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Work Plan For the
Visual Site Inspection (VSI) and
Sampling Visit (SV)
at Bob's Home Service, Inc (BHS)
Wright City, Missouri

U. S. EPA Contract No. 68-01-7251
Work Assignment No. 39-7L00
Task No. W63710.SI

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For Region VII, U.S. EPA

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RCRA RECORDS CENTER

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# SECTION 1: INTRODUCTION

Through the U.S. Environmental Protection Agency (EPA) REM IV contract (Contract no. 68-01-7251) with $CH_2M$ HILL, Inc., a work assignment (W.A. No. 39-7L00) was issued to Ecology and Environment, Inc. (E & E), a subcontractor to $CH_2M$ HILL, to perform a series of Resource Conservation and Recovery Act (RCRA) preliminary review (PR), visual site inspections (VSI), and sampling visits (SV) cumulatively referred to as RCRA Facility Assessments (RFAs). This document constitutes the SV work plan portion of the RFA for Bob's Home Service, Inc (BHS), a secure landfill located in Wright City, Missouri.

The objective of this SV is to determine if hazardous constituents have migrated into the soil, sediment, surface and groundwater from any of the solid waste management units (SWMU's) onsite.

Sections 3004 (u), 3004 (v) and 3008 (l) of the 1984 Hazardous and Soil Waste Amendments give EPA the authority to require corrective actions at interim status and RCRA permitted facilities for releases from solid waste management units (SWMUs). EPA can require corrective actions for releases to the air, surface and groundwater. Also, EPA can require corrective actions off of the facility.

## SECTION 2: SITE DESCRIPTION

Bob's Home Service, Inc. (BHS) is located approximately three miles southwest of Wright City in Warren County, Missouri. As shown on Figure 1 the BHS property occupies approximately 158 acres in the south 1/2 of Section 32, Township 47N, Range 1W.

BHS is situated on what is known as the Zykan Farm. The majority owner of the BHS is Mrs. Laverne Zykan. Daily operations are under the management of Mr. Michael Gill, Vice President of Operations. Mailing address of the site is: Route 1, Box 116-F, Wright City, Missouri 63390.

BHS is an industrial waste management facility whose operations consist of receiving, checking, and landfilling of hazardous and non-hazardous industrial waste materials.

Facilities on the site include:

Office and Employee Facilities;
Maintenance Building;
Covered Truck Wash and General Storage;
Solid Waste Disposal Area pre-1977;
Area I Hazardous Waste Disposal Area;
Progressive Trench Hazardous Waste Disposal Area; and,
Surface Impoundments SI1, SI2, SI3, SI4

3T ?

The BHS site is located within the overlapping boundaries of the Dissected Till Plains physiographic subprovince of the Central Lowland and Ozark Salem Plateau provinces. Topography of the site is typically rolling to hilly till plains of moderate relief. Surface elevations range from 810 mean sea level (MSL) at the northwest corner of the site to 725 MSL at the southwestern corner.

Two major and one minor surface drainage features, characterized by intermittent streams, transect the site. Major drainage features flow generally southwesterly and southerly across the site. The minor drainage feature trends southeasterly.

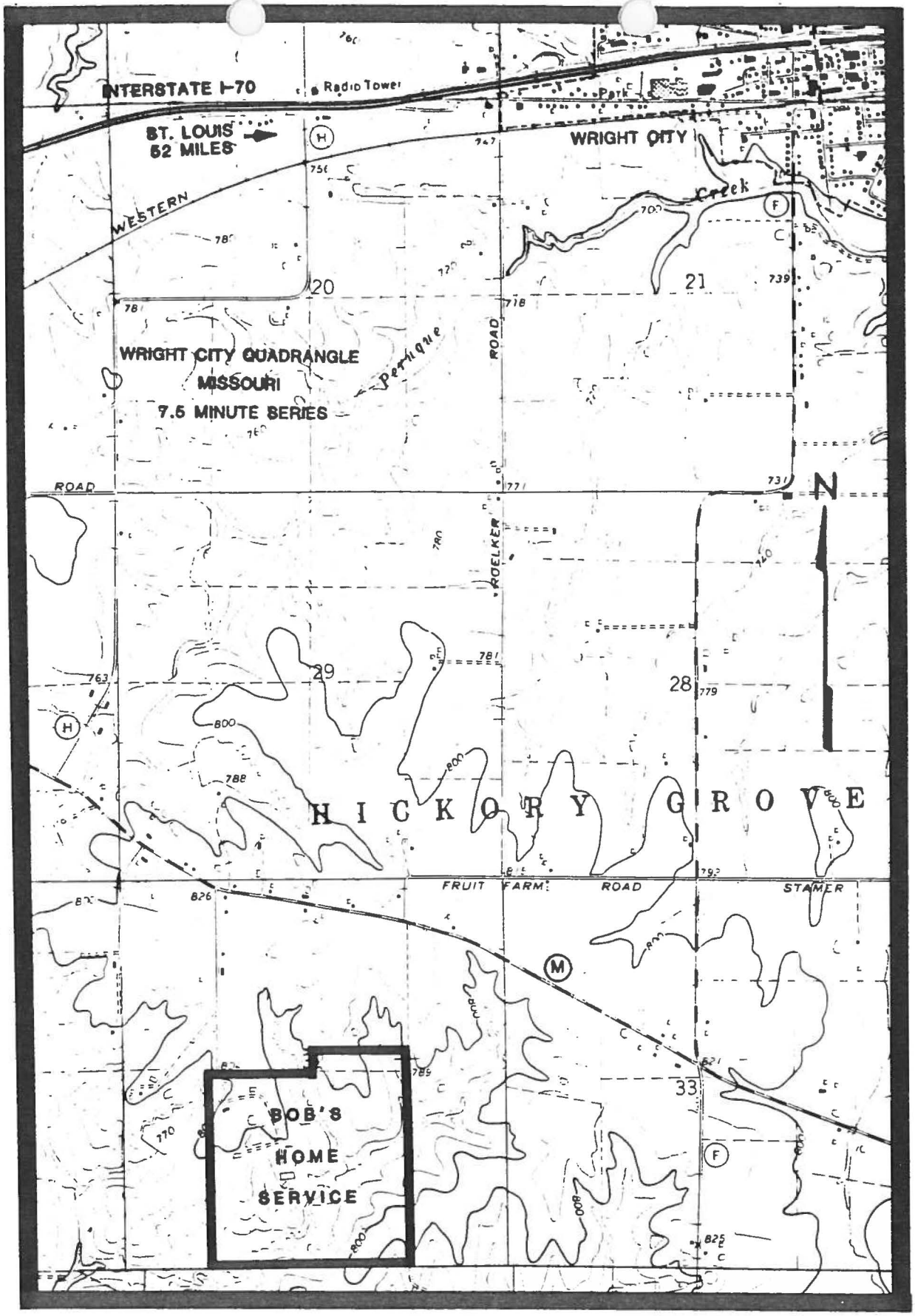


**FIGURE 1**
**TOPOGRAPHIC MAP**

SCALE 1:24000

1 ½ 0 1 MILE

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

The unconsolidated materials have been divided into two zones. The upper unit consists of the fractured oxidized till and loessial deposits. The lower unit is made up of the unoxidized till and residual soils. Permeabilities of the upper unit are estimated to be on the order $10^{-5}$ to $10^{-3}$ cm/sec. Permeabilities of the lower unit is estimated at about $10^{-7}$ to $10^{-5}$ cm/sec.

Underlying the unconsolidated sediments are sedimentary rocks the youngest of which has been identified as the Sulfur Springs Group. Underlying the Sulfur Springs Group are the: Snyder Creek Formation; Callaway, Kimmswick, Plattin, and Joachim Limestones and the Decorah Shale. The St. Peter Formation lies below the above formations. Below the St. Peter are the Powell-Cotter, Jefferson City and Roubidoux formations.

Regional water-supplying aquifers are found in the St. Peter Sandstone and in underlying formations. All formation in this section was obtained from the Preliminary Review (E&E, 1986).

## SECTION 3: SITE HISTORY AND WASTE CHARACTERISTICS

Prior to 1977 BHS operated as a commercial/residential waste sanitary landfill operation. The history and wastes handled and disposed of in the landfills during that time period have not been determined. Since 1977 BHS has been a State-permitted industrial waste facility for the handling and disposal of bulk and drummed wastes. In 1980 BHS ceased landfilling flammable wastes. Separate waste disposal operations were maintained for organic, and alkaline, and acid wastes until 1982. After January 1982 the disposal method was changed to a progressive trench method with no waste segregation. In May 1985, Hazard Waste Disposal Area 1 reached its permitted disposal capacity and ceased receiving off-site wastes for disposal.

Disposal facilities on site consist of the old landfill area, the Waste Management Area I (Area I and the progressive trench) and four surface impoundments (SI1, SI2, SI3T, and SI4) (Figure 2). Total estimated wastes disposed of between 1977 and 1985 are approximately 190,000 cubic yards.

Wastes disposed of at BHS have been both non-hazardous and hazardous. A variety of waste types have been handled and disposed of at BHS. Examples of waste streams which were disposed of are:

- Paint sludge - heavy metals and traces of solvents;
- Heavy metal wastes - metal less than 1% by weight;
- Pesticide wastes - pesticides less than 10% by weight;
- Dust collector residue;
- Spill clean-up wastes;
- Expended safety material and equipment;
- Contaminated soil from lagoon closures;
- Contaminated wastes - i.e., orthochlorophenol; creosote pcp, etc.
- Industrial wastewater treatment sludges; and,
- Non-hazardous wastes.

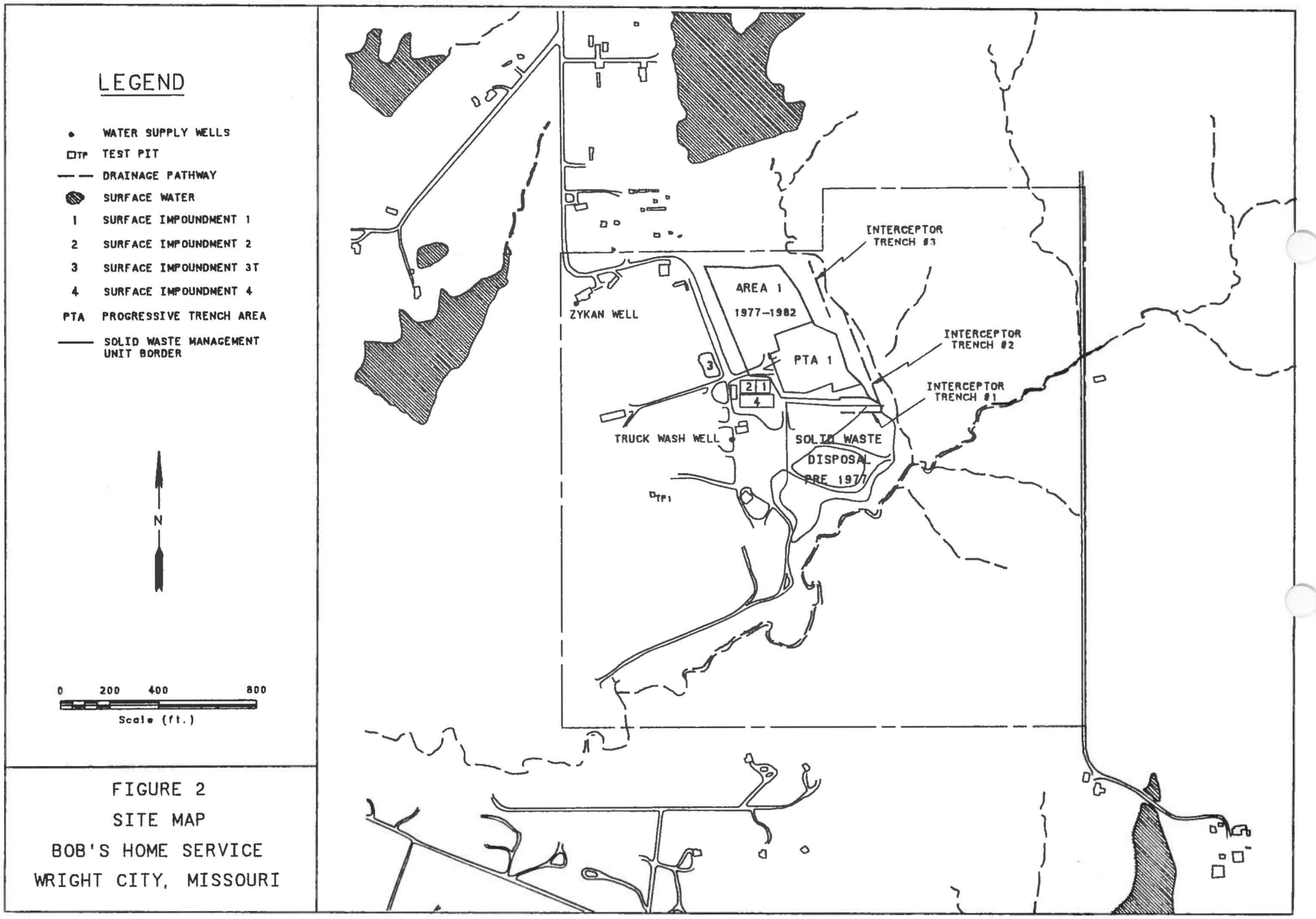


FIGURE 2
SITE MAP
BOB'S HOME SERVICE
WRIGHT CITY, MISSOURI

Compliance sampling has been conducted at 5 surface water locations, the SI's, and Lake Lucerne from 1977 to 1985. Samples have also been collected of surface water runoff and of leachate. However, parameters for surface water analysis have not included organic compounds. Leachate samples collected in 1985 have been analyzed for metals, organics and indicator parameters.

Over 70 borings, many completed as monitor wells and piezometers have been drilled within and around BHS since 1977 (Figure 3). Many of these have been sampled to ascertain groundwater quality and to comply with RCRA. Pre-1985 groundwater analysis included metals and indicator parameters. Recent sample results by the EPA Groundwater Task Force and BHS found low concentrations of a few organic compounds in a number of the monitoring wells.

All information in this section was obtained from the Preliminary Review (E&E,1986).

## LEGEND

| | |
|---|---|
| • | WATER SUPPLY WELLS |
| ✦GM1R | EXISTING GROUND WATER MONITORING WELLS |
| ✦GM4R | REPLACEMENT WELL 1985 |
| •TH, ∘P | BORINGS BY RIETZ AND JENS 1977 AND 1979 |
| •K | BORINGS BY D.E. KLOCKOW 1983 |
| ∘B | BORINGS BY WOODWARD-CLYDE 1985 |
| ✦DMW | DEEP MONITORING WELL 1977 |
| □TP | TEST PIT |
| 1 | SURFACE IMPOUNDMENT 1 |
| 2 | SURFACE IMPOUNDMENT 2 |
| 3 | SURFACE IMPOUNDMENT 3T |
| 4 | SURFACE IMPOUNDMENT 4 |
| — | SOLID WASTE MANAGEMENT UNIT BORDER |
| ▨ | SURFACE WATER |

N

0 200 400 800

Scale (ft.)

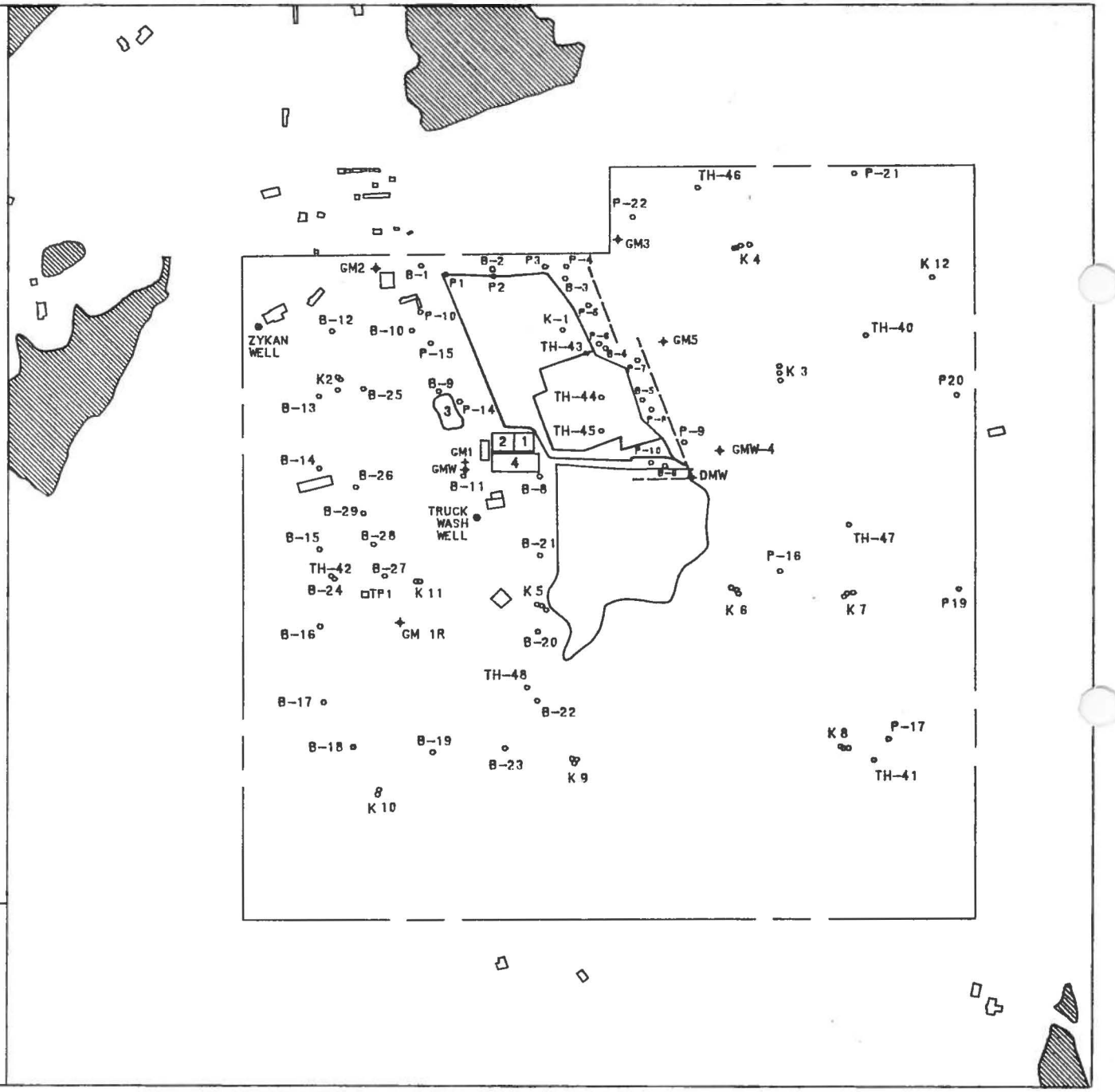


FIGURE 3

BORINGS AND WELL LOCATION MAP

BOB'S HOME SERVICE

WRIGHT CITY, MISSOURI

## SECTION 4: FIELD WORK

The sampling plan has been developed taking into account the extensive historical data available on BHS. Surface water, leachate, waste, and groundwater data are available. However, some gaps in the data (i.e., surface water sediment data, complete organics analysis of groundwater, and surface water) have been identified. The sampling plan has been designed to provide data which will fill some of these data gaps.

Objectives of the following sample plan for the sampling visit (SV) of BHS are:

- To verify the presence of organic contaminants which may be migrating from the hazardous waste disposal Area 1 via the ground water;
- To identify contaminants which may be migrating from the old landfill area via leachate seeps; and,
- To identify surface water quality affected by contamanints from the hazardous waste disposal Area 1 and/or the old landfill area.

To achieve these objectives ~~the following plan of~~ investigation ~~is proposed:~~ it is recommended to

Obtain and analyze groundwater, surface water, sediment, and leachate/sediment samples, a total of seventeen (17) samples are proposed for collection from BHS (Figure 4). All samples are to be analyzed for the Hazardous Substance List (HSL) metals and organics. The following sampling is proposed:

Reset margins

- Five (5) groundwater samples will be collected from wells selected to provide optimum verification of groundwater quality. At one location a duplicate sample will be collected for QA/QC. Wells to be sampled are: GM-1, B-6A, B-8, B-20.

## LEGEND

- ◆ WATER SUPPLY WELLS
- □TP TEST PIT
- — — DRAINAGE PATHWAY
- SURFACE WATER
- 1 SURFACE IMPOUNDMENT 1
- 2 SURFACE IMPOUNDMENT 2
- 3 SURFACE IMPOUNDMENT 3T
- 4 SURFACE IMPOUNDMENT 4
- PTA PROGRESSIVE TRENCH AREA
- ——— SOLID WASTE MANAGEMENT UNIT BORDER
- UN UPSTREAM NORTH
- UE UPSTREAM EAST
- HW HAZARDOUS WASTE AREA
- BO BELOW OLD LANDFILL
- LS LEACHATE SAMPLE LOCATION

N

0 200 400 800

Scale (ft.)

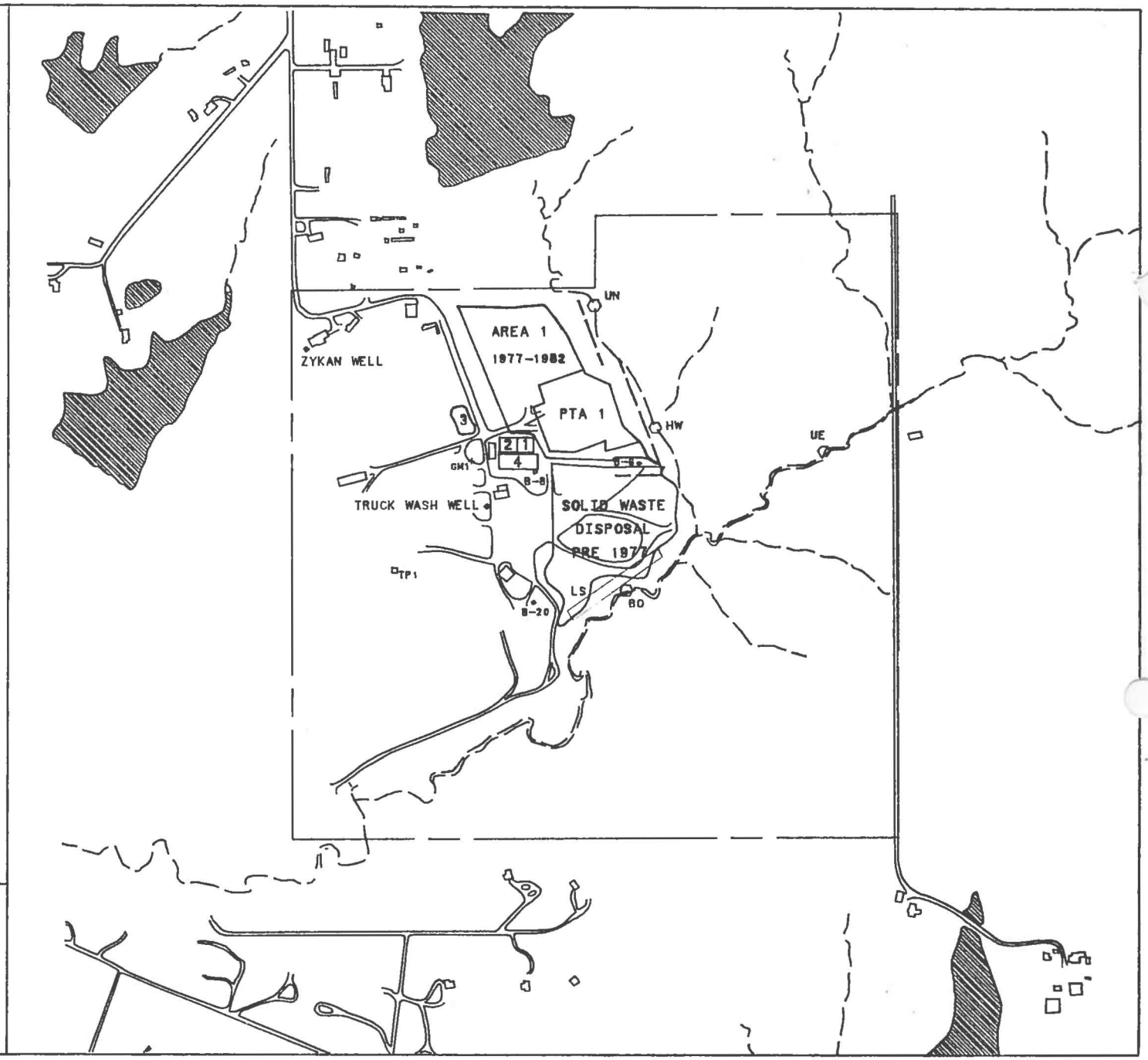


FIGURE 4
SAMPLE LOCATION MAP
BOB'S HOME SERVICE
WRIGHT CITY, MISSOURI

Five (5) surface water samples will be collected near locations (depending on surface water availability) used by BHS for compliance monitoring. At one location a duplicate sample will be collected for QA/QC. Locations to be sampled are UE, UN (both background but within separate drainage ways), HW, and OL.

Five (5) sediment samples will be collected from six (6) locations within the surface water pathways. At one location, a duplicate sample will be collected QA/QC analysis. Five (5) of the samples will coincide with surface water sample locations (Figure 3).

Two (2) samples will be collected from seeps, which may be occurring along the southeastern perimeter of the landfill area. If seeps are not present soil from drainage paths will be sampled. The location and number of these samples will be identified by a reconnaissance of the landfill boundary. Although no seeps were observed during the VSI, heavy fall precipation may produce leachate flow.

Tables 1, 2, 3, and 4 present summaries of the sample locations and analysis to be performed.

## 4.1 SAMPLE COLLECTION PROCEDURES

### 4.1.1 Groundwater Samples:

Prior to sampling a monitoring well, three to five well volumes will be purged from the well so that a representative groundwater sample can be obtained. Water will be purged and monitored until stabilized temperature, pH, and conductivity are reached. Determination of these parameters will be done in the field. Groundwater samples will be collected using an inert Teflon bailer attached to a length of polypropylene rope. To assure that all samples are representative, bailers will be retrieved from varying water depths and each bailer's contents will be evenly divided between sample containers.

Water samples will be introduced directly into the sample containers from the bailer to minimize potential cross contamination. The sample containers will then be documented, decontaminated, and packaged for shipment to the designated EPA Region VII laboratory (RL).

Bailers will be decontaminated between each sample using a clean (potable) water and detergent wash, a clean water rinse and a methanol

TABLE 1

GROUNDWATER SAMPLE SUMMARY

| LOCATION | PARAMETERS |
|---|---|
| GM-1 | HSL Metals and Organics |
| B-6 | HSL Metals and Organics |
| B-8 | HSL Metals and Organics |
| B-20 | HSL Metals and Organics |

Total samples: 5 groundwater.

*A duplicate sample will be collected at GM-1 for QA/QC.

TABLE 2

SUMMARY OF SURFACE WATER SAMPLES

| LOCATION | PARAMETERS |
|---|---|
| UN (background) | HSL Metals and Organics |
| UE (background | HSL Metals and Organics |
| HW* | HSL Metals and Organics |
| BO | HSL Metals and Organics |

Total samples: 5 surface water.

* A second sample will be taken from location HW for QA/QC.

TABLE 3

SUMMARY OF SEDIMENT SAMPLES

| LOCATION | PARAMETERS |
|---|---|
| UN (background) | HSL Metals and Organics |
| UE (background) | HSL Metals and Organics |
| HW | HSL Metals and Organics |
| BO* | HSL Metals and Organics |

Total samples: 7 sediment samples.

Locations UN and UE are both background but within different drainage pathways.

* A second sample will be taken from location BO for QA/QC.

TABLE 4

SUMMARY OF LEACHATE SAMPLES

| LOCATIONS | PARAMETERS |
| --- | --- |
| To be determined during recon. | HSL Metals and Organics |

Total samples; 2 water or sediment (nature to be determined during reconnaissance).

rinse. The polypropylene rope will be discarded and new rope attached to the bailer prior to purging and sampling each well.

Groundwater samples will be collected in accordance with the Quality Assurance Project Plan (QAPP) RCRA Sampling visits, Region VII, U.S. EPA (E&E,1986a).

### 4.1.2 Surface Water Samples

Samples will be collected either by direct submersion of the sample container into the water, or with a clean glass beaker attached to a telescoping rod. The retrieval method will be dependent upon conditions at the sample location at the time of sampling. If streams are flowing, representative samples will be collected across the stream channel perpendicular to flow direction. If no flow is occuring and pools exist, samples will be collected at multiple locations and composited.

The water sample will be introduced directly into the sample container. The sample containers will then be documented, decontaminated, and packaged for delivery to the EPA Region VII laboratory.

All sampling equipment shall be decontaminated between samples. The decontamination procedures is that described under Groundwater Samples and the QAPP. Surface water samples will be collected in accordance with QAPP.

### 4.1.3 Sediment Samples

Sediment samples will be collected using a decontaminated stainless steel trowel. Each sample will be composed of 10 aliquots collected at distances to be determined on site. To produce representative samples, aliquots shall be deposited into a stainless steel pan for homoganization of sediments before being placed into the sample container. The sample will then be documented, decontaminated, and packaged for shipment to the RL. After sample collection, the trowel and pie pan shall be decontaminated to prevent cross-contamination.

### 4.1.4 Leachate Samples

Leachate samples may be either water or sediment depending upon conditions at the time of sampling. To assure that samples are representative, a set number of aliquots at a specifified distance apart

will be collected. Sample collection, containerization, and decontamination procedures will be the same as those described above for surface water or sediment depending upon the matrix. Sample collection will be in accordance with the methods sited in the QAPP.

### 4.1.5 Sample Completeness and Comparability

To achieve the BHS SV work plan objectives, reliable data must be generated for a minimum number samples targeting a potential release from a specified facility unit. Table 5 provides media type, number or samples collected, the unit sampling is targeting and the minimum number (and present) of samples needed to achieve sampling goals.

All sample results will be presented using the units of measurement in the final report. This will allow for easy comparison between sample locations, values, and media types.

TABLE 5

SAMPLE COMPLETNESS REQUIRED
TO MEET SAMPLING OBJECTIVES5

| Media | Number of Sample | Unit Targeted | Minimum #/ % Completeness |
|---|---|---|---|
| Ground water | 4 | Hazardous Waste Area 1 | 1 (25%) |
| Surface water | 1 | Hazardous Waste Area 1 | 1 (100%) |
| Surface water | 1 | Old Landfill Area | 1 (100%) |
| Stream sediment | 1 | Hazardous Waste Area 1 | 1 (100%) |
| Stream sediment | 1 | Old Landfill Area | 1 (100%) |
| Leachate ~~of~~ or sediment | 2 | Old Landfill Area | 1 (50%) |

#### 4.1.6 Decontamination

After each use, the bailers and other sampling equipment will be broken down and decontaminated. Decontamination will consist of a detergent wash, a water rinse, a distilled water rinse and finally a methanol rinse. After decontamination, the equipment will be placed in a clean plastic bag, until use at the next well or sample location.

#### 4.1.7 Documentation

A logbook will be maintained during the sampling visit. This book will be used to record the work performed, names of the team members, level of protection, weather conditions, photographs and samples taken. Any unusual occurrences will also be recorded.

When a sample is collected, it will be logged and each bottle in the sample will be labeled and tagged. Sample series prefix ADE05 will be used to identify the sample in the Region VII Labor and Sample Tracking System (LAST) (CSC,1986). A CLP Organics and/or Inorganics Traffic Report will be prepared for each sample and packaged with the sample.

A chain-of-custody will be maintained from all samples collected. Samples will be either in the physical possession of the sampler or locked up and sealed. A chain-of-custody form will be used to track the sample from collection to analysis. Each person maintaining custody of the samples will be required to sign the form when accepting or relinquishing the samples. The chain-of-custody form will be returned with the analytical results.

Details of the documentation procedures including logbook entries, sample label and rags, chain-of-custody field sheets and traffic reports are given in the QAPP (E&E,1986a), the User's Guide to the EPA Contract Laboratory Program (EPA,1982) and Region VII's Laboratory Assistance Manual (EPA,1986).

#### 4.1.8 Sample Analysis

Analysis of the samples for the HSL parameters will be accomplished through the Contract Laboratory Program (CLP). Procedures for analysis and detection limits are described in the QAPP and the Region VII Laboratory Assistance Manual.

#### 4.1.9 Sample Packing

All groundwater, surface water, soil, and sediment samples will be environmental or low concentration samples. Packaging for these samples for shipment to the regional laboratory will consist of an ice chest, lined with a large plastic bag. Foam or vermiculite will be placed in the bottom of the chest. The sample containers will be placed in a small plastic bag, sealed with fiber tape and placed in the chest. Foam or vermiculite will be placed around glass jars. "Blue Ice" will be used to cool the samples. Additional foam or vermiculite will be placed over the glass jars and the large plastic bag will be sealed with fiber tape. The chain-of-custody and traffic report forms will be placed in a plastic bag, sealed and taped to the inside lid of chest. The chest will be closed and locked. Fiber tape will be placed around the ends of the chest to secure lid. Evidence tape will be affixed at two locations on the cooler/lid.

Leachate samples, if found, will be considered medium hazard samples. These samples will be sealed in a jar wrapped in a plastic bag then placed in a plastic lined paint can with vermiculite and shipped with a medium hazard traffic report. The sample will be shipped to the regional laboratory. Details of sample packaging are discussed in the QAPP.

### 4.2 SAFETY AND PERSONNEL RESOURCES

The sampling team will operate in accordance with the Site Safety Plan which will be prepared prior to the start of the field effort. Anticipated required level of protection will be Level D while collecting groundwater, surface water and sediment samples; and, Level C while collecting leachate samples.

Personnel requirements are anticipated to be a three person team. An estimated 160 manhours will be required for completion of SV field work and final report.

### 4.3 COST ESTIMATE

The cost estimates of the SV and preparation of the final report are presented as follows:

SV Field Work:

Personnel: 3 persons x 40 hours x $50/hour* = $ 6,000

Final Report:

Personnel: 100 hours x $50/hour = $ 5,000

GRAND TOTAL = $11,000 *

* Does not include analytical costs.

Total project estimate for BHS - SI phase is included in Appendix 1.

## 4.4 SCHEDULE

Field work on the site investigation is scheduled to begin during the first part of November 1986. Estimated date for completion and submission of the report is January 1987. (actual date is dependent upon receipt of analytical results from the designated laboratory.

## SECTION 5: REFERENCES


E&E,1986: "RCRA Facility Assessment, Preliminary Review Bob's Home Service, Inc (BHS)" by Michael E. Benner, Ecology & Environment for Region VII, U.S. EPA, July, 1986.

E&E,1986a: "Quality Assurance Project Plan (QAPP), RCRA Sampling Visits, Region VII, U.S. EPA, by J.C. Parks, Ecology & Environment, Inc., July 1986.

EPA,1982: "User's Guide to the EPA Contract Laboratory Contract Program," by U.S. EPA, August, 1982.

EPA,1986: "Region VII's Laboratory Assistance Manual or Services for Superfund Contractors," by U.S. EPA Region VII, April 1, 1986.

CSC,1986: "Standard Operating Procedure No. SG290A, Labor and Sample Tracking (LAST) Users Guide", U.S. EPA Region VII, Computer Sciences Corporation, January 14, 1986.

Sent 10/20/86
Draft #1

**EXHIBIT VIII-2**
**REM IV QUALITY ASSURANCE**
**PROJECT DELIVERABLE REVIEW FORM**

To: RTL Kathy Nissen

QA Review Team _____ _____
_____ _____
_____ _____

After review, please return to: John Caoile
Requested due date for review comments: 10/24/86
(date due)

DRAFT

Project Site: Bobs Home Service

Project Number: W63710.SI

Project Type: ___RD ___IRM ___RI ___FS ___Other _____

Project Deliverable: X Work Plan for SV at Bobs Home Service (Draft No. 1)
___ Health and Safety Plan
___ Draft Report
___ Final Report
___ Other _____

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THIS SECTION TO BE COMPLETED BY REVIEWER

Name of Reviewer _____ Areas Reviewed _____
(e.g., General, Geotech, etc.)

Summary Comments:

_____
(reviewer signature)

_____
(date)

Appendix 1
BHS Total Project Estimate