

**PUBLIC HEALTH CONSULTATION**

**UNIVERSAL OIL PRODUCTS, INC.**

**EAST RUTHERFORD, BERGEN COUNTY, NEW JERSEY**

**CERCLIS NO. NJD002005106**

**AUGUST 29, 1994**

**Prepared by:  
The New Jersey Department of Health  
Under a Cooperative Agreement with  
The Agency for Toxic Substances and Disease Registry**

## **BACKGROUND AND STATEMENT OF ISSUES**

This health consultation is being performed to evaluate the possible exposures to polychlorinated biphenyls (PCB's) and lead for recurrent trespassers through the pathway of ingestion of contaminated soil and dust at UOP site (Areas 1, 1A, and 2).

The Universal Oil Products (UOP) site is located in the Borough of East Rutherford, Bergen County, New Jersey (Figure 1). The UOP site occupies approximately 75 acres and is surrounded by undeveloped tidal marshes, highways, and commercial and light industrial properties. The UOP site is bounded on the north by a compressed gas facility, on the east by Berry's Creek and tidal marshes, on the south by commercial properties, and on the west by New Jersey Route 17.

The UOP site occupies part of the Berry's Creek drainage basin. The site is crossed by various man-made and natural channels (commonly referred to as Ackerman's Creek) that drain to Berry's Creek which joins the Hackensack River about 3.5 miles downstream. Due to its location, the site is subject to tidal flooding on a regular basis.

The property was developed in 1932 by Trubeck Laboratories to manufacture aromatic chemicals. Trubeck began operating a solvent recovery facility and handling waste chemicals in 1955. In 1956 Trubeck constructed a wastewater treatment plant, and in 1959 began utilizing two wastewater holding lagoons.

UOP acquired the property in 1960. Use of the wastewater treatment plant and wastewater lagoons ceased in 1971. All operations at the facility were terminated in 1979. In 1980, all structures, except slabs, were demolished. During the years of operation, approximately 4.5 million gallons of chemical wastes were discharged into on-site unlined lagoons. Various hazardous substances were released to the soils and shallow ground water.

The UOP site has been divided into six areas: Areas 1, 1A, 2, 3, 4, and 5. Areas 1, 1A, 2, and 5 are the uplands area of the site, area 3 is the former waste lagoons associated with the wastewater treatment plant, and area 4 is the on-site stream channels (Figure 2).

The site was placed on the National Priorities List (NPL) in September, 1983.

ATSDR conducted a Preliminary Health Assessment in February 1989, which categorized the site as a "public health concern", based on the possibility of human exposure pathways associated with exposure to contaminated soil, groundwater, surface water, sediment, and ingestion of contaminated biota.

In March 1992, ATSDR conducted a site visit and completed a Lead Initiative Summary Report. Based on site conditions at that time, the report categorized the site as an "indeterminate public health hazard". The report also indicated that children ride their bicycles

on the site, mostly in Area 2 which contains high levels of polychlorinated biphenyls (PCB's) found in isolated areas.

The data and information contained in the Lead Initiative Summary Report had been evaluated by the Health Activities Recommendation Panel (HARP) for appropriate public health actions. The HARP recommended that a public health assessment should be conducted at the UOP site when additional information becomes available.

The human exposure pathway of concern identified in the 1992 Lead Initiative Summary Report was the ingestion of contaminated soils (and dusts) by trespassers. After review of the most recent additional data it has been concluded that soil and dust contamination as the only potential pathway of concern. There are no known or apparent completed exposure pathways at the UOP site.

On-site groundwater contamination has been shown in the upper and lower Alluvium (shallow) aquifers with VOCs, base/neutral and acid-extractable (BNA) compounds, polychlorinated biphenyls (PCB's), and heavy metals. The residents and local industry use the Brunswick (deep) aquifer, which does not show any contamination, as source of potable water supply and process water.

To date, remedial activities at the UOP site have included the investigations of the uplands soils and leachate (Operable Unit 1), excavation and removal of the two wastewater lagoons (Operable Unit 2), and a remedial investigation currently being performed for the site stream channels (Operable Unit 3). The Remedial Investigation and Feasibility Study (RI/FS) and the Proposed Plan for the UOP site were released to the public for comment on August 10, 1992. The Record of Decision (ROD) was signed on September 29, 1993.

On November 9, 1993, James Pasqualo and N.P.Singh of the New Jersey Department of Health (NJDOH) visited the UOP site accompanied by representatives of NJDEPE and Bergen County Department of Health Services (BCDHS). During the site visit no signs of trespass were observed. The potential for trespassing does exist as the site is not completely fenced, but representatives from NJDEPE and BCDHS report that site trespass is rare. Conditions at the UOP site have remained constant, with no notable changes from conditions described during previous investigations by ATSDR.

## DISCUSSION

The human exposure pathway of concern identified in the 1992 Lead Initiative Summary Report was the ingestion of contaminated soils and dusts by trespassers in Area 2 of the site, in which high levels of PCB's were detected. Area 2 is the western part of the UOP site between the main railroad tracks and New Jersey Route 17 (Figure 2). As mentioned in the Lead Initiative Summary Report, lead contamination is not the major public health threat at this site. The highest concentrations of lead contamination was found in Area 5 which is not easily

accessible to trespassers. However, lead contamination was also found in Areas 1 and 1A which are easily accessible. This is the reason for evaluating the potential exposures to lead for trespassers through the pathway of ingestion of contaminated soil and dust in these areas (Areas 1 and 1A).

Between 1983 and 1986, various samples from on-site environmental media were collected and analyzed. Soil sampling at the UOP site has demonstrated a considerable level of contamination.

The Remedial Investigation (RI) for areas 1, 1A, 2, and 5 was completed in 1988. Table # 1 reports the range of contaminant concentration in on-site soil samples (0 to 4 feet).

Table # 1. Range of Contaminant Concentrations in on-site soil samples(0 - 4 ft) in Areas 1, 1A, 2, and 5.

Contaminant	Concentration Range (ppm)	Comparison Value	
		ppm	source
Polychlorinated Biphenyls (PCB's)	<0.01 - 480	1.0	Chronic EMEG
Lead	8.2 - 1,820	None	None

Source: Remedial Investigation (RI) Report, May 1988.  
 Chronic EMEG: ATSDR Environmental Media Evaluation Guide

The soil sample analysis showed the contamination with PCB's scattered throughout the site. The maximum concentration in Area 2 was found to be 21 ppm at a depth of 2 to 4 feet and 10 ppm at a depth of 0 to 2 feet. Both of these concentrations of PCB's in soil were at levels above ATSDR comparison values (EMEG's are media-specific comparison values that are used to select contaminants of concern.)

The soil sample analysis for lead showed the contamination throughout the site except in Area 2. The maximum concentration of lead in Area 5 was 1820 ppm. The maximum concentration of 316 ppm in Area 1 and 902 ppm in Area 1A.

Supplemental investigations in Areas 1, 1A, 2 and 5 were conducted between November 13, 1992, and February 5, 1993. The purpose of these supplemental investigations was to complete the delineation of both the soil and shallow aquifer contamination. Table # 2 reports the range of contaminant concentration in on-site soil samples (0 to 2 feet).

Table # 2. Range of Contaminant Concentrations in on-site soil samples(0 - 2 ft) in Areas 1, 1A, 2, and 5.

Contaminant	Concentration Range (ppm)	Comparison Value	
		ppm	source
Polychlorinated Biphenyls (PCB's)	<0.04 - 400	1.0	Chronic EMEG
Lead	14 - 12,000	None	None

Source: Supplemental Investigation Report, October 1993.  
 Chronic EMEG : ATSDR Environmental Media Evaluation Guide

Thirty-five soil samples were collected and analyzed for PCB's during supplemental investigation. Most of the samples were composited from a depth of 0 to 2 feet. PCB's concentrations of more than 2 ppm were detected in twenty-five of these soil samples. The maximum concentration of 400 ppm was detected in Area 2 (Figure 3-2).

Soil sampling for lead contamination was also conducted during supplemental investigation. Twenty-two soil samples were collected and analyzed for lead. Most of the samples were composited from a depth of 0 to 2 feet. The concentrations of lead in soil ranged from 14 to 12,000 ppm. The locations of elevated lead concentrations were predominantly to the north and east of Area 5 (Figure 3-1) which is not easily accessible to trespassers. The maximum concentration of 110 ppm in Area 1 and 480 ppm in Area 1A were detected. The concerns raised in Lead Initiative Summary Report regarding soil contamination with PCBs in Areas 1, 1A, and 2 and with lead in Areas 1 and 1A which are easily accessible to trespassers is addressed in this section. Contaminant levels used to calculate exposure doses come from Areas 1, 1A, and 2.

To determine whether trespassers are exposed to contaminants, NJDOH evaluates the environmental and human components that lead to human exposure. This pathways analysis consists of five elements:(1) a source of contamination;(2) transport through an environmental medium;(3) a point of human exposure;(4) route of human exposure; and (5) an exposed population.

NJDOH classifies exposure pathways into three groups: (1) "completed pathways", that is, those in which exposure has occurred, is occurring, or will occur; (2) "potential pathways", that is, those in which exposure might have occurred, may be occurring, or may yet occur; and (3) "eliminated pathways", that is, those that can be eliminated from further analysis because one of the five elements is missing and will never be present, or in which no contaminants of concern can be identified.

To evaluate health effects, ATSDR has developed a Minimal Risk Level (MRL) for contaminants commonly found at hazardous waste sites. The MRL is an estimate of daily human exposure to a contaminant below which non-cancer, adverse health effects are unlikely to occur. MRLs are developed for each route of exposure, such as ingestion and inhalation, and for the length of exposure, such as acute (less than 14 days), intermediate (15 to 364 days), and chronic (greater than 365 days). ATSDR presents these MRLs in the Toxicological Profiles. These chemical-specific profiles provide information on health effects, environmental transport, human exposure, and regulatory status. In the following discussion, NJDOH used ATSDR Toxicological Profiles for the contaminants of concern at the UOP site.

There are no known or apparent completed exposure pathways at the UOP site.

Potential exposure pathways at the UOP site are associated with on-site soil contamination. Insufficient sampling data for surface soil exists to comprehensively determine the extent of surface soil contamination (0-3 inches deep) at the site. Limited soil sampling data (0 to 2 feet) have suggested that Areas 1, 1A, and 2 are contaminated with PCB's at concentrations above ATSDR comparison value and Area 1 and 1A are contaminated with lead. Although the site is partially fenced and hazards signs are posted, it is possible that site trespassers may be exposed to the contaminants via ingestion of the contaminated soil, or through inhalation of contaminated dusts. The number of people who are trespassers at the site and may become exposed is unknown. It is unlikely that very young children would trespass because of the remoteness of the site.

The following assumptions were made to estimate exposure doses of site trespassers: 1) The site was visited by 35 kg children (approximately 10 years old) two times per week, for a period of four months per year for five years; and 2) These children ingest 200 mg of soil during each visit.

The ATSDR prefers to calculate exposure doses for soil exposure using surface soil taken from the zero to three inches. Instead, exposure doses were determined from the shallow soil samples (0 to 2 ft) because surface samples were not analyzed.

## **POLYCHLORINATED BIPHENYLS (PCB'S)**

The trespassers at the UOP site may be exposed to PCB's at a maximum concentration of 400 ppm (Area 2). All of the current soil data is based on samples collected from a depth of 0 to 2 feet (composited soil samples). The trespassers are most likely to ingest soil near the surface (0 to 3 inches), the reported concentrations may not represent the concentrations to which trespassers are likely to be exposed. The estimated exposure dose (EED) is below the chronic oral MRL of 0.00002 mg/kg/day for PCB's. Exposure doses are less than the No Observed Adverse Effect Level (NOAEL) for chronic exposure in animals, for effects other than cancer as cited in the ATSDR Toxicological Profile for PCB's.

PCB's are carcinogenic in animals and potentially carcinogenic in humans. The USEPA classifies PCB's as a probable human carcinogen. The lifetime excess cancer risk (LECR) associated with oral exposure to PCB's at the site could present an insignificant increased risk of cancer for frequent trespassers ingesting 200 mg of soil during each visit.

## **LEAD**

The trespassers at the UOP site may be exposed to lead at a maximum concentration of 480 ppm (Area 1A). All of the current soil data is based on samples collected from a depth of 0 to 2 feet (composited soil samples). The trespassers are most likely to ingest soil near the surface (0 to 3 inches), the reported concentrations may not represent the concentrations to which trespassers are likely to be exposed. There is no current MRL or RfD for chronic oral exposure for lead. Based on the maximum levels of lead detected in soil samples at the site (Area 1A), calculated exposure doses were well below the No Observed Adverse Effect Level (NOAEL) for chronic exposure in animals, for effects other than cancer as cited in the ATSDR Toxicological Profile for Lead.

Health outcome data for the community surrounding the UOP site was not evaluate for this public health consultation because there are no apparent completed exposure pathways and the community and the BCDHS have not expressed any concerns about adverse health effects in the community because of the site.

## **CONCLUSIONS**

Maximum concentrations of PCB's (Areas 1, 1A, and 2) and lead (Areas 1 and 1A) detected by the NJDEPE at a depth of 0 to 2 feet on UOP site presented potential exposure doses for children frequently trespassing the site. The exposure doses were below the chronic oral MRL for PCB's; therefore, adverse health effects are unlikely from potential exposures to PCB's and lead in soils. It should be noted that exposure dose calculations were based upon the maximum concentration of PCB's and lead detected in above mentioned areas of the site and assume significant soil ingestion ( 200 mg during each visit ), thus representing a worst case exposure scenario.

Areas of the site, particularly 1, 1A, and 2 remain accessible to trespassers. Effective limitation of access to these areas would eliminate the potential exposure pathway associated with trespassers. The toxicological evaluation of site soil contaminants indicate that exposure to accessible areas could not result in adverse health effects, if indeed exposure to PCB's and lead occurs. The trespassers are most likely to ingest soil near the surface (0 to 3 inches), the reported concentrations may not represent the concentrations to which trespassers are likely to be exposed. Data on surface soil levels (0 to 3 inches) are needed to verify the likelihood of adverse health effects as a result of exposures.

On the basis of information reviewed, ATSDR and the NJDOH have concluded that UOP site in its present state poses an indeterminate public health hazard. However, if access to the site is restricted, the UOP site would pose no apparent public health hazard.

Remedial activities specified in the Record of Decision (ROD), when implemented, are sufficient to address remaining concerns of the ATSDR, the NJDOH, and the community regarding the site and are consistent with protection of the public health.

There are no known or apparent completed exposure pathways at the UOP site.


### **RECOMMENDATIONS**

1. Obtain additional data for surface soil (0 to 3 inches) to calculate the exposure doses associated with trespassers.
2. Unauthorized access to the site should be restricted to reduce the possibility of exposure to recurrent trespassers.
3. Additional warning signs should be posted at the site.




## CERTIFICATION

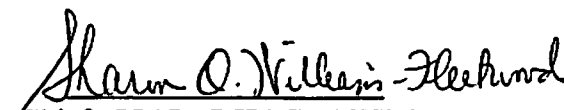
The Public Health Consultation for the Universal Oil Products, Inc., site was prepared by the New Jersey Department of Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the public health consultation was initiated.



Technical Project Officer, SPS, RPB, DHAC



The Division of Health Assessment and Consultation (DHAC), ATSDR, has reviewed this public health consultation and concurs with its findings.



Chief, SSAB, DHAC, ATSDR

## DOCUMENTS REVIEWED

1. Supplemental Investigation Summary Report, Universal Oil Products (UOP) Site, East Rutherford, Bergen County, New Jersey. ENSR Consulting and Engineering (Allied-Signal Inc.), October 1993.
2. Record of Decision (ROD), Universal Oil Products (Chemical Division), Borough of East Rutherford, Bergen County, New Jersey. USEPA, September 29, 1993.
3. Lead Initiative Summary Report, Universal Oil Products (Chemical Division), Borough of East Rutherford, Bergen County, New Jersey. Agency for Toxic Substances and Disease Registry (ATSDR), September 25, 1992.
4. Feasibility Study for Areas 1, 1A, 2 and 5, Universal Oil Products (Chemical Division), Borough of East Rutherford, Bergen County, New Jersey. ENSR Consulting and Engineering (Allied-Signal, Inc.), June 1992.
5. Risk Assessment Report (Part I - Ecological Assessment and Part II - Human Health Food Chain Assessment), Universal Oil Products (Chemical Division), Borough of East Rutherford, Bergen County, New Jersey. ENSR Consulting and Engineering (Allied-Signal, Inc.), November 1989.
6. Risk Assessment Report (Human Health Risks), Universal Oil Products (Chemical Division), Borough of East Rutherford, Bergen County, New Jersey. ENSR Consulting and Engineering (Allied-Signal, Inc.), June 1989.
7. Preliminary Health Assessment, Universal Oil Products , Borough of East Rutherford, Bergen County, New Jersey. Agency for Toxic Substances and Disease Registry, February 15, 1989.
8. Public Health Assessment Guidance Manual. Agency for Toxic Substances and Disease Registry. Lewis Publishers; Chelsea, Michigan, 1992.
9. Toxicological Profile for Polychlorinated Biphenyls (PCB's). U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry. April 1993.
10. Toxicological Profile for Lead. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry. April 1993.

## **INTERVIEWS/PERSONAL COMMUNICATIONS:**

1. Site Remediation Program/NJDEPE Site Manager.
2. Department of Health Services/Bergen County Senior Environmental Specialist.
3. Division of Health Assessment and Consultation/ATSDR Lead Initiative Coordinator.

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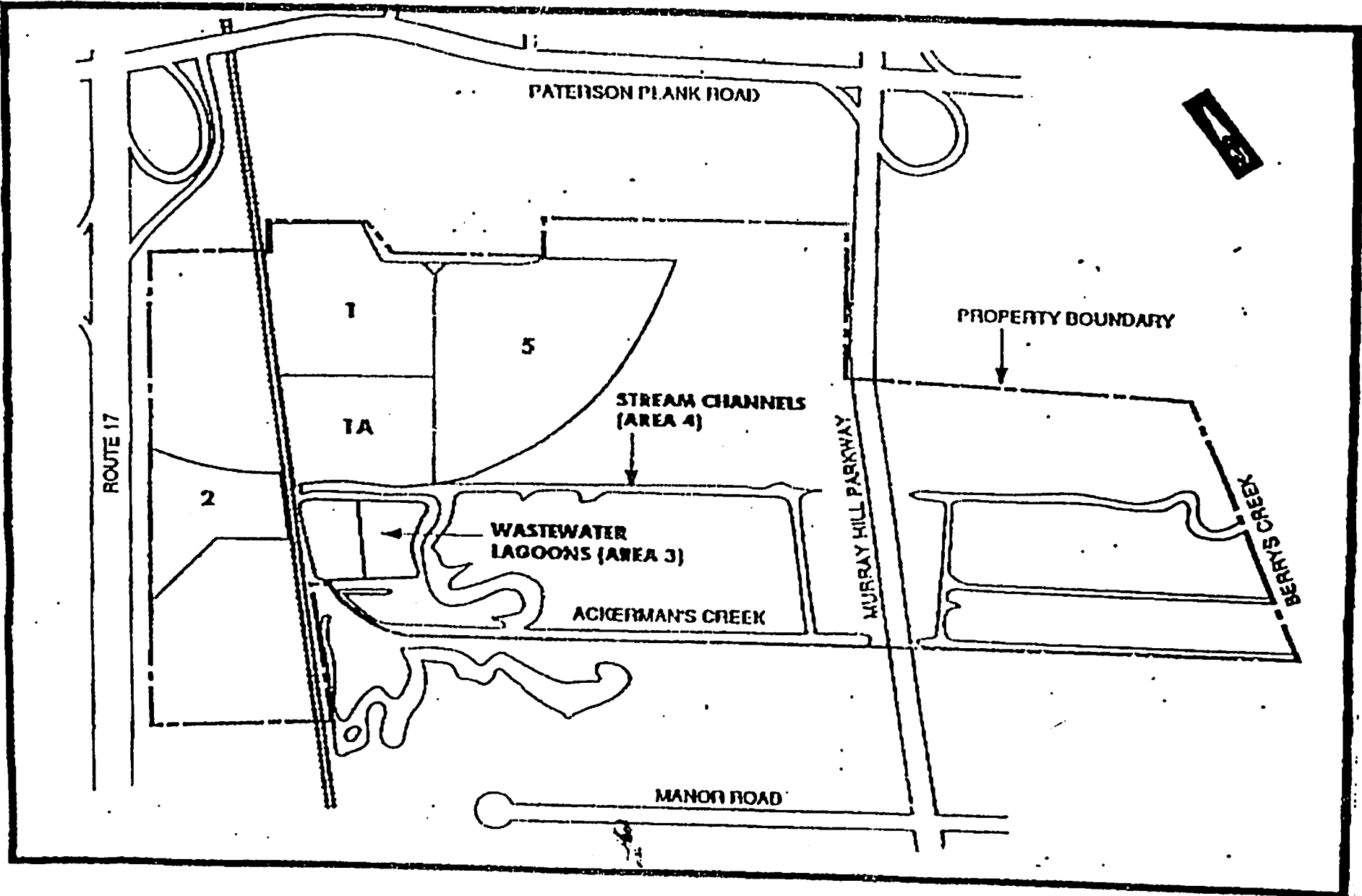
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## APPENDICES

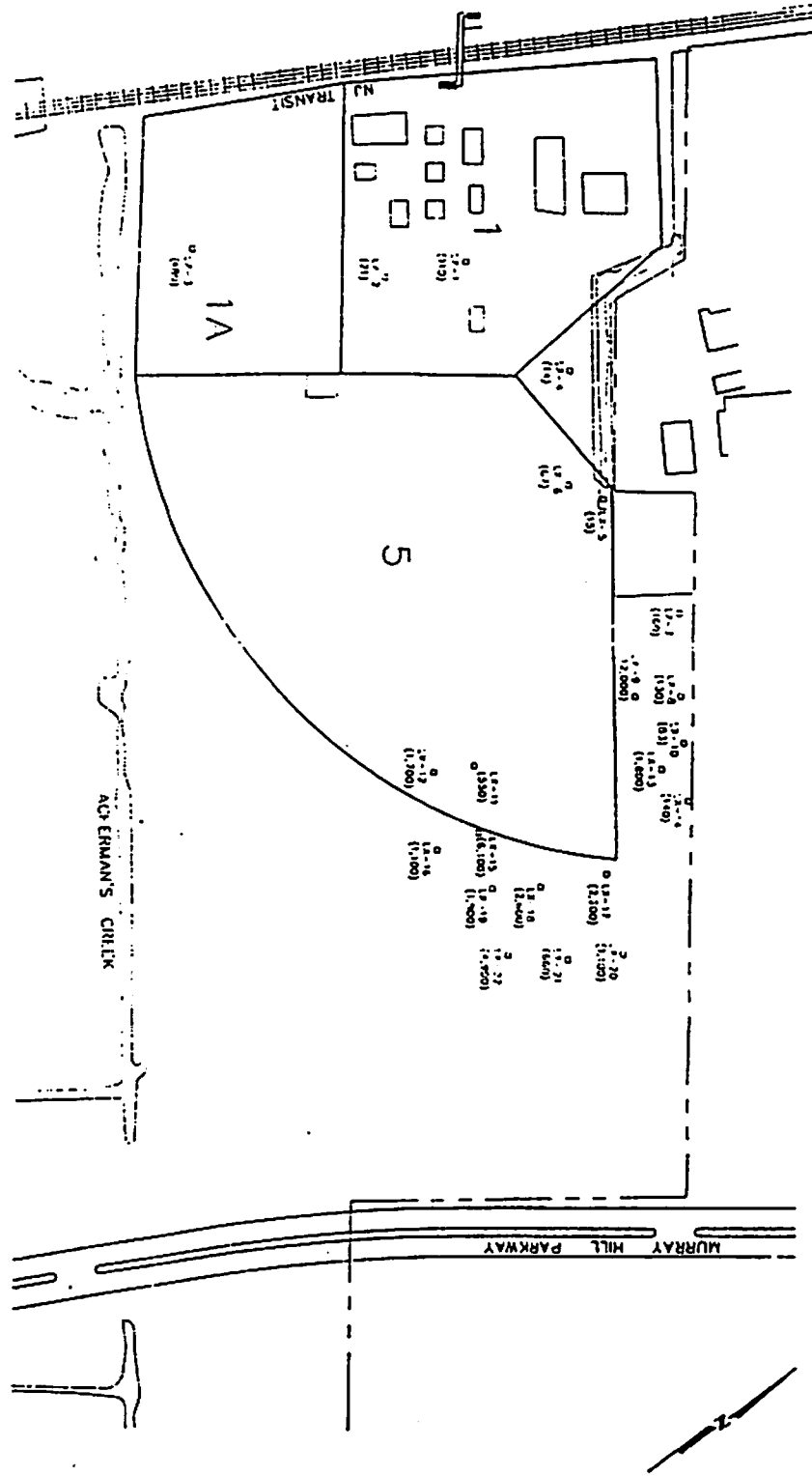
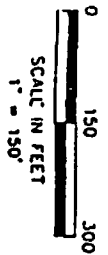
### Figures

1. Site Location Map
2. Site Study Areas, UOP Site, East Rutherford, NJ
- 3-1. Lead Soil Sample Locations, UOP Site, East Rutherford, NJ
- 3-2. PCB/PAH Soil Sample Locations, UOP Site, East Rutherford, NJ





**Figure 2**  
 Site Study Areas  
 UOP Site, East Rutherford, NJ



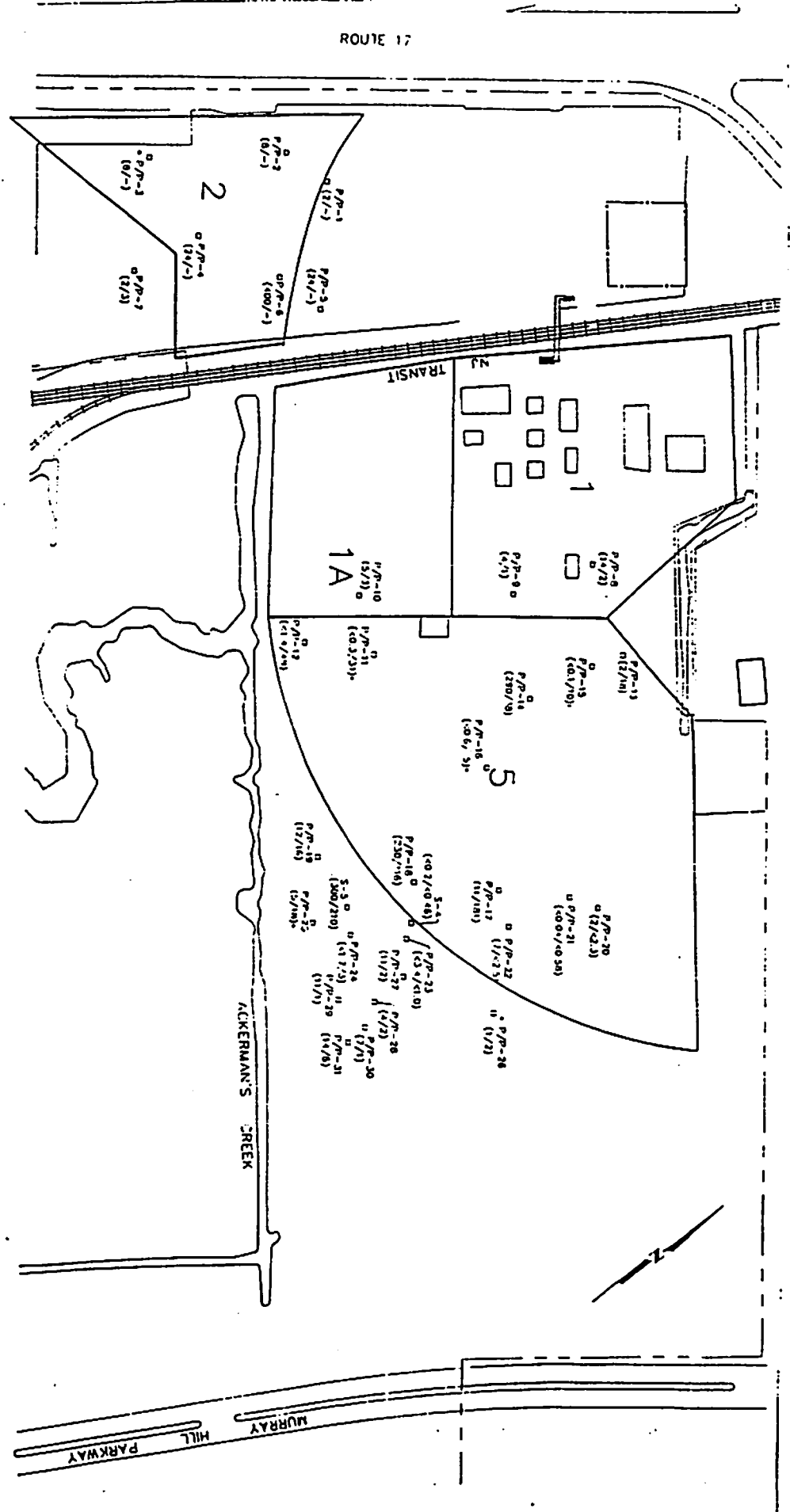
LEGEND  
 SURVEYED LOCATION OF LEAD-SOIL SAMPLES  
 CONCENTRATION IN mg/kg

FIGURE 3-1

		ENSR CONSULTING & ENGINEERING	
		LEAD SOIL SAMPLE LOCATIONS	
EAST RUTHERFORD, N.J.		DATE: 3/93	
N.P.B.		0186-002-53	



SCALE IN FEET  
1" = 150'



**LEGEND**

- SURVEYED LOCATION OF PCB/PAH SOIL SAMPLES
- ( ) CONCENTRATION EXCEEDS ACTION LEVEL FOR INDIVIDUAL CHLORINATED

**NOTE**

- NOT FOUND FIELD LOCATION
- NOT FOUND FROM AERIAL MAP

**ENSR**  
ENSR CONSULTING & ENGINEERING

PCB/PAH SOIL SAMPLE LOCATIONS  
JUP SITE  
EAST RUTHERFORD, N.J.

DATE	1/93
BY	K.P.B.
PROJECT NO.	0186-0172-524

FIGURE 3-2