUS CHARACTERISTIC	DOES THE WASTE EXHIBIT THE CHARACTERISTIC?	REASON OR COMMENT
Ignitability	No	Its flash point was higher than 60°C (140°F). The sample was not a pyrophoric or spontaneously combustible liquid, a flammable compressed gas or an oxidizer. The sample was not analyzed to determine alcohol content.
Corrosivity	No	The sample was not a liquid.
Reactivity	No	The sample did not exhibit characteristics 1 through 5 or 7 of a reactive waste described in 40 CFR §261.23. The sample was not tested to determine if it was an explosive described in characteristics 6 and 8 of 40 CFR 261.23 (definition of a reactive waste).
Extraction Procedure Toxicity	Not for Metals	The EP Toxicity extract contained none of the metal contaminants listed in 40 CFR §261.24 (EP Toxicity Definition) above their maximum allowable concentrations. The extract was not tested for the pesticides or herbicides listed in the section.

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT

Report Date: 8/8/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION 5W121 014	EPA MAXIMUM CONCENTRATION (mg/1)
Total Arsenic	mg/1	7/30/85	<0.005	5.0
Total Barium	mg/1	7/30/85	<0.04	100.0
Total Cadmium	mg/1	7/31/85	≤0.005	1.0
Total Chromium	mg/1	7/31/85	<0.005	5.0
Total Lead	mg/1	8/1/85	<0.1	5.0
Total Mercury	mg/1	8/6/85	<0.001	0.2
Total Selenium	mg/1	7/30/85	<0.005	1.0
Total Silver	mg/1	8/1/85	<0.01	5.0

FOR RECRA ENVIRONMENTAL LABORATORIES R. V. Finn

DATE 8/8/85

I.D. #85-776/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT
QUALITY CONTROL

Report Date: 8/8/85

RECOVERY ANALYSIS OF
SAMPLE 5W121 014

PARAMETER	μg OF SPIKE	μg RECOVERED	% RECOVERY
Total Arsenic	25	25	100
	50	46	92
Total Barium	2,500	2,475	99
	5,000	4,450	89
Total Cadmium	2,000	2,000	100
	3,000	2,940	98
Total Chromium	5,000	5,100	102
	10,000	10,300	103
Total Lead	5,000	5,000	100
	10,000	9,900	99
Total Mercury	0.2	0.198	99
	0.4	0.384	96
Total Selenium	25	22	88
	50	44	88
Total Silver	5,000	4,800	96
	10,000	9,500	95

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Finn

DATE 8/8/85

I.D. #85-776/5W-121

RECRA ENVIRONMENTAL LABORATORIES

RCRA HAZARDOUS CHARACTERISTICS EVALUATION
performed for
O.H. MATERIALS COMPANY

Sample I.D.: 014

Report Date: 8-27-85
I.D.#: 5W-121

An evaluation of the sample for the characteristics of a hazardous waste as defined by 40 CFR Part 261 Subpart C is given below. (Note: The sample was not evaluated to determine if it is a listed hazardous waste under 40 CFR Part 261 Subpart D).

HAZARDOUS CHARACTERISTIC	DOES THE WASTE EXHIBIT THE CHARACTERISTIC?	REASON OR COMMENT
Ignitability	No	Its flash point was higher than 60°C (140°F). The sample was not a pyrophoric or spontaneously combustible liquid, a flammable compressed gas or an oxidizer. The sample was not analyzed to determine alcohol content.
Corrosivity	No	The sample was not a liquid.
Reactivity	No	The sample did not exhibit characteristics 1 through 5 or 7 of a reactive waste described in 40 CFR §261.23. The sample was not tested to determine if it was an explosive described in characteristics 6 and 8 of 40 CFR 261.23 (definition of a reactive waste).
Extraction Procedure Toxicity	Not for Metals	The EP Toxicity extract contained none of the metal contaminants listed in 40 CFR §261.24 (EP Toxicity Definition) above their maximum allowable concentrations. The extract was not tested for the pesticides or herbicides listed in the section.

WASTE CHARACTERIZATION
performed for
O.H. MATERIALS COMPANY

Summary of Results for Sample: 015

Report Date: 8-27-85
I.D.#: 5W-121

PARAMETER	RESULTS
PHYSICAL PROPERTIES	
Density @ 25°C (g/ml)	1.4
Flash Point (°F)	
Run I:	>200
Run II:	>200
Leachable pH (Std. Units)	4.8
Total Residue @ 103°C (% by wt.)	88.0
Ash Weight @ 650°C (% by wt.)	86.5
Reactivity:	
@ pH 2.0	No apparent reaction
@ pH 12.5	No apparent reaction
GENERAL COMPOSITION	
Cyanide Spot Test	Negative
Sulfide Spot Test	Negative
Oxidizer Spot Test	Negative

COMMENT: These analyses were performed in accordance with EPA/ASTM methodologies, where applicable. This sample was analyzed for evaluation as a landburial candidate.

FOR RECRA RESEARCH, INC. Constance A. Finocchi

DATE 8/29/85

RECRA RESEARCH, INC.

ANALYTICAL RESULTS

O. H. MATERIALS

Report Date: 8/29/85

PARAMETER	UNITS OF MEASURE	EXTRACTION DATE	ANALYSIS DATE	SAMPLE IDENTIFICATION 015
Halogenated Organic Scan (ECD)	µg/g dry as Chlorine; Lindane Standard	8/14/85	8/23/85	0.15
Total Polychlorinated Biphenyls	µg/g dry as Aroclor 1254	8/14/85	8/23/85	<0.1
Leachable Organic Carbon	µg/g	-	8/22/85	505
Dry Weight (103°C)	%	-	-	87.4

FOR RECRA ENVIRONMENTAL LABORATORIES Fredrick Bozek

DATE 8/29/85

D. V. Fri[illegible]

8/29/85

I.D. #85-855/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT

Report Date: 8/8/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION 5W121 015	EPA MAXIMUM CONCENTRATION (mg/1)
Total Arsenic	mg/1	7/30/85	<0.005	5.0
Total Barium	mg/1	7/30/85	0.04	100.0
Total Cadmium	mg/1	7/31/85	<0.005	1.0
Total Chromium	mg/1	7/31/85	<0.005	5.0
Total Lead	mg/1	8/1/85	<0.1	5.0
Total Mercury	mg/1	8/6/85	<0.001	0.2
Total Selenium	mg/1	7/30/85	<0.005	1.0
Total Silver	mg/1	8/1/85	<0.01	5.0

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Finn

DATE 8/8/85

I.D. #85-776/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT
QUALITY CONTROL

Report Date: 8/8/85

RECOVERY ANALYSIS OF
SAMPLE 5W121 015

PARAMETER	µg OF SPIKE	µg RECOVERED	% RECOVERY
Total Arsenic	25	23	92
	50	49	98
Total Barium	2,500	1,975	79
	5,000	4,750	95
Total Cadmium	2,000	1,960	98
	3,000	2,940	98
Total Chromium	5,000	5,100	102
	10,000	10,600	106
Total Lead	5,000	5,000	100
	10,000	10,200	102
Total Mercury	0.2	0.186	93
	0.4	0.388	97
Total Selenium	25	20	80
	50	44	88
Total Silver	5,000	4,800	96
	10,000	9,800	98

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Finn

DATE 8/8/85

I.D. #85-776/5W-121

RECRA ENVIRONMENTAL LABORATORIES

RCRA HAZARDOUS CHARACTERISTICS EVALUATION
performed for
O.H. MATERIALS COMPANY

Sample I.D.: 015

Report Date: 8-27-85
I.D.#: 5W-121

An evaluation of the sample for the characteristics of a hazardous waste as defined by 40 CFR Part 261 Subpart C is given below. (Note: The sample was not evaluated to determine if it is a listed hazardous waste under 40 CFR Part 261 Subpart D).

HAZARDOUS CHARACTERISTIC	DOES THE WASTE EXHIBIT THE CHARACTERISTIC?	REASON OR COMMENT
Ignitability	No	Its flash point was higher than 60°C (140°F). The sample was not a pyrophoric or spontaneously combustible liquid, a flammable compressed gas or an oxidizer. The sample was not analyzed to determine alcohol content.
Corrosivity	No	The sample was not a liquid.
Reactivity	No	The sample did not exhibit characteristics 1 through 5 or 7 of a reactive waste described in 40 CFR §261.23. The sample was not tested to determine if it was an explosive described in characteristics 6 and 8 of 40 CFR 261.23 (definition of a reactive waste).
Extraction Procedure Toxicity	Not for Metals	The EP Toxicity extract contained none of the metal contaminants listed in 40 CFR §261.24 (EP Toxicity Definition) above their maximum allowable concentrations. The extract was not tested for the pesticides or herbicides listed in the section.

WASTE CHARACTERIZATION
performed for
O.H. MATERIALS COMPANY

Summary of Results for Sample: 016

Report Date: 8-27-85
I.D.#: 5W-121

PARAMETER	RESULTS
PHYSICAL PROPERTIES	
Density @ 25°C (g/ml)	1.9
Flash Point (°F)	
Run I:	>200
Run II:	>200
Leachable pH (Std. Units)	7.6
Total Residue @ 103°C (% by wt.)	88.3
Ash Weight @ 650°C (% by wt.)	86.7
Reactivity:	
@ pH 2.0	No apparent reaction
@ pH 12.5	No apparent reaction
GENERAL COMPOSITION	
Cyanide Spot Test	Negative
Sulfide Spot Test	Negative
Oxidizer Spot Test	Negative

COMMENT: These analyses were performed in accordance with EPA/ASTM methodologies, where applicable. This sample was analyzed for evaluation as a landburial candidate.

FOR RECRA RESEARCH, INC. Constance A. Finocchi

DATE 8/29/85

RECRA RESEARCH, INC.

ANALYTICAL RESULTS

O. H. MATERIALS

Report Date: 8/29/85

PARAMETER	UNITS OF MEASURE	EXTRACTION DATE	ANALYSIS DATE	SAMPLE IDENTIFICATION 016
Halogenated Organic Scan (ECD)	µg/g dry as Chlorine; Lindane Standard	8/14/85	8/23/85	0.68
Polychlorinated Biphenyls	µg/g dry as Aroclor 1248	8/14/85	8/23/85	1.2
	µg/g dry as Aroclor 1254	8/14/85	8/23/85	0.63
	µg/g dry TOTAL	8/14/85	8/23/85	1.8
Leachable Organic Carbon	µg/g	-	8/22/85	489
Dry Weight (103°C)	%	-	-	58.5

FOR RECRA ENVIRONMENTAL LABORATORIES Frederick Bogk

DATE 8/29/85

O. V. Finn

8/29/85

I.D. #85-855/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT

Report Date: 8/8/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION 5W121 016	EPA MAXIMUM CONCENTRATION (mg/l)
Total Arsenic	mg/l	7/30/85	<0.005	5.0
Total Barium	mg/l	7/30/85	0.10	100.0
Total Cadmium	mg/l	7/31/85	0.005	1.0
Total Chromium	mg/l	7/31/85	0.005	5.0
Total Lead	mg/l	8/1/85	<0.1	5.0
Total Mercury	mg/l	8/6/85	<0.001	0.2
Total Selenium	mg/l	7/30/85	<0.005	1.0
Total Silver	mg/l	8/1/85	<0.01	5.0

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Ferm

DATE 8/8/85

I.D. #85-776/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT
QUALITY CONTROL

Report Date: 8/8/85

RECOVERY ANALYSIS OF
SAMPLE 5W121 016

PARAMETER	µg OF SPIKE	µg RECOVERED	% RECOVERY
Total Arsenic	25	24	96
	50	49	98
Total Barium	2,500	2,325	93
	5,000	4,700	94
Total Cadmium	2,000	1,980	99
	3,000	2,940	98
Total Chromium	5,000	5,050	101
	10,000	10,300	103
Total Lead	5,000	5,000	100
	10,000	10,000	100
Total Mercury	0.2	0.198	99
	0.4	0.38	95
Total Selenium	25	22	88
	50	45	90
Total Silver	5,000	4,800	96
	10,000	9,700	97

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Finn

DATE 8/8/85

RCRA HAZARDOUS CHARACTERISTICS EVALUATION
performed for
O.H. MATERIALS COMPANY

Sample I.D.: 016

Report Date: 8-27-85
I.D.#: 5W-121

An evaluation of the sample for the characteristics of a hazardous waste as defined by 40 CFR Part 261 Subpart C is given below. (Note: The sample was not evaluated to determine if it is a listed hazardous waste under 40 CFR Part 261 Subpart D).

HAZARDOUS CHARACTERISTIC	DOES THE WASTE EXHIBIT THE CHARACTERISTIC?	REASON OR COMMENT
Ignitability	No	Its flash point was higher than 60°C (140°F). The sample was not a pyrophoric or spontaneously combustible liquid, a flammable compressed gas or an oxidizer. The sample was not analyzed to determine alcohol content.
Corrosivity	No	The sample was not a liquid.
Reactivity	No	The sample did not exhibit characteristics 1 through 5 or 7 of a reactive waste described in 40 CFR §261.23. The sample was not tested to determine if it was an explosive described in characteristics 6 and 8 of 40 CFR 261.23 (definition of a reactive waste).
Extraction Procedure Toxicity	Not for Metals	The EP Toxicity extract contained none of the metal contaminants listed in 40 CFR §261.24 (EP Toxicity Definition) above their maximum allowable concentrations. The extract was not tested for the pesticides or herbicides listed in the section.

WASTE CHARACTERIZATION
performed for
O.H. MATERIALS COMPANY

Summary of Results for Sample: 017

Report Date: 8-27-85
I.D.#: 5W-121

PARAMETER	RESULTS
PHYSICAL PROPERTIES	
Density @ 25°C (g/ml)	1.5
Flash Point (°F)	
Run I:	>200
Run II:	>200
Leachable pH (Std. Units)	7.2
Total Residue @ 103°C (% by wt.)	84.5
Ash Weight @ 650°C (% by wt.)	80.0
Reactivity:	
@ pH 2.0	No apparent reaction
@ pH 12.5	No apparent reaction
GENERAL COMPOSITION	
Cyanide Spot Test	Negative
Sulfide Spot Test	Negative
Oxidizer Spot Test	Negative

COMMENT: These analyses were performed in accordance with EPA/ASTM methodologies, where applicable. This sample was analyzed for evaluation as a landburial candidate.

FOR RECRA RESEARCH, INC. Constance A. Finocchi

DATE 8/29/85

RECRA RESEARCH, INC.

ANALYTICAL RESULTS

O. H. MATERIALS

Report Date: 8/29/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION
			017
Leachable Organic Carbon	µg/g	8/22/85	1,950

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Fri...

DATE 8/29/85

I.D. #85-855/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT

Report Date: 8/8/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION 5W121 017	EPA MAXIMUM CONCENTRATION (mg/l)
Total Arsenic	mg/l	7/30/85	<0.005	5.0
Total Barium	mg/l	7/30/85	0.07	100.0
Total Cadmium	mg/l	8/1/85	<0.005	1.0
Total Chromium	mg/l	8/1/85	<0.005	5.0
Total Lead	mg/l	8/1/85	<0.1	5.0
Total Mercury	mg/l	8/6/85	<0.001	0.2
Total Selenium	mg/l	7/30/85	<0.005	1.0
Total Silver	mg/l	8/1/85	<0.01	5.0

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Finn

DATE 8/8/85

I.D. #85-780/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT
QUALITY CONTROL

Report Date: 8/8/85

RECOVERY ANALYSIS OF
SAMPLE 5W121 017

<table>
<tr><th>PARAMETER</th><th>μg OF SPIKE</th><th>μg RECOVERED</th><th>% RECOVERY</th></tr>
<tr><td rowspan="2">Total Arsenic</td><td>25</td><td>22</td><td>88</td></tr>
<tr><td>50</td><td>45</td><td>90</td></tr>
<tr><td rowspan="2">Total Barium</td><td>2,500</td><td>2,000</td><td>80</td></tr>
<tr><td>5,000</td><td>4,250</td><td>85</td></tr>
<tr><td rowspan="2">Total Cadmium</td><td>2,000</td><td>2,060</td><td>103</td></tr>
<tr><td>3,000</td><td>2,910</td><td>97</td></tr>
<tr><td rowspan="2">Total Chromium</td><td>5,000</td><td>5,100</td><td>102</td></tr>
<tr><td>10,000</td><td>9,800</td><td>98</td></tr>
<tr><td rowspan="2">Total Lead</td><td>5,000</td><td>4,900</td><td>98</td></tr>
<tr><td>10,000</td><td>9,800</td><td>98</td></tr>
<tr><td rowspan="2">Total Mercury</td><td>0.2</td><td>0.2</td><td>100</td></tr>
<tr><td>0.4</td><td>0.388</td><td>97</td></tr>
<tr><td rowspan="2">Total Selenium</td><td>25</td><td>19</td><td>76</td></tr>
<tr><td>50</td><td>41</td><td>82</td></tr>
<tr><td rowspan="2">Total Silver</td><td>5,000</td><td>5,000</td><td>100</td></tr>
<tr><td>10,000</td><td>10,000</td><td>100</td></tr>
</table>

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Finn

DATE 8/8/85

I.D. #85-780/5W-121

RECRA ENVIRONMENTAL LABORATORIES

RCRA HAZARDOUS CHARACTERISTICS EVALUATION
performed for
O.H. MATERIALS COMPANY

Sample I.D.: 017

Report Date: 8-27-85
I.D.#: 5W-121

An evaluation of the sample for the characteristics of a hazardous waste as defined by 40 CFR Part 261 Subpart C is given below. (Note: The sample was not evaluated to determine if it is a listed hazardous waste under 40 CFR Part 261 Subpart D).

HAZARDOUS CHARACTERISTIC	DOES THE WASTE EXHIBIT THE CHARACTERISTIC?	REASON OR COMMENT
Ignitability	No	Its flash point was higher than 60°C (140°F). The sample was not a pyrophoric or spontaneously combustible liquid, a flammable compressed gas or an oxidizer. The sample was not analyzed to determine alcohol content.
Corrosivity	No	The sample was not a liquid.
Reactivity	No	The sample did not exhibit characteristics 1 through 5 or 7 of a reactive waste described in 40 CFR §261.23. The sample was not tested to determine if it was an explosive described in characteristics 6 and 8 of 40 CFR 261.23 (definition of a reactive waste).
Extraction Procedure Toxicity	Not for Metals	The EP Toxicity extract contained none of the metal contaminants listed in 40 CFR §261.24 (EP Toxicity Definition) above their maximum allowable concentrations. The extract was not tested for the pesticides or herbicides listed in the section.

1/2485

WASTE CHARACTERIZATION
performed for
O.H. MATERIALS COMPANY

Summary of Results for Sample: 018

Report Date: 8-27-85
I.D.#: 5W-121

PARAMETER	RESULTS
PHYSICAL PROPERTIES	
Density @ 25°C (g/ml)	1.2
Flash Point (°F)	
Run I:	>200
Run II:	>200
Leachable pH (Std. Units)	6.9
Total Residue @ 103°C (% by wt.)	87.9
Ash Weight @ 650°C (% by wt.)	85.9
Reactivity:	
@ pH 2.0	No apparent reaction
@ pH 12.5	No apparent reaction
GENERAL COMPOSITION	
Cyanide Spot Test	Negative
Sulfide Spot Test	Negative
Oxidizer Spot Test	Negative

COMMENT: These analyses were performed in accordance with EPA/ASTM methodologies, where applicable. This sample was analyzed for evaluation as a landburial candidate.

FOR RECRA RESEARCH, INC. Constance A. Finocchi

DATE 8/29/85

RECRA RESEARCH, INC.

ANALYTICAL RESULTS

O. H. MATERIALS

Report Date: 8/29/85

PARAMETER	UNITS OF MEASURE	EXTRACTION DATE	ANALYSIS DATE	SAMPLE IDENTIFICATION 018
Halogenated Organic Scan (ECD)	µg/g dry as Chlorine; Lindane Standard	8/14/85	8/23/85	0.062
Total Polychlorinated Biphenyls	µg/g dry as Aroclor 1254	8/14/85	8/23/85	<0.1
Leachable Organic Carbon	µg/g	-	8/22/85	1,190
Dry Weight (103°C)	%	-	-	88.7

FOR RECRA ENVIRONMENTAL LABORATORIES Frederick Bozek

DATE 8/29/85

Q. V. Z[illegible]

8/29/85

I.D. #85-855/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT

Report Date: 8/8/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION 5W121 018	EPA MAXIMUM CONCENTRATION (mg/1)
Total Arsenic	mg/1	7/30/85	<0.005	5.0
Total Barium	mg/1	7/30/85	0.06	100.0
Total Cadmium	mg/1	8/1/85	<0.02	1.0
Total Chromium	mg/1	8/1/85	<0.02	5.0
Total Lead	mg/1	8/1/85	<0.1	5.0
Total Mercury	mg/1	8/6/85	<0.001	0.2
Total Selenium	mg/1	7/30/85	<0.005	1.0
Total Silver	mg/1	8/1/85	0.05	5.0

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Ferrin

DATE 8/8/85

I.D. #85-780/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT
QUALITY CONTROL

Report Date: 8/8/85

RECOVERY ANALYSIS OF
SAMPLE 5W121 018

PARAMETER	µg OF SPIKE	µg RECOVERED	% RECOVERY
Total Arsenic	25	22	100
	50	48	96
Total Barium	2,500	2,175	87
	5,000	4,350	87
Total Cadmium	2,000	2,000	100
	3,000	3,000	100
Total Chromium	5,000	5,200	104
	10,000	10,500	105
Total Lead	5,000	5,000	100
	10,000	10,100	101
Total Mercury	0.2	0.186	93
	0.4	0.396	99
Total Selenium	25	22	88
	50	41	82
Total Silver	5,000	5,000	100
	10,000	8,400	84

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Finn

DATE 8/8/85

I.D. #85-780/5W-121

RECRA ENVIRONMENTAL LABORATORIES

RCRA HAZARDOUS CHARACTERISTICS EVALUATION
performed for
O.H. MATERIALS COMPANY

Sample I.D.: 018

Report Date: 8-27-85
I.D.#: 5W-121

An evaluation of the sample for the characteristics of a hazardous waste as defined by 40 CFR Part 261 Subpart C is given below. (Note: The sample was not evaluated to determine if it is a listed hazardous waste under 40 CFR Part 261 Subpart D).

HAZARDOUS CHARACTERISTIC	DOES THE WASTE EXHIBIT THE CHARACTERISTIC?	REASON OR COMMENT
Ignitability	No	Its flash point was higher than 60°C (140°F). The sample was not a pyrophoric or spontaneously combustible liquid, a flammable compressed gas or an oxidizer. The sample was not analyzed to determine alcohol content.
Corrosivity	No	The sample was not a liquid.
Reactivity	No	The sample did not exhibit characteristics 1 through 5 or 7 of a reactive waste described in 40 CFR §261.23. The sample was not tested to determine if it was an explosive described in characteristics 6 and 8 of 40 CFR 261.23 (definition of a reactive waste).
Extraction Procedure Toxicity	Not for Metals	The EP Toxicity extract contained none of the metal contaminants listed in 40 CFR §261.24 (EP Toxicity Definition) above their maximum allowable concentrations. The extract was not tested for the pesticides or herbicides listed in the section.

WASTE CHARACTERIZATION
performed for
O.H. MATERIALS COMPANY

Summary of Results for Sample: 019

Report Date: 8-27-85
I.D.#: 5W-121

PARAMETER	RESULTS
PHYSICAL PROPERTIES	
Density @ 25°C (g/ml)	1.6
Flash Point (°F)	
Run I:	>200
Run II:	>200
Leachable pH (Std. Units)	7.3
Total Residue @ 103°C (% by wt.)	85.1
Ash Weight @ 650°C (% by wt.)	83.0
Reactivity:	
@ pH 2.0	No apparent reaction
@ pH 12.5	No apparent reaction
GENERAL COMPOSITION	
Cyanide Spot Test	Negative
Sulfide Spot Test	Negative
Oxidizer Spot Test	Negative

COMMENT: These analyses were performed in accordance with EPA/ASTM methodologies, where applicable. This sample was analyzed for evaluation as a landburial candidate.

FOR RECRA RESEARCH, INC. Constance A. Finocchi

DATE 8/29/85

RECRA RESEARCH, INC.

ANALYTICAL RESULTS

O. H. MATERIALS

Report Date: 8/29/85

PARAMETER	UNITS OF MEASURE	EXTRACTION DATE	ANALYSIS DATE	SAMPLE IDENTIFICATION 019
Halogenated Organic Scan (ECD)	μg/g dry as Chlorine; Lindane Standard	8/14/85	8/23/85	0.057
Total Polychlorinated Biphenyls	μg/g dry as Aroclor 1254	8/14/85	8/23/85	<0.1
Leachable Organic Carbon	μg/g	-	8/22/85	632
Dry Weight (103°C)	%	-	-	83.8

FOR RECRA ENVIRONMENTAL LABORATORIES Frederick Boyle

DATE 8/29/85

R. V. Fr[illegible]

8/29/85

I.D. #85-855/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT

Report Date: 8/8/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION 5W121 019	EPA MAXIMUM CONCENTRATION (mg/l)
Total Arsenic	mg/l	7/30/85	<0.005	5.0
Total Barium	mg/l	7/30/85	0.08	100.0
Total Cadmium	mg/l	8/1/85	<0.02	1.0
Total Chromium	mg/l	8/1/85	<0.02	5.0
Total Lead	mg/l	8/1/85	<0.1	5.0
Total Mercury	mg/l	8/6/85	<0.001	0.2
Total Selenium	mg/l	7/30/85	<0.005	1.0
Total Silver	mg/l	8/1/85	0.03	5.0

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Finn

DATE 8/8/85

I.D. #85-780/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT
QUALITY CONTROL

Report Date: 8/8/85

RECOVERY ANALYSIS OF
SAMPLE 5W121 019

PARAMETER	μg OF SPIKE	μg RECOVERED	% RECOVERY
Total Arsenic	25	22	88
	50	51	102
Total Barium	2,500	1,775	71
	5,000	4,300	86
Total Cadmium	2,000	2,000	100
	3,000	3,000	100
Total Chromium	5,000	5,150	103
	10,000	10,400	104
Total Lead	5,000	4,900	98
	10,000	10,200	102
Total Mercury	0.2	0.224	112
	0.4	0.396	99
Total Selenium	25	20	80
	50	45	90
Total Silver	5,000	4,200	84
	10,000	10,000	100

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Finn

DATE 8/8/85

I.D. #85-780/5W-121

RECRA ENVIRONMENTAL LABORATORIES

RCRA HAZARDOUS CHARACTERISTICS EVALUATION
performed for
O.H. MATERIALS COMPANY

Sample I.D.: 019

Report Date: 8-27-85
I.D.#: 5W-121

An evaluation of the sample for the characteristics of a hazardous waste as defined by 40 CFR Part 261 Subpart C is given below. (Note: The sample was not evaluated to determine if it is a listed hazardous waste under 40 CFR Part 261 Subpart D).

HAZARDOUS CHARACTERISTIC	DOES THE WASTE EXHIBIT THE CHARACTERISTIC?	REASON OR COMMENT
Ignitability	No	Its flash point was higher than 60°C (140°F). The sample was not a pyrophoric or spontaneously combustible liquid, a flammable compressed gas or an oxidizer. The sample was not analyzed to determine alcohol content.
Corrosivity	No	The sample was not a liquid.
Reactivity	No	The sample did not exhibit characteristics 1 through 5 or 7 of a reactive waste described in 40 CFR §261.23. The sample was not tested to determine if it was an explosive described in characteristics 6 and 8 of 40 CFR 261.23 (definition of a reactive waste).
Extraction Procedure Toxicity	Not for Metals	The EP Toxicity extract contained none of the metal contaminants listed in 40 CFR §261.24 (EP Toxicity Definition) above their maximum allowable concentrations. The extract was not tested for the pesticides or herbicides listed in the section.

RECRA RESEARCH, INC.

WASTE CHARACTERIZATION
performed for
O.H. MATERIALS COMPANY

Summary of Results for Sample: 020

Report Date: 8-27-85
I.D.#: 5W-121

PARAMETER	RESULTS
PHYSICAL PROPERTIES	
Density @ 25°C (g/ml)	1.3
Flash Point (°F)	
Run I:	>200
Run II:	>200
Leachable pH (Std. Units)	8.2
Total Residue @ 103°C (% by wt.)	91.0
Ash Weight @ 650°C (% by wt.)	88.7
Reactivity:	
@ pH 2.0	No apparent reaction
@ pH 12.5	No apparent reaction
GENERAL COMPOSITION	
Cyanide Spot Test	Negative
Sulfide Spot Test	Negative
Oxidizer Spot Test	Negative

COMMENT: These analyses were performed in accordance with EPA/ASTM methodologies, where applicable. This sample was analyzed for evaluation as a landburial candidate.

FOR RECRA RESEARCH, INC. Constance A. Finocchi

DATE 8/29/85

RECRA RESEARCH, INC.

ANALYTICAL RESULTS

O. H. MATERIALS

Report Date: 8/29/85

PARAMETER	UNITS OF MEASURE	EXTRACTION DATE	ANALYSIS DATE	SAMPLE IDENTIFICATION 020
Halogenated Organic Scan (ECD)	µg/g dry as Chlorine; Lindane Standard	8/14/85	8/23/85	0.078
Total Polychlorinated Biphenyls	µg/g dry as Aroclor 1254	8/14/85	8/23/85	<0.1
Leachable Organic Carbon	µg/g	-	8/22/85	490
Dry Weight (103°C)	%	-	-	91.5

FOR RECRA ENVIRONMENTAL LABORATORIES Frederick Bogle

DATE 8/29/85

R. V. Zim

8/29/85

I.D. #85-855/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT

Report Date: 8/8/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION 5W121 020	EPA MAXIMUM CONCENTRATION (mg/l)
Total Arsenic	mg/l	7/30/85	0.007	5.0
Total Barium	mg/l	7/30/85	0.08	100.0
Total Cadmium	mg/l	8/1/85	<0.02	1.0
Total Chromium	mg/l	8/1/85	<0.02	5.0
Total Lead	mg/l	8/1/85	<0.1	5.0
Total Mercury	mg/l	8/6/85	<0.001	0.2
Total Selenium	mg/l	7/30/85	<0.005	1.0
Total Silver	mg/l	8/1/85	<0.01	5.0

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Finn

DATE 8/8/85

I.D. #85-780/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT
QUALITY CONTROL

Report Date: 8/8/85

RECOVERY ANALYSIS OF
SAMPLE 5W121 020

PARAMETER	µg OF SPIKE	µg RECOVERED	% RECOVERY
Total Arsenic	25	24.5	98
	50	56	112
Total Barium	2,500	1,975	79
	5,000	4,500	90
Total Cadmium	2,000	2,000	100
	3,000	3,000	100
Total Chromium	5,000	5,250	105
	10,000	10,700	107
Total Lead	5,000	4,900	98
	10,000	10,200	102
Total Mercury	0.2	0.186	93
	0.4	0.392	98
Total Selenium	25	24	96
	50	46	92
Total Silver	5,000	4,950	99
	10,000	9,700	97

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Finn

DATE 8/8/85

RCRA HAZARDOUS CHARACTERISTICS EVALUATION
performed for
O.H. MATERIALS COMPANY

Sample I.D.: 020

Report Date: 8-27-85
I.D.#: 5W-121

An evaluation of the sample for the characteristics of a hazardous waste as defined by 40 CFR Part 261 Subpart C is given below. (Note: The sample was not evaluated to determine if it is a listed hazardous waste under 40 CFR Part 261 Subpart D).

HAZARDOUS CHARACTERISTIC	DOES THE WASTE EXHIBIT THE CHARACTERISTIC?	REASON OR COMMENT
Ignitability	No	Its flash point was higher than 60°C (140°F). The sample was not a pyrophoric or spontaneously combustible liquid, a flammable compressed gas or an oxidizer. The sample was not analyzed to determine alcohol content.
Corrosivity	No	The sample was not a liquid.
Reactivity	No	The sample did not exhibit characteristics 1 through 5 or 7 of a reactive waste described in 40 CFR §261.23. The sample was not tested to determine if it was an explosive described in characteristics 6 and 8 of 40 CFR 261.23 (definition of a reactive waste).
Extraction Procedure Toxicity	Not for Metals	The EP Toxicity extract contained none of the metal contaminants listed in 40 CFR §261.24 (EP Toxicity Definition) above their maximum allowable concentrations. The extract was not tested for the pesticides or herbicides listed in the section.

WASTE CHARACTERIZATION
performed for
O.H. MATERIALS COMPANY

Summary of Results for Sample: 021

Report Date: 8-27-85
I.D.#: 5W-121

PARAMETER	RESULTS
PHYSICAL PROPERTIES	
Density @ 25°C (g/ml)	1.3
Flash Point (°F)	
Run I:	>200
Run II:	>200
Leachable pH (Std. Units)	6.9
Total Residue @ 103°C (% by wt.)	94.1
Ash Weight @ 650°C (% by wt.)	92.5
Reactivity:	
@ pH 2.0	No apparent reaction
@ pH 12.5	No apparent reaction
GENERAL COMPOSITION	
Cyanide Spot Test	Negative
Sulfide Spot Test	Negative
Oxidizer Spot Test	Negative

COMMENT: These analyses were performed in accordance with EPA/ASTM methodologies, where applicable. This sample was analyzed for evaluation as a landburial candidate.

FOR RECRA RESEARCH, INC. Constance A. Finocchi

DATE 8/29/85

RECRA RESEARCH, INC.

ANALYTICAL RESULTS

O. H. MATERIALS

Report Date: 8/29/85

PARAMETER	UNITS OF MEASURE	EXTRACTION DATE	ANALYSIS DATE	SAMPLE IDENTIFICATION 021
Halogenated Organic Scan (ECD)	µg/g dry as Chlorine; Lindane Standard	8/14/85	8/24/85	0.014
Total Polychlorinated Biphenyls	µg/g dry as Aroclor 1254	8/14/85	8/24/85	<0.1
Leachable Organic Carbon	µg/g	-	8/22/85	<200
Dry Weight (103°C)	%	-	-	93.7

FOR RECRA ENVIRONMENTAL LABORATORIES Frederick Bozek

DATE 8/29/85

D M Firm

8/29/85

I.D. #85-855/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT

Report Date: 8/8/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION 5W121 021	EPA MAXIMUM CONCENTRATION (mg/1)
Total Arsenic	mg/1	7/30/85	<0.005	5.0
Total Barium	mg/1	7/30/85	<0.04	100.0
Total Cadmium	mg/1	8/1/85	<0.02	1.0
Total Chromium	mg/1	8/1/85	<0.02	5.0
Total Lead	mg/1	8/1/85	<0.1	5.0
Total Mercury	mg/1	8/6/85	<0.001	0.2
Total Selenium	mg/1	7/30/85	<0.005	1.0
Total Silver	mg/1	8/1/85	0.02	5.0

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Finn

DATE 8/8/85

I.D. #85-780/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT
QUALITY CONTROL

Report Date: 8/8/85

RECOVERY ANALYSIS OF
SAMPLE 5W121 021

PARAMETER	µg OF SPIKE	µg RECOVERED	% RECOVERY
Total Arsenic	25	24	96
	50	49	98
Total Barium	2,500	2,225	89
	5,000	4,250	85
Total Cadmium	2,000	2,000	100
	3,000	3,000	100
Total Chromium	5,000	5,000	100
	10,000	10,200	102
Total Lead	5,000	4,850	97
	10,000	10,200	102
Total Mercury	0.2	0.212	106
	0.4	0.396	99
Total Selenium	25	19	76
	50	42	84
Total Silver	5,000	4,700	94
	10,000	9,900	99

FOR RECRA ENVIRONMENTAL LABORATORIES R. V. Fina

DATE 8/8/85

I.D. #85-780/5W-121

RECRA ENVIRONMENTAL LABORATORIES

RCRA HAZARDOUS CHARACTERISTICS EVALUATION
performed for
O.H. MATERIALS COMPANY

Sample I.D.: 021

Report Date: 8-27-85
I.D.#: 5W-121

An evaluation of the sample for the characteristics of a hazardous waste as defined by 40 CFR Part 261 Subpart C is given below. (Note: The sample was not evaluated to determine if it is a listed hazardous waste under 40 CFR Part 261 Subpart D).

HAZARDOUS CHARACTERISTIC	DOES THE WASTE EXHIBIT THE CHARACTERISTIC?	REASON OR COMMENT
Ignitability	No	Its flash point was higher than 60°C (140°F). The sample was not a pyrophoric or spontaneously combustible liquid, a flammable compressed gas or an oxidizer. The sample was not analyzed to determine alcohol content.
Corrosivity	No	The sample was not a liquid.
Reactivity	No	The sample did not exhibit characteristics 1 through 5 or 7 of a reactive waste described in 40 CFR §261.23. The sample was not tested to determine if it was an explosive described in characteristics 6 and 8 of 40 CFR 261.23 (definition of a reactive waste).
Extraction Procedure Toxicity	Not for Metals	The EP Toxicity extract contained none of the metal contaminants listed in 40 CFR §261.24 (EP Toxicity Definition) above their maximum allowable concentrations. The extract was not tested for the pesticides or herbicides listed in the section.

RECRA RESEARCH, INC.

WASTE CHARACTERIZATION
performed for
O.H. MATERIALS COMPANY

Summary of Results for Sample: 022

Report Date: 8-27-85
I.D.#: 5W-121

PARAMETER	RESULTS
PHYSICAL PROPERTIES	
Density @ 25°C (g/ml)	2.0
Flash Point (°F)	
Run I:	>200
Run II:	>200
Leachable pH (Std. Units)	7.4
Total Residue @ 103°C (% by wt.)	86.4
Ash Weight @ 650°C (% by wt.)	84.8
Reactivity:	
@ pH 2.0	No apparent reaction
@ pH 12.5	No apparent reaction
GENERAL COMPOSITION	
Cyanide Spot Test	Negative
Sulfide Spot Test	Negative
Oxidizer Spot Test	Negative

COMMENT: These analyses were performed in accordance with EPA/ASTM methodologies, where applicable. This sample was analyzed for evaluation as a landburial candidate.

FOR RECRA RESEARCH, INC. Constance A. Finocchi

DATE 8/29/85

RECRA RESEARCH, INC.

ANALYTICAL RESULTS

O. H. MATERIALS

Report Date: 8/29/85

PARAMETER	UNITS OF MEASURE	EXTRACTION DATE	ANALYSIS DATE	SAMPLE IDENTIFICATION 022
Halogenated Organic Scan (ECD)	µg/g dry as Chlorine; Lindane Standard	8/14/85	8/24/85	0.042
Total Polychlorinated Biphenyls	µg/g dry as Aroclor 1254	8/14/85	8/24/85	<0.1
Leachable Organic Carbon	µg/g	-	8/22/85	1,230
Dry Weight (103°C)	%	-	-	85.8

FOR RECRA ENVIRONMENTAL LABORATORIES Frederick Boyle

DATE 8/29/85

D. N. Fein

8/29/85

I.D. #85-855/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT

Report Date: 8/8/85

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION	EPA MAXIMUM CONCENTRATION (mg/1)
			5W121 022	
Total Arsenic	mg/1	7/30/85	<0.005	5.0
Total Barium	mg/1	7/30/85	0.07	100.0
Total Cadmium	mg/1	8/1/85	<0.02	1.0
Total Chromium	mg/1	8/1/85	<0.02	5.0
Total Lead	mg/1	8/1/85	<0.1	5.0
Total Mercury	mg/1	8/6/85	<0.001	0.2
Total Selenium	mg/1	7/30/85	<0.005	1.0
Total Silver	mg/1	8/1/85	0.01	5.0

FOR RECRA ENVIRONMENTAL LABORATORIES [signature]

DATE 8/8/85

I.D. #85-780/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT
QUALITY CONTROL

Report Date: 8/8/85

RECOVERY ANALYSIS OF
SAMPLE 5W121 022

PARAMETER	μg OF SPIKE	μg RECOVERED	% RECOVERY
Total Arsenic	25	25	100
	50	53	106
Total Barium	2,500	1,950	78
	5,000	3,750	75
Total Cadmium	2,000	2,000	100
	3,000	3,000	100
Total Chromium	5,000	5,000	100
	10,000	10,200	102
Total Lead	5,000	4,850	97
	10,000	10,000	100
Total Mercury	0.2	0.214	107
	0.4	0.408	102
Total Selenium	25	20	80
	50	43	86
Total Silver	5,000	4,950	99
	10,000	9,800	98

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Fivin

DATE 8/8/85

RCRA HAZARDOUS CHARACTERISTICS EVALUATION
performed for
O.H. MATERIALS COMPANY

Sample I.D.: 022

Report Date: 8-27-85
I.D.#: 5W-121

An evaluation of the sample for the characteristics of a hazardous waste as defined by 40 CFR Part 261 Subpart C is given below. (Note: The sample was not evaluated to determine if it is a listed hazardous waste under 40 CFR Part 261 Subpart D).

HAZARDOUS CHARACTERISTIC	DOES THE WASTE EXHIBIT THE CHARACTERISTIC?	REASON OR COMMENT
Ignitability	No	Its flash point was higher than 60°C (140°F). The sample was not a pyrophoric or spontaneously combustible liquid, a flammable compressed gas or an oxidizer. The sample was not analyzed to determine alcohol content.
Corrosivity	No	The sample was not a liquid.
Reactivity	No	The sample did not exhibit characteristics 1 through 5 or 7 of a reactive waste described in 40 CFR §261.23. The sample was not tested to determine if it was an explosive described in characteristics 6 and 8 of 40 CFR 261.23 (definition of a reactive waste).
Extraction Procedure Toxicity	Not for Metals	The EP Toxicity extract contained none of the metal contaminants listed in 40 CFR §261.24 (EP Toxicity Definition) above their maximum allowable concentrations. The extract was not tested for the pesticides or herbicides listed in the section.

ANALYTICAL RESULTS

O. H. MATERIALS
QUALITY CONTROL

Report Date: 8/29/85

REPLICATE LEACHABLE ORGANIC CARBON ANALYSIS

SAMPLE IDENTIFICATION	UNITS OF MEASURE	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION	PERCENT COEFFICIENT OF VARIATION
005	µg/g	1,554	1,554	1,554	0	0
011	µg/g	2,115	2,115	2,115	0	0

LEACHABLE ORGANIC CARBON RECOVERY ANALYSIS

SAMPLE IDENTIFICATION	µg OF SPIKE	µg RECOVERED	% RECOVERY
005	100	96.0	96.0
011	100	104.8	104.8

FOR RECRA ENVIRONMENTAL LABORATORIES R. V. Finn

DATE 8/29/85

I.D. #85-855/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
QUALITY CONTROL

Report Date: 8/29/85

RECOVERY ANALYSIS OF
METHOD BLANK SPIKE

PARAMETER	ng OF SPIKE	ng RECOVERED	% RECOVERY
Halogenated Organic Scan - ECD (Lindane Standard)	0.20	0.21	105
Polychlorinated Biphenyls (Aroclor 1254)	1.0	1.02	102

FOR RECRA ENVIRONMENTAL LABORATORIES Frederick Bozek

DATE 8/29/85

I.D. #85-855/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT

Report Date: 8/8/85

COMMENTS:

Comments pertain to data on one or all pages of this report.

Methods used for the EP Toxicity Test procedure as well as the analysis of the resulting extract were presented in U.S. Environmental Protection Agency publication, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods; SW-846, Second Edition, 1982. Metals analyses were performed utilizing the method of standard addition. Values reported as "less than" (<) indicate the working detection limit for the particular sample or parameter.

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Finn

DATE 8/8/85

I.D. #85-780/5W-121

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS

Report Date: 8/29/85

COMMENTS:

Comments pertain to data on one or all pages of this report.

Values reported as "less than" (<) indicate the working detection limit for the particular sample and/or parameter.

Halogenated Organic Scan (ECD) results are used for screening purposes only and are not designed for qualification or quantification of any specific organic compound. Results are calculated based upon the chlorine content and response factor of Lindane but do not imply either the presence or absence of Lindane itself. Halogenated Organic Scan results do not include volatile organic constituents.

The chromatograms of the samples for PCB analyses were qualitatively screened for the presence of nine PCB mixtures (Aroclors). These include Aroclor 1016, 1221, 1232, 1242, 1248, 1254, 1260, 1262 and 1268.

Halogenated Organic Scan (ECD) and PCB results are corrected for moisture content and reported on a dry weight basis.

The result reported as Total Polychlorinated Biphenyls is the summation of all positive values.

Leachable organic carbon analysis was performed by mixing 1.0 grams of sample with 200 mls of deionized water for 0.5 hours. The mixture was allowed to settle and the resulting water layer was analyzed according to U.S. Environmental Protection Agency methodologies.

FOR RECRA ENVIRONMENTAL LABORATORIES Frederick Boyle

DATE 8/29/85

I.D. #85-855/5W-121

RECRA ENVIRONMENTAL LABORATORIES

APPENDIX C

WORK ORDER NUMBERS AND WEIGHT OF MATERIAL DISPOSED AT CECOS INTERNATIONAL, INC.

TABLE C.1

MATERIAL REMOVED FROM TRASH AREA-C
AND DISPOSED AT CECOS

Date	Work Order		Weight (Tons)
12/12	162646		16.47
	162647		15.86
	162648		17.04
	162649		14.23
	162650		16.16
		TOTAL	79.76

TABLE C.2

MATERIAL REMOVED FROM CDS
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
9/4	161070	23.03	
	161071	17.11	
	161072	22.80	
	161073	22.21	
	161074	20.54	
	161075	26.64	
	161076	23.27	
		Subtotal	155.60
9/5	161077	23.15	
	161078	23.34	
	161079	22.08	
	161080	21.94	
	161081	17.99	
	161082	22.33	
		Subtotal	130.83
9/6	161083	21.43	
	160101	21.43	
	160102	19.80	
	160103	19.00	
	160104	18.31	
	160105	18.25	
	160106	22.91	
	160107	18.58	
		Subtotal	159.71
9/9	160108	17.03	
	161103	21.25	
	161104	20.32	
	161105	18.15	
	161106	20.09	
	161110	19.96	
	161111	20.38	
	161112	21.28	
	161113	18.78	
	161117	21.82	
	161118	15.81	
	161119	19.28	
		Subtotal	234.15

TABLE C.2 (CONTINUED)

MATERIAL REMOVED FROM CDS
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
9/10	161120	17.42	
	161121	20.09	
	161122	19.71	
	161123	21.65	
	161124	19.53	
	161125	18.33	
	161126	19.23	
	161127	22.08	
		Subtotal	158.04
9/11	161128	19.18	
	161129	21.43	
	161130	22.33	
	161131	22.66	
	161132	20.32	
	161133	19.00	
	161134	17.83	
	161140	23.45	
	161141	21.18	
	161142	17.66	
	161143	20.85	
	161144	22.86	
	161145	23.02	
	161146	17.52	
	161147	19.91	
	161148	20.89	
	161149	23.04	
	161150	23.06	
	161151	20.02	
	161152	19.58	
	161153	20.81	
		Subtotal	436.60
9/12	161154	21.42	
	158378	20.00	
	158379	22.28	
	158380	21.63	
	158381	21.84	
	158382	21.02	
	158383	20.21	
	158384	21.44	

TABLE C.2 (CONTINUED)

MATERIAL REMOVED FROM CDS
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
9/12	158385	19.68	
	158395	19.11	
	158396	20.67	
	158397	20.11	
		Subtotal	249.41
9/13	158398	20.34	
	158399	20.86	
	158400	20.88	
	158401	21.56	
	158402	21.90	
	158403	21.76	
	158404	21.84	
	158405	20.32	
	158406	23.75	
	158407	23.60	
	158408	21.89	
	158409	19.99	
	158410	21.98	
	158411	21.65	
	158412	20.97	
	158413	19.57	
	158414	19.91	
		Subtotal	362.77
9/14	158415	23.22	
	158416	20.25	
		Subtotal	43.47
9/16	158417	18.94	
	158418	20.87	
	158419	21.48	
	158420	22.88	
	158421	22.51	
	158448	19.53	
	158449	26.73	
	158450	24.22	
	158451	19.05	
	158452	20.79	
	158453	18.99	
	158454	18.34	
	158455	20.25	

TABLE C.2 (CONTINUED)

MATERIAL REMOVED FROM CDS
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
9/18	158528	22.00	
	158525	20.94	
	158526	19.08	
	158523	22.65	
	158524	18.70	
	158521	18.63	
	158522	23.43	
	158519	19.29	
	158520	20.68	
	158517	18.21	
	158518	20.95	
	158515	22.83	
	158516	19.22	
	158513	21.00	
	158514	21.99	
	158511	18.77	
	158512	21.06	
	158509	23.78	
	158510	24.78	
		Subtotal	631.51
9/19	158579	20.00	
	158577	20.54	
	158576	19.94	
	158575	18.71	
	158572	20.87	
	158571	20.83	
	158570	22.66	
	158560	21.31	
	158568	23.34	
	158567	22.81	
	158566	20.89	
	158565	19.28	
	158564	20.43	
	158573	22.98	
	158580	21.27	
	158578	20.18	
	158574	20.46	
		Subtotal	356.50

TABLE C.2 (CONTINUED)

MATERIAL REMOVED FROM CDS
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
9/20	158581	19.13	
	158594	20.34	
	158595	20.65	
	158596	20.76	
	158597	20.71	
	158598	21.51	
	158599	20.94	
	158600	22.22	
	158601	20.72	
	158602	20.34	
	158603	22.62	
	158604	21.15	
	158605	21.53	
	158606	25.08	
	158607	22.69	
	158608	20.47	
	158609	21.74	
	158610	23.93	
	158611	21.39	
	158612	19.70	
	158613	22.20	
	158614	19.55	
	158615	21.11	
	158616	22.24	
	158617	21.24	
	158618	21.75	
	161212	20.79	
	161213	21.09	
		Subtotal	597.59
9/21	161214	21.56	
	161215	19.47	
	161216	20.69	
		Subtotal	61.72
9/23	161217	20.05	
	161218	22.66	
	161219	21.74	
	161220	21.04	
	161221	20.37	
	161222	20.91	
	161223	21.34	
	161224	22.29	

TABLE C.2 (CONTINUED)

MATERIAL REMOVED FROM CDS
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
9/23	161225	21.07	
	161226	19.92	
	161227	20.31	
	161228	20.68	
	161229	19.73	
	161247	18.41	
	161248	21.51	
	161249	20.42	
	161250	21.52	
	161251	21.48	
	161252	21.80	
	161253	19.95	
	161254	22.70	
	161255	22.73	
	161256	19.00	
	161257	18.82	
	161258	20.49	
	161259	23.72	
	161260	22.98	
	161261	21.54	
		Subtotal	598.18
9/24	161262	23.29	
	161263	21.15	
	161264	20.54	
	161265	21.75	
	161266	21.63	
	161267	21.15	
	161268	20.16	
	161269	19.87	
	161270	21.61	
	161271	22.45	
	161272	21.70	
	161273	22.88	
	161274	22.72	
	161275	18.98	
	161276	19.08	
	161277	17.19	
	161278	19.62	
	161287	19.48	
	161288	20.38	
		Subtotal	395.63

TABLE C.2 (CONTINUED)

MATERIAL REMOVED FROM CDS
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
9/25	161314	20.79	
	161313	19.97	
	161312	21.74	
	161311	20.38	
	161310	21.68	
	161306	21.54	
	161305	21.61	
	161304	20.12	
	161303	23.64	
	161302	21.64	
	161301	22.28	
	161300	22.86	
	161299	22.19	
	161298	21.33	
	161297	23.30	
	161296	21.47	
	161295	18.80	
	161294	19.34	
	161293	21.64	
	161292	19.52	
	161291	20.21	
	161290	21.59	
	161289	22.44	
		Subtotal	490.08
9/26	161315	22.44	
	161316	21.32	
	161317	21.62	
	161318	22.24	
	161319	24.75	
	161320	18.96	
	161321	21.58	
	161322	21.83	
	161323	20.47	
	161324	20.77	
	161325	20.35	
	161326	20.78	
	161327	22.46	
		Subtotal	279.57

TABLE C.2 (CONTINUED)

MATERIAL REMOVED FROM CDS
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
9/28	161337	21.14	
	161338	20.33	
	161335	22.45	
	161336	21.38	
	161333	23.33	
	161334	21.76	
	161331	24.33	
	161332	22.75	
	161328	18.55	
	161329	18.99	
	161330	22.07	
		Subtotal	237.08
9/30	161339	19.12	
	161355	22.07	
	161340	22.57	
	161357	21.13	
	161356	19.84	
	161359	21.26	
	161358	22.00	
	161361	20.56	
	161360	22.49	
	161363	20.76	
	161362	22.15	
	161365	20.43	
	161364	19.88	
	161366	19.72	
	161367	19.47	
	161370	20.64	
	161369	20.50	
	161368	20.49	
		Subtotal	375.08
10/1	161371	20.25	
	161372	19.82	
	161373	20.58	
	161374	20.95	
	158729	20.73	
	158730	20.48	
	158731	19.93	
	158732	20.60	
	158733	21.68	
	158734	20.77	

TABLE C.2 (CONTINUED)

MATERIAL REMOVED FROM CDS
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
10/1	158735	22.38	
	158736	21.31	
	158737	22.27	
	158738	20.98	
	158739	21.59	
	158740	22.17	
	158741	21.34	
	158742	21.55	
		Subtotal	379.38
10/2	158743	18.68	
	158744	20.54	
	158745	20.89	
	158746	23.24	
	158747	22.07	
	158748	22.55	
		Subtotal	127.97
10/8	158749	21.04	
	158750	22.25	
	158751	21.79	
	158752	17.27	
	158769	17.62	
	158770	23.66	
	158771	20.85	
	158772	22.16	
	158773	22.05	
	158774	21.83	
	158775	23.89	
	158776	19.19	
	158777	18.10	
	158778	19.78	
	158779	20.93	
	158780	15.52	
	158781	18.66	
	158837	20.69	
	158838	19.20	
	158839	24.41	
	158840	22.30	
	158841	16.39	
	158842	20.35	
	158843	16.35	
		Subtotal	486.28

TABLE C.2 (CONTINUED)

MATERIAL REMOVED FROM CDS
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
10/9	158844	19.93	
	158845	17.29	
	158846	23.63	
	158847	16.86	
	158848	20.16	
	158849	20.73	
	158850	22.25	
	158851	22.82	
	158923	22.05	
	158924	15.51	
	158925	19.95	
		Subtotal	221.18
10/10	158926	22.93	
	158927	23.20	
	158928	23.55	
	158929	21.01	
	158930	20.88	
	158931	19.14	
	158932	17.08	
	158933	19.82	
	158934	20.20	
	158935	22.83	
	158936	20.90	
	158937	17.10	
	158938	23.12	
	158939	22.21	
	158940	19.22	
	158941	19.58	
	158942	20.20	
	158943	19.99	
	158944	22.21	
	158945	21.05	
	158946	19.20	
	158947	20.39	
	158948	17.32	
	158949	18.01	
	158950	18.43	
		Subtotal	509.57
10/11	158951	22.18	
	158952	20.50	
	158953	22.30	
	158954	19.61	
	158955	19.80	

TABLE C.2 (CONTINUED)

MATERIAL REMOVED FROM CDS
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
10/11	158956	18.44	
	158957	21.43	
	158958	20.81	
	158959	19.22	
	161487	22.43	
		Subtotal	206.72
10/12	161488	21.31	
	161489	24.31	
	161490	21.91	
	161491	21.64	
	161492	20.48	
	161493	23.36	
	161494	21.99	
	161495	21.34	
	161496	19.07	
	161497	17.81	
		Subtotal	213.22
10/14	161498	17.60	
	161499	19.82	
	161500	20.49	
	161501	18.96	
	161502	19.49	
	161503	20.78	
	161504	18.48	
	161505	22.80	
	161506	28.75	
	161507	21.99	
	161508	21.90	
	161509	21.17	
	161510	21.48	
	161511	20.28	
	161512	19.61	
	161513	20.48	
	161514	21.54	
	161515	20.10	
	161516	18.24	
	161517	20.58	
	161518	18.50	
		Subtotal	433.04

TABLE C.2 (CONTINUED)

MATERIAL REMOVED FROM CDS
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
10/15	161519	18.42	
	161520	22.85	
	161521	24.42	
	161522	24.67	
	161523	24.04	
	161524	23.04	
	161525	22.32	
	161526	22.52	
	161527	21.55	
	161528	17.75	
	161529	22.61	
	161530	23.57	
	161531	22.61	
	161532	22.81	
	161533	21.04	
	161534	21.67	
	161535	20.66	
	161536	19.26	
	161537	20.11	
		Subtotal	415.92
10/16	161571	17.65	
	161572	20.91	
	161573	21.29	
	161574	8.59	
	161575	22.84	
	161576	23.74	
	161577	22.36	
	161578	21.99	
	161579	21.32	
	161580	22.22	
	161581	21.45	
	161582	20.86	
	161583	19.92	
	161584	20.75	
	161585	20.64	
	161586	20.25	
	161587	22.70	
	161588	22.14	
	161589	20.21	
	161590	20.80	
	161591	22.32	
	161592	19.63	

TABLE C.2 (CONTINUED)

MATERIAL REMOVED FROM CDS
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
10/17	161593	20.06	
	161594	21.54	
	161595	20.99	
	161596	20.57	
	161597	20.31	
	161598	21.57	
		Subtotal	579.62
10/17	161599	20.43	
	161600	18.97	
	161601	18.43	
	161602	19.03	
	161603	23.15	
	161604	20.26	
	161605	22.84	
	161606	20.83	
	161607	19.80	
	161608	20.36	
	161609	17.82	
	161610	21.79	
	162076	20.59	
	162078	19.86	
	162077	20.79	
		Subtotal	304.95
10/18	162079	21.26	
	162080	18.86	
	162081	19.27	
	162082	19.56	
	162083	20.56	
	162084	20.76	
	162086	21.20	
	162087	21.38	
	162088	20.02	
	162085	17.29	
	162089	12.23	
	162090	20.10	
	162091	21.58	
	162092	20.34	
	162093	20.94	
	162094	21.57	
	162095	20.03	
	162096	21.12	

TABLE C.2 (CONTINUED)

MATERIAL REMOVED FROM CDS AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
10/18	162097	20.25	
	162098	19.16	
	162099	22.48	
	162100	21.75	
	162101	22.32	
	162102	21.29	
	162103	22.60	
	162104	20.59	
	162105	21.80	
	162106	18.73	
		Subtotal	569.04
10/19	162107	20.18	
	162108	20.93	
	162109	20.22	
	162110	20.68	
	162111	19.64	
	162112	21.78	
	162113	21.47	
	162114	19.48	
	162115	17.84	
	162116	20.93	
	162117	20.12	
	162119	19.32	
	162118	20.89	
	162120	19.49	
	162121	19.02	
	162122	19.79	
	162123	20.50	
	162124	19.57	
	162125	19.82	
	162126	16.74	
		Subtotal	398.41
10/20	162127	21.98	
	162128	20.99	
	162140	18.92	
	162141	17.22	
	162142	22.18	
		Subtotal	101.29

TABLE C.2 (CONTINUED)

MATERIAL REMOVED FROM CDS
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
10/21	162143	20.28	
	162144	21.14	
		Subtotal	41.42
		TOTAL	11,805.04

TABLE C.3.

MATERIAL REMOVED FROM OSL
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
10/24	162145	20.26	
	162146	22.24	
		Subtotal	42.50
10/25	162147*	16.65	
	162148*	20.07	
	162149*	19.85	
	162150*	20.17	
	162151*	20.73	
	162152*	19.27	
	162153*	21.49	
	162154*	20.30	
	162155*	18.64	
		Subtotal	177.17
10/26	162160	20.50	
	162161	20.11	
	162162	18.33	
	162163	22.30	
	162164	19.31	
	162165	20.38	
	162166	17.65	
	162167	19.09	
	162168	19.06	
		Subtotal	176.73
10/28	162169	17.39	
	160764	21.50	
	160765	17.73	
	160766	19.63	
	160767	18.02	
	160768	15.92	
	160769	15.89	
	160770	19.59	
	160771	18.03	
	162240	15.93	
	162241	20.13	
	162242	16.65	
		Subtotal	216.41

*There were 13 work orders on 10/25--9 from the OSL and 4 CBS-3. The work orders did not specify where the loads were from, and all were disposed at CECOS's Cell A.

TABLE C.3 (CONTINUED)

MATERIAL REMOVED FROM OSL
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
10/29	162243	21.88	
	162244	23.21	
	162245	18.65	
	162246	19.80	
	162247	18.63	
	162248	19.57	
	162249	21.86	
	162250	22.53	
	162251	23.44	
		Subtotal	189.57
10/30	162255	20.15	
	162256	21.61	
	162257	18.62	
	162258	18.23	
	162259	18.75	
	162260	18.67	
		Subtotal	116.03
10/31	162261	22.44	
	162262	19.36	
	162263	20.28	
	162264	18.12	
	160816	20.63	
	160817	18.47	
	160818	19.46	
	160819	21.59	
		Subtotal	160.35
11/1	160835	20.88	
	160836	25.23	
	160837	21.49	
	160838	19.08	
	160839	24.44	
	160840	23.96	
	160841	20.67	
	160842	19.52	
	160843	21.83	

TABLE C.3 (CONTINUED)

MATERIAL REMOVED FROM OSL
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
11/1	160844	20.02	
	160845	20.07	
	160846	16.66	
		Subtotal	253.85
11/5	161759	25.45	
	161760	22.02	
	161761	19.97	
	161762	18.29	
	161763	20.66	
	161764	22.08	
	161765	20.75	
	161766	21.12	
	161767	27.96	
		Subtotal	198.30
11/23	172072	19.51	
	172073	19.56	
		Subtotal	39.07
12/15	172491	19.18	
	172492	19.92	
	172493	20.75	
	172494	23.34	
	172495	19.54	
		Subtotal	102.73
12/17	162698	20.31	
	162699	19.10	
	162700	19.38	
	162701	18.29	
		Subtotal	77.08
12/18	162728	20.66	
	162729	23.06	
	162711	22.82	
	162731	22.73	

TABLE C.3 (CONTINUED)

MATERIAL REMOVED FROM OSL
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
12/18	162730	23.69	
	162732	21.08	
	162733	20.50	
		Subtotal	154.54
12/20	162753	18.59	
	162754	22.93	
	172590	19.22	
	172591	18.11	
	172592	17.23	
	172593	21.72	
	172594	18.74	
	172595	19.70	
	172596	19.67	
	172597	23.02	
	172598	21.64	
	172599	22.81	
	172600	23.59	
	172601	26.25	
	172602	27.00	
	172603	26.52	
	172604	22.32	
	172605	22.33	
	172606	21.22	
	172607	21.60	
	172608	21.89	
	172609	20.88	
		Subtotal	476.98
12/23	172634	14.96	
	172665	16.50	
	172666	16.13	
		Subtotal	47.59
12/27	172667	20.13	
	172668	15.07	
	162860	15.83	
	162861	18.75	
	162862	19.31	
	162863	17.73	

TABLE C.3 (CONTINUED)

MATERIAL REMOVED FROM OSL
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
12/27	162864	17.58	
	162865	19.95	
	162866	24.62	
	162867	22.85	
	162868	20.22	
	162869	21.36	
	162870	19.20	
	162871	18.26	
		Subtotal	270.86
		TOTAL	2,699.76

TABLE C.4

MATERIAL REMOVED FROM CBS-3
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
10/25	162159*	17.81	
	162158*	15.36	
	162157*	17.13	
	162156*	17.35	
		Subtotal	67.65
10/29	162252	19.01	
		Subtotal	19.01
10/30	162253	20.06	
	162254	18.29	
		Subtotal	38.35
10/31	160820	17.58	
	160821	21.13	
	160822	20.67	
	160823	20.90	
		Subtotal	80.28
11/1	160824	20.82	
	160825	18.17	
	160834	21.10	
		Subtotal	60.09
11/2	160847	20.89	
	160848	20.81	
	161733	19.49	
		Subtotal	61.19

*All truckloads were disposed at Cell A. The last four truckloads on October 25 were assumed to be from CBS-3. There were a total of 13 truckloads on October 25, 9 from the OSL, and 4 from CBS-3.

TABLE C.4 (CONTINUED)

MATERIAL REMOVED FROM CBS-3
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
11/4	161734	20.86	
	161735	22.51	
	161736	21.92	
	161737	19.80	
	161738	21.40	
	161739	20.52	
	161740	17.69	
	161741	19.99	
	161742	23.32	
	161743	21.60	
	161744	21.03	
	161745	19.11	
	161746	17.82	
	161747	19.59	
	161758	18.18	
		Subtotal	305.34
11/5	161770	20.13	
	161771	25.05	
	161772	21.35	
	161773	17.88	
	161774	22.02	
	161775	18.05	
		Subtotal	124.48
11/6	161776	19.21	
	161777	18.51	
	161778	21.87	
	161768**	23.61	
	161779	17.77	
	161769**	18.36	
	161780	20.16	
	161781	16.51	
	161782	19.53	
	161783	22.04	
	160965	20.69	
	160966	20.72	
	160967	20.93	
	160968	18.99	
	160969	20.72	
	160970	20.17	
	160971	18.63	
		Subtotal	338.42

**Shipped as hazardous.

TABLE C.4 (CONTINUED)

MATERIAL REMOVED FROM CBS-3
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
11/7	160972	18.32	
	160973	17.16	
	160974	17.41	
	160975	17.33	
	160976	21.09	
	160977	18.28	
	160978	17.15	
	160979	20.89	
	160980	22.47	
	160981	17.68	
		Subtotal	187.78
11/8	160982	19.70	
	160983	23.32	
	160984	21.58	
	160985	17.81	
	160991	16.61	
	160986	16.87	
	160987	23.71	
	160988	21.20	
	160989	18.94	
	160990	17.17	
	160992	17.86	
	160993	20.26	
	160994	22.07	
	160995	18.90	
	160996	19.95	
	160998	21.31	
	160997	14.60	
	160999	22.76	
		Subtotal	354.62
11/9	172000	24.02	
	172001	24.08	
	172002	16.72	
	172003	16.76	
	172004	17.09	
	172005	18.11	
	172006	26.41	
		Subtotal	143.19

TABLE C.4 (CONTINUED)

MATERIAL REMOVED FROM CBS-3
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
11/11	161794	20.45	
	161795	20.00	
	161796	21.10	
	161797	20.66	
	161798	20.98	
	161799	22.73	
	161800	18.06	
	161801	20.94	
	161802	18.03	
	161803	17.12	
	161804	15.87	
	161805	17.00	
	161806	16.16	
	161807	17.62	
		Subtotal	266.72
		TOTAL	2,047.12

TABLE C.5

MATERIAL REMOVED FROM CBS-2
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
11/20	161808	18.19	
	161809	16.69	
	161810	20.20	
		Subtotal	55.08
11/21	161811	21.28	
	161812	20.18	
	161813	19.63	
	172047	20.04	
	172048	19.59	
	172049	20.13	
	172050	21.03	
	172051	20.18	
	172052	19.86	
	172053	21.14	
	172054	21.55	
	172055	20.76	
	172056	21.04	
	172057	22.30	
	172058	20.84	
		Subtotal	309.55
11/22	172059	19.18	
	172063	19.64	
	172064	20.28	
	172061	24.62	
	172060	22.25	
		Subtotal	105.97
11/23	172062	22.68	
	172069	22.93	
	172074	19.85	
	172075	20.12	
	172065	20.04	
	172066	20.81	
	172067	20.46	
	172068	14.69	
	172070	12.98	
	172071	13.76	
		Subtotal	188.32

TABLE C.5 (CONTINUED)

MATERIAL REMOVED FROM CBS-2
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
11/25	172076	20.97	
	172077	18.93	
	172078	19.56	
	172079	19.98	
	172080	20.02	
	172081	21.57	
	172082	21.58	
	172083	20.68	
		Subtotal	163.29
11/26	172084	20.43	
	172085	20.02	
	161919	20.36	
	172086	20.47	
	161920	20.03	
	161921	20.65	
	161922	20.31	
	161923	20.79	
	161924	19.80	
	161925	24.71	
	161926	19.35	
	161927	20.53	
		Subtotal	247.45
12/1	161928	21.91	
	161929	20.71	
	161930	20.29	
	161931	18.77	
	161932	19.78	
	161933	18.95	
	161934	19.16	
	161935	18.41	
	161937	19.26	
	161936	18.35	
	161938	19.46	
	161977	20.57	
	161978	20.43	
	161979	21.13	
	161983	21.00	
	161984	20.80	
	161981	20.13	
	161980	20.70	
		Subtotal	359.81

TABLE C.5 (CONTINUED)

MATERIAL REMOVED FROM CBS-2
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
12/2	161982	20.30	
	161985	19.62	
	161986	20.22	
	161988	20.87	
	161989	20.07	
	161990	19.48	
	161991	20.15	
	161992	21.60	
	161993	21.10	
	161994	19.63	
	161996	18.11	
	161995	19.74	
	161997	20.72	
		Subtotal	261.61
12/13	162651	17.85	
	162652	17.03	
	162653	18.44	
	162654	19.28	
	162655	22.02	
	162656	20.42	
	162657	21.48	
	162658	22.07	
	162659	21.18	
	162660	21.94	
	162661	21.11	
	162662	21.03	
	162663	22.01	
	162664	21.66	
	162665	21.73	
	162666	17.29	
	162667	21.79	
	162668	22.16	
	162669	21.32	
	162670	20.17	
	162671	20.00	
	172480	21.45	
		Subtotal	453.43

TABLE C.5 (CONTINUED)

MATERIAL REMOVED FROM CBS-2
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
12/14	172481	23.21	
	172482	21.40	
	172483	24.43	
	172484	20.05	
	172485	20.62	
	172486	22.92	
	172487	20.83	
	172488	19.72	
	172489	23.37	
	172490	18.56	
		Subtotal	215.11
12/16	172496	13.86	
	172497	18.12	
	172498	19.60	
	172499	17.58	
	172501	24.31	
	172502	22.48	
	172503	25.19	
	172504	23.03	
	172505	22.25	
	172507	25.77	
	172506	21.57	
	172508	20.16	
	172509	22.36	
	172510	21.10	
	172511	21.01	
	172512	22.26	
	172513	20.47	
	172500	20.96	
		Subtotal	382.08
12/17	172514	23.17	
	172515	23.05	
	172516	20.98	
	172517	23.13	
	172518	21.56	
	172520	21.27	
	172519	21.87	
	162687	21.78	
	162688	20.68	
	162689	20.60	

TABLE C.5 (CONTINUED)

MATERIAL REMOVED FROM CBS-2
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
12/17	162690	21.35	
	162691	21.41	
	162692	19.33	
	162693	20.67	
	162694	19.05	
	162695	20.48	
	162696	19.63	
	162697	19.76	
		Subtotal	379.77
12/18	162702	19.81	
	162703	22.66	
	162704	23.57	
	162705	21.61	
	162706	21.96	
	162707	22.74	
	162708	18.58	
	162709	18.08	
	162710	18.08	
	162725	20.22	
	162726	17.33	
	162727	21.37	
		Subtotal	246.01
12/19	162734	20.80	
	162735	25.50	
	162737	23.93	
	162736	18.19	
	162738	18.60	
	162739	22.60	
	162740	22.46	
	162741	21.54	
	162742	21.46	
	162743	19.76	
	162744	18.30	
	162745	17.76	
	162746	17.52	
	162747	17.50	
	162748	18.35	
	162749	18.38	
	162750	17.90	
	162751	18.43	
	162752	15.68	
		Subtotal	374.66

TABLE C.5 (CONTINUED)

MATERIAL REMOVED FROM CBS-2
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
12/21	172610	17.05	
	172611	21.00	
	172612	19.94	
	172613	18.25	
	172614	19.43	
	172615	18.32	
	172616	18.79	
	172617	17.23	
		Subtotal	150.01
12/22	172672	21.99	
	172671	22.21	
	172619	24.24	
	172618	21.70	
		Subtotal	90.14
12/23	172622	19.40	
	172623	24.46	
	172624	22.57	
	172625	20.76	
	172626	21.03	
	172627	23.00	
	172628	23.31	
	172629	20.93	
	172630	20.84	
	172631	18.90	
	172632	17.76	
	172633	20.76	
		Subtotal	253.72
12/27	162872	23.27	
	162873	27.72	
	162875	19.16	
		Subtotal	70.15
12/28	162874	21.54	
	162876	19.04	
	162877	22.79	
	162878	20.92	
		Subtotal	84.29

TABLE C.5 (CONTINUED)

MATERIAL REMOVED FROM CBS-2
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
12/29	162879	17.83	
	162880	18.46	
	162881	19.89	
	162882	19.71	
	162883	19.72	
	162884	15.52	
	162885	18.74	
	162886	20.25	
	162887	20.66	
	162888	20.56	
	162889*	18.24	
	162890*	22.61	
	162891*	21.04	
	162892*	18.62	
	162893	21.12	
	162894	18.97	
		Subtotal	311.94
12/30	162895	23.20	
	162896	21.94	
	162897	25.85	
	163898	23.42	
	162899	22.33	
		Subtotal	116.74
12/31	162902	21.20	
	162903	18.79	
	162904	19.00	
	162908	20.25	
	162909	19.01	
	162910	16.19	
	162911	18.75	
	162912	18.29	
		Subtotal	151.48
1/2	162914	17.81	
	162915	16.73	
	162916	17.75	
	162917	18.03	
	162918	17.37	

*Shipped as hazardous

TABLE C.5 (CONTINUED)

MATERIAL REMOVED FROM CBS-2
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
1/2	162919	20.05	
	162920	15.46	
	162921	15.68	
	162922	18.66	
		Subtotal	157.54
1/5	162939	22.97	
	162943	14.60	
	162944	15.29	
		Subtotal	52.86
1/7	162946	18.22	
	162947	17.69	
	162948	18.87	
	162949	21.64	
	162950	19.03	
		Subtotal	95.45
		TOTAL	5,276.46

TABLE C.6

MATERIAL REMOVED FROM DP AND CBS-1
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
DP			
12/30	162900	22.12	
	162901	22.69	
		Subtotal	44.81
12/31	162913	17.32	
		Subtotal	17.32
		DP Total	62.13
CBS-1			
1/4	162935	23.62	
	162936	21.53	
	162937	23.42	
	162938	19.76	
		Subtotal	88.33
1/5	162940	19.44	
	162941	15.75	
	162942	14.65	
		Subtotal	49.84
1/7	162945	17.03	
	162951	20.94	
	162952	22.57	
	162953	21.13	
	162954	13.89	
	162955	14.39	
	162956	16.65	
	162957	17.25	
	162958	17.80	
	162959	17.73	
	162960	16.63	
	162961	19.71	
	162962	18.63	
	162963	16.86	
	162964	19.67	
		Subtoal	270.88

TABLE C.6 (CONTINUED)

MATERIAL REMOVED FROM DP AND CBS-1
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
1/8	162965	17.90	
	162966	18.49	
	162967	17.43	
	162968	22.75	
	162969	18.54	
	162970	22.00	
	162971	19.59	
	162972	19.84	
	162973	17.76	
	162974	18.60	
	162975	19.30	
	162976	17.93	
	172714	18.76	
	172715	19.05	
	172716	20.35	
		Subtotal	288.29
1/9	172722	17.53	
	172717	16.11	
	172718	20.88	
	172719	16.90	
	172720	19.20	
	172721	20.74	
	172723	21.25	
	172724	20.18	
	172725	20.63	
	172726	24.28	
		Subtotal	197.70
1/10	172727	17.52	
	172728	21.88	
	172729	21.67	
	172730	21.54	
	173133	22.31	
	173134	19.03	
	173135	19.74	
	173136	16.64	
	173137	16.63	
	173138	14.51	
	173139	15.66	
	173140	17.50	
		Subtotal	224.63

TABLE C.6 (CONTINUED)

MATERIAL REMOVED FROM DP AND CBS-1
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
1/11	173141	20.15	
	173142	22.23	
	173143	20.29	
	173144	18.63	
	173145	16.28	
	173146	16.35	
	173147	16.35	
	173148	18.30	
	173149	17.31	
	173150	15.17	
		Subtotal	181.06
1/12	173151	16.72	
	173152	17.58	
	173153	17.33	
	173154	22.03	
		Subtotal	73.66
1/13	173155	17.97	
	173156	17.32	
	173157	19.20	
	173158	20.12	
	173159	18.38	
	173160	17.44	
	173161	15.16	
	173162	16.45	
	173163	16.40	
	173164	13.17	
	173165	15.01	
	173166	15.75	
		Subtotal	202.37
1/14	173167	18.62	
	173168	17.58	
	173169	18.64	
	173170	20.84	
		Subtotal	75.68
		CBS-1 TOTAL	1,652.44

TABLE C.7

MATERIAL REMOVED FROM ODA
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
1/14	173171	22.01	
	173172	18.76	
	174088	20.14	
	174089	18.14	
		Subtotal	79.05
1/15	174090	17.51	
	174091	18.33	
	174096	21.08	
	174097	18.32	
	174098	20.05	
	174099	19.45	
	174100	17.34	
	174101	17.63	
	174102	18.01	
	174103	20.90	
	174104	18.95	
	174105	18.70	
	174114	18.44	
	174115	19.48	
	174116	18.45	
	174117	18.73	
		Subtotal	301.37
1/22	174118	19.98	
	174119	22.36	
	172818	21.84	
	172819	22.75	
	172820	19.54	
	172821	19.27	
	172822	18.92	
		Subtotal	144.66
1/24	172823	17.92	
	172824	15.41	
	172825	16.42	
	172826	16.91	
	172827	18.26	
	174187	18.79	
	174188	18.51	
	174189	17.79	
	174190	17.71	
	174191	17.98	
		Subtotal	175.70

TABLE C.7 (CONTINUED)

MATERIAL REMOVED FROM ODA
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
1/29	174192	16.49	
	174193	21.55	
	172960	19.57	
	172961	21.27	
	172962	23.88	
	172963	23.91	
	172964	19.69	
	172965	21.49	
	172966	19.35	
	172967	20.49	
	172968	22.06	
	172969	23.24	
	172970	21.47	
		Subtotal	274.46
1/30	172971	20.85	
	172972	26.21	
	172973	24.17	
	172974	24.67	
	172975	22.66	
		Subtotal	118.56
2/5	172976	15.86	
	172977	19.69	
	172978	15.05	
	172979	16.42	
	174287	16.39	
	174288	19.63	
	174289	21.20	
	174290	20.27	
		Subtotal	144.51
2/15	174291	18.66	
	174292	18.42	
	173236	23.23	
	173237	24.30	
		Subtotal	84.61
2/20	173238	24.29	
	173239	16.30	
	173240	17.95	
	173241	17.50	
		Subtotal	76.04

TABLE C.7 (CONTINUED)

MATERIAL REMOVED FROM ODA
AND DISPOSED AT CECOS

Date	Work Order	Weight (Tons)	
2/21	173242	21.09	
	173243	22.69	
		Subtotal	43.78
2/22	173244	22.98	
	173245	19.06	
	173246	20.07	
	173247	20.66	
	174374	19.85	
	174375	20.28	
	174376	18.20	
		Subtotal	141.10
2/27	174401	16.63	
	174402	18.67	
	174403	20.60	
		Subtotal	55.90
		TOTAL	1,639.74

APPENDIX D

HANDLING PROCEDURES FOR CRUSHING AND DISPOSAL OF CONTAINERS
JANUARY 30, 1986

OHM
THE ENVIRONMENTAL SERVICES COMPANY

O.H. MATERIALS CO.
P.O. Box 41
Windsor, NJ 08561
Phone: 609-443-2800
800-537-9540 (24 hr)

HANDLING PROCEDURES FOR CRUSHING AND DISPOSAL OF CONTAINERS TEXACO RESEARCH CENTER BEACON, NEW YORK

Project No. 2997

Submitted to:

Mike Gallagher, Project Engineer
Texaco Inc.

O.H. Materials Co.

Joe W. Rader
Health and Safety

Mark O. Erickson
Site Supervisor

January 30, 1986

[illegible] 2/3/86
Michael Gallagher 2/3/86
Mark M. [illegible] 2/3/86
Mark Erickson 2/3/86
John L. [illegible] 2/3/86

INTRODUCTION

O.H. Materials (OHM) has been contracted by Texaco to handle and dispose of intact containers recovered during excavation of the Texaco Research Center Beacon, (TRCB) Inactive Disposal Site Clean-up Project. Most of the containers recovered are considered to contain chemicals of unknown origin. OHM has successfully completed dozens of similar projects involving unknown chemicals. Based on our experience of handling unknown and lab pack materials, OHM has devised site specific procedures for handling containers presently stored in the container handling building at TRCB. This document is divided into three sections as follows:

I-HISTORICAL OVERVIEW
II-BOTTLE CRUSHING PROCEDURES
III-SITE SAFETY

I. HISTORICAL OVERVIEW

OHM's approach in handling unknown and lab pack containers is based on many successfully completed jobs, and on EPA protocals. This historical overview is provided to explain the reasoning for the bottle crushing procedures and site safety plans. If the individual containers are not identified, they must be sampled for categorization and proper disposal. This situation is complicated by the possibility of shock sensitive explosive materials being present such as picric acid or peroxides. Both of these materials can be detonated, in some cases, by simply opening the container in which they are stored. Therefore, the sampling procedure becomes hazardous when dealing with unknown lab pack components due to the possibility of an explosion when opening containers to draw samples.

Unfortunately, a non-invasive technique does not exist for identifying either picric acid or peroxides (or similar materials) in unmarked containers. Therefore, any procedures for dealing with unknown lab pack components must be assumed to be the worst case, i.e., every container contains a shock sensitive material unless evidence exists to the contrary.

As a result of the above mentioned factors, it is unacceptable hazardous to put a worker in the position of opening unknown lab pack components manually, as he might suffer injury or death as a result of an explosion and or reaction. Considering that no personnel protective gear exists that would adequately protect a person from this type of hazard, a remote method must be used to open the subject containers.

OBJECTIVE

OHM's procedure for the remote opening and stabilization of "unknown" is similar to that described in the USEPA procedure with the exception that the containers will be remotely opened by fracturing the container with a trackhoe instead of fracturing the container with a low-mass projectile (a .22 caliber bullet). The procedure will safely accomplish two things: the container will be opened remotely, and the contents will be collected, stabilized, and readily handled in an inert sorbent media.

The unknown small container remote opening and consolidation method will be performed on site. Before proceeding with an explanation of the procedures to be employed for the unknowns on the project site, it must be understood by all parties concerned that there is an inherent possibility of reactions during the remote opening process. These potential reactions may occur due to substances such as fuming acid, air and water reactives, spontaneously combustibles, low flash point materials, shock sensitive materials coming in contact with air, water and or other substances.

Again, it must be emphaized that the purpose of remote consolidation of unknown lab chemicals is to preclude personnel hazard from the potential reactions stated above. OHM's method for handling the unknowns has factored in precaution and methods of expediently dealing with an untoward reaction.

These include:

1. A detailed safety meeting and inspection of crushing building will be held among all parties with a safety coordinator on site prior to bottle breaking.
2. The use of lime and dry sand as consolidation media.
3. Readily available lime material for placement on the crushing bed.
4. Air monitoring for total organics, hydrogen cyanide, and hydrogen sulfide and lel (inside building).
5. Readily available extinguishing material such as inert sand for smothering and 150 lb. A.B.C. fire extinguishers.
6. Breathing aparatus and enclosed cab for trackhoe operators with explosion shield.
7. Enclosed building, covering loadout pad with air treatment system and hoses adjacent to crushing area.
8. Container crushing contingent upon acceptable weather conditions.

II. BOTTLE CRUSHING PROCEDURES

These are the site specific procedures OHM intends to follow during the disposal of the containers removed during excavation of the CBS sites. Approx. 600 containers will be handled in the following manner:

Definitions:

KNOWN CONTAINERS- A container with an intact label and is known to contain that material.

OBVIOUS PETROLEUM BY-PRODUCT- An unmarked container that contains an obvious oil or fuel product.

UNKNOWN CONTAINERS-EMPTY- An unlabeled empty container.

UNKNOWN CONTAINERS WITH MATERIAL- An unlabeled or unmarked container that contains a product or material.

A. IDENTIFICATION AND SEGREGATION

Each container will be examined for labels and markings. OHM will clean containers with brushes, cleaning solution and/or tongue depressors as needed to aid in material identification.

The containers will be divided into one of the following groups:

A. Known Containers
B. Obvious Petroleum By-Products
C. Unknown Containers Empty
D. Unknown Containers With Material

B. HANDLING OF SEGREGATED GROUPS

Segregated groups will be handled in the following manner: (See segregation flow chart, Diagram #1).

Group A- Known Containers-

These will be segregated into compatible DOT shipping classes and lab packed as per Cecos requirements for disposal.

Group B- Obvious Petroleum By-Products-

These will be sampled and analyzed using standard analytical methods. Once contents are known, material will be segregated into compatible DOT shipping classes and lab packed per Cecos International Inc. disposal requirements.

Group C- Unknown Containers Empty-

These containers will be crushed in a bed of sand/lime mixture and bulked in a secure roll off dumpster. This group will be bulked along with group D material for disposal at Cecos.

Group D- Unknown Containers With Material-

These containers will be further segregated by physical appearance into the following groups:

D1- Apparent aqueous material
D2- Apparent organic material
D3- Solids
D4- Tins and metal cans

Subgroups D1-D4 will be further segregated according to size of containers for crushing batches as follows:

5-15 gallon container
1-5 gallon container
1 pt-1 gallon container
Less than 1 pint containers

The above "container size" segregation will determine depth of sand/lime bed as well as container spacing for crushing. Depending upon the size of the containers, a number of containers will be positioned in the sand/lime bed. As a general guideline, one bottle will be crushed at a time.

C. Pad Requirements for crushing Groups C and D containers. Crushing will be performed on the load out pad inside the excavation building. The air filtration system will be in operation during the bottle crushing process. The air treatment system will be set up in such a manner as to effectively remove vapors or smoke caused by a reaction during bottle breaking. Figure 1 details the proposed air treatment system layout. A dry sand/lime mixture containing a minimum of 15% lime will be placed on the loadout pad to absorb, neutralize and stabilize the contents of the containers. After a series of bottles has been crushed, the final mixture will contain less than 5% chemical material by weight, (less than 100 lbs. chemical material per ton of sand/lime). A portable scale will be used to determine the proper weight of chemicals for the appropriate amount of sand/lime mixture to insure the 5% limit.
The pad will be surrounded on three sides by an 18" berm made of soil or sand covered with visqueen. See diagram 2. Bottles that are 20 inches or greater in height will be handled in the middle of the crushing area. The sand/lime mixture will be piled around the containers in such a way so as to cover all but the neck of the container. The sand/lime mixture will slope in such a way that the neccessary volume (weight) of neutralization material will be provided.

D. Handling and Crushing

The sand/lime bed mixture will be prepared by the chemist and equipment operators and spread on the crushing pad. Depth requirements for neutralization mixture are outlined in Table 1.
The containers will be transported from the container handling building to the crushing area in the bucket of a track loader. Records of segregation category and load number will be maintained throughout the transfer/bottle breaking process. OHM will also maintain appropriate photographic documentation throughout the bottle crushing procedure. The bucket will be lined with a bed of sand to cushion the containers from shock. Transfer of containers from container storage shed to loader to crushing pad will be done by the chemists.
The loader will be positioned so as not to block the entrance/exit of the container handling building. This will leave access for escape by the chemists in the event of an emergency.

When the load of containers reach the pad area, the chemists will carefully set the containers into the bed of sand/lime leaving the tops of the containers exposed for the operator to detect when crushing. The site safety officer will oversee the transport operation. When crushing begins, the operator will have a bucket of sand/lime mix in the event that a reaction would need to be controlled. Under no circumstances will any other personnel be permitted in the building during the crushing process.
When the operator feels he has crushed all containers on the pad, he will radio the chemist outside of the building for a quality control check to make sure all containers have been crushed.
At the completion of a successful crush, the operator will mix the contents to minimize any reaction that could occur from the contact after contents have been bulked. After crushing has been completed, the Lime/Sand/Chemical mixture will be transfered into the bucket of the Cat 963 using the Koehring 6608. This will minimize exposure and therefore decontamination time. The bulked material will be transferred to a secure roll off dumpster for disposal at Cecos. Due to the unknown nature of the material, the roll off dumpster will have a sealed and caulked gate, will be lined with a plastic liner and have a water proof tarp to protect it from the elements.
Once all the containers have been crushed, a sample of the material will be taken and analyzed for the appropriate constituents. The roll off will then be secured awaiting analytical results.

E. Decontamination

Any equipment involved with container transfer, bottle crushing and bulk mixture disposal will be decontaminated with the high pressure water lazer. The water generated will be recovered with the skid mounted vacuum unit and tranferred to a holding pool for disposal at the Dupont Deepwater Facility located in New Jersey.

III SITE SAFETY

OHM is committed to safety and as stated previously, has completed dozens of like lab pack and crushing operations. A site safety officer will be on site to assure safe handling of containers during the crushing operation. The following section addresses safety equipment and protective gear, air monitoring and contingency plan.

A. Safety Equipment and Protective Gear

Sand, shovels and 150 lb fire extinguisher will be placed near the crushing building, the areas designated by the site safety officer. The two areas will be the container handling building and the excavation building where crushing will occur. Fire jackets will be placed in these areas in case of fire or violent reaction. Field support personnel (chemists and safety officer) will be in Level "B" protective with the following gear:

SCBA
Saran/Tyvek Suit
Splash Suit
Booties
Robars
PVC Gloves (outer)
Sample Gloves (inner)
Hard Hat
Face Shield
Radio

Operators will also be in Level "B" Protection including the following gear:

Saran/Tyvek Suit
Egress Mask
Booties
Sample Gloves (inner)
Cloth Gloves (outer)
Fire Suit (Koehring Operator Only)
Radio

During the bottle crushing operation, the only administrative personnel allowed on site will be the NYDEC and Texaco. The NYDEC and Texaco will be allowed to inspect the crushing pad prior to and after each crushing operation. At no time will anyone, (except the Koehring Operator) be allowed in the building while container crushing is proceeding.
Also, at no time will any person, (OHM or otherwise), be allowed beyond the transition building without level B personnel protection; For visitors, Level B protection includes:

Saran/Tyvek Suits
SCBA
Robar Boots
PVC Gloves (outer)
Sample Gloves (inner)
Hard Hat

Visitors will be allowed to observe bottle transfer from the chemical storage building to the bottle crushing pad on a routine basis.

B. Air Monitoring

PID and Monitox readings will be taken during the crushing operation to determine the airborn concentration of organic, cyanide and hydrogen sulfide materials inside the building and at the carbon filters. Action levels for the various components detected are included in the site contingency plan. Personnel and air monitoring requirements are as follows:

Chemist outside the building- will have a PID

Safety Officer at effluent of carbon filters- will have a PID

Chemist- on stand by at transition shed- will have a PID and hydrogen sulfide and hydrogen cyanide monitox detectors. He will be used only if the contingency plan goes into effect.

In addition to the chemists and instruments listed above, the equipment operator will have hydrogen cyanide and hydrogen sulfide monitox instruments in the cab of the Koehring 6608. A LEL meter will be stationed in the crushing building prior to the first series of bottles being crushed. The LEL will be positioned in such a manner so the chemists outside the crushing building will hear the LEL alarm, if activated. Figure 2 shows personnel and safety equipment as well as air monitoring equipment locations during the bottle crushing operations

SITE CONTINGENCY PLAN
FOR CONTAINER CRUSHING

In the event of an unusual vapor release or reaction, the following steps and procedures will be followed:

1. The excavation field chemist shall notify the senior foreman and site supervisor by radio that there has been a release or reaction. He shall advise of the severity, describing the extent of release and wind direction.

2. If safe for the Koehring operator shall remain in the building to minimize the reaction by using inert materials to cover the reaction, transporting the blower intake hose to the reaction.

3. The site supervisor shall notify the appropriate Texaco/DEC representative of the release and its present situation and if necessary request assistance in identifying the nature of the material to control further releases or reaction.

4. Based upon the excavation field chemist's visual assessment and meter readings of the perimeter, the senior foreman and site supervisor and chemist shall decide how to proceed. The air monitoring chemist shall enter the exclusion zone in Level B protection.

5. Downwind PID, cyanide, and hydrogen sulfide readings will be taken immediately and as the above decisions are being made. Readings shall be taken outside the building to the perimeter of the site. These readings, (including wind direction), will be relayed via radio contact to the site supervisor and the appropriate Texaco/DEC representatives.

6. Continuous radio contact will be maintained between the field chemist and site supervisor until the proper remedial action has been completed.

7. Appropriate emergency response personnel such as the Texaco's fire brigade, the local fire department, hospital, police shall be summoned by joint decision between OHM/Texaco and NYDEC.

(con't)

8. After neutralization or other similar remedial actions, the chemists will identify the most suitable containment method and proceed accordingly. This process will be done in consultation with a Texaco chemist when possible. The material will then be placed in a secure roll off dumpster for eventual disposal at Cecos.

9. The supervisor will be updated on the current status of the release/reaction at all times. He shall authorize the resumption of work. Work will resume cautiously taking care to observe additional reaction/releases. The site supervisor will authorize the resumption of work and be advised when "normal" operation commence.

Site Personnel and Duties During
Bottle Crushing

There will be two field chemists and one OHM health safety officer on site during the bottle crushing operation. Each persons duties will be explained in more detail below:

I. Chemist outside the building: During the bottle crushing, he will be responsible for a) periodic visual contact with the equipment operator. b) Periodic PID readings inside the building c) Periodic LEL readings during bottle crushing. His other job duties will include:

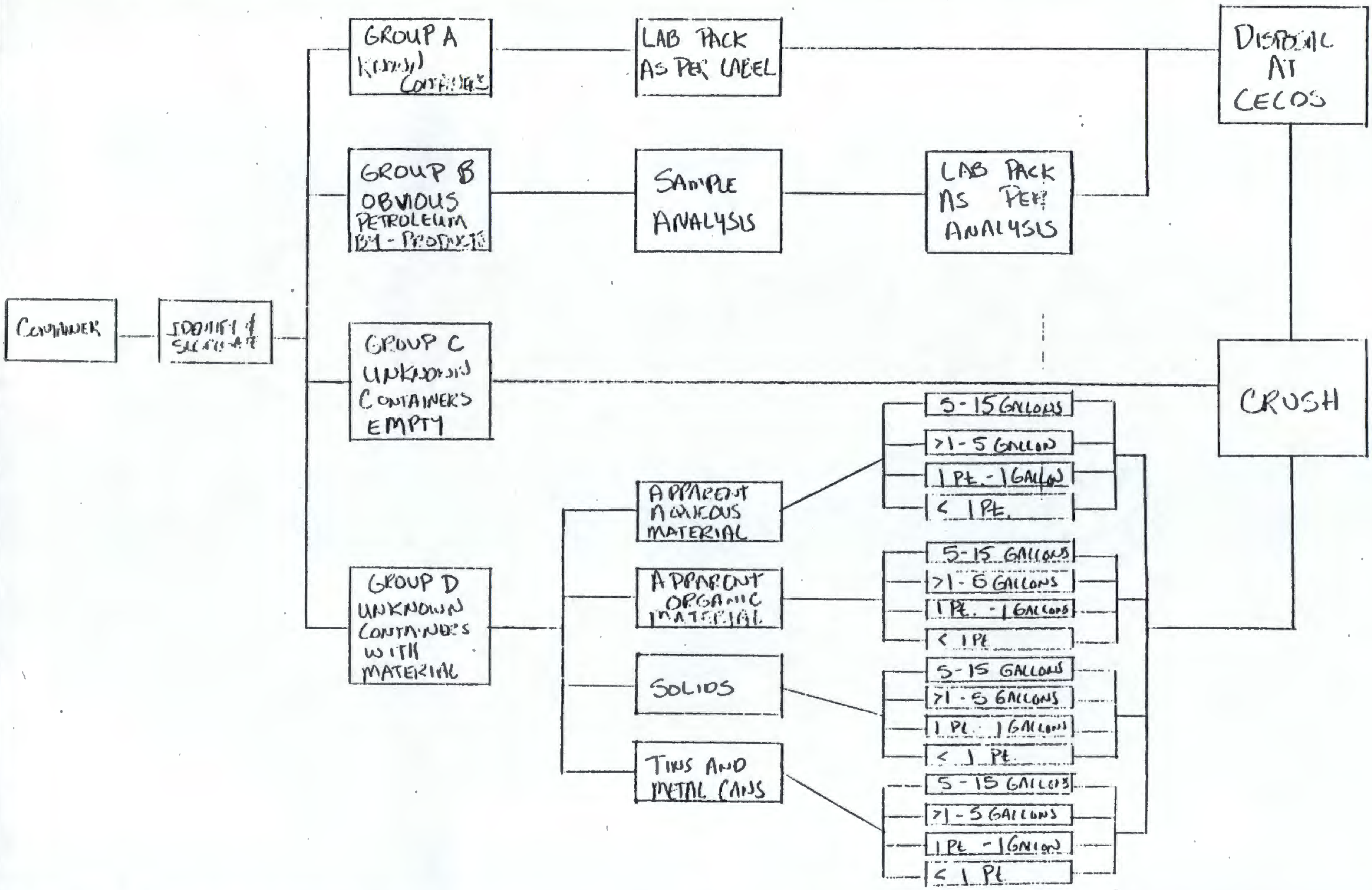
a) inspection of bottle crushing pad after a crushing sequence
b) placing containers in the sand/lime mixture prior to a crushing sequence.
c) assisting the other chemist during container transfer from the chemical storage shed to the crushing pad.
d) assisting the Koehring operator mix and spread the sand and lime to make the crushing bed.

II. Standby Chemist: During the bottle crushing, he will be responsible for a) maintaining radio contact with the chemist outside the crushing building, the health safety person monitoring the carbon filter effluent and the equipment operators. If a reaction occurs inside the building of a significant quantity or type of material, the standby chemist will be dispatched to the field to conduct downwind air monitoring. He will report the results of his air monitoring survey to the site supervisor. b) If neccessary, he will assist the building and carbon filter personnel during bottle crushing.

The standby chemist's main responsibility during the bottle crushing operation is to weigh and segregate chemicals inside the chemical storage building. Written documentation of segregation category, number of bottles in segregation category per run, number of runs per crushing sequence will be maintained at all times by the standby chemist.

The standby chemist will assist the excavation chemist during the transfer of containers from the storage building to the crushing building.

III. The Health Safety Officer: Will be responsible for air monitoring at the carbon filter exhaust ports during bottle crushing. He will also be responsible for overseeing chemical transfer, bed preperation, and mixing of crushed bottles and the neutralization material. He will also assist the field personnel on site when neccessary.



SCALE N/A	DRAWN BY ME	NO.	DATE	REVISION	BY	Segregation Flow Chart Bottle Crushing Operation Diagram 1
DATE 1/30/86	CHECKED ME					
SHEET 1 OF 1	APPROVED ME					

O. H. MATERIALS CO.
EMERGENCY RESPONSE AND ENVIRONMENTAL RESTORATION
BOX 551 419/423 3526 FINDLAY, OHIO 800/537 9540

PROJECT	DRAWING	REVISION
2997		

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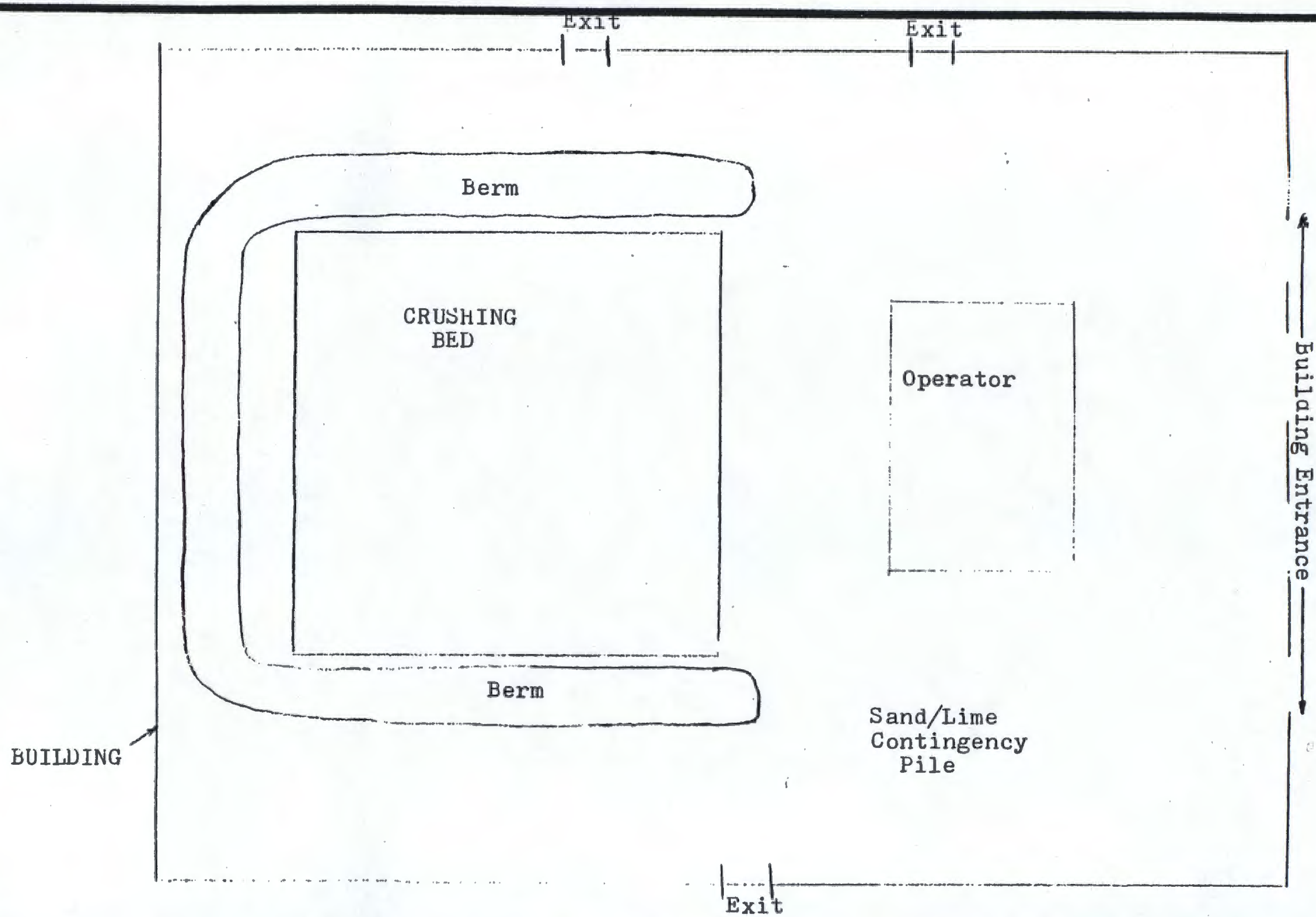

SCALE 1" = 5'	DRAWN BY ME	NO.	DATE	REVISION	BY	Crushing Bed Layout for Bottle Breaking
DATE 1/30/86	CHECKED ME					
SHEET 1 OF 1	APPROVED ME					Diagram 2

O. H. MATERIALS CO.
EMERGENCY RESPONSE AND ENVIRONMENTAL RESTORATION
BOX 551 419-423-3526 FINDLAY, OHIO 800/537-9540

PROJECT	DRAWING	REVISION
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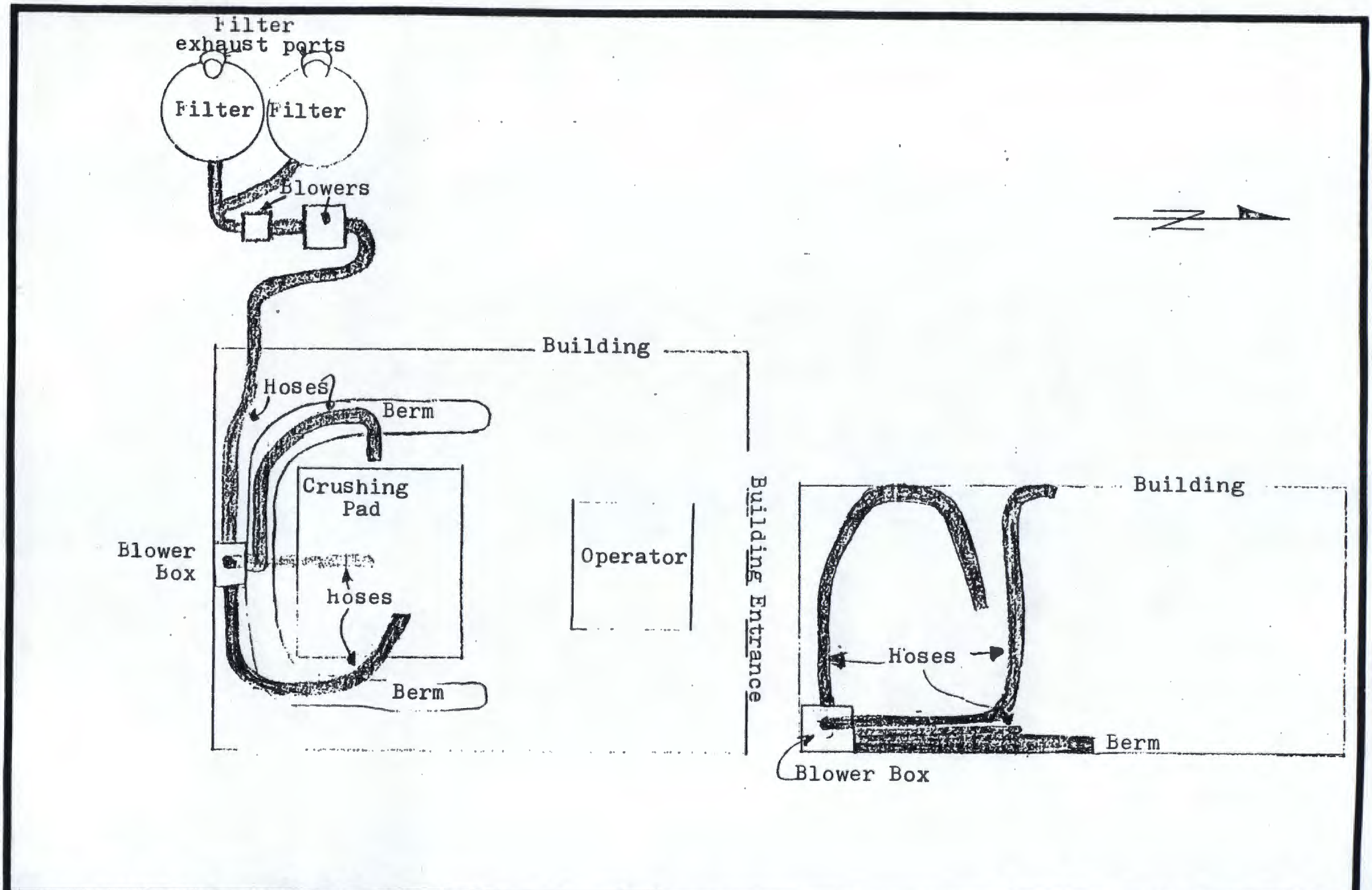
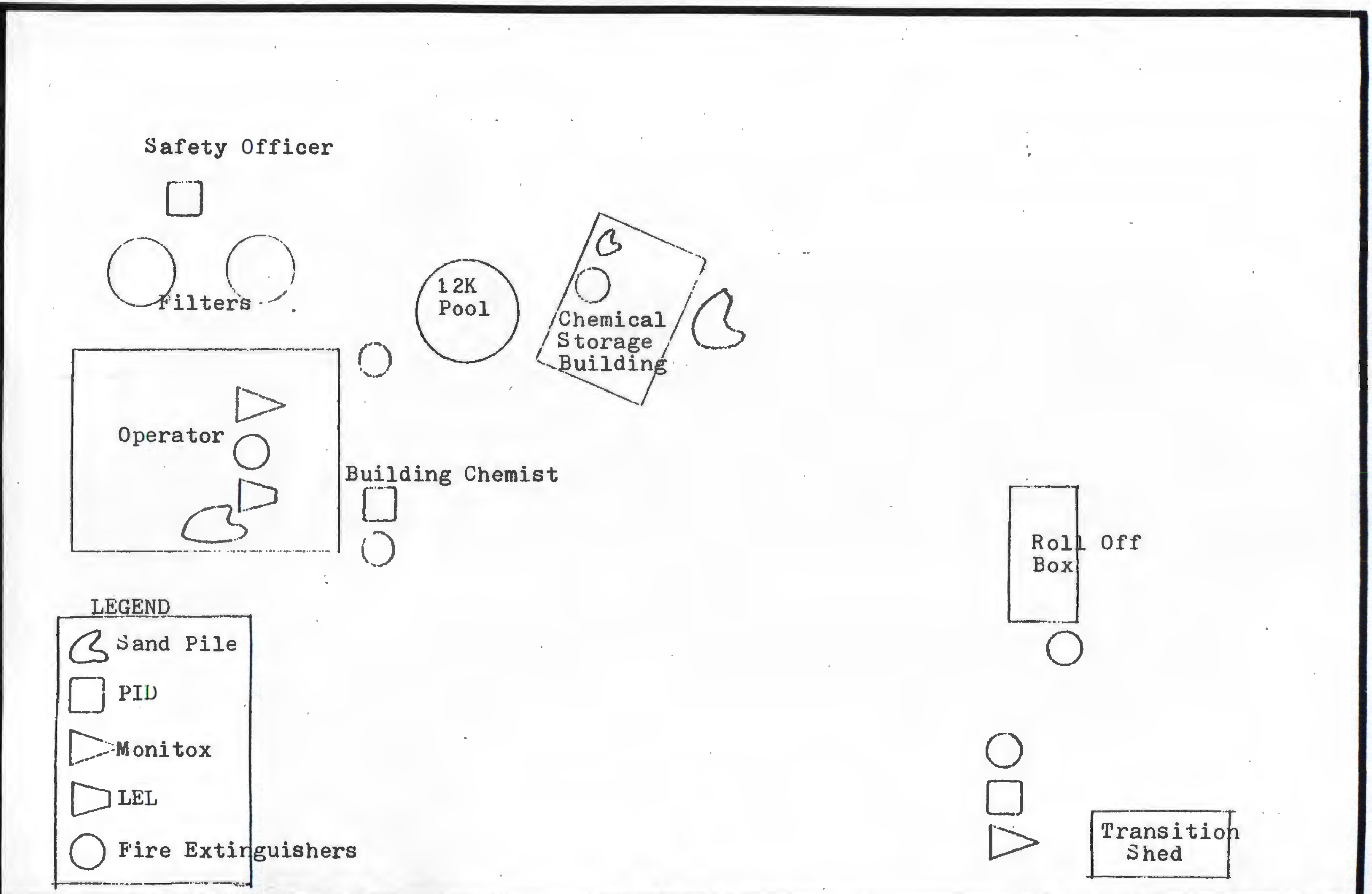


SCALE N/A	DRAWN BY ME	NO.	DATE	REVISION	BY	Blower Hose Arrangement During Bottle Crushing Operations	O. H. MATERIALS CO. EMERGENCY RESPONSE AND ENVIRONMENTAL RESTORATION BOX 551 419/423-3526 FINDLAY, OHIO 800/537-6540
DATE 1/30/86	CHECKED ME						
SHEET 1 OF 1	APPROVED ME					Figure 1	PROJECT 2997 / DRAWING / REVISION

N60446

OHM



SCALE N/A	DRAWN BY JR	NO.	DATE	REVISION	BY	Personnel and Safety Equipment Positions During Bottle Breaking	O. H. MATERIALS CO. EMERGENCY RESPONSE AND ENVIRONMENTAL RESTORATION BOX 551 419-423-3526 FINDLAY, OHIO 800/537-9540
DATE 1/31/86	CHECKED ME						
SHEET 1 OF 1	APPROVED ME					Figure 2	PROJECT 2997 / DRAWING / REVISION

N60446

TABLE 1

Container Size	Ave. Container Height	Ave. Container Weight	Sand/Lime Pad Thickness	*Containers & Material (4% by Weight)
< 1 pt.	4"	0.25 lbs.	3"	182 lbs.
1 pt. - 1 gal.	8"	5.0 lbs.	6"	364 lbs.
1 - 5 gal.	12"	16.0 lbs.	10"	607 lbs.
5 - 15 gal.	24"	80.0 lbs.	20"	1215 lbs.

*NOTE Assumes a pad size of 15' x 15' and a Sand/Lime density of approximately 81 lbs/ft^3.

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233-0001

Henry G. Williams
Commissioner

January 31, 1986

[illegible] 2/3/86
[illegible] 2/3/86
Mark M. Moroukian 2/3/86
Mark [illegible] 2/3/86
[illegible] 2/3/86

Mr. Harold J. Weiss
Project Manager
Texaco Incorporated
Research Environment and Safety Dept.
P.O. Box 509
Beacon, New York 12508

Dear Mr. Weiss

Re: Texaco Research Facility Remediation Project -
Proposed Container Breaking and Disposal Procedure
Dutchess County

After a detailed review of Texaco's Proposed Container Breaking and Disposal Procedure by my staff, approval to proceed with the procedure is hereby given with the following requirements:

1. The final draft of the detailed Health and Safety Plan for the Container Breaking Procedure must be submitted and approved prior to commencement of the proposed procedure.

2. The composite sample drawn from the roll-off container must be analyzed for the following criteria:

   - Characteristics of Hazardous Wastes (6NYCRR-Part 371.3)

   - Hazardous Substance List (attached)

   - Percent Organics (not to exceed 5% by weight)

3. A copy of the sampling results must be submitted to the Department for verification prior to ultimate disposal.

Although this proposal activity may not be consistent with the Division's May 1985 Policy, regarding the land burial of organic hazardous waste materials, it is our decision that this procedure appears to be the most practical and safest method of final disposal. On that basis, a one time exception to the Solid and Hazardous Waste Division Policy is granted.

Sincerely,

John E. Iannotti

John E. Iannotti, P.E.
Supervisor
Technical Support Section
Bureau of Eastern Remedial Action
Division of Solid and Hazardous Waste

cc: D. King
M. Moroukian

HSL - Volatiles

Hazardous Substance List (HSL) and
Contract Required Detection Limits (CRDL)**

		CAS Number	Detection Limits* Low Water[a] µg/L	Low Soil/Sediment[b] µg/Kg
1.	Chloromethane	74-87-3	10	10
2.	Bromomethane	74-83-9	10	10
3.	Vinyl chloride	75-01-4	10	10
4.	Chloroethane	75-00-3	10	10
5.	Methylene chloride	75-09-2	5	5
6.	Acetone	67-64-1	10	10
7.	Carbon Disulfide	75-15-0	5	5
8.	1,1-Dichloroethene	75-35-4	5	5
9.	1,1-Dichloroethane	75-35-3	5	5
10.	trans-1,2-Dichloroethene	156-60-5	5	5
11.	Chloroform	67-66-3	5	5
12.	1,2-Dichloroethane	107-06-2	5	5
13.	2-Butanone	78-93-3	10	10
14.	1,1,1-Trichloroethane	71-55-6	5	5
15.	Carbon tetrachloride	56-23-5	5	5
16.	Vinyl acetate	108-05-4	10	10
17.	Bromodichloromethane	75-27-4	5	5
18.	1,1,2,2-Tetrachloroethane	79-34-5	5	5
19.	1.2-Dichloropropane	78-87-5	5	5
20.	trans-1,3-Dichloropropene	10061-02-6	5	5
21.	Trichloroethene	79-01-6	5	5
22.	Dibromochloromethane	124-48-1	5	5
23.	1,1,2-Trichloroethane	79-00-5	5	5
24.	Benzene	71-43-2	5	5
25.	cis-1,3-Dichloropropene	10061-01-5	5	5
26.	2-Chloroethyl vinyl ether	110-75-8	10	10
27.	Bromoform	75-25-2	5	5
28.	2-Hexanone	591-78-6	10	10
29.	4-Methyl-2-pentanone	108-10-1	10	10
30.	Tetrachloroethene	127-18-4	5	5
31.	Toluene	108-88-3	5	5
32.	Chlorobenzene	108-90-7	5	5
33.	Ethyl Benzene	100-41-4	5	5
34.	Styrene	100-42-5	5	5
35.	Total Xylenes		5	5

[a] Medium Water Contract Required Detection Limits (CRDL) for Volatile HSL Compounds are 100 times the individual Low Water CRDL.

[b] Medium Soil/Sediment Contract Required Detection Limits (CRDL) for Volatile HSL Compounds are 100 times the individual Low Soil/Sediment CRDL.

HSL - Base/Neutral/Acid Extractables

		CAS Number	Detection Limits* Low Water µg/L	Low Soil/Sediment µg/Kg
36.	N-Nitrosodimethylamine	62-75-9	10	330
37.	Phenol	108-95-2	10	330
38.	Aniline	62-53-3	10	330
39.	bis(2-Chloroethyl) ether	111-44-4	10	330
40.	2-Chlorophenol	95-57-8	10	330
41.	1,3-Dichlorobenzene	541-73-1	10	330
42.	1,4-Dichlorobenzene	106-46-7	10	330
43.	Benzyl alcohol	100-51-6	10	330
44.	1,2-Dichlorobenzene	95-50-1	10	330
45.	2-Methylphenol	95-48-7	10	330
46.	bis(2-Chloroisopropyl) ether	39638-32-9	10	330
47.	4-Methylphenol	106-44-5	10	330
48.	N-Nitroso-dipropylamine	621-64-7	10	330
49.	Hexachloroethane	67-72-1	10	330
50.	Nitrobenzene	98-95-3	10	330
51.	Isophorone	78-59-1	10	330
52.	2-Nitrophenol	88-75-5	10	330
53.	2,4-Dimethylphenol	105-67-9	10	330
54.	Benzoic acid	65-85-0	50	1600
55.	bis(2-Chloroethoxy) methane	111-91-1	10	330
56.	2,4-Dichlorophenol	120-83-2	10	330
57.	1,2,4-Trichlorobenzene	120-82-1	10	330
58.	Naphthalene	91-20-3	10	330
59.	4-Chloroaniline	106-47-8	10	330
60.	Hexachlorobutadiene	87-68-3	10	330
61.	4-Chloro-3-methylphenol (p-chloro-m-cresol)	59-50-7	10	330
62.	2-Methylnaphthalene	91-57-6	10	330
63.	Hexachlorocyclopentadiene	77-47-4	10	330
64.	2,4,6-Trichlorophenol	88-06-2	10	330
65.	2,4,5-Trichlorophenol	95-95-4	50	1600
66.	2-Chloronaphthalene	91-58-7	10	330
67.	2-Nitroaniline	88-74-4	50	1600
68.	Dimethyl phthalate	131-11-3	10	330
69.	Acenaphthylene	208-96-8	10	330
70.	3-Nitroaniline	99-09-2	50	1600
71.	Acenaphthene	83-32-9	10	330
72.	2,4-Dinitrophenol	51-28-5	50	1600
73.	4-Nitrophenol	100-02-7	50	1600
74.	Dibenzofuran	132-64-9	10	330
75.	2,4-Dinitrotoluene	121-14-2	10	330

HSL - Base/Neutral/Acid Extractables (con't.)

		CAS Number	Detection Limits* Low Water[c] µg/L	Low Soil/Sediment[d] µg/Kg
76.	2,6-Dinitrotoluene	606-20-2	10	330
77.	Diethylphthalate	84-66-2	10	330
78.	4-Chlorophenyl phenyl ether	7005-72-3	10	330
79.	Fluorene	86-73-7	10	330
80.	4-Nitroaniline	100-01-6	50	1600
81.	4,6-Dinitro-2-methylphenol	534-52-1	50	1600
82.	N-nitroso-diphenylamine	86-30-6	10	330
83.	4-Bromophenyl phenyl ether	101-55-3	10	330
84.	Hexachlorobenzene	118-74-1	10	330
85.	Pentachlorophenol	87-86-5	50	1600
86.	Phenanthrene	85-01-8	10	330
87.	Anthracene	120-12-7	10	330
88.	Di-n-butyl phthalate	84-74-2	10	330
89.	Fluoranthene	206-44-0	10	330
90.	Benzidine	92-87-5	80	2600
91.	Pyrene	129-00-0	10	330
92.	Butyl benzyl phthalate	85-68-7	10	330
93.	3,3'-Dichlorobenzidine	91-94-1	20	660
94.	Benzo(a)anthracene	56-55-3	10	330
95.	bis(2-ethylhexyl)phthalate	117-81-7	10	330
96.	Chrysene	218-01-9	10	330
97.	Di-n-octyl phthalate	117-84-0	10	330
98.	Benzo(b)fluoranthene	205-99-2	10	330
99.	Benzo(k)fluoranthene	207-88-9	10	330
100.	Benzo(a)pyrene	50-32-8	10	330
101.	Indeno(1,2,3-cd)pyrene	193-39-5	10	330
102.	Dibenz(a,h)anthracene	53-70-3	10	330
103.	Benzo(g,h,i)perylene	191-24-2	10	330

[c] Medium Water Contract Required Detection Limits (CRDL) for Semi-Volatile HSL Compounds are 100 times the individual Low Water CRDL.

[d] Medium Soil/Sediment Contract Required Detection Limits (CRDL) for Semi-Volatile HSL Compounds are 60 times the individual Low Soil/Sediment CRDL.

HSL - Pesticides/PCBs

		CAS Number	Detection Limits* Low Water[e] µg/L	Low Soil/Sediment[f] µg/Kg
104.	alpha-BHC	319-84-6	0.05	8.0
105.	beta-BHC	319-85-7	0.05	8.0
106.	delta-BHC	319-86-8	0.05	8.0
107.	gamma-BHC (Lindane)	58-89-9	0.05	8.0
108.	Heptachlor	76-44-8	0.05	8.0
109.	Aldrin	309-00-2	0.05	8.0
110.	Heptachlor epoxide	1024-57-3	0.05	8.0
111.	Endosulfan I	959-98-8	0.05	8.0
112.	Dieldrin	60-57-1	0.10	16.
113.	4,4'-DDE	72-55-9	0.10	16.
114.	Endrin	72-20-8	0.10	16.
115.	Endosulfan II	33213-65-9	0.10	16.
116.	4,4'-DDD	72-54-8	0.10	16.
117.	Endrin aldehyde	7421-93-4	0.10	16.
118.	Endosulfan sulfate	1031-07-8	0.10	16.
119.	4,4'-DDT	50-29-3	0.10	16.
120.	Endrin ketone	53494-70-5	0.10	16.
121.	Methoxychlor	72-43-5	0.5	80.
122.	Chlordane	57-74-9	0.5	80.
123.	Toxaphene	8001-35-2	1.0	80.
124.	AROCLOR-1016	12674-11-2	0.5	80.
125.	AROCLOR-1221	11104-28-2	0.5	80.
126.	AROCLOR-1232	11141-16-5	0.5	80.
127.	AROCLOR-1242	53469-21-9	0.5	80.
128.	AROCLOR-1248	12672-29-6	0.5	80.
129.	AROCLOR-1254	11097-69-1	1.0	160.
130.	AROCLOR-1260	11096-82-5	1.0	160.

[e]Medium Water Contract Required Detection Limits (CRDL) for Pesticide HSL Compounds are 100 times the individual Low Water CRDL.

[f]Medium Soil/Sediment Contract Required Detection Limits (CRDL) for Pesticide HSL compounds are 15 times the individual Low Soil/Sediment CRDL.

*Detection Limits listed for soil/sediment are based on wet weight. The detection limits calculated by the laboratory for soil/sediment, calculated on dry weight basis, as required by the protocol, will be higher.

**Specific detection limits are highly matrix dependent. The detection limits listed herein are provided for guidance and may not always be achievable.

HSL - Inorganic Parameters

Elements Determined by Inductively Coupled Plasma Emission or Atomic Absorption Spectroscopy

Parameter	Contract Required Detection Level[1 2] (µg/L)
Aluminum	200
Antimony	60
Arsenic	10
Barium	200
Beryllium	5
Cadmium	5
Calcium	5000
Chromium	10
Cobalt	50
Copper	25
Iron	100
Lead	5
Magnesium	5000
Manganese	15
Mercury	0.2
Nickel	40
Potassium	5000
Selenium	5
Silver	10
Sodium	5000
Thallium	10
Tin	40
Vanadium	50
Zinc	20

HSL - Inorganic Parameter

(continued)

Parameter	Contract Required Detection Level[1 2] (µg/L)
Cyanide	10

1: Any analytical method specified in SOW Exhibit D may be utilized as long as the documented instrument or method detection limits meet the Contract Required Detection Level (CRDL) requirements. Higher detection levels may only be used in the following circumstance:

If the sample concentration exceeds two times the detection limit of the instrument or method in use, the value may be reported even though the instrument or method detection limit may not equal the contract required detection level. This is illustrated in the example below:

For lead:
Method in use = ICP
Instrument Detection Limit (IDL) = 40
Sample concentration = 85
Contract Required Detection Level (CRDL) = 5

The value of 85 may be reported even though instrument detection limit is greater than required detection level. The instrument or method detection limit must be documented as described in Exhibit E.

2: These CRDL are the instrument detection limits obtained in pure water that must be met using the procedure in Exhibit E. The detection limits for samples may be considerably higher depending on the sample matrix.

Regulatory Promulgated Parameters

In addition to the preceding lists, the Laboratory may be asked to analyze for any or all of the conventional water quality parameters as listed in 40CFR Part 136 or for the hazardous waste parameters listed in 40CFR Part 261.

Detection limits to be achieved are those required to meet New York State regulations as specified in a State Pollutant Discharge Elimination System permit or NYCRR Part 703.

APPENDIX E

RECRA RESEARCH, INC., FEBRUARY 21, 1986, REPORT ON RESULTS OF THE ANALYSIS OF THE CONTAINER CRUSHING RESIDUE

RECRA ENVIRONMENTAL LABORATORIES

Division of Recra Research, Inc.

ENVIRONMENTAL CONSERVA[illegible]
AND TOXICOLOGY

FEB 27 1986

February 21, 1986

Mr. Jim Harrigan
O.H. Materials Company
P.O. Box 41
Windsor, NJ 08561

Re: Analytical Results
Recra Research Quote #86-074

Dear Mr. Harrigan:

Please find enclosed results of the analyses of the sample received at our laboratories on February 6, 1986.

The information contained in this report has been reviewed for completeness and accuracy by the individuals whose signature appears on this cover letter.

If you have any questions concerning these data, do not hesitate to contact our Customer Service Representative at (716) 692-7620.

Sincerely,

RECRA ENVIRONMENTAL LABORATORIES

James A. Ploscyca
Laboratory Director

for

Constance A. Finocchi
Waste Laboratory Supervisor

EC&T
FILE
X-REF

CAF/JAP/jhs
Enclosure
cc: Mike Verde
Ellen Hoffman
✓Mike Gallagher

I.D. #86-152 A,B
#6A757044

4248 Ridge Lea Road, Amherst, New York 14226

Telephone Sales (716) 838-62
Laboratory (716) 692-76

WASTE CHARACTERIZATION ANALYTICAL RESULTS

O. H. MATERIALS

Analytical Group C — Report Date: 2/21/86

Sample Identification: Soil Composite

PARAMETER	UNITS OF MEASURE	RESULTS
PHYSICAL PROPERTIES		
General Appearance		
Phases/Layering	% Layer	None
Physical State	-	Solid
Color	-	Brown
Odor	Apparent Indication	Pungent
Viscosity	Qualitative	High
Turbidity	Qualitative	Opaque
Total Residue @ 103°C	% by Weight	90.7
Ash Weight at 550°C	% by Weight	88.6
Density @ 25°C	g/ml	1.4
Leachable pH	Standard Units	12.45
Flash Point	°F	>200
Gas Evolution		
@ pH 2.0	-	No apparent reaction
@ pH 12.5	-	No apparent reaction
Free Liquid Test (paint filter)		Passed: Contains no free liquids
Solidification with Commercial Lime	% by Weight required	N/A: No free liquids
Compaction Test (See Attachment)	% Liquid Weight Loss	
CHEMICAL PROPERTIES		
Oxidizer Spot Test	-	Negative
Total Available Cyanide	mg/kg HCN	<50
Total Available Sulfide	mg/kg H_2S	<50
Total Cyanide	µg/g	<0.5
Total Sulfide	µg/g	<20
PCB's	µg/g dry as Aroclor 1242	<1
Halogenated Organic Scan (ECD)	µg/g dry as Chlorine; Lindane Standard	0.73
EP Toxicity Metals		See Attachment
IR Scan - Organics		See Attachment
Landfill Ban Analyses	% by Weight	See Attachment

(Continued)

COMPACTION TEST ANALYSIS

O. H. MATERIALS COMPANY

Report Date: 2/21/86

COMPACTION TEST

The compaction test is required by some disposal facilities to determine the potential weight of liquid that may escape from a solid waste material during transportation or landburial.

The compaction test involved subjecting a representative portion of the sample to a 0.33 kg weight with a diameter of 3.15 cm, a free-falling distance is absorbed on an elastomeric, polyurethane foam sample cup holder. The weight of the liquid is determined and recorded as the sample weight loss.

SAMPLE IDENTIFICATION	SAMPLE WEIGHT	SAMPLE WEIGHT LOSS	WEIGHT LOSS (%)
Soil Composite	53.0602	0.0802	0.15

FOR RECRA ENVIROMENTAL LABORATORIES [illegible]

DATE 2/24/86

I.D. #86-152B

RECRA ENVIRONMENTAL LABORATORIES

LANDBURIAL CERTIFICATION ANALYSES

O. H. MATERIALS COMPANY

Results for Sample: Soil Composite   Report Date: 2/21/86

PARAMETER	RESULTS	DATE ANALYZED
Total Organic Halogen (Appendix A; as weight % chlorine)	<0.01	2/10/86
Aromatic Organics (Appendix B; as weight %)		
Non-Polar	<0.01	2/14/86
Polar	<0.01	2/17/86
Total Organic Nitrogen (Appendix C; as weight % nitrogen)	<0.1	2/11/86
Low Molecular Weight Organics (Appendix D; as weight %)	<0.01	2/12/86

COMMENTS: The above analyses were performed in accordance with New York State Department of Environmental Conservation "Approved Analytical Procedures for Determining the Content of Constituents Banned from Landburial, January, 1985."

Values reported as "less than" (<) indicate the working detection limit for the particular sample or parameter.

FOR RECRA ENVIRONMENTAL LABORATORIES [illegible]

DATE [illegible]

Frederick Borck

2/21/86

I.D. #86-152A

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT

Report Date: 2/21/86

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION SOIL COMPOSITE	EPA MAXIMUM CONCENTRATION (mg/l)
Total Arsenic	mg/l	2/19/86	<0.005	5.0
Total Barium	mg/l	2/14/86	0.12	100.0
Total Cadmium	mg/l	2/18/86	<0.008	1.0
Total Chromium	mg/l	2/19/86	0.011	5.0
Total Lead	mg/l	2/18/86	<0.005	5.0
Total Mercury	mg/l	2/22/86	0.15	0.2
Total Selenium	mg/l	2/18/86	<0.005	1.0
Total Silver	mg/l	2/18/86	<0.007	5.0

COMMENTS:

Methods used for the EP Toxicity Test procedure as well as the analysis of the resulting extract were presented in U.S. Environmental Protection Agency publication, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods; SW-846, Second Edition, 1982. Metals analyses were performed utilizing the method of standard addition. Values reported as "less than" (<) indicate the working detection limit for the particular sample or parameter.

FOR RECRA ENVIRONMENTAL LABORATORIES [signature]

DATE 2/20/86

I.D. #86-152B

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
EP TOXICITY TEST EXTRACT
QUALITY CONTROL

Report Date: 2/21/86

RECOVERY ANALYSIS OF
SOIL COMPOSITE

PARAMETER	µg OF SPIKE	µg RECOVERED	% RECOVERY
Total Arsenic	25	26	104
	50	40	80
Total Barium	2,500	2,650	106
	5,000	5,900	118
Total Cadmium	250	247.50	99
	500	505	101
Total Chromium	250	200	80
	500	405	81
Total Lead	25	22	88
	50	40	80
Total Mercury	0.2	0.218	109
	0.4	0.436	109
Total Selenium	25	21	84
	50	39.5	79
Total Silver	250	255	102
	500	515	103

FOR RECRA ENVIRONMENTAL LABORATORIES R.V. Fin

DATE 2/24/86

I.D. #86-152B

RECRA ENVIRONMENTAL LABORATORIES

OHM
The Environmental Services Company

O.H. Materials Co.
P.O. Box 551
Findlay, Ohio 45839-0551
Phone (419) 423-3526

CHAIN-OF—CUSTODY RECORD

№ 19864

PROJECT LOCATION	NAME OF CLIENT	PROJECT TELEPHONE NO	PROJECT NUMBER
Glenham, N.Y.	Texaco	914-831-7054	#2997

ITEM NUMBER	SAMPLE NUMBER	NUMBER & SIZE OF CONTAINERS	DESCRIPTION	TRANSFER NUMBER & CHECK 1	2	3	4	5	6	7
01	2997-01	4-40ml vials	Soil Composite from Bottle Crush Roll-Off	✓						
02	2997-01	2-32oz Glass Jars	" " " " " "	✓						

Person Responsible for sample	Affiliation	Date	Time
Mike Strayer	OH Materials	2/5/86	1700

Purpose of analysis (use back of front sheet if necessary)
1) HSL-CLP (No Duplicate)
{Pesticides/PCBs
{Volatiles; Metals; AP/BN;}

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	ACCEPTED BY	DATE	TIME
1	01	[signature]	[signature] 2/6/86 11:00AM	2/5/86	1730
2	02	[signature]	[signature] 2/6/86 11:00AM	2/5/86	1730
3					
4					
5					

RECRA ENVIRONMENTAL LABORATORIES

Division of Recra Research, Inc.

February 28, 1986

Mr. Jim Harrigan
O. H. Materials
P.O. Box 41
Windsor, NJ 08561

Re: Analytical Results (P.O. #J2997-57278)

Dear Mr. Harrigan:

Please find enclosed results of the analyses of the soil sample received at our laboratories on February 6, 1986.

The information contained in this report has been reviewed for completeness and accuracy by the individuals whose signature appears on this cover letter.

If you have any questions concerning these data, do not hesitate to contact our Customer Service Representative at (716) 692-7620.

Sincerely,

RECRA ENVIRONMENTAL LABORATORIES

James A. Ploscyca
Laboratory Director

Richard V. Finn
Inorganic Coordinator

John J. Jugovich
Organic Coordinator

JJJ/JAP/jhs
Enclosure
cc: Mike Verde
Ellen Hoffman
✓Mike Gallagher

I.D. #86-152
#6A757044

RECRA ENVIRONMENTAL LABORATORIES

Division of Recra Research, Inc.

ANALYTICAL RESULTS

O. H. MATERIALS
PRIORITY POLLUTANT ANALYSES

Prepared For:

O. H. Materials
P.O. Box 41
Windsor, NJ 08561

Prepared By:

Recra Environmental Laboratories
4248 Ridge Lea Road
Amherst, NY 14226

Report Date: February 28, 1986

ANALYTICAL RESULTS

O. H. MATERIALS
PRIORITY POLLUTANT ANALYSES

Report Date: 2/28/86

INTRODUCTION:

On February 6, 1986 a sample was received at Recra Environmental Laboratories. A request was made by O. H. Materials to have the sample analyzed for selected fractions of the Environmental Protection Agency decreed priority pollutants.

This report will address the results of those analyses.

METHODS:

Priority pollutant analyses were conducted according to Environmental Protection Agency (EPA) methodologies.

Organic priority pollutants were analyzed by Gas Chromatography/Mass Spectrometry (GC/MS). Pesticide priority pollutants were analyzed by Gas Chromatography.

RESULTS AND DISCUSSION:

Analyses for specific Pesticides/PCB's are based upon the matching of retention times between samples and standards on a single gas chromatographic column. Gas chromatographic values reported as "less than" (<) indicate the working detection limit for the given sample and/or parameter.

The values reported as "less than or equal to" (≤) indicate the compound may be present at trace levels relative to the detection limit but not subject to accurate quantification.

(Continued)

RESULTS AND DISCUSSION (CONT'D.):

Compounds reported as ND are "not detected". Compounds reported as BDL are confirmed as being present in the sample at a level "below detection limit", and are not subject to reliable quantitation.

Respectfully Submitted,

RECRA ENVIRONMENTAL LABORATORIES

John J. Jugovich

John J. Jugovich
Organic Coordinator

JJJ/jhs

ANALYTICAL RESULTS

O. H. MATERIALS
GAS CHROMATOGRAPHY/MASS SPECTROMETRY
PRIORITY POLLUTANT ANALYSES

Report Date: 2/28/86

ACID/PHENOLICS

COMPOUND	DETECTION LIMIT (ug/g Dry)	SAMPLE IDENTIFICATION SOIL COMPOSITE
2-chlorophenol	0.33	ND
2,4-dichlorophenol	0.33	ND
2,4-dimethylphenol	0.33	ND
4,6-dinitro-o-cresol	1.6	ND
2,4-dinitrophenol	1.6	ND
2-methylphenol	0.33	ND
4-methylphenol	0.33	ND
2-nitrophenol	0.33	ND
4-nitrophenol	1.6	ND
p-chloro-m-cresol	0.33	ND
pentachlorophenol	1.6	ND
phenol	0.33	3.8 ug/g Dry 1/158
2,4,5-trichlorophenol	1.6	ND
2,4,6-trichlorophenol	0.33	ND

ADDITIONAL SAMPLE INFORMATION

Sample Date	2/5/86
Extraction Date	2/14/86
Analysis Date	2/26/86
Internal Standard (IS) - Level	1.0 ug/g
deuterated phenanthrene - Recovery	121%
Surrogate Standard (SS1) - Level	5.0 ug/g
2-fluorophenol - Recovery	110%
Surrogate Standard (SS2) - Level	5.0 ug/g
pentafluorophenol - Recovery	17%

FOR RECRA ENVIRONMENTAL LABORATORIES [illegible signature]

DATE [illegible]

I.D. #86-152

ANALYTICAL RESULTS

O. H. MATERIALS
GAS CHROMATOGRAPHY/MASS SPECTROMETRY
PRIORITY POLLUTANT ANALYSES

Report Date: 2/28/86

BASE/NEUTRALS

COMPOUND	DETECTION LIMIT (ug/g Dry)	SAMPLE IDENTIFICATION SOIL COMPOSITE
acenaphthene	0.33	ND
acenaphthylene	0.33	ND
aniline	0.33	ND
anthracene	0.33	ND
benzidine	1.6	ND
benzo(a)anthracene	0.33	ND
benzo(a)pyrene	0.33	ND
benzo(b)fluoranthene	0.33	ND
benzo(g,h,i)perylene	0.33	ND
benzo(k)fluoranthene	0.33	ND
benzoic acid	1.6	ND
benzyl alcohol	0.33	ND
bis(2-chloroethoxy)methane	0.33	ND
bis(2-chloroethyl)ether	0.33	ND
bis(2-chloroisopropyl)ether	0.33	ND
bis(2-ethylhexyl)phthalate	0.33	ND
4-bromophenylphenylether	0.33	ND
butylbenzylphthalate	0.33	ND
4-chloroaniline	0.33	ND
2-chloronaphthalene	0.33	ND
4-chlorophenylphenylether	0.33	ND
chrysene	0.33	ND
dibenzo(a,h)anthracene	0.33	ND
dibenzofuran	0.33	ND
1,2-dichlorobenzene	0.33	ND
1,3-dichlorobenzene	0.33	BDL
1,4-dichlorobenzene	0.33	1.4 ug/g Dry U072
3,3'-dichlorobenzidine	0.66	ND
diethylphthalate	0.33	BDL
dimethylphthalate	0.33	ND
di-n-butylphthalate	0.33	0.48 ug/g Dry - U069
2,6-dinitrotoluene	0.33	ND
2,4-dinitrotoluene	0.33	ND
di-n-octylphthalate	0.33	ND
1,2-diphenylhydrazine	0.33	ND
fluoranthene	0.33	BDL
fluorene	0.33	ND

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ANALYTICAL RESULTS

O. H. MATERIALS
GAS CHROMATOGRAPHY/MASS SPECTROMETRY
PRIORITY POLLUTANT ANALYSES

Report Date: 2/28/86

BASE/NEUTRALS

COMPOUND	DETECTION LIMIT (ug/g Dry)	SAMPLE IDENTIFICATION SOIL COMPOSITE
hexachlorobenzene	0.33	ND
hexachlorobutadiene	0.33	BDL
hexachlorocyclopentadiene	0.33	ND
hexachloroethane	0.33	ND
indeno(1,2,3-cd)pyrene	0.33	ND
isophorone	0.33	ND
2-methylnaphthalene	0.33	ND
naphthalene	0.33	BDL
2-nitroaniline	1.6	ND
3-nitroaniline	1.6	ND
4-nitroaniline	1.6	ND
nitrobenzene	0.33	21 ug/g Dry 0169
N-nitrosodimethylamine	0.33	ND
N-nitrosodi-n-propylamine	0.33	ND
N-nitrosodiphenylamine	0.33	ND
phenanthrene	0.33	BDL
pyrene	0.33	BDL
1,2,4-trichlorobenzene	0.33	BDL

ADDITIONAL SAMPLE INFORMATION

Sample Date	2/5/86
Extraction Date	2/14/86
Analysis Date	2/26/86
Internal Standard - Level	1.0 ug/g
deuterated phenanthrene - Recovery	121%
Surrogate Standard (SS3) - Level	5.0 ug/g
decafluorobiphenyl - Recovery	63%
Surrogate Standard (SS4) - Level	5.0 ug/g
2-fluorobiphenyl - Recovery	54%

FOR RECRA ENVIRONMENTAL LABORATORIES [illegible]

DATE [illegible]

I.D. #86-152

ANALYTICAL RESULTS

O. H. MATERIALS
GAS CHROMATOGRAPHY/MASS SPECTROMETRY
PRIORITY POLLUTANT ANALYSES

Report Date: 2/28/86

VOLATILES

COMPOUND	DETECTION LIMIT (ug/g Dry)	SAMPLE IDENTIFICATION SOIL COMPOSITE
acetone	0.010	0.77 ug/g Dry U002
acrolein	0.400	ND
acrylonitrile	0.400	ND
benzene	0.005	0.018 ug/g Dry U019
bromodichloromethane	0.005	ND
bromoform	0.005	ND
bromomethane	0.010	ND
2-butanone	0.010	ND
carbon disulfide	0.005	ND
carbon tetrachloride	0.005	ND
chlorobenzene	0.005	ND
chloroethane	0.010	ND
2-chloroethylvinyl ether	0.010	ND
chloroform	0.005	ND
chloromethane	0.010	ND
dibromochloromethane	0.005	ND
1,2-dichlorobenzene	0.005	ND
1,3-dichlorobenzene	0.005	ND
1,4-dichlorobenzene	0.005	ND
1,1-dichloroethane	0.005	ND
1,2-dichloroethane	0.005	ND
1,1-dichloroethylene	0.005	ND
trans-1,2-dichloroethylene	0.005	ND
1,2-dichloropropane	0.005	ND
cis-1,3-dichloropropene	5.0	ND
trans-1,3-dichloropropene	5.0	ND
ethylbenzene	0.005	0.0098 ug/g Dry-not UP
2-hexanone	0.010	ND
methylene chloride	0.005	ND
4-methyl-2-pentanone	0.010	ND
styrene	0.005	0.12 ug/g Dry not UP.
1,1,2,2-tetrachloroethane	0.005	ND
tetrachloroethylene	0.005	0.0082 ug/g Dry U210

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ANALYTICAL RESULTS

O. H. MATERIALS
GAS CHROMATOGRAPHY/MASS SPECTROMETRY
PRIORITY POLLUTANT ANALYSES

Report Date: 2/28/86

VOLATILES

COMPOUND	DETECTION LIMIT (ug/g Dry)	SAMPLE IDENTIFICATION SOIL COMPOSITE	
toluene	0.005	0.10 ug/g Dry	U2BC
1,1,1-trichloroethane	0.005	ND	
1,1,2-trichloroethane	0.005	ND	
trichloroethylene	0.005	ND	
trichlorofluoromethane	0.005	ND	
vinyl acetate	0.010	ND	
vinyl chloride	0.010	ND	
m & p-xylene	0.005	0.072 ug/g Dry	7U239
o-xylene	0.005	0.20 ug/g Dry	5

ADDITIONAL SAMPLE INFORMATION

Sample Date	2/5/86
Analysis Date	2/17/86
Internal Standard - Level	0.05 ug/g
bromochloromethane - Recovery	93%
Internal Standard - Level	0.05 ug/g
2-bromo-1-chloropropane - Recovery	96%
Internal Standard - Level	0.05 ug/g
1,4-dichlorobutane - Recovery	94%

FOR RECRA ENVIRONMENTAL LABORATORIES [illegible]

DATE [illegible]

I.D. #86-152

ANALYTICAL RESULTS

O. H. MATERIALS
GAS CHROMATOGRAPHY
PRIORITY POLLUTANT ANALYSES

Report Date: 2/28/86

PESTICIDES/PCB'S

COMPOUND	UNITS OF MEASURE	SAMPLE IDENTIFICATION SOIL COMPOSITE
aldrin	ug/g Dry	<0.03
alpha-BHC	ug/g Dry	<0.02
beta-BHC	ug/g Dry	0.69 - not UP
delta-BHC	ug/g Dry	<0.05
gamma-BHC	ug/g Dry	<0.02
chlordane	ug/g Dry	<1
4,4'-DDD	ug/g Dry	0.033 - U060.
4,4'-DDE	ug/g Dry	<0.02
4,4'-DDT	ug/g Dry	<0.08
dieldrin	ug/g Dry	<0.02
alpha-endosulfan	ug/g Dry	≤0.01
beta-endosulfan	ug/g Dry	0.033 P050
endosulfan sulfate	ug/g Dry	<0.08
endrin	ug/g Dry	<0.02
endrin aldehyde	ug/g Dry	<0.08
heptachlor	ug/g Dry	<0.1
heptachlor epoxide	ug/g Dry	≤0.01
PCB-1016	ug/g Dry	<0.5
PCB-1221	ug/g Dry	<2
PCB-1232	ug/g Dry	<2
PCB-1242	ug/g Dry	<1
PCB-1248	ug/g Dry	<1
PCB-1254	ug/g Dry	<0.5
PCB-1260	ug/g Dry	<0.5
toxaphene	ug/g Dry	<1

ADDITIONAL SAMPLE INFORMATION

Sample Date	2/5/86
Extraction Date	2/13/86
Analysis Date	2/19/86

FOR RECRA ENVIRONMENTAL LABORATORIES [signature]

DATE [illegible]

I.D. #86-152

RECRA ENVIRONMENTAL [illegible]

ANALYTICAL RESULTS

O. H. MATERIALS

Report Date: 2/28/86

PARAMETER	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION (DATE) SOIL COMPOSITE (2/5/86)
Total Aluminum	ug/g Dry	2/17/86	12,000
Total Antimony	ug/g Dry	2/12/86	<0.6
Total Arsenic	ug/g Dry	2/12/86	6.1
Total Barium	ug/g Dry	2/14/86	80
Total Beryllium	ug/g Dry	2/14/86	<0.6
Total Cadmium	ug/g Dry	2/12/86	<0.6
Total Calcium	ug/g Dry	2/17/86	35,000
Total Chromium	ug/g Dry	2/13/86	17
Total Cobalt	ug/g Dry	2/14/86	8.6
Total Copper	ug/g Dry	2/12/86	24
Total Iron	ug/g Dry	2/12/86	26,000
Total Lead	ug/g Dry	2/12/86	7.7
Total Magnesium	ug/g Dry	2/14/86	20,000
Total Manganese	ug/g Dry	2/13/86	540
Total Mercury	ug/g Dry	2/18/86	7.3
Total Nickel	ug/g Dry	2/14/86	18
Total Potassium	ug/g Dry	2/24/86	2,600
Total Selenium	ug/g Dry	2/11/86	<0.6
Total Silver	ug/g Dry	2/12/86	<2
Total Sodium	ug/g Dry	2/24/86	2,100
Total Thallium	ug/g Dry	2/12/86	<0.6
Total Tin	ug/g Dry	2/17/86	<30
Total Vanadium	ug/g Dry	2/20/86	21
Total Zinc	ug/g Dry	2/12/86	78
Dry Weight	%	2/13/86	91.1

FOR RECRA ENVIRONMENTAL LABORATORIES [signature]

DATE 2/28/86

I.D. #86-152

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

O. H. MATERIALS
GAS CHROMATOGRAPHY/MASS SPECTROMETRY
PRIORITY POLLUTANT ANALYSES
QUALITY CONTROL

Report Date: 2/28/86

VOLATILE RECOVERY ANALYSIS OF
SAMPLE SOIL COMPOSITE

COMPOUND IDENTIFICATION	ng OF SPIKE	ng RECOVERED	% RECOVERY
benzene	250	213	85
chlorobenzene	250	223	89
1,1-dichloroethene	250	218	87
toluene	250	193	77
trichloroethylene	250	233	93

ADDITIONAL SAMPLE INFORMATION

Sample Date	2/5/86
Analysis Date	2/17/86
Internal Standard - Level	0.05 ug/g
bromochloromethane - Recovery	117%
Internal Standard - Level	0.05 ug/g
2-bromo-1-chloropropane - Recovery	112%
Internal Standard - Level	0.05 ug/g
1,4-dichlorobutane - Recovery	111%

FOR RECRA ENVIRONMENTAL LABORATORIES [signature]

DATE 2/27/86

I.D. #86-152

ANALYTICAL RESULTS

O. H. MATERIALS
GAS CHROMATOGRAPHY/MASS SPECTROMETRY
PRIORITY POLLUTANT ANALYSES
QUALITY CONTROL

Report Date: 2/28/86

REPLICATE EXTRACTABLE ANALYSIS OF
SAMPLE SOIL COMPOSITE

COMPOUND IDENTIFICATION	UNITS OF MEASURE	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION	PERCENT COEFFICIENT OF VARIATION
1,3-dichlorobenzene	ug/g Dry	BDL	BDL	-	-	-
1,4-dichlorobenzene	ug/g Dry	1.4	1.3	1.4	0.071	5.1
diethylphthalate	ug/g Dry	BDL	ND	-	-	-
di-n-butylphthalate	ug/g Dry	0.48	0.60	0.54	0.085	16
fluoranthene	ug/g Dry	BDL	BDL	-	-	-
hexachlorobutadiene	ug/g Dry	BDL	ND	-	-	-
naphthalene	ug/g Dry	BDL	BDL	-	-	-
nitrobenzene	ug/g Dry	21	11	16	7.1	44
phenanthrene	ug/g Dry	BDL	BDL	-	-	-
phenol	ug/g Dry	3.8	2.0	2.9	1.3	43
pyrene	ug/g Dry	BDL	BDL	-	-	-
1,2,4-trichlorobenzene	ug/g Dry	BDL	BDL	-	-	-

FOR RECRA ENVIRONMENTAL LABORATORIES [signature]

DATE [illegible]

ANALYTICAL RESULTS

O. H. MATERIALS
QUALITY CONTROL

Report Date: 2/28/86

REPLICATE ANALYSIS OF
SAMPLE SOIL COMPOSITE

PARAMETER	UNITS OF MEASURE	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION	PERCENT COEFFICIENT OF VARIATION
Halogenated Organic Scan (ECD)	µg/g Dry as Chlorine; Lindane Standard	0.77	0.68	0.73	0.064	8.7

PESTICIDE/PCB's RECOVERY ANALYSIS OF
METHOD BLANK SPIKE

COMPOUND IDENTIFICATION	ng OF SPIKE	ng RECOVERED	% RECOVERY
aldrin	0.020	0.025	125
gamma-BHC	0.020	0.023	115
4,4'-DDE	0.026	0.029	112
beta-endosulfan	0.034	0.034	100
endrin	0.020	0.019	95

FOR RECRA ENVIRONMENTAL LABORATORIES [illegible]

DATE [illegible]

I.D. #86-152

[illegible]

ANALYTICAL RESULTS

O. H. MATERIALS
QUALITY CONTROL

Report Date: 2/28/86

REPLICATE ANALYSIS

PARAMETER	SAMPLE I.D.	UNITS OF MEASURE	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION	PERC. COEFFI. OF VARI.
Total Aluminum	Soil Composite	ug/g Dry	12,000	11,000	11,500	710	6.
Total Antimony	Soil Composite	ug/g Dry	<0.6	<0.6	<0.6	-	-
Total Arsenic	Soil Composite	ug/g Dry	6.2	5.9	6.1	0.21	3.
Total Barium	Soil Composite	ug/g Dry	78	82	80	2.8	3.
Total Beryllium	Soil Composite	ug/g Dry	<0.6	<0.6	<0.6	-	-
Total Cadmium	Soil Composite	ug/g Dry	<0.6	<0.6	<0.6	-	-
Total Calcium	Soil Composite	ug/g Dry	32,000	37,000	34,500	3,500	10
Total Chromium	Soil Composite	ug/g Dry	17	16	16.5	0.71	4.
Total Cobalt	Soil Composite	ug/g Dry	8.8	8.3	8.55	0.35	4.
Total Copper	Soil Composite	ug/g Dry	26	21	23.5	3.5	15
Total Iron	Soil Composite	ug/g Dry	28,000	24,000	26,000	2,800	11
Total Lead	Soil Composite	ug/g Dry	7.3	8.0	7.65	0.49	65
Total Magnesium	Soil Composite	ug/g Dry	19,000	20,000	19,500	710	3.
Total Manganese	Soil Composite	ug/g Dry	560	510	535	35	6.
Total Mercury	Soil Composite	ug/g Dry	7.5	7.1	7.3	0.28	3.
Total Nickel	Soil Composite	ug/g Dry	18	18	18	0	0
Total Potassium	Soil Composite	ug/g Dry	2,500	2,700	2,600	140	5.
Total Selenium	Soil Composite	ug/g Dry	<0.6	<0.6	<0.6	-	-
Total Silver	Soil Composite	ug/g Dry	<2	<2	<2	-	-
Total Sodium	Soil Composite	ug/g Dry	2,100	2,000	2,050	71	3.
Total Thallium	Soil Composite	ug/g Dry	<0.6	<0.6	<0.6	-	-
Total Tin	Soil Composite	ug/g Dry	<30	<30	<30	-	-
Total Vanadium	Soil Composite	ug/g Dry	19	23	21	2.8	13
Total Zinc	Soil Composite	ug/g Dry	87	69	78	13	16

FOR RECRA ENVIRONMENTAL LABORATORIES ____________________

DATE ____________________

I.D. #86-152

RECRA ENVIRONMENTAL

ANALYTICAL RESULTS

O. H. MATERIALS
QUALITY CONTROL

Report Date: 2/28/86

RECOVERY ANALYSIS

PARAMETER	SAMPLE I.D.	ug OF SPIKE	ug RECOVERED`	% RECOVERY
Total Aluminum	Soil Composite	5,000	4,650	93
Total Antimony	Soil Composite	50	55	110
Total Arsenic	Soil Composite	50	51	102
Total Barium	Soil Composite	5,000	5,650	113
Total Beryllium	Soil Composite	500	450	90
Total Cadmium	Soil Composite	500	535	107
Total Calcium	Soil Composite	5,000	5,450	109
Total Chromium	Soil Composite	500	425	85
Total Cobalt	Soil Composite	500	525	105
Total Copper	Soil Composite	500	490	98
Total Iron	Soil Composite	500	495	99
Total Lead	Soil Composite	50	41.5	83
Total Magnesium	Soil Composite	5,000	5,350	107
Total Manganese	Soil Composite	500	485	97
Total Mercury	Soil Composite	0.4	0.456	114
Total Nickel	Soil Composite	50	49	98
Total Potassium	Soil Composite	5,000	5,050	101
Total Selenium	Soil Composite	50	42	84
Total Silver	Soil Composite	500	500	100
Total Sodium	Soil Composite	50,000	51,500	103
Total Thallium	Soil Composite	50	35.5	71
Total Tin	Soil Composite	5,000	4,600	92
Total Vanadium	Soil Composite	5,000	4,850	97
Total Zinc	Soil Composite	500	460	92

FOR RECRA ENVIRONMENTAL LABORATORIES [signature]

DATE 2/28/86

I.D. #86-152

OHM
ne Environmental Services Company

O H. Materials Co.
P.O. Box 551
Findlay, Ohio 45839-0551
Phone (419) 423-3526

CHAIN-OF—CUSTODY RECORD

№ 19864

PROJECT LOCATION	NAME OF CLIENT	PROJECT TELEPHONE NO.	PROJECT NUMBER
Glenham, N.Y.	Texaco	914-831-7054	#2997

ITEM NUMBER	SAMPLE NUMBER	NUMBER & SIZE OF CONTAINERS	DESCRIPTION	TRANSFER NUMBER & CHECK 1	2	3	4	5	6	7
01	2997-01	4-40ml vials	Soil Composite from Bottle crush Roll-Off	✓						
02	2997-01	2-32oz Glass Jars	" " " " " "	✓						

Person responsible for sample	Affiliation	Date	Time
Mike Strayer	OH Materials	2/5/86	1700

Purpose of analysis (use back of front sheet if necessary)

HSL-CLP (No Duplicate)
Pesticides/PCBs
V.O.A.'s · Metals · AP/BN

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	ACCEPTED BY	DATE	TIME
1	01	[signature]	[signature] 2/6/86 11:00AM	2/5/86	1730
2	02	[signature]	[signature] 2/6/86 11:00AM	2/5/86	1730
3					
4					
5					

APPENDIX F

CYLINDER HANDLING AND SAMPLING PROCEDURES
MARCH 4, 1986

March 4, 1986

Examined & Agreed Upon

Hazel Jordan - Texaco

Mark Pucker - OHM

Peter N. Coleman - AETC

Mark M. Morowski - NYSDE

Fred Gallo - Gallo Assoc.

CYLINDER HANDLING PROCEDURES

TEXACO RESEARCH CENTER

BEACON, NEW YORK

PROJECT 2997

OH MATERIALS CO.

INTRODUCTION

OH Materials Co. (OHM) has been contracted by Texaco to determine the chemical content of cylinders and lecture bottles recovered during excavation at the Texaco Research Center Beacon (TRCB) in-active disposal site cleanup project. All of the cylinders recovered are considered to contain chemicals of unknown origin. Due to the unknown nature of the chemicals contained in the cylinders, OHM has contracted Gollob Analytical Services of Berkeley Heights, New Jersey to sample and analytically identify the contents of each cylinder.

Prior to sampling, the cylinders will be divided into two major segregation categories.

I Those to be transported off site to Gollob's main facility for sampling and analysis.

II Those to be sampled on-site by Gollob personnel.

OHM has contracted Advanced Environmental Technology Corporation (AETC) to transport the cylinders to Gollobs main facility in Berkeley Heights, N.J.

The following sections detail the field operation activities and sampling protocols to be used during packaging for off-site transportation and on-site sampling.

I CYLINDER HANDLING PROCEDURES

These are the site specific procedures OHM intends to follow during packaging of cylinders for transportation to Gollob Analytical Services (Gollob). Also detailed in this section is OHM's field operation plan to be implemented during on-site sampling of cylinders.

A. SEGREGATION OF CYLINDERS

Cylinder segregation was conducted by Texaco, Gollob and OHM personnel on a preliminary basis on February 12, 1986 and finalized on March 4, 1986. During the segregation procedure, the cylinders were assigned sample numbers and subsequently divided into four categories:

1- Cylinders to be transported to Gollob in Berkeley Heights, N.J. for sampling and analysis.

2- Cylinders to be sampled on-site for analysis by Gollob.

3- Disposal of ruptured cylinders.

4- Disposal of known cylinders.

Table 1 details the results of the segregation inspection showing cylinder number, and type of container.

TABLE 1 CYLINDER NUMBERS AND SAMPLE LOCATION

Cylinder #	Cylinder Type
1	20 l
2	25 l
No Sample #	No Cylinder
4	10 l
5	#6
6	1 l
7	500cc
8	500cc
9	6 l
10	4 l
11	2 l
12	2 l
13	3 l
14	3 l
15	Possibly an air dryer
16	200cc
17	2.5 l
18	1 l
19	L.B.-Lecture Bottle
20	1 l (F type)
21	300cc
22	L.B.
23	L.B.
24	L.B.
25	L.B.

26	#4
27	¼"NPT
28	1 1
29	1.5 1
30	1.5 1
31	2.5 1
32	2.5 1
33	#7
34	L.B.-(Methyl Acetylene)
35	#6 L.B.
36	L.B.
37	L.B.
38	L.B.
39	L.B.
40	L.B.
41	L.B.
42	L.B.
43	L.B.
44	L.B.
45	L.B.
46	L.B.
47	Airplane O_2 type tank
48	6 1
49	L.B.
50	L.B.
51	L.B.
52	L.B.
53	L.B.

54	L.B.
55	L.B.
56	L.B.
57	1A Linde Nitric Oxide
58	20 1

B. HANDLING OF SEGREGATION GROUPS

The cylinders, segregated into the groups listed above, will be handled in the following manner - See Diagram 1 for details:

Group A - Cylinders To Be Transported

Cylinders that are sound enough, will be shipped by AETC to Gollub in Berkeley Heights, N.J. for disposal analysis. After sampling they will be returned to Texaco for further disposition.

Group B - Cylinders To Be Sampled On-Site

These cylinders will be sampled by Gollob Analytical personnel inside the cylinder storage shed - (See Diagram 2). Samples will be transported to Gollob's lab in N.J. for analysis. The cylinders will be stored on-site pending analysis and disposal at an approved facility.

Group C - Disposal Of Ruptured Cylinders

These cylinders will be deposited in the secure roll off dumpster on-site by Gollob personnel for disposal at CECOS International Incorporated, Niagara Falls, N.Y.

Group D - Disposal Of Known Cylinders

This group contains cylinders that have markings or labels identifying the owner. These cylinders will be transported off-site by the owner.

C. OFF-SITE TRANSPORTATION OF CYLINDERS

Cylinders to be transported off-site will be packaged according to proper DOT Regulations. AETC will oversee the cylinder packing operation. OHM anticipates the cylinder packing operation will follow the format outlined below.

- Place cylinders individually contained in polyethylene bags in an unused drum.
- Place mechanical cushioning material (vermiculite) in the bottom of the drum to absorb shock.
- Place cylinders in an upright position at the bottom of the drum with a minimum of 2 inches cushioning in all directions.
- When bottom of drum is full of cylinders, place vermiculite packing material around sides and on top of cylinders.
- If adequate cushioning can be guaranteed, place a second row of cylinders on top of the vermiculite.
- Add appropriate amount of vermiculite to properly cushion cylinders.
- Continue this operation until the drum can not hold more material.
- Cover drum, and label according to appropriate DOT shipping requirements.

54	L.B.
55	L.B.
56	L.B.
57	1A Linde Nitric Oxide
58	20 1

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<u>Group D - Disposal Of Known Cylinders</u>

This group contains cylinders that have markings or labels identifying the owner. These cylinders will be transported off-site by the owner.

Cylinders will be wrapped in polyethelyne and either drummed with appropriate cushioning material or secured in an upright position to the side of the truck during transportation. The drums will be shipped by Environmental Transport Corporation (NY JA043), wholly owned by AETC to Gollob in Berkeley Heights, N.J. for sampling and analysis. Gollob will sample the cylinders and determine their contents for disposal. The cylinders will be returned to Texaco after sampling pending analysis results. The cylinders will then be packaged and transported to the proper disposal facility(ies) according to DOT shipping classes and associated shipping regulations.

D. CYLINDERS TO BE SAMPLED ON-SITE

Gollob personnel will be conducting on-site sampling of all cylinders not sent to their NJ facility for sampling and analysis. OHM estimates that between two and twenty-three cylinders will be sampled in the manner outlined in Appendix A (General Procedure For Sampling of Unlabeled Compressed Gas Cylinders).

Once sampled, the sample aliquots will be packaged and transported by Gollob to their facility in NJ for disposal analysis. The cylinders that were sampled will be packaged according to DOT requirements and stored in a secure concrete, fireproof building on Texaco property pending analysis. Prior to shipment off-site, the cylinders will be re-packaged if required according to the proper DOT classification as identified by the analysis. The cylinders will then be manifested and transported by a DOT approved carrier to an approved disposal facility.

During on-site sampling OHM will support Gollobs sampling efforts with a negative pressure ventilation system designed to remove fumes, smoke or potentially toxic vapors released to the atmosphere. The ventilation system will be attached to two carbon filters designed to "scrub" the air being forced through them. This scrubbing will reduce or eliminate any organic or volatile component concentrations released to the atmosphere. Diagram 3 details the position of ventilation hose, blower and carbon filters. OHM will also monitor the air quality inside the cylinder shed and at the carbon filters during sampling. Each person conducting the air monitoring will carry a PID, a cyanide monitor and a hydrogen sulfide monitor instrument to determine the air quality. An Explosimeter will also be placed inside the cylinder building during sampling. Diagram 4 indicates approximate position of personnel and associated air monitoring equipment during sampling.

E. DISPOSAL OF RUPTURED EMPTY CYLINDERS AND CONTAINERS

Prior to on-site sampling the ruptured empty cylinders and containers will be transported to the secure rolloff dumpster located northeast of the cylinder shed. The cylinders will be transported to the dumpster by Gollob personnel with the transfer overseen by OHM personnel.

F. DISPOSAL OF KNOWN CYLINDERS

As stated previously, these cylinders will be staged for off-site transportation by the owner.

II SITE SAFETY

OHM is committed to safety and as stated previously, will be involved with the support of Gollob personnel during cylinder sampling in the field. A site safety officer will be on-site to assure safe handling of the cylinders during the sampling procedure.

Prior to sampling, or off-site transportation of cylinders, OHM intends to enforce the following safety protocols.

1. A detailed safety meeting and inspection of cylinder sampling building will be held among all parties with a safety coordinator on site prior to cylinder sampling.

2. Air monitoring for total organics, hydrogen cyanide, and hydrogen sulfide and LEL (inside building).

3. Readily available extinguishing material such as inert sand for smothering and 50 lb. A.B.C. fire extinguishers.

4. Breathing apparatus worn by sampling and air monitoring personnel.

5. Enclosed building with air treatment system and hoses adjacent to sampling area.

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5. Enclosed building with air treatment system and hoses adjacent to sampling area.

The following section addresses safety equipment and protective gear, air monitoring, and contingency plan.

A. SAFETY EQUIPMENT AND PROTECTIVE GEAR

Sand, shovels and two 20 lb. fire extinguishers will be placed inside the cylinder building, while sand, shovels, and one 20 lb. fire extinguisher will be placed outside the cylinder building. Fire jackets will also be placed in these areas in case of fire or violent reaction. Field support personnel (chemist and safety officer) will be in Level "B" protection with the following gear:

SCBA
Saran/Tyvek Suit
Splash Suit
Booties
Robars
PVC Gloves (Outer)
Sample Gloves (Inner)
Hard Hat
Face Shield
Radio

During the cylinder sampling operation, the only administrative personnel allowed on-site will be the N.Y.S.D.E.C. and Texaco. The N.Y.S.D.E.C. and

Texaco will be allowed to inspect the cylinder shed prior to and after the sampling operation. At no time will any one, except sampling chemists and air monitoring personnel be allowed in the building while cylinder sampling is in progress. Also, at no time will any person, OHM or otherwise, be allowed beyond the transition building without level B protection; for visitors, level B protection includes:

Saran/Tyvek Suits

SCBA

Robar Boots

PVC Gloves (outer)

Sample Gloves (inner)

Hard Hat

B.. AIR MONITORING

PID, LEL, and monotox readings will be taken during the sampling operation to determine the airborne concentration of organic, oxygen, cyanide, and hydrogen sulfide vapors inside the cylinder shed and at the carbon filters. Personnel and air monitoring requirements are as follows:

Chemist inside the building - will have PID, LEL and monotoxes.

Safety officer at the carbon filters - will have PID and monotoxes.

Diagram 2 shows personnel and safety equipment as well as air monitoring equipment locations during the sampling of the cylinders.

III SITE CONTINGENCY PLAN FOR CYLINDER SAMPLING

In the event of an unusual vapor release or reaction, the following steps and procedures will be followed:

1. The chemist monitoring the cylinder sampling (cylinder chemist) shall notify the senior foreman and site supervisor by radio that there has been a release or reaction. He shall advise of the severity, describing the extent of release and wind direction.

2. If safe, the sampling and air monitoring crew shall remain in the building to minimize the reaction by using inert materials to cover the reaction or use appropriate fire extinguisher to remediate the reaction.

3. The site supervisor shall notify the appropriate Texaco/DEC representative of the release and its present situation and if necessary request assistance in identifying the nature of the material to control further releases or reaction.

4. Based upon the cylinder chemist's visual assessment and meter readings of the perimeter, the senior foreman and site supervisor and chemist shall decide how to proceed.

5. Downwind PID, cyanide, and hydrogen sulfide readings will be taken immediately and as the above decisions are being made. Readings shall be taken outside the building to the

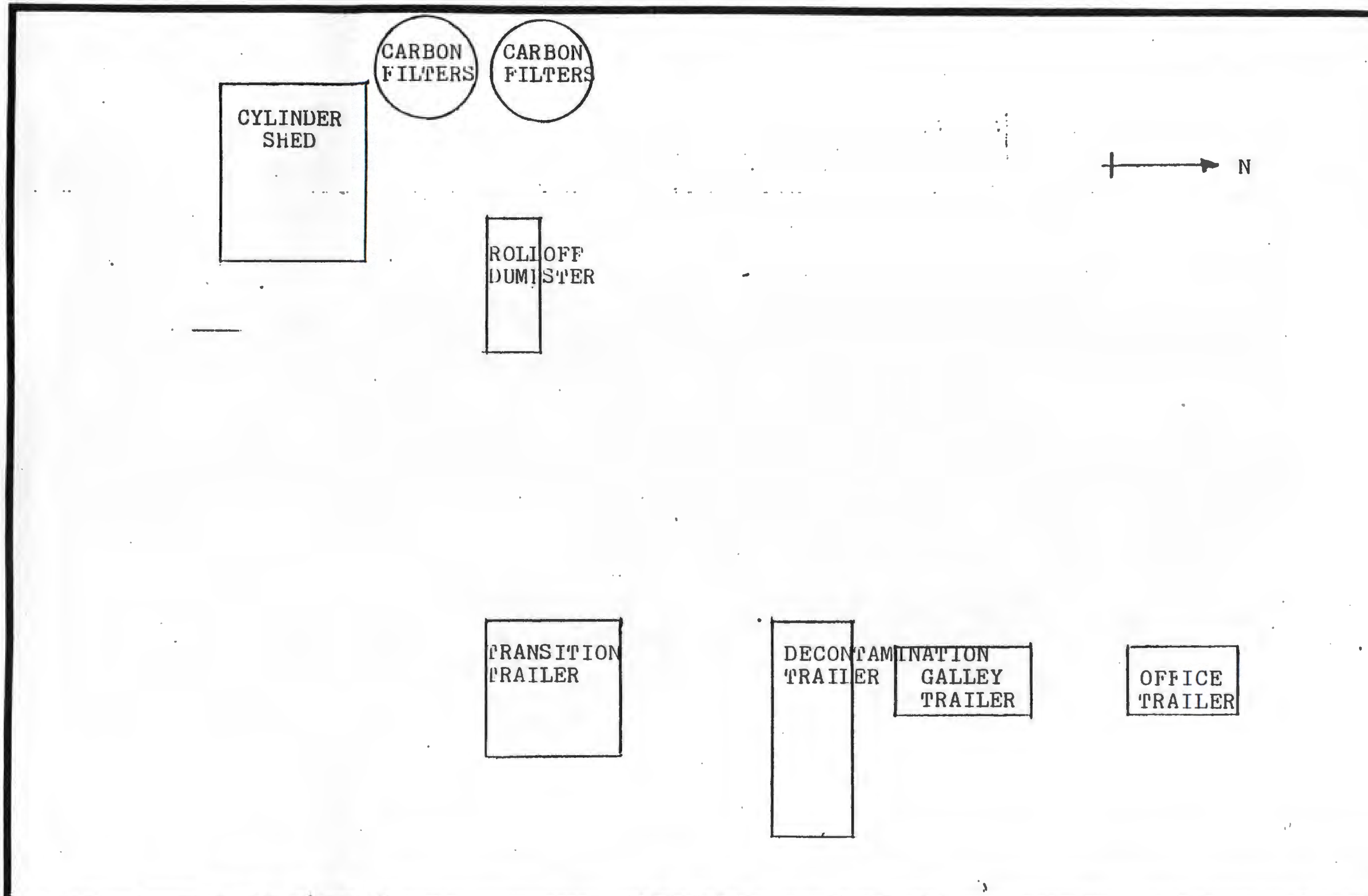
perimeter of the site. These readings (including wind direction) will be relayed via radio contact to the site supervisor and the appropriate Texaco/DEC representatives.

6. Continuous radio contact will be maintained between the cylinder chemist and site supervisor until the proper remedial action has been completed.

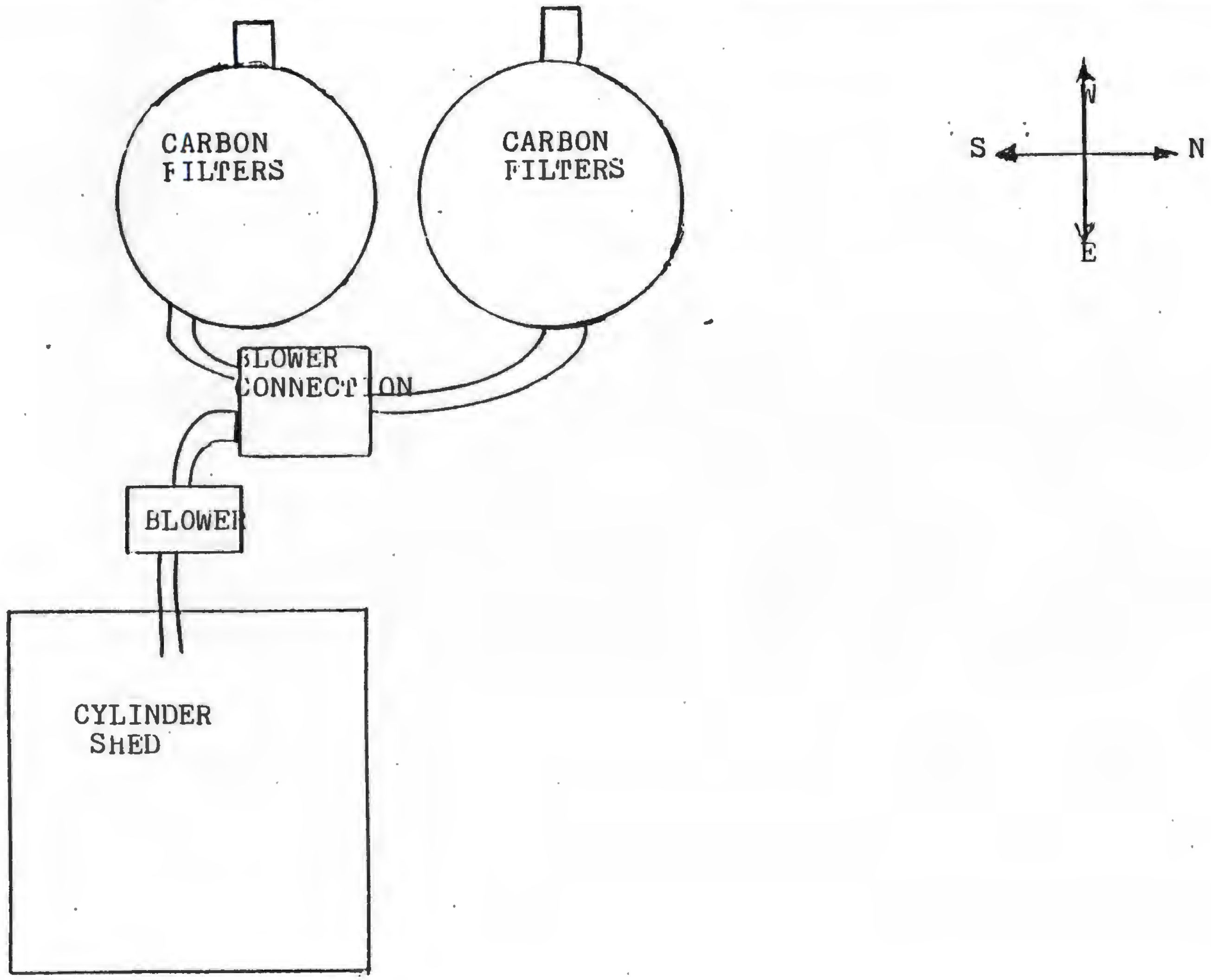
7. Appropriate emergency response personnel such as Texaco's fire brigade, the local fire department, hospital and police shall be summoned by joint decision between OHM, Texaco and N.Y.S.D.E.C.

8 After remediation or completion of the reaction/release the chemist will identify the most suitable containment method and proceed accordingly. This process will be done in consultation with a Texaco chemist when possible.

9. The supervisor will be updated on the current status of the release/reaction at all times. He shall authorize the resumption of work. Work will resume cautiously taking care to observe additional reaction/releases. The site supervisor will authorize the resumption of work and be advised when normal operations commence.



SCALE NTS	DRAWN BY MS	NO.	DATE	REVISION	BY	DIAGRAM 2	O. H. MATERIALS CO.
DATE 2/28/86	CHECKED ME					SITE PLAN	EMERGENCY RESPONSE AND ENVIRONMENTAL RESTORATION BOX 551 419-423-3526 FINDLAY, OHIO 800-537-9540
SHEET 1 OF 1	APPROVED ME						PROJECT 2997 / DRAWING / REVISION



SCALE NTS

DRAWN BY MS

DATE 2/28/86

CHECKED ME

SHEET 1 OF 1

APPROVED ME

NO.	DATE	REVISION	BY

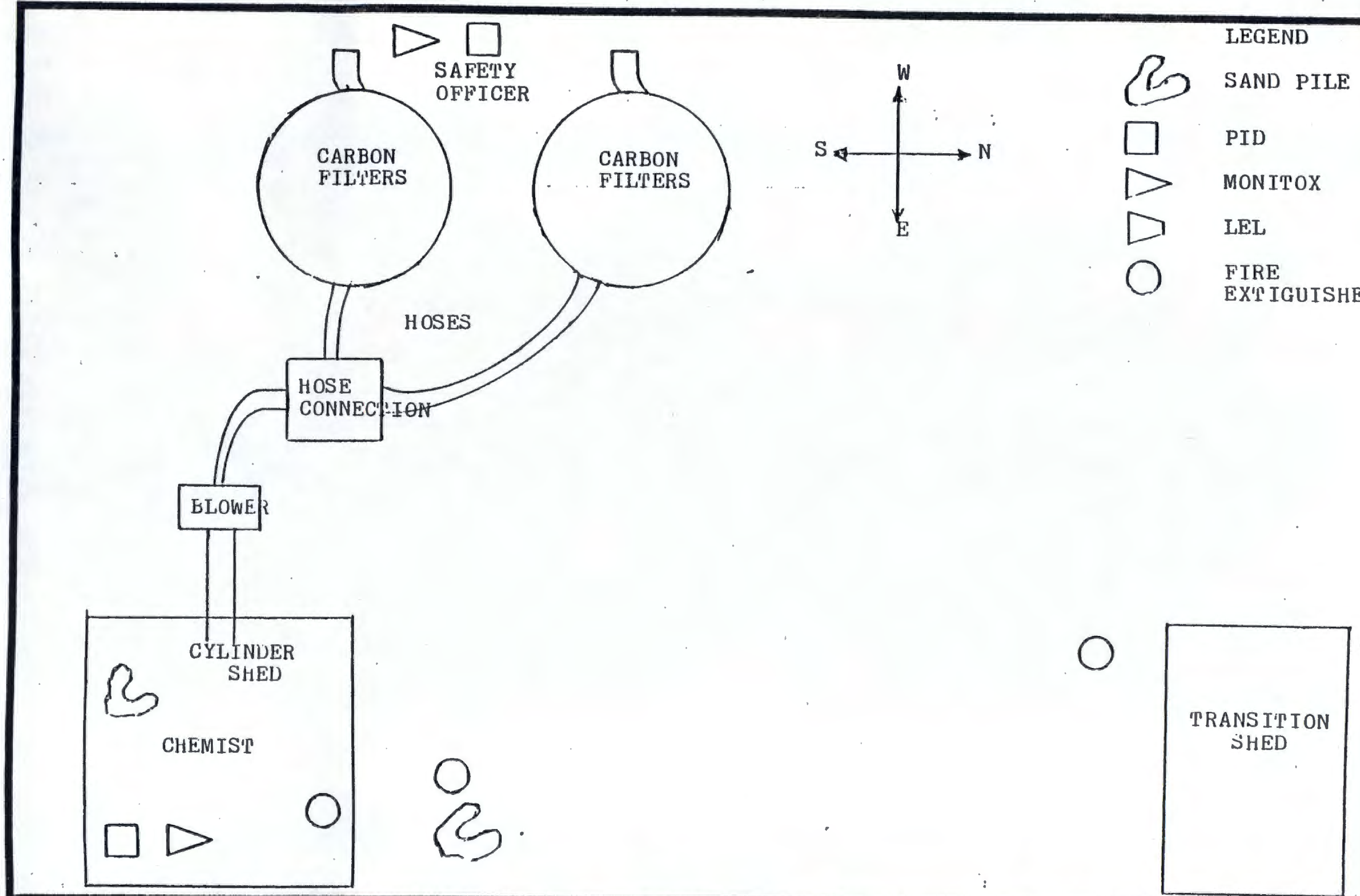
DIAGRAM 3
BLOWER HOSE ARRANGEMENT
DURING CYLINDER SAMPLING
OPERATIONS

O. H. MATERIALS CO.
EMERGENCY RESPONSE AND ENVIRONMENTAL RESTORATION
BOX 551 FINDLAY OHIO

PROJECT 2997

DRAWING

REVISION



SCALE NTS	DRAWN BY MS	NO.	DATE	REVISION	BY
DATE 2/28/86	CHECKED ME				
SHEET 1 OF 1	APPROVED ME				

DIAGRAM 4

PERSONNEL and SAFETY EQUIPMENT POSITIONS DURING CYLINDER SAMPLING

O. H. MATERIALS CO.
EMERGENCY RESPONSE AND ENVIRONMENTAL RESTORATION
FINDLAY, OHIO

PROJECT | DRAWING | REVISION

Gollob Analytical Service

47 INDUSTRIAL ROAD
BERKELEY HEIGHTS, NEW JERSEY 07922
TEL. (201) 464-3331

MOLININI-GOLLOB, INC.

February 25, 1986

Mr. M. Gallagher
Texaco Research Center
Old Glenham Road
Glenham, New York 12527

Dear Mr. Gallagher:

As requested by Jim Harrigan, you will find enclosed a description of the sampling procedures that I propose to use at your location.

Please do not hesitate to contact me if you have any questions.

Yours very truly,

Fred Gollob

GOLLOB ANALYTICAL SERVICE
FRED GOLLOB

FG/ars
Encs.

cc: Mr. J. Harrigan
O.H. Materials
P.O. Box 41
Windsor, NJ 08561

cylinder are purged with nitrogen and evacuated. The manifold and sample cylinder are then filled to atmospheric pressure, with the unknown gas, by careful control of the needle valve. At this point the sampling is complete, and it is a matter of disposing of the residual gas in the system. Depending upon the unknown cylinder pressure, and any general knowledge of its contents, obtained from observation of the cylinder size, shape and type of fitting, the residual gas is either vented or drawn into the evacuated gasreceiver, Venting is the usual procedure, and is accomplished by at least three cycles each of evacuation and purging with nitrogen. This rather thorough venting procedure is performed to ensure complete removal of the unknown gas and avoid any possible reaction with the next unknown gas to be sampled.

The sampling cylinders are then returned to the laboratory for analysis. Mass spectrometry is the primary identification method, but gas chromatography and chemical procedures can also be used to complete the identification.

Most compressed gas cylinders contain either gas, or gas in equilibrium with a liquid phase. In the latter case, the liquid is placed in the cylinder because it has a high vapor pressure and the cylinder is used to contain the vapors. Identification of the gas is sufficient to identify and characterize the entire cylinder contents.

However, certain types of liquids that have no significant vapor are also placed in cylinders for a different reason-to prevent contact of atmospheric oxygen and moisture with the liquid. These liquids are very reactive chemically, and will either ignite spontaneously upon contact with air or will react with the air to release poisonous or corrosive vapors. In this case, the gas phase is usually not the vapors of the liquid, but an inert gas placed there to protect the liquid and to facilitate the removal of the liquid. Identification of the gas phase of these cylinders usually reveals only an inert gas and does not warn of the presence of a dangerous liquid phase.

The task of identification of cylinder contents requires, among other skills, alertness to the possibility that a cylinder containing only a low pressure of an inert gas may also contain a hazardous low vapor pressure liquid. If analysis of the gas phase, and a prudent evaluation of the cylinder, indicate this possibility, then the cylinder should be examined for the presence of a liquid phase, If liquid is present, there is a high probability that it will be a hazardous liquid. A sampling procedure should therefore be used that will not expose the liquid to air, and will not expose the sampling personnel to the liquid, or to possible reaction products if there is an unplanned contact between the liquid and the air.

Liquid samples are obtained from cylinders by replacing the tee assembly with a special glass receiver-fixture. One connection of the assembly is attached to the cylinder, and the other to the manifold. After evacuation of the glass receiver, the cylinder is inverted and a sample of its liquid contents permitted to enter the receiver. The valves in the receiver are then closed, and the receiver is returned to the laboratory for identification..