



State of Ohio  
Environmental Protection Agency

---

Division of Emergency and Remedial Response

# Unico Landfill Site Assessment Report

---



**August 2009**

Governor Ted Strickland  
Director Chris Korleski

OHIO ENVIRONMENTAL PROTECTION AGENCY (OHIO EPA)  
DIVISION OF EMERGENCY & REMEDIAL RESPONSE (DERR)

SITE ASSESSMENT REPORT

Unico Landfill  
Union County  
Project Number 180000830001  
OHD082747379

Prepared by: Fred Myers Date: 8/5/09  
Fred Myers  
Site Coordinator

Reviewed by: Ken Schultz Date: 8/5/09  
Ken Schultz  
Assistant Manager

Approved by: Deborah Strayton Date: 8/5/09  
Deborah Strayton  
Manager

## EXECUTIVE SUMMARY

Unico Landfill (LF) was a permitted landfill that operated from 1976-1981. The landfill consists of two separate disposal areas, a 5-acre area and a 12-acre area. Unico LF closed in 1982 in accordance with Ohio Administrative Code (OAC) 3745-27 [effective 1976]. While in operation Unico LF accepted hazardous waste by permit from Ohio EPA. The wastes included electroplating sludge, industrial wastewater sludge, paint booth filter sludge, solvent cleaning sludge, fly ash, resins, asbestos, acids, and bases. The United States Environmental Protection Agency (U.S. EPA) and Ohio EPA, Division of Emergency and Remedial Response (DERR), have previously assessed Unico LF for further actions under the federal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and state authority since the mid-1980s. U.S. EPA has concluded that no further federal action is warranted. Ohio EPA continues to monitor and assess the site for possible state actions. This assessment is a continuation of that effort.

Over the course of the past 25 years, Ohio EPA-DERR site investigations have documented a general degradation of the landfill due to lack of maintenance. Ohio EPA has documented landfill cap erosion, gas emissions and leachate seeps. The leachate seeps occur at the north and northeast end of Unico LF. Ohio EPA collected samples of leachate and underlying soil in 1998 and 2009 at the seep area. The sample results indicate that the leachate and soil contain mainly volatile organic compounds (VOCs) and metals. With one exception, the site-related concentrations of the contaminants of concern (COCs) are below screening levels. The one exception is vinyl chloride, which in 1998 was detected in soil at concentration in excess of the residential land use screening level, but this result was not confirmed in 2009.

The threat to human health and the environment is low because of the relatively low COC concentrations, small target population, and limited potential exposure pathways. Land use surrounding the site is agricultural and rural residential. There are no residents or businesses on or adjacent to Unico LF. There are no nearby identified sensitive environments or threatened/endangered species. Ground water is not threatened due to an 80-foot thick impermeable confining clay above the uppermost water-bearing zone. Potential exposure pathways are, therefore, limited to direct contact with contaminated leachate and soil. The potential target population consists of the landowner, trespassers, and occasional on-site workers.

This site assessment was completed in accordance with current Ohio EPA-DERR site assessment guidance (Ohio EPA-DERR, 2006). Based on this guidance the site meets threshold criteria for additional state actions if the potential future threat is considered. However, DERR recommends no further action based on the balancing criteria, particularly because of the low threat level to human health and the environment. Although no further state actions is the recommendation, Unico LF should be periodically monitored for land use changes and its overall condition. If the adjacent land use changes, then Unico LF should be re-assessed.

## 1.0. INTRODUCTION

This site assessment is a continuation of assessments conducted by U.S EPA and Ohio EPA over the past 25 years. Ohio EPA completed two preliminary assessments (1984 and 1996) and U.S. EPA completed a screening site inspection in 1990. Ohio EPA has periodically monitored Unico LF for general site conditions and land use since its closure.

The objective of this site assessment is to determine if state or federal actions are warranted to protect human health and the environment from releases of hazardous substances. The assessment was conducted in accordance with the current DERR site assessment guidance, which was finalized in November 2006. The bulk of the information used in this assessment was obtained from 2003 to 2009. The information gained during the adjacent Hershberger LF remedial investigation and subsequent remedial action was also used.

## 2.0. BACKGROUND

**Site Name:** Unico Landfill

**Alias:**

**DERR Project No.:** 180000830001

**U.S. EPA I.D. No.:** OHD082747379

**District:** CDO

**County:** Union

**Site Address:** West of Crottinger Road and East of Taylor Rd. West of the Hershberger Landfill.

**Directions to Site:** From Lazarus Government Center: Take I-70 West to I-270 North to U.S. Route 33 North to U.S. Route 42 South. Travel on U.S. Route 42 South to Industrial Parkway and turn north to Taylor Road. Turn west on Taylor Road to Crottinger Road and turn north. The site is accessed through Hershberger Landfill access road, west of the railroad tracks.

**Latitude:** 40° 9' 33"

**Longitude:** 83° 16' 18"

### 2.1. Figures and Tables

- Figure 1. Site Location
- Figure 2. Site Features
- Figure 3. Historic Sampling Locations
- Figure 4. Topography and Surface Water Drainage
- Figure 5. Land Use
- Figure 6. 2009 Sampling Locations
- Figure 7. Surface Water Exposure Pathway
- Figure 8. Soil Exposure Pathway
- Figure 9. 15 mile Ecological Target Distance Limit

Table 1. Waste Disposal Information

Table 2. 1990 and 1998 Analytical Summary

Table 3. 2009 Sampling Results

### 2.2. Site Description

Unico LF is located in Jerome Township in southern Union County (**Figure 1**). It is bordered by a CSX railroad line and farm fields. The total disposal area is 17 acres, which consists of a 5-acre disposal area and a 12-acre disposal area (**Figure 2**).

The estimated volume of waste in the landfill is 350,000 cubic yards. Based on information on file at Ohio EPA, Central District Office, the waste consists of solid waste, industrial wastes, and hazardous wastes (as defined by Ohio Revised Code (ORC) 3734.20). Industrial waste materials were placed in the disposal areas by permit from Ohio EPA. According to the permits, the wastes consisted of electroplating sludge, industrial wastewater sludge, paint booth filter sludge, solvent cleaning sludge, fly ash, resins, asbestos, acids and bases.

The current owners of the property are David Eli Gingerich, Ruth Ann Gingerich, Abraham Ray Gingerich, and Christi Wayne Gingerich. The Gingerich family has owned the property throughout the existence of the landfill.

### **2.3. Regulatory Information**

In 1976, Ohio EPA issued a permit-to-install (PTI) to Jonas Hershberger for an expansion to the adjacent Hershberger Landfill in accordance with OAC 3745-27 [effective 1976]. Mr. Hershberger transferred the PTI to David Headlee, who renamed it Unico LF.

The PTI allowed specific loads of dry industrial fertilizer and sand from OM Scott and Sons, and a seasonal load of commercial waste and paint waste from PPG Industries. Beginning in November 1976, Ohio EPA began issuing permits for other individual industrial waste loads (**see Table 1**). In 1979, Ohio EPA required separation between solid wastes and industrial wastes. In April 1980, Ohio EPA granted a modification to the original PTI to allow for the disposal of industrial sludge in constructed trenches. On December 1, 1981, Unico LF officially ceased operations. In September 1982, closure was completed in accordance with OAC 3745-27 [1976]. Ohio EPA completed the final post closure inspection in 1984.

In 1991, Ohio EPA, Division of Solid and Hazardous Waste Management, issued Director's Final Findings and Orders to landowner Emma Gingerich and operator David Headlee for failure to submit an explosive gas monitoring plan in accordance with OAC 3745-27-12 [1990]. Ohio EPA has since concluded that an explosive gas plan is not required because there are no residents within 1000 feet that have unvented crawl spaces or basements.

Ohio EPA-DERR has regulatory authority at Unico LF because it closed under the 1976 solid waste rules, which required a three year post closure maintenance period. After the final post-closure inspection in 1984, Unico LF became an unregulated site. See the attached *Determination of Regulatory Authority Checklist*

### **2.4. Site History**

The site was a farm field before 1974, owned by Emma Gingerich. In 1974, Jonas Hershberger leased 17.5 acres from Mrs. Gingerich so that he could expand the existing

Hershberger Landfill. After securing the lease, Mr. Hershberger applied to Ohio EPA for a PTI. Ohio EPA approved the landfill expansion in 1976. Mr. Hershberger began operations in June 1976. In August 1976, Mr. Hershberger transferred the PTI to David Headlee, who changed the name to Unico Landfill, Inc. Mr. Headlee operated Unico LF from August 1976 until December 1, 1981. Closure was completed in September 1982 in accordance with OAC 3745-27 [1976]. The site has remained in the Gingerich family, and no other activities have occurred on the site since closure.

In 1981, U.S. EPA received CERCLA Section 103(c) Notifications from the following companies: International Business Machines, Allied Roto Rooter, and Owens-Illinois, Inc. In 1984, Ohio EPA completed a CERCLA preliminary assessment under a U.S. EPA grant commitment. The preliminary assessment recommended no further action for state or federal action.

In 1990, the U.S. EPA Federal Investigation Team (FIT) completed a screening site inspection (SSI). Based on the SSI, FIT recommended that Unico LF be designated as a potential "Listing Site Inspection" candidate. US EPA did not accept this recommendation and gave the site a "no further remedial action planned" (NFRAP) designation on September 18, 1990.

In 1991, Ohio EPA-DERR sent letters to potential responsible parties to determine the types and volumes of industrial wastes that were disposed of at Unico LF. Several responses were received and are on file in Ohio EPA-DERR, Central District Office (**see Table 1**).

In 1993, Ohio EPA-DERR requested that U.S. EPA complete an expanded site inspection for possible federal action. U.S. EPA did not complete the requested expanded site inspection.

In 1996, Ohio EPA-DERR updated the original 1984 preliminary assessment. The updated preliminary assessment noted cap degradation, ponding, outgassing, and leachate seepage. The conclusion recommended a medium priority for further state action. Ohio EPA-DERR continued to monitor the site and, in 1998, noted active leachate seeps at the northeast end of the 12-acre disposal area. In 1998, Ohio EPA-DERR collected samples of the leachate and underlying soil. The sample results indicated that the leachate and soil contained hazardous substances; however, only vinyl chloride exceeded the screening level for soil (See **Table 2**). In 2003, DERR began re-assessment of the site for further state and federal action.

## **2.5 Redevelopment Activities**

Ohio EPA has not been informed of and is not aware of any current plans for redevelopment at or adjacent to Unico LF, and no redevelopment activities were evident during this site assessment. It appears future land use will remain agricultural and rural residential. According to the *Jerome Township Draft Comprehensive Land Use Plan*

(Bird Houk, 2008), the land use west of the CSX railroad is designated agricultural and rural residential, and the land use east of the CSX railroad along Crottinger Road is designated "conservation development" (i.e., housing clusters with at least 40% open space). This same land use plan is also depicted in the *Logan, Union, Champaign Regional Planning Commission U.S. 33 Corridor Consensus Future Land Use Map* (October 2008). In addition, the existence of the Hershberger Landfill should prevent residential housing east of the CSX railroad adjacent to Unico LF.

## 2.6. Previous Field Work

### Federal Screening Site Inspection (1990)

U.S. EPA completed a SSI in 1990. The objective was to refine the preliminary hazardous ranking system score. Samples were analyzed by a U.S. EPA Contract Laboratory Program laboratory. U.S. EPA reviewed and approved all analytical results.

Six surface soil samples (0-2 feet) were collected using hand trowels and a post-hole digger (**Figure 3**). One soil sample, S-6, collected at the southeast corner of the 5-acre disposal area, next to the railroad tracks, had the most contaminants at detectable concentrations (**Table 2**). Sample S-6 contained polynuclear aromatic hydrocarbons (PAHs) and a lead concentration of 359 mg/kg, which was higher than expected regional background levels, but below the screening level of 400 mg/kg. The PAHs and lead may be associated with the railroad tracks. No COCs were detected at concentrations above U.S. EPA Region 9 preliminary remediation goals (PRGs) for residential land use (April 2009).

FIT collected ground water samples from three residential water wells located within 1 mile of the site. Samples were collected from outlets that bypassed water treatment systems. Water was discharged for 15 minutes prior to collecting the samples. The water samples were submitted to the U.S. EPA Central Regional Laboratory of Chicago, Illinois. No COCs were detected above the sample quantification limits.

### Ohio EPA Soil and Leachate Investigation (1998)

In June 1998, Ohio EPA-DERR collected soil and leachate samples at observed seeps at the northeast end of the 12-acre disposal area (**Figure 3**). The samples were analyzed by Quanterra, the Ohio EPA contract laboratory. Analytes detected included volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and dicamba, a common herbicide (**Table 2**). Analyte concentrations in soil were compared to U.S. EPA Region 9 s PRGs for residential land use. Vinyl chloride and arsenic were the only analytes that exceeded the soil PRGs. The concentration of vinyl chloride was 0.3 mg/kg at Sample Location UNSO-1, which exceeded the PRG at the time of 0.079 mg/kg (the current PRG for vinyl chloride is 0.06 mg/kg). Although the arsenic concentration exceeded the PRG, the concentration is within the expected background level for Ohio.

## 2.7. Topography, Geology, Hydrogeology and Hydrology

Union County is in the till plains section of the Central Lowlands Physiographic province and Eastern Corn Belt ecoregion. The area is characterized by Wisconsin-age till plains, glacial moraines and outwash features. Unico LF is located on top of the east-west trending Powell End Moraine.

The climate in central Ohio is considered a warm temperate climate where the annual mean temperature is 51° F and the annual rainfall is approximately 37 inches.

The general topography in this area of southern Union County is flat to low hills with a general slope south toward the Big Darby Creek drainage basin. Unico LF is located on a topographically high area, and surface water drains radially from the site to the north and south (**Figure 4**). At the north end of the site, water drains to the north and east to an unnamed intermittent stream that flows east. A drainage tile has been placed in the swale where the stream is located, and water flow is subsurface. Ultimately drainage at the north end of the Unico LF ends up in Sugar Run, approximately 5000 feet from the north end of Unico LF. Drainage at the south end of Unico LF is south to an unnamed intermittent stream that flows 4 miles to Sugar Run. Storm water also drains south along the railroad tracks. Sugar Run flows to Big Darby Creek, located approximately 7 miles to the south of Unico LF.

Unico LF overlies a former valley that was buried with glacial sediments during the Wisconsin Ice Age. The buried valley trends north-south and was incised 100-150 feet into Silurian-age dolomite bedrock. The remedial investigation at the adjacent Hershberger Landfill revealed that the thickness of glacial deposits beneath it is approximately 200 feet.

There are two principal aquifers in southern Union County: (1) unconsolidated sand and gravel deposits and (2) fractured dolomite bedrock. According to Ohio Department of Natural Resources (ODNR) driller's logs, most area residents obtain water 80 feet below the land surface from a 30-foot thick sand and gravel aquifer. A few wells were drilled to the dolomite bedrock aquifer. The total depth of most water wells in the area is 100-130 feet below ground surface and typical pump test rates are 10-20 gallons per minute with very little drawdown.

The hydrogeology at Unico LF is well-known because of the 1995 remedial investigation at the adjacent Hershberger LF, where five monitoring wells were drilled to the dolomite bedrock. Based on this data, the subsurface consists of 50-80 feet of stiff homogenous silty clay that overlies a 25- to 35-foot thick zone of poorly sorted sand and gravel deposit. Below the sand and gravel is 60-65 feet of alternating sequences of fine sand and silt. Dolomitic limestone bedrock underlies the unconsolidated glacial deposits. The aquifer is separated from the base of Unico LF by 60 feet of silty-clay glacial till (assuming 20-foot deep trenches at the base of the landfill). The underlying till was tested for vertical hydraulic conductivity at Hershberger LF (ASTM Method D-2976) and

was measured at  $2.5 \times 10^{-8}$  cm/sec to  $1.0 \times 10^{-8}$  cm/sec, which is considered impermeable. The static water level is approximately 50-70 feet below the ground surface; therefore, the aquifer is under confining conditions. Potentiometric data at the Hershberger LF indicates ground water flow in the uppermost aquifer is toward the south.

## 2.8. Land Use and Demographic Information

Land use within 1 mile of the site is mainly agricultural, rural residential, and recreational. A golf course is located 0.5 mile to the northeast. The nearest residence is 600 feet to the south of the 5-acre disposal area. Communities within 4 miles of the site are Unionville and Plain City (**Figure 5**). Population is 315 within 1 mile and 4542 within 4 miles (2000 Census Data)

### 3.0. METHODOLOGY

Because landfill leachate is the potential source of contamination to soil and surface water/sediment (Ohio EPA-DERR documented a release of hazardous substances associated with the leachate in 1998), the overall objectives of this field investigation are to (1) verify the chemical characteristics of the leachate and underlying soil; (2) verify the 1998 observed release of hazardous substances to surface soil; and (3) determine if the concentrations of any COCs exceed screening levels. Data quality objectives (DQOs) were established so that the data obtained was sufficient to achieve the above objectives (see Attachment 6, Sampling Plan). The leachate and soil investigation was conducted on May 6, 2009.

#### 3.1. Field Screening and Sampling Locations

See **Figure 6** for a map view of the sampling locations. The first sampling location, L1/S1, was collected at an active leachate seep approximately 100 feet south of the northeast edge of the 12-acre disposal area. This is the same area where UNSO-1 was collected in 1998. The second location, L2/S2, was collected at the uncovered field tile at the northeast end of the site. A duplicate sample, L3/S3, was also collected at this location. The third sample location, L4/S4, was collected at the CSX railroad tracks where two field tiles outfall at a culvert placed beneath the tracks. See Attachment 5, field report and photographs for the May 2009 sampling event.

#### 3.2. Field Screening and Sampling Methodologies

Personal protective procedures, sample collection procedures, sample screening procedures and field decontamination procedures were performed according to Ohio EPA-DERR's *Standard Operating Procedures (SOPs)*, January 2007. The relevant SOPs identified for this investigation are listed in the approved work plan (Attachment 5).

The first sample location, L1, was collected at an active leachate seep for VOCs and metals analysis. Samples were collected by bottle immersion. The acid preservative in the 40 ml VOC vials reacted with the leachate causing effervescence. Attempts to clean the acid out of the vials were not entirely successful, therefore, small bubbles formed in the vials. This factor was noted on the chain-of-custody form, and the sample was analyzed within seven days of receipt. A photo-ionization detector (PID) reading of 0.0 PPM was obtained at the seep. The pH of the leachate was 7.70, the temperature was 11.0°C and the conductivity was out of range (>1999 ugS). A soil sample was collected in conjunction with this leachate sample, designated S1, using a scoop, and analyzed for VOCs, SVOCs, PCBs/pesticides and metals.

The second leachate sample location, L2, was sampled for VOCs, SVOCs, PCBs/pesticides, metals and cyanides. Samples were collected by bottle immersion where the leachate entered the field tile. Again, the leachate reacted with the acid preservative in the VOC vials causing effervescence. This factor was noted on the

chain-of-custody form, and the sample was analyzed within seven days of receipt. A duplicate sample for VOCs and metals was collected at this location (L3). A PID reading of 0.5 PPM was obtained inside the drainage tile. The pH was 7.43, the temperature was 11.4° C, and the conductivity was out of range. Soil samples, designated S2 and S3 (duplicate), were collected at this location using a spoon and scoop and analyzed for VOCs, SVOCs, PCBs/pesticides, and metals.

Sample L4 was collected at the CSX railroad tracks for VOCs and metals. Samples were collected by bottle immersion. A PID reading of 0.3 PPM was obtained in one of the drainage tiles. The pH was 8.04; the temperature was 10.4° C, and the conductivity was out of range. A soil sample, designated S4, was collected at this location using a spoon and analyzed for VOCs, SVOCs, PCBs/pesticides, and metals.

Ohio EPA-DERR delivered the samples to Stantec, the Ohio EPA contract laboratory, on May 9, 2009. Stantec was informed at the time of delivery that the acid preservative had been washed out of the VOC vials. Analytical methods used were VOC analysis (SW846 8260B), pesticides/PCBs (SW846-80801/8082), total cyanide (SW846 9010), SVOC analysis (SW846-8270C), and metals (SW846 6010B/7471A).

## 4.0. RESULTS

The reported concentrations met the DQOs in that they were below the screening levels. Review of the data package submitted by Alpha Omega Environmental Laboratory, which purchased Stantec in June 2009, indicates that the sample results are valid and are representative. The effervescence in the VOC samples at L1 and L2/L3 may have caused a reduction of VOC concentrations in leachate but this factor did not affect the DQOs.

### 4.1. Field Screening and Sampling Results (Table 3)

#### Leachate/Surface Water

- Several VOCs were detected in the leachate samples (**Table 3**). These include the chlorinated ethenes and ethanes (chloroethane, 1,1 dichloroethane, cis 1,2 dichloroethene, 1,2 dichloroethane, and 1,1,1 trichloroethane) and the non-halogenated VOCs (BTEX (benzene, toluene, ethyl benzene and xylenes), 4-methyl 2-pentanone, styrene, isopropylbenzene, 1,3,5 trimethylbenzene, 1,2 4 trimethylbenzene, tetrahydrofuran, and naphthalene). The VOCs were detected in L1 (leachate seep) and also in L2/L3 (drainage tile). Chloroethane, 1,1 dichloroethane, tetrahydrofuran, toluene, ethylbenzene, and xylenes were detected in L4 (railroad tracks) but at lower concentrations. This indicates that some of the VOCs emanating from Unico LF persist at detectable levels in the drainage tile for at least 350 feet. Chloroethane is present in the highest maximum concentration (1460 ug/l) at L1. Other VOC maximum concentrations include 1,1 dichloroethane (379 ug/l) at L1, tetrahydrofuran (144 ug/l) at L2, benzene (28.6 ug/l) at L1, and toluene (133 ug/l) at L1.
- Only arsenic and mercury were detected in L1 (leachate seep) and none of the priority metals were detected in L4 (railroad tracks). Arsenic, antimony, beryllium, cadmium, chromium, copper, lead, mercury, nickel, and zinc were detected in the L2/L3 (drainage tile). Silver, thallium, and selenium were the only metals not detected in any of the leachate or surface water samples.
- No SVOCs or PCBs/pesticides were detected above quantification limits in any of the leachate/surface water samples.

#### Soil

- VOCs in soil were detected mainly in S1 (leachate seep). Only chloroethane and 1,1 dichloroethane were detected in soil at S2/S3 (drainage tile). No VOCs were detected in soil at L4 (railroad tracks). The maximum VOC concentration detected was total xylenes (0.446 mg/kg) at S1, followed by chloroethene (0.437 mg/kg) at S1. Concentrations of chloroethane and 1,1 dichloroethane are

approximately 10 times lower at S2/S3 compared to S1.

- The only SVOC detected was di-n-butylphthalate, which was detected at S2 and S4 at concentrations of 0.621 mg/kg and 0.458J mg/kg, respectively.
- Soil Samples S2/S3 had the highest overall metal concentrations. Selenium, silver, and thallium were the only metals on the U.S. EPA priority pollutant list that were not detected in the soil.

#### 4.2. Comparison of Field Screening and Sampling Results to Screening Levels Criteria (Table 3)

Soil screening levels used in this assessment are the U.S. EPA Region 9 PRGs for residential land use (April 2009). Soil analyte concentrations were compared to the screening levels to determine the potential threat from direct contact. For non-carcinogen VOCs, 1/10 of the screening level was used in accordance with the site assessment guidance. Leachate and water screening levels are the Ohio EPA water quality standards for human health, non-drinking, listed in OAC 3745-1-34. If the analyte was not listed and a drinking water standard is listed, then the drinking water value was used for a general comparison. The drinking water standards are depicted in parenthesis in **Table 3**.

Leachate/Surface Water: No analytes exceeded the human health non-drinking standard for surface water. Arsenic, chromium, and mercury exceeded drinking water standards; however, this standard is not an applicable screening level because there are no drinking water intakes within 15 miles downstream of Unico LF. It was used for general comparison purposes.

Soil: Arsenic was the only analyte that exceeded the screening level; however, the concentrations are within the expected background range for Ohio soils. Therefore, arsenic is not considered to be site-related COC.

## 5.0 DISCUSSION

All exposure pathways were considered in accordance with the Ohio EPA-DERR site assessment guidance (2006).

### 5.1. Migration and Exposure Pathways

#### Groundwater Exposure Pathway

A release to ground water has not been observed, and the potential for a release is unlikely. Although some of the wastes placed in Unico LF are water soluble, the depth to the uppermost aquifer (60+ feet) and the impermeable nature of the clay-silt beneath the site impedes vertical migration. Ohio EPA, Division of Drinking and Ground Waters (DDAGW) conservatively estimated a travel time of at least 1500 years for a particle of water to migrate 55 feet through the underlying clay-silt (see Ohio EPA's Decision Document for the Hershberger Landfill, April 22, 1997). Ohio EPA-DDAGW also noted that the travel time of the water soluble COCs would be longer because of attenuation factors.

Ground water is used for potable water supplies at nearly all residences within 1 mile of the site. The total potential target population for the ground water pathway is 315 within 1 mile and 4552 within 4 miles (2000 U.S. Census data). There are two well-head protection areas located 3.5 miles to the south in Plain City. The closest residential water well is approximately 600 feet to the south of the 5-acre disposal area.

Due to the low potential of a release to the uppermost aquifer, the ground water migration pathway will not require additional actions to protect human health.

#### Surface Water Exposure Pathway

This site assessment documented a release to surface water, which is the north intermittent stream. A release to "waters of the state" as defined in ORC 6111 was also documented. The leachate seeps contain chlorinated ethenes and ethanes, BTEX, other nonhalogenated compounds, and inorganics. The field tile from the leachate seep area to the intermittent stream is a direct conduit to surface water. Chloroethane, 1,1 dichloroethane, tetrahydrofuran, toluene, ethylbenzene, and xylenes were detected in the intermittent stream where the field tile outfalls. However, none of these COCs exceed the surface water screening levels, and are not considered a current threat to human health.

The intermittent stream has been tiled to Crottinger Road, approximately 1700 feet from the leachate seeps. The stream is impounded at the Rolling Meadows golf course, 3000 feet from Unico LF and enters Sugar Run, 5000 feet from Unico LF (**See Figure 7**). The current target population consists of the landowner, trespassers, occasional on-site workers, and recreational users. The water in the intermittent stream is not used for agriculture, livestock, or drinking water, and is not a fishery. There are no surface

drinking water intakes within 15 miles of Unico LF. The human food chain threat is not a factor due to the subsurface flow and intermittent flow to the golf course pond. It is not known if the pond is used to harvest aquatic species for human consumption. Based on this pathway assessment the potential threat to human health is low.

There are no identified aquatic sensitive environments within 7 miles downstream (the confluence of Sugar Run and Big Darby Creek). Although Big Darby Creek is within the 15 mile target distance limit, the VOCs detected are not persistent or bioaccumulative, and the inorganics associated with Unico LF were not detected in the north intermittent stream. Based on these factors, Unico LF does not currently pose a threat to Big Darby Creek. The potential threat to Big Darby Creek is considered low because of the distance from the release site and the nature of the release, which consists primarily of water soluble VOCs.

### **Soil Exposure Pathway**

The source of the COCs is the leachate seeps. Most of the contaminants detected in soil are contingent with the leachate seep where L1/S1 was collected. Only chloroethane and 1,1 dichloroethane were detected in soil samples collected downgradient of the seep area. None of the COCs exceeded the screening level for soil. In addition, the 2009 sample results did not verify the 1998 vinyl chloride exceedence of the screening level. Based on the concentrations of the COCs detected, releases at Unico LF do not currently pose a threat to human health.

The potential human target population is limited to the landowner, trespassers, and occasional on-site workers. Currently, there are no nearby resident or worker populations that live or work on or near the site. The nearest resident is located 1300 feet to the east from the leachate seeps (**See Figure 8**). A residence is located 650 feet south of the 5-acre disposal area and there is another residence located 1,200 feet southwest of the 12-acre disposal area. The human target population is 315 within 1 mile and 4542 within 4 miles (2000 Census Data). The site is not accessible or attractive for recreational use and there are no large nearby populations. Based on these factors, the current threat from soil exposure to nearby human populations is low.

The future threat from exposure to contaminated soil is uncertain. The large tracts of farm land that surround Unico LF could eventually be developed as residential neighborhoods or commercial enterprises. That scenario would affect the target population and potential threat. However, the development of the adjacent parcel is not likely in the foreseeable future due to the isolation of area, lack of utilities and roads, and the availability of other large tracks of land in southern Union County. In addition, the Jerome Township land use plan and the Logan, Union, Champaign County U.S. Route 33 corridor consensus future land use plan both designate the future land use at Unico LF as agricultural and rural residential.

No terrestrial sensitive environments (state or federal) are within 4 miles of the site, and there are no known endangered or threatened species that inhabit the area that would be impacted through exposure to soil.

### **Air Exposure Pathway**

Landfill gas has been visually observed to be releasing at the site from several vents on the flanks of the 12 acre disposal area. Most of this gas is likely methane, the result of the anaerobic biodegradation of solid waste. The vapor pressures of some of the known wastes placed in Unico LF indicate a release to the ambient air is possible. Field PID measurements in May 2009 did not indicate measurable VOC concentrations in the air immediately above the gas vents associated with leachate seeps (based on a 10eV bulb). The PID measurements collected inside the field tiles indicated 5 PPM of unknown VOCs at the landfill and 3 PPM in a drainage tile at the Conrail railroad tracks. Therefore, it appears VOCs may accumulate in the confined space of a drainage tile but are quickly dispersed in the ambient air.

There are bare areas on the landfill where particulates could potentially become airborne. However, particulates emanating from contaminated areas have not been observed.

Extensive subsurface horizontal migration of gas is unlikely due to the impermeable clay at the base of Unico LF and the low potential for ground water impact. In addition, Ohio EPA, Division of Solid and Infectious Waste Management (formerly Division of Solid and Hazardous Waste Management) has determined that an explosive gas monitoring plan in accordance with OAC 3745-27-12 is not required.

### **Ecological Targets**

There are no nearby terrestrial or aquatic sensitive environments affected by the release at Unico LF. The nearest designated sensitive environment is Big Darby Creek, a national and state scenic river, located approximately 7 miles downstream from the site, which is within the 15-mile target distance limit. State and federal endangered aquatic species have been identified in Big Darby Creek within the 15-mile target distance limit. These species include Snuffbox, Clubshell, and Rabbitsfoot Mussels (**See Figure 9**). The Rayed Bean Mussel was identified upstream of the confluence of Sugar Run and Darby Creek and could occur downstream. According to the U.S. Fish and Wildlife Service, the Indiana Bat is the only listed threatened terrestrial species that may be present in Union County; however, the Indiana Bat is listed for every county in Ohio.

## 6.0. CONCLUSIONS AND SITE RECOMMENDATION

### Threshold Criteria

As stated in the 2006 Ohio EPA-DERR site assessment guidance, seven threshold criteria must be met in order for DERR to pursue additional actions: (1) *DERR has the authority to address the site*; 2) *there is a potential or actual release at the site*; 3) *there is potential or actual harm to human health and the environment from the release*; 4) *there is a viable potentially responsible party (PRP)*; 5) *the site is eligible for CERCLA funding*; 6) *the site does not have a Voluntary Action Program (VAP) Covenant Not to Sue (CNS) or a No Further Action letter with a pending request for a CNS*; and 7) *the site is not a VAP Memorandum of Agreement-track site*.

Unico LF meets all of the threshold criteria with the possible exception of #3, *there is potential or actual harm to human health and the environment from the release*. Based on COC concentrations in leachate and soil compared to screening levels, there is no current potential harm. However, COC concentrations and/or types of COCs could change over time, so there is the potential for harm in the future.

### Balancing Criteria

- Based on the 2009 data, the concentrations of the COCs detected in soil are not actionable. None of the site-related COC concentrations exceeded the unrestricted land use screening levels for soil. Based on this factor, potential exposure to soil does not pose an unacceptable threat to human health.
- The current human target population for soil is very small. Currently, there is no worker or resident target population adjacent to the contaminated soil or waste (i.e., within 200 feet). This factor indicates that the potential risk to human health would not be sufficient to justify further actions.
- Based on the 2009 data, the concentrations of COCs in leachate/surface water are not actionable. None of the site-related COCs concentrations exceeded Ohio EPA non-drinking human health water quality standards.
- The chemical characteristics of the COCs detected in the leachate/surface water indicate that they are not persistent or bioaccumulative; therefore, there is no threat to aquatic life.
- There are no identified surface water or terrestrial sensitive environments (e.g., parks, wildlife refuges, wilderness areas, jurisdictional wetlands, aquatic endangered or threatened species) on or near Unico LF, or that have been impacted from releases at Unico LF; therefore, further actions cannot be justified based on an ecological threat.

- The leachate entering the drainage tiles may be considered a release to “waters of the state,” which is a potential violation of ORC 6111. According to ORC 6111.04, the drainage tile meets the definition of “waters of the state.” The existence of the Unico LF may have caused pollution of waters of the state because there are COCs in the leachate. The “person” who caused the pollution may be the PRPs and/or the owner and operator of Unico LF. This factor is not likely a sufficient justification for Ohio EPA-DERR to pursue an enforcement action because the COC concentrations are below the water quality criteria listed in OAC 3745-1-34.
- Unico LF is not being maintained. The cap is degrading and it appears leachate production is increasing over time. ORC 3745-27 [1976] required a three year maintenance period after closure; therefore, the owner/operator is not under any obligation to maintain Unico LF. Without maintenance, the landfill will likely continue to degrade. Whether or not this gradual degradation will result in an increased threat is uncertain.
- There are no land use controls in place to prevent exposure to COCs or waste. It is feasible that the surrounding land use could change from agricultural to residential, increasing the target population. Based on the future land use plan for Jerome Township, the land use on and adjacent to Unico LF will remain agricultural/rural residential.

Threshold criteria are met for further state actions, if the potential future threat is considered. The balancing criteria indicate that further state actions are not justifiable at this time. However, Unico LF will likely continue to degrade and the threat may increase over time, particularly if adjacent land use changes and the concentrations of COCs increase in leachate. It is therefore recommended that Ohio EPA continue to periodically monitor the surrounding land-use and the overall condition of the landfill. Monitoring can be accomplished in conjunction with Hershberger Landfill periodic inspections. If the Ohio EPA notes changes in land use, then the site should be re-evaluated.

## 7.0. REFERENCES AND ATTACHMENTS

### References

Bird Houk Collaborative, August 2008, Jerome Township Draft Comprehensive Plan.

Blasland, Bouk and Lee, 1995. Remedial Investigation Report for the Hershberger Landfill, Union County, Ohio

Ecology & Environment, 1990. Screening Site Inspection Report for the Unico Landfill, Inc.

Logan, Union, Champaign Regional Planning Commission, October 2008, U.S. 33 Corridor Consensus Future Land Use Map.

ODNR, 1978. Ground Water Resources Map of Union County

Ohio EPA-DERR, 2006. Site Assessment Guidance

Ohio EPA, 2009. Information on file at the Central District Office.

Ohio EPA 2009. Geographical Information System Database.

United States Census Bureau, 2000 Census Data

United States Department of Agriculture, 1975. Soil Survey of Union County, Ohio

United States Geological Survey, 1961. Glacial Map of Ohio. Miscellaneous Geologic Investigations, Map I 316.

### ATTACHMENTS

1. RECOMMENDATION OPTIONS WORKSHEET
2. TABLES
3. FIGURES
4. ALPHA OMEGA LABORATORY REPORT
5. FIELD REPORT WITH PHOTOGRAPHS
6. SAMPLING PLAN
7. DETERMINATION OF REGULATORY AUTHORITY CHECKLIST

ATTACHMENT 1

RECOMMENDATION OPTIONS WORKSHEET

# RECOMMENDATION OPTIONS WORKSHEET

Site Name: Unico Landfill

Worksheet Completion Date: 6/23/09

## Step 1. Threshold Criteria

	Recommendations										
	Inter-/Intra-Program Referral		No Further Action					State Cleanup Program	State Author./Enforce. Action	Fed. Site Assess. Program	Federal Removal Action Program
Does DERR have authority?	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is there a potential/actual release?		Yes		No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is there potential/actual harm?		Yes*			No	Yes	Yes	Yes	Yes	Yes	Yes
Is there a viable PRP?						-	No	Yes	-	-	-
Does CERCLA have authority?						-	Yes	-	-	Yes	Yes
Has a VAP NFA with CNS been requested?						Yes	-	-	No	No	-
Is it in the VAP-MOA track?						-	Yes	-	No	No	-
<b>Mark an X if all of the replies in the column are circled</b>		X							X	X	X

\* "Low" potential harm. No known current harm or threat. Threat could increase overtime.

## Step 2. Balancing Criteria

Balancing Criteria	Check if applicable	Description
Lack of resources	X	There may be a lack of Legal resources. Legal resources may be extensive due to the large number of potential PRPs.
Unusual resource demands		
Local government priority		
Publicly-owned site (i.e., federal match)		
Post-removal O&M		
PRP issues	X	The PRPs disposed of their waste legally by individual permits, issued by Ohio EPA.
Multi-programmatic site		
Clean Ohio Fund site		
Federal brownfield/targeted brownfield assessment site		
Potential Threat	X	COC concentrations are below screening levels, which implies there is no current threat. Target population is small-limited to landowner, trespassers, on-site workers. Soil and leachate are the only current exposure pathways. Incidental contact with soil and leachate on-site are the only current potential exposure pathways.
Other:		Potential ORC 6111 violation and potential future threat due to no maintenance and no LUCs.

## ATTACHMENT 2

### TABLES

TABLE 1  
UNICO LANDFILL DISPOSAL INFORMATION

Generator	PTI Date(s)	Permitted Waste	Permitted Quantity	1991 Response to OEPA-DERR Information Request
PPG	Original Permit	paint	unknown	No info on Unico.
OM Scott	Original Permit	General plant waste	unknown	No information sent
McLean Trucking	11/2/76	arsenous acid	10-15 gallons	No letter sent
Rockwell International	12/14/76 3/21/77	asbestos asbestos	20 pounds 50 pounds	No available info.
SYSTECH	1/20/77 5/5/77 1/23/78 4/28/80	metallic sludge sludge sludge metallic sludge	150 cu yds/month 500 cu yds/month 280 tons/mo. 3000 yds/mo.	No info. Contact Tricil and Laidlaw
General Electric (GE Superabrasives) (RCA Thompson)	4/28/77 10/12/77 8/25/78 10/9/80	sludge sludge metallic sludge lagoon sludge	35 cu yds/month for 6 months 35 cu yds/mo. through 7/31/78 50 cu yds/wk 1800 cu yds	extensive info sent on type/quantity.
Gould	9/20/77	copper hydroxide sludge	120 tons/mo.	5 cubic yards of sludge disposed
United Technologies (Essex)	11/15/77	filter press sludge	2.5 tons/wk	Plating waste disposed from '78-'81
General Motors (Delco Moraine) (Fisher Body)	3/7/78 4/29/80 9/5/80 10/23/80	filter press sludge wastewater sludge sludge electroplating sludge	20 cu yds/day 24,000 cu yards 50 cu yds/wk. 240 cu yds/wk	Extensive info sent on type/quantity
Chemlawn	3/9/78	empty containers	5-6 drums/mo.	No letter sent

TABLE 1  
UNICO LANDFILL DISPOSAL INFORMATION

Generator	PTI Date(s)	Permitted Waste	Permitted Quantity	1991 Response to OEPA-DERR Information Request
AEP (Columbus and Southern)	2/26/80 11/4/80	fly ash/sludge; PCB laced clean-up debris	not known 125 drums	1980-125 drums PCB debris 1981-78 yds debris
Owens-Illinois	4/29/80	sludge	12 tons/day	4672 cu yds total of wastewater sludge. Chemical info.
AT&T (Western Electric)	4/29/80	plating sludge	15 cu yds/wk	total 675 cu yds of electro plating sludge
Columbus Steel Drum	4/27/80 (request)	incinerator sludge	80 tons	no info.
Armco Steelox	4/30/80	paint sludge	unknown	270 cu yds of paint sludge
GTE (Sylvania, Phillips)	5/9/80	metal hydroxide sludge	unknown	lagoon sludge. No info. That it went to Unico.
Ohio State University	8/6/80	asbestos	600 fiber drums	No letter sent
Seagull Environmental	8/28/80	asbestos	400-600 drums	No letter sent
Alcoa (Wearever)	12/24/80	leachate, dust, paints, sludge	60,000 pounds/yr	no info.
Dressor-Marion	12/24/80	Electric furnace baghouse dust	10,000 pounds/mo.	Did not dispose at Unico
Asarco	4/28/81	asbestos	not specified	12 cu yds sent
Hagglunds Denison (PneumoAbex)	No PTI in File	No PTI in File	No PTI in File	No info
Chem Waste	No PTI in File	No PTI in File	No PTI in File	No info

TABLE 1  
UNICO LANDFILL DISPOSAL INFORMATION

Generator	PTI Date(s)	Permitted Waste	Permitted Quantity	1991 Response to OEPA-DERR Information Request
Eljer	No PTI in File	No PTI in File	No PTI in File	No info
Ferro	No PTI in File	No PTI in File	No PTI in File	No info
Battelle	No PTI in File	No PTI in File	No PTI in File	295 yds of various wastes
Nestle	No PTI in File	No PTI in File	No PTI in File	No info
Goodyear	No PTI in File	No PTI in File	No PTI in File	31,500 cu yards of plant waste
Sherwin Williams	No PTI in File	No PTI in File	No PTI in File	No info
Georgia Pacific	No PTI in File	No PTI in File	No PTI in File	160 yards of pond bottom sludge
Ranco	No PTI in File	No PTI in File	No PTI in File	65-120 yards/year of general plant waste

Table 2  
US EPA 1990 and Ohio EPA 1998 Analytical Summary

Analytes	1990 US EPA Samples						1998 Ohio EPA Samples			
	Soil Samples (mg/kg)						Soil (mg/kg)		Leachate (ug/L)	
VOCs	S-1	S-2	S-3	S-4	S-5	S-6	SO-1	SO-2	LE-1	LE-2
vinyl chloride							0.3		98	
acetone							0.27		200	0.023
1,1 dichloroethane							0.044		24	
cis 1,2 dichloroethene							0.21		32	
chloroform						0.002J				
methylene chloride	0.046B									
perchloroethene		0.003J								
2-butanone									90	
4-methyl 2 pentanone							0.099		200	
benzene							0.026	0.018		
toluene		0.001J					0.45	0.091	160	
ethylbenzene							0.11	0.15	22	
xylene							0.3	0.53	58	
<b>Pesticides</b>										
dicamba							0.17	0.068		
<b>Semi VOCs</b>										
4-methylphenol							5.2			
N-nitrosodiphenylamine							1.6			
bis 2 ethylhexylphthalate							1.3			
phenanthrene										0.23J
fluoranthene					0.15J	0.33J				
pyrene					0.13J	0.28J				
benzo (a) anthracene						0.17J				
chrysene						0.25J				
benzo (b) fluoranthene						0.37J				
benzo (k) fluoranthene						0.23J				
benzo (a) pyrene						0.26J				
indeno (1,2,3-cd)pyrene						0.27J				
benzo (g,h,i)perylene						0.3J				
<b>Metals</b>										
lead	21.2	22.2	20	23.7	30.8	359	18.4	14.1		

Blank cell means analyte was not detected at the practical quantitation limit  
J Qualifier: Analyte detected below the practical quantitation limit  
VOC: Volatile Organic Compound

**TABLE 3**  
**UNICO LANDFILL SITE ASSESSMENT**  
**2009 OHIO EPA SAMPLE RESULTS AND SCREENING LEVEL COMPARISON**

Analytes Detected	Screening Levels		Sample Results							
			WATER (ug/l)				SOIL (mg/kg)			
	Soil mg/kg	Water ug/L	L1	L2	L3	L4	S1	S2	S3	S4
<b>Volatile Organic Compounds</b>										
Chloroethane	NL	NL	1460	836	1030	38	0.437	0.031	0.058	<0.005
1,1 dichloroethane	3.4	NL	379	226	297	17.2	0.192	0.0147	0.024	<0.005
cis 1,2 dichloroethene	78.0 (n)	(70)	1.67	1.12	1.05	<1	Not Detected in Soil			
1,2 dichloroethane	0.450	990	1.77	<10	1.13	<1	Not Detected in Soil			
Tetrahydrofuran	NL	NL	117	144	134	18	Not Detected in Soil			
1,1,1 trichloroethane	900.0 (n)	(200)	17.9	10.8	10.1	<1	Not Detected in Soil			
4-methyl 2 pentanone	530.0 (n)	NL	17	14.9	15.5	<10	Not Detected in Soil			
Benzene	1.1	710	28.6	17.7	17.1	<1	Not Detected in Soil			
Toluene	500.0 (n)	200000	133	104	96.8	3.99	0.068	<0.005	<0.005	<0.005
Ethylbenzene	5.7	29000	101	54.5	57.6	1.27	0.041	<0.005	<0.005	<0.005
Total xylenes	60.0 (n)	(10000)	301	206	194	9.00	0.446	<0.015	<0.015	<0.015
Styrene	650.0 (n)	(100)	11.3	5.22	5.03	<2	Not Detected in Soil			
Isopropylbenzene	NL	NL	5.05	2.50	2.78	<1	0.006	<0.005	<0.005	<0.005
1,3,5 trimethylbenzene	4.7 (n)	NL	6.83	3.91	4.42	<1	0.018	<0.005	<0.005	<0.005
1,2,4 trimethylbenzene	6.7 (n)	NL	19.2	12.1	12.2	<1	0.047	<0.005	<0.005	<0.005
Naphthalene	3.9	NL	13.9	11.1	9.73	<10	0.029	<0.005	<0.005	<0.005
<b>PCBs/Pesticides</b>										
No PCBs or Pesticides Detected in Water or Soil										
<b>Semi-volatile organic compounds</b>										
Di-n-butylphthalate	NL	NL	Not Detected in Water				<0.500	0.621	<0.500	0.458J
<b>Inorganics (US EPA Priority Pollutants and RCRA 8 Metals)</b>										
Arsenic	0.39	(10)	11.8	16.7	13.3	<3	20	9.9	7.9	34
Antimony	31	4300	<10	26.6	19.8	<10	<0.5	6.47	6.17	19
Beryllium	160	280	<5	1.2J	<5	<5	0.630	0.47	0.510	1
Cadmium	70	(5)	<10	2.24J	2.14J	<10	0.240	0.22	0.250	0.48
Chromium*	280	(100)	<10	105	84.9	<10	25.4	16.1	19	17.6
Copper	3100	1300	<10	37	22.1	<10	21.7	16.6	18.7	18.9
Lead	400	NL	<10	65.5	38.1	<10	20.8	13.9	15.9	34.8
Mercury	4.3	0.012	0.066J	0.079J	0.055J	<2	0.03	0.020	0.030	0.02
Nickel	1500	4600	<10	119	101	<10	24.4	18.4	18.7	22.5
Selenium	390	11000	<5	<5	<5	<5	<0.5	<0.5	<0.5	<0.5
Silver	390	NL	<10	<10	<10	<10	<0.5	<0.5	<0.5	<0.5
Thallium	5.1	6.3	<10	<10	<10	<10	<0.5	<0.5	<0.5	<0.5
Zinc	23000	69000	<10	126	92.2	<10	73.2	48.2	54.4	59.9
Total Cyanide	1600	220000	NA	20	NA	NA	NA	NA	NA	NA

**Water Screening Levels:** human health non-drinking water quality standards in OAC 3745-1-34.

**(#):** The human health drinking water standard-the analyte was not listed under nondrinking in OAC 3745-1-34.

**Soil Screening Levels:** U.S. EPA Region 9 Residential Soil Preliminary Remediation Goals listed in the Regional Screening Level Table, April 2009.

**(n):** soil screening level based on non-cancer risk; the screening level is therefore 1/10 of that given in the table

**NL:** Not Listed in OAC 3745-1-34 or U.S. EPA Region 9 screening level table

**J qualifier:** analyte detected below the practical quantitation limit

## ATTACHMENT 3

### FIGURES

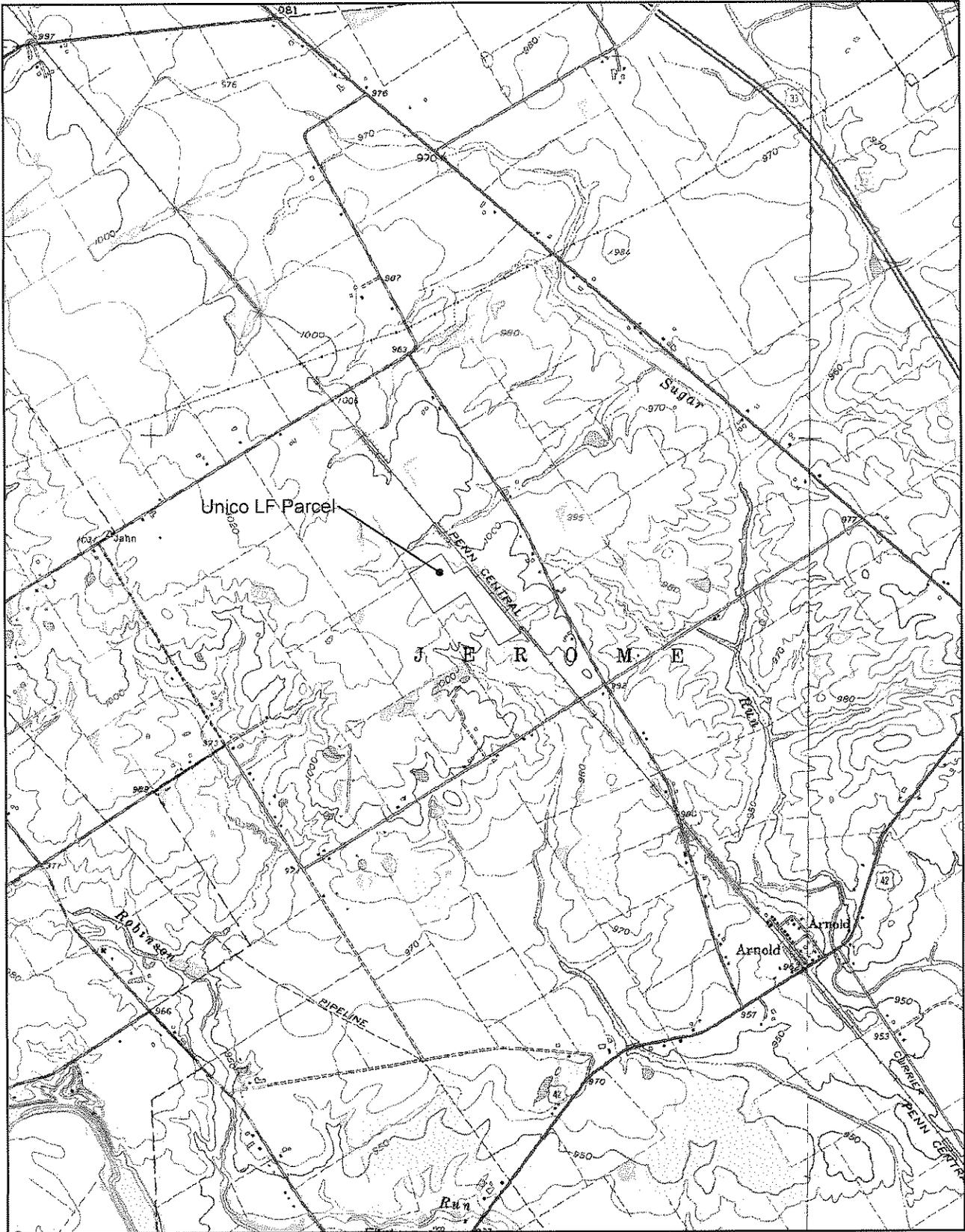


Figure 1  
 Site Location  
 Unico Landfill Site Assessment

2,000  
 Feet





Figure 2  
 Site Features  
 Unico Landfill Site Assessment

250  
 Feet



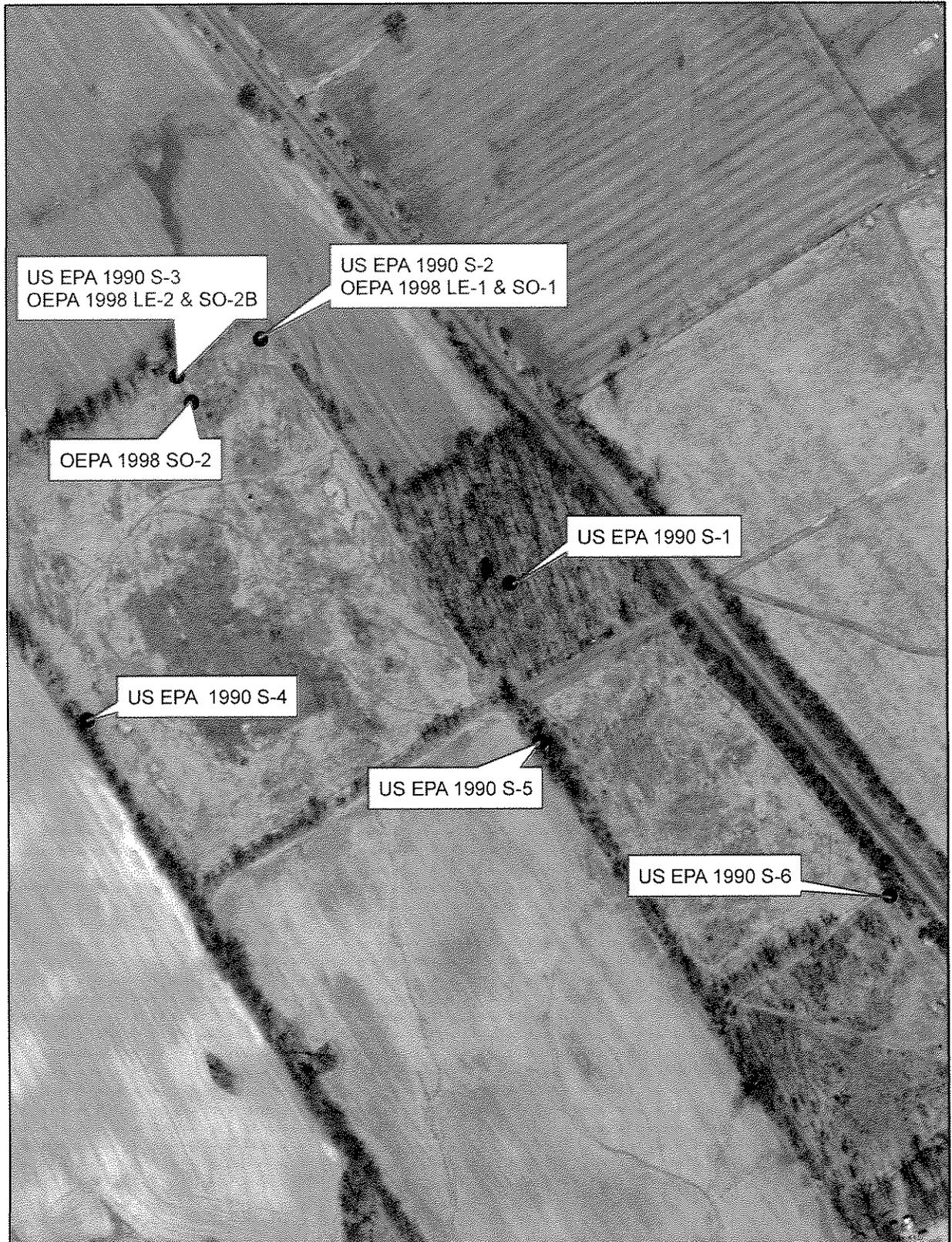


Figure 3  
Historic Sampling Locations  
Unico Landfill Site Assessment

250  
Feet



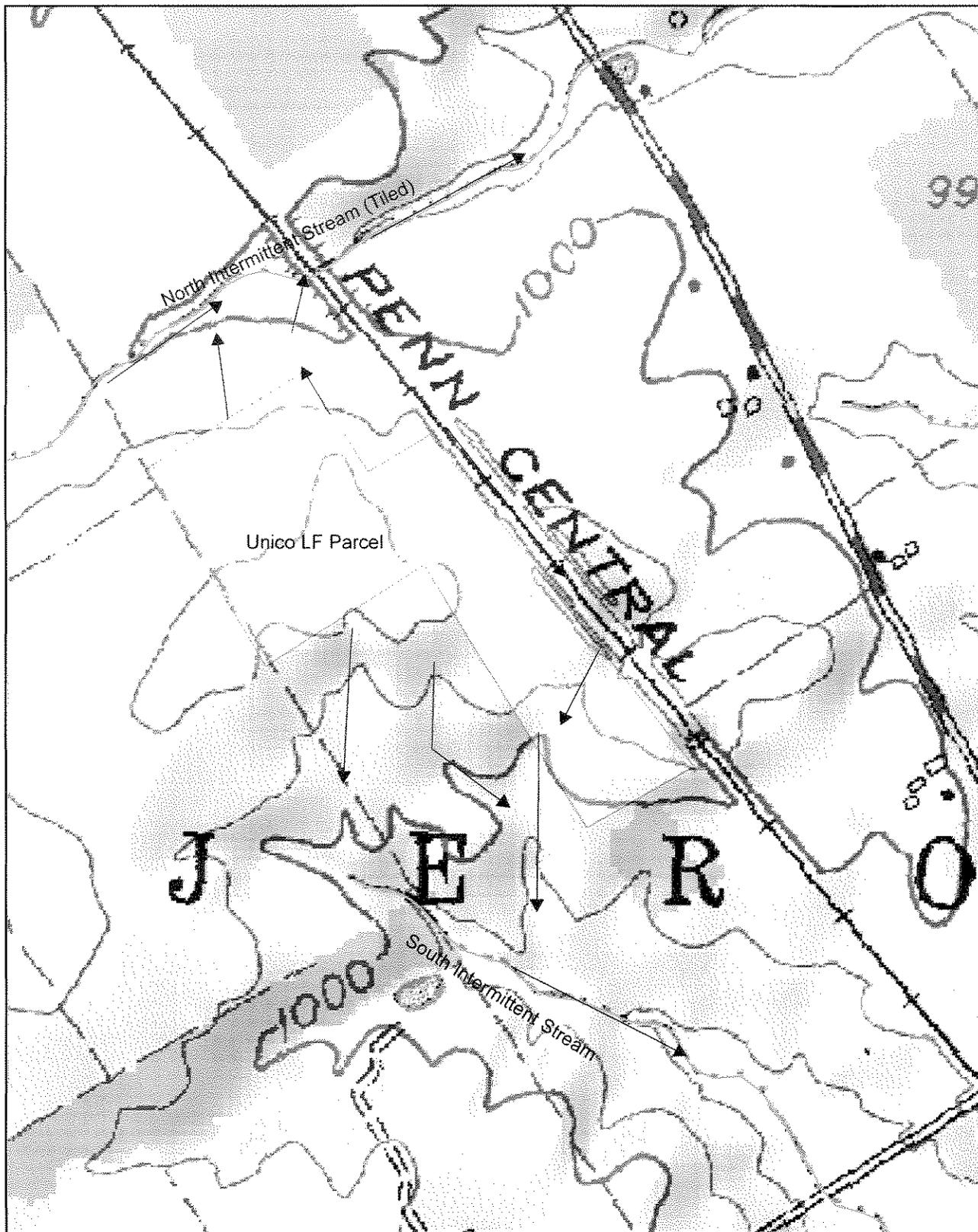


Figure 4  
 Topography and Surface Water Drainage  
 Unico Landfill Site Assessment

500  
 Feet

Ohio EPA  
 June 2009

→ Flow Direction



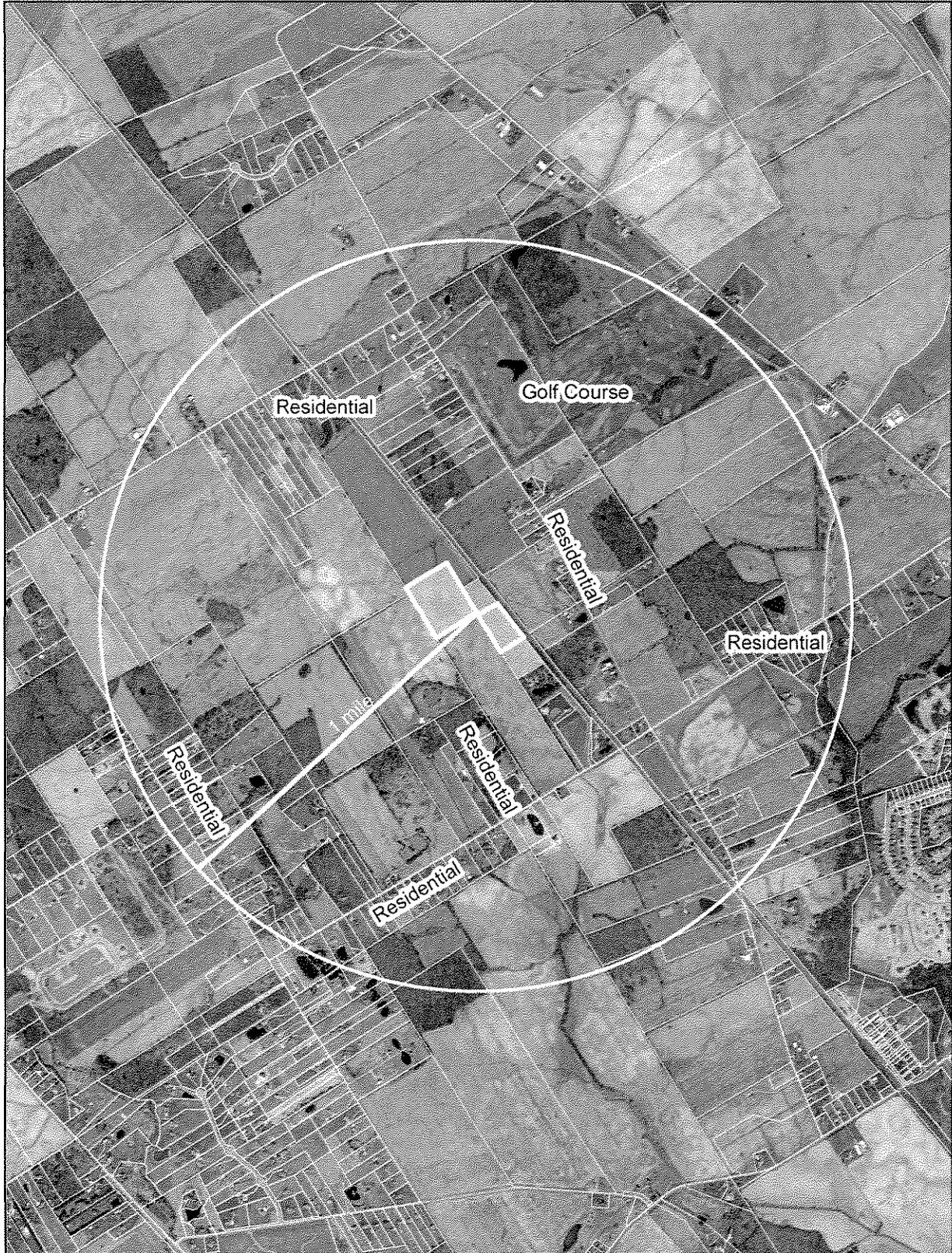


Figure 5  
Nearby Land Use  
Unico Landfill Site Assessment  
Ohio EPA  
June 2009

2,000  
Feet

OSIP Imagery 2006  
Union County Parcel Data





Figure 6  
Unico Landfill Site Assessment  
May 6, 2009 Sample Locations

125  
Feet

OSIP Imagery 2006



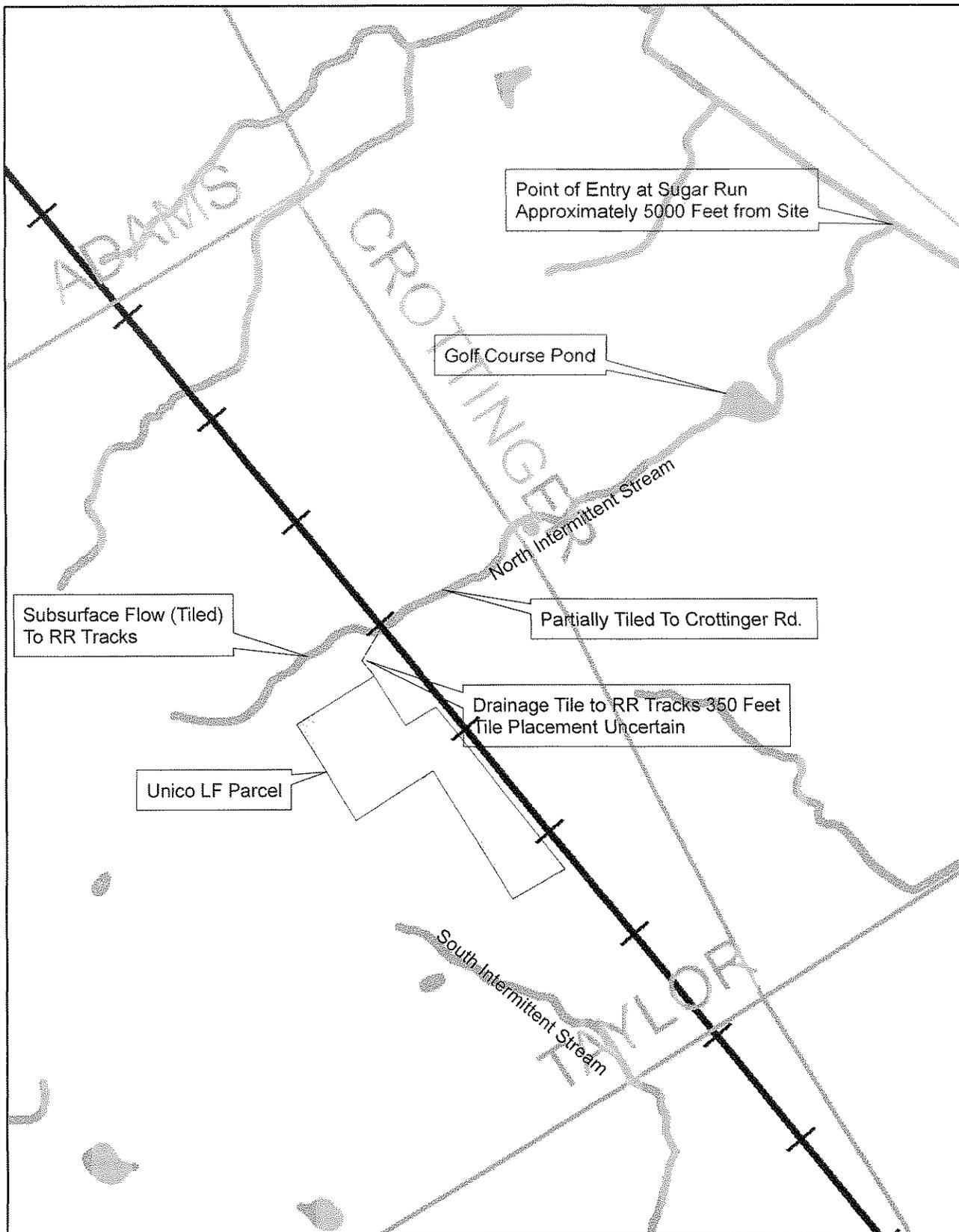


Figure 7  
 Surface Water Pathway  
 Unico Landfill Site Assessment

1,000  
 Feet



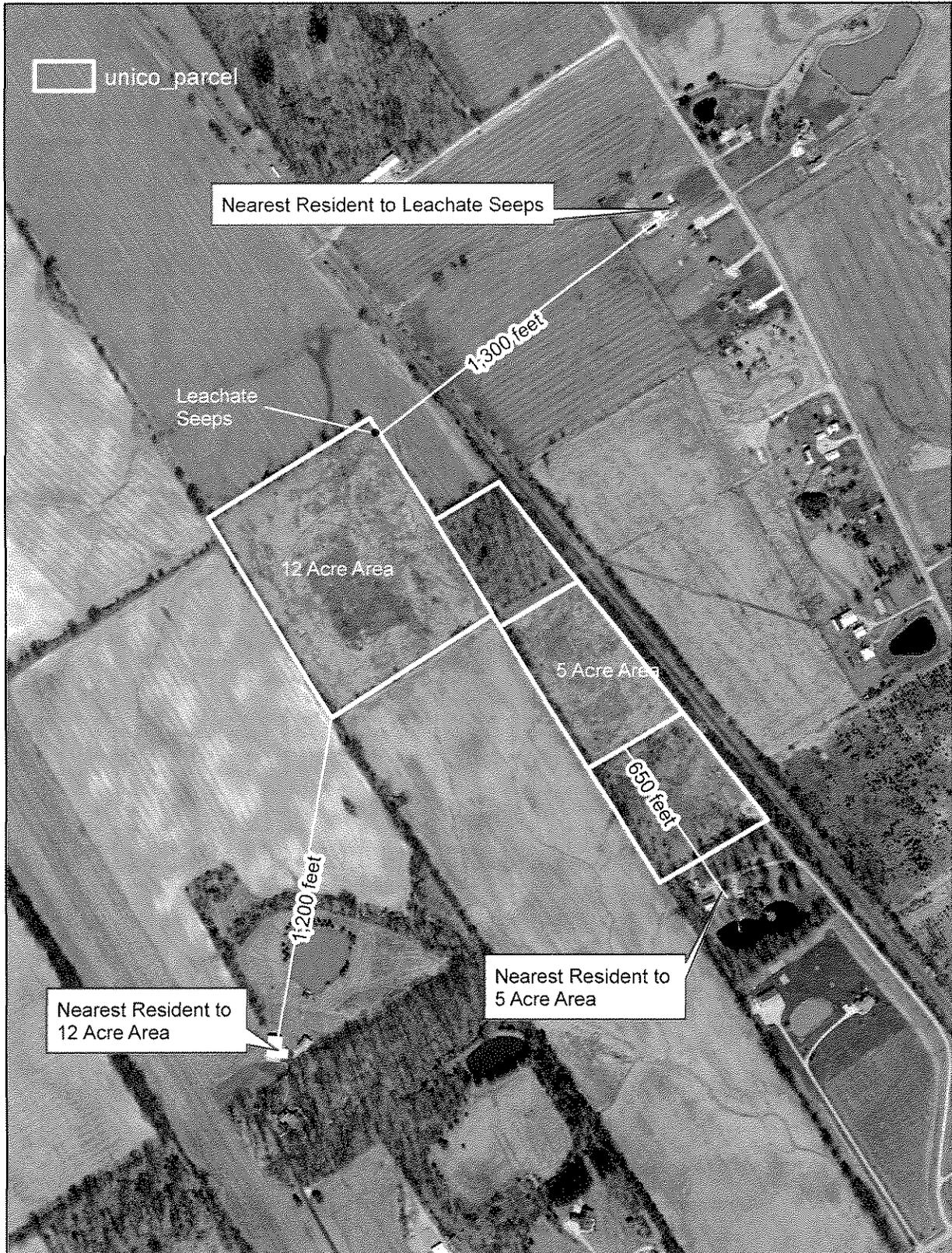


Figure 8  
Soil Pathway Nearest Resident  
Unico Landfill Site Assessment

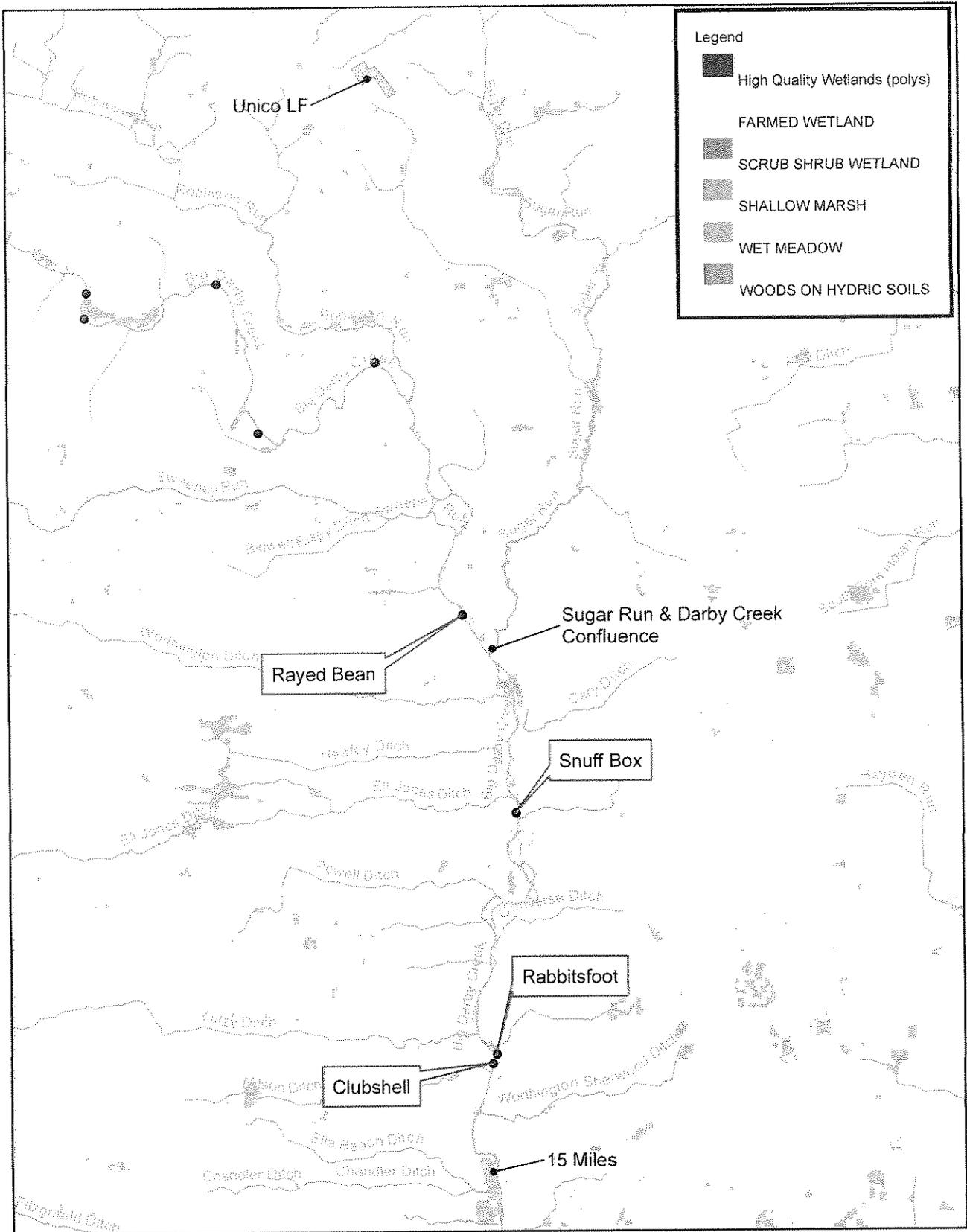


Figure 9  
 Ecological Pathway  
 15 Mile Target Distance Limit  
 Unico Landfill Site Assessment

Ohio EPA  
 June 2009

ODNR Wetland Layer  
 401 High Quality Wetland Layer  
 DSW State and Federal Threatened Layer  
 Ohio EPA GIS Database

ATTACHMENT 4  
ALPHA OMEGA LABORATORY REPORT

Due to its size, the Alpha Omega Laboratory Report was not included in the scanned image of this report. If interested in the Alpha Omega Laboratory Report, please contact the Division of Emergency and Remedial Response, Central District Office.

ATTACHMENT 5  
FIELD REPORT WITH PHOTOGRAPHS

**Ohio EPA/DERR  
FIELD ACTIVITY REPORT**

Date: May 6, 2009	Time: 9:30 AM-1:00 PM
Site: Unico Landfill	Project #:
Location: Crottinger Road, Plain City	County: Union
Weather: Cloudy-light rain	Temperature: 65 F
Ohio EPA personnel: Fred Myers and Robin Roth	
Other personnel: David Gingerich (Landowner); Rayon Welch (LATA)	
Protection level: D	

Field Instruments	Calibration Date	Readings at Site
PID	5-5-09	0.0-0.5 PPM
OAKTON meter	5-5-09	pH 7.43-8.04 (leachate) Temp 10.3-11.4. Conductivity (>1999 ugS)
Garmin GPS		

**Findings/Recommendations:**

The purpose was to sample leachate and soil observed to be emanating from the northeast end of the 12 acre disposal area.

Robin and I drove to the sampling area. We prepared the jars and vials for sampling. We measured the distance from the first seep to the northeast corner of the 12 acre area (200 feet). The adjacent landowner had ditched along the

I noted that the plastic barrel at the northeast corner had been recently excavated and clay drain tiles were exposed. The leachate was flowing into the broken 4" field tile, which trended south from Unico to the north toward the swale in the adjacent farm field. The flow was to the north toward the swale in the farm field. Robin and I attempted to find field tile outfalls at the swale, but there was no flowing water in the swale and no exposed field tiles. We followed the swale to the east to the railroad tracks and found the end of a perforated plastic drainage pipe and clay field tile at the railroad culvert. I decided to change the sampling plan and sample the water and sediment at the railroad culvert.

The first sample location, sample identification Unico L-1 (leachate) and S-1 (soil), which was collected approximately 100 feet south from the northeast edge of the landfill. We measured the pH of the leachate (7.7); the conductivity reading was out of

range (max 1999 uS); and temperature 11 C. We collected VOC and metal samples for both leachate and soil. The acid preservative in the VOC vials reacted with the leachate and foamed out of the 40 ml vials. We attempted to rinse the acid out but could not prevent bubbles from forming in the vials. David Gingerich (landowner) arrived after collecting these samples. Dave told us that the neighboring landowner dug the ditch to divert the leachate away from his field and uncovered the field tile because it was plugged. He also told us that outgassing and some seepage was beginning to show up at the south end of the landfill. He said his lawnmower almost got stuck in a hole that opened up on the south end. He left after about 0.5 hours.

The next sample location (L2/S2) was collected at the northeast corner of the landfill where the drain tile was excavated. PID reading of 0.5 ppm was measured in the clay tile toward the landfill. Samples were collected for VOC, SVOCs, PCBs/Pesticides and cyanides for both leachate and soil. Duplicate samples were collected for VOCs and metals (designated L3/S3). Again the acid in the VOC vials reacted with the leachate and we could not get a bubble free sample. pH was measured at 7.43 and temperature 11.4 C. Conductivity was again out of range. Raylon Welch (LATA) met us after collecting these samples (she was doing the Hershberger LF quarterly inspection). She accompanied us to the next sample location.

The final sample location (L4/S4) was collected at the railroad culvert downstream of the two drainage pipes. Samples were collected for VOC and metal analysis. Slag and other debris were noted at this location. PID reading of 0.3 ppm was measured in the plastic drainage pipe. Ms Welch observed sampling. *pH 8.04, Temp 10.3°C  
Cond. out of range.*

We packed the samples and left the site at approximately 1 PM. We drove to Delaware to look at another site and then dropped the samples off at Stantec. We informed Stantec that 3 of the VOC samples were not preserved.

Prepared by: Fred Myers	Date: 5-7-09
-------------------------	--------------



Figure 1  
Unico LF Field Report for May 6, 2009  
Leachate and Soil Sample Locations

125  
Feet





**Figure 1: Unico LF 5-6-09. First leachate outbreak, 200 feet from northeast corner of landfill.**



**Figure 2: Unico LF 5-6-09. Looking north at northeast edge of the landfill. Note ditch adjacent to farm field to divert leachate to the north.**



**Figure 3: Unico LF 5-6-09. Sample located L1/S1.**



Figure 4: Unico LF 5-6-09. Looking West at sample location L1/S1. Leachate pooled in constructed ditch below the

seep.



Figure 5: Unico LF 5-6-09. Looking south at sample location L2/S2 and L3/S3. Clay field tile is broken and trends south-north along the landfill. Water flows to the north (toward camera).



**Figure 6: Unico LF 5-6-09. Looking north at sample location S2/L2 & S3/L3. Leachate flows from ditch into excavation and into drainage**



Figure 7: Unico LF 5-6-09. Looking east at sample location L2/S2 & L3/S3.



Figure 8: Unico LF 5-6-09. Sample location L4/S4. Perforated plastic pipe at railroad culvert.



**Figure 9: Unico LF 5-6-09. Sample location L4/S4. Field tile and plastic pipe draining farm field to the west.**



**Figure 10: Unico LF 5-6-09. Looking east at sample location L4/S4. Culvert that goes beneath the railroad tracks.**

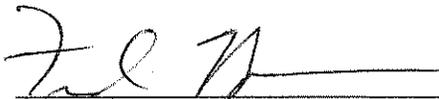
ATTACHMENT 6  
SAMPLING PLAN

OHIO ENVIRONMENTAL PROTECTION AGENCY (OHIO EPA)  
DIVISION OF EMERGENCY & REMEDIAL RESPONSE (DERR)

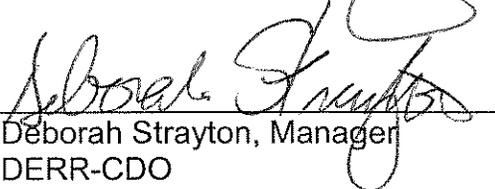
SITE INVESTIGATION WORK PLAN APPROVAL FORM

Unico Landfill  
Project Number 18000083001

Union County

Prepared by:  4/16/09  
Fred Myers, Site Coordinator  
DERR-CDO Date

Reviewed by:  4/16/09  
Ken Schultz Supervisor  
DERR-CDO Date

Approved by:  4/16/09  
Deborah Strayton, Manager  
DERR-CDO Date

---

**OHIO EPA DIVISION OF EMERGENCY AND REMEDIAL RESPONSE**  
**SITE INVESTIGATION WORK PLAN**  
**UNICO LANDFILL**

**STATEMENT OF PURPOSE**

The overall purpose of this investigation is to document a release of hazardous substances to environmental media. Uncontrolled leachate has been documented at the northeast end of the 12-acre fill area. The leachate and underlying soil was sampled in 1998 and those results indicated a release of hazardous substances. Updated information is needed on the chemical characteristics of the leachate and underlying soil in order to verify the release and to meet the requirements of the state site assessment guidance. In accordance with the guidance, the updated soil data will be compared to established soil and surface water screening levels (see attached DQO document). If the concentration of one or more COCs exceeds the screening levels, then a release that may pose a threat to human health or the environment will have been documented. If such a release is documented, then Ohio EPA will determine whether or not to pursue additional state actions based on the criteria in the state site assessment guidance.

**SECTION I - General Information and Personnel**

<b>Site Name:</b> Unico Landfill	<b>Date(s) of Investigations:</b> 5/6/09
<b>DERR I.D. No.:</b> 180-0830	<b>U.S. EPA I.D. No.:</b> OHD082747379
<b>District:</b> Central District Office	<b>County:</b> Union
<b>Site Address/Location:</b> Site is located off of Crottinger Road in Union County, west of the Hershberger Landfill.	
<b>Directions to Site:</b> From Columbus, take I-70 West to I-270 north to US Route 33 East. Exit State Route 42 South for 0.5 mi. and turn right (north) on Industrial Parkway. Take Industrial Parkway 0.7 mile and turn left (west) onto Taylor Rd. Take Taylor Rd. 1 mile and then turn right (north) onto Crottinger Rd. Follow Crottinger Rd. 0.5 mile to Hershberger Landfill access road (gravel road on left (west) at north end of Hershberger Landfill). Park in the gravel parking lot. Walk to Unico Landfill by crossing over the top of the Hershberger Landfill.	
<b>Latitude:</b> 40° 09' 33" N	<b>Longitude:</b> -83° 16' 18" W
<b>USGS 7.5 Minute Series Quadrangle:</b>	
<b>Access Permitted By:</b> David Gingerich	<b>Phone:</b> 614-873-3023
<b>Site Representative:</b> David Gingerich	<b>Phone:</b> 614-873-3023
<b>OUPS Utility Clearance Number:</b> Not Applicable	<b>Date:</b>

**SECTION I - General Information and Personnel**

**List of Map(s) Attached:**

- Figure 1: Site Location
- Figure 2: Topography and Area Features
- Figure 3: Site Features
- Figure 4: Planned Sampling Locations

**Team Members and Responsibilities:**

Fred Myers	Project Manager
Fred Myers	Sampling Team Leader
Fred Myers	Site Health and Safety Officer
Robin Roth	Sampling Team Member; Alternate Health and Safety Officer

**Prepared by: Fred Myers**

**Date:** 4/16/09; Revised 5/5/09

**SECTION II - Sample Summary**

	Field Samples #	Duplicates #	Equipment Blanks #	Trip Blanks #	Total #
Soil Samples	4	1			5
Sediment Samples					
Surface Water (Leachate) Samples	3	1		1 VOC only	5
Ground Water Samples (8260 B)					
Air Samples					
Soil Gas Samples (8260B)					

### SECTION III - Site Description

Unico Landfill is located in Jerome Township in southern Union County. It is bordered by agricultural land and railroad tracks. The fill area consists of a 12-acre area and a 5-acre area (**Figure 1**). The estimated total volume of waste is 350,000 cubic yards. The waste consists of solid waste, industrial wastes, and hazardous wastes (as defined in ORC 3734.20). Industrial waste materials include electroplating sludge, industrial wastewater sludge, paint booth filter sludge, solvent cleaning sludge, fly ash, resins, asbestos, acids, and bases. The hazardous wastes were placed in trenches by permit and covered with solid waste.

### SECTION IV - Site History

In 1974, Jonas Hershberger leased 17.5 acres from Emma Gingerich to expand the existing Hershberger Landfill. After securing the lease, Mr. Hershberger applied to Ohio EPA for a permit to install (PTI). Ohio EPA approved the landfill expansion in 1976. Mr. Hershberger began operations in June 1976. In August 1976, Mr. Hershberger transferred the PTI to David Headlee, who changed the name to Unico Landfill, Inc. Mr. Headley operated Unico LF from August 1976 until December 1, 1981. Closure was completed in September 1982 in accordance with existing solid waste rules. The site has remained in the Gingerich family and no other activities have occurred on it since closure.

### SECTION V - Previous Site Work

In 1990, U.S. EPA completed a screening site inspection (SSI). The SSI noted cap degradation and methane outgassing on the flanks of the 12-acre fill area. Six soil samples were collected, and methylene chloride, antimony, lead, and mercury were identified as potential contaminants of concern (COCs). Ground water samples were collected from 3 residential water wells located within 1 mile of the site; no contaminants of concern were identified.

In 1998, Ohio EPA DERR inspected the site and noted leachate outbreaks on the northeastern edge of the 12-acre fill area. In June 1998, Ohio EPA collected soil and leachate samples at the 2 active leachate outbreaks. Analytes detected include volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and the pesticide, dicamba.

On October 2, 2008, Ohio EPA inspected Unico LF and documented active leachate seepage at the northeast end of the 12-acre fill area, where the 1998 release was documented. The leachate seep had been ditched and diverted to a plastic barrel partially buried in the ground, where it terminated (see attached photograph and site map). No other active leachate seeps were noted during the inspection.

### SECTION VI - Site Geology and Hydrogeology

## **SECTION VI - Site Geology and Hydrogeology**

Unico LF is located on the top of the Powell End Moraine. The general topography in the area slopes toward the east-southeast toward Darby Creek. Unico LF is located on a topographically high area with radial drainage to the north, east, and south.

Unico LF overlies a buried valley that trends north-south. The valley was incised 100-150 feet into Silurian age dolomitic bedrock. The thickness of the surficial glacial deposits is approximately 200 feet. The surface soil (0-2 feet) is predominately Blount silt loam and Morley silt-clay loam. The subsurface consists of approximately 80 feet of stiff homogenous gray silty clay that overlies a 25-35 foot thick zone of poorly sorted sand and gravel deposits. Below the sand and gravel is 60-65 feet of alternating sequences of fine sand and silt. Dolomitic limestone bedrock underlies the unconsolidated glacial deposits.

The upper-most aquifer is approximately 80 feet below ground surface. The static water level is approximately 50-70 feet below the ground surface, which indicates confining conditions. Potentiometric data indicates ground water flow is toward the south. Based on the hydrogeologic evaluation at the neighboring Hershberger Landfill, the upper clay impedes vertical water flow; therefore, migration of potential COCs through approximately 60 feet of tight silt-clay to ground water is unlikely.

## **SECTION VII - Sampling Strategy**

The main objective of this investigation is to verify a release of hazardous substances documented in Ohio EPA's 1998 assessment. Concentrations of COCs in leachate and soil will be compared to U.S. EPA Region 9 Preliminary Remediation Goals (PRGs) for unrestricted land use and Ohio Water Quality Standards. Therefore, practical quantitation limits must be sufficient to detect potential COCs to those concentrations. See attached DQO document.

### **Leachate Investigation**

The objectives of the leachate seep investigation are to (1) characterize the chemical nature of the leachate; (2) define the aerial extent of the leachate seeps; (3) define the extent (persistence) of the COCs in the leachate; and (4) identify potential human and ecological receptors. The sources of the leachate seeps will be geolocated, and the extent will be measured and geolocated. All visually identified potential migration pathways to surface water drainage will be evaluated, measured, and geolocated (drainage tiles, ditches, and etc.). Potential receptors/targets will be identified and geolocated.

The active leachate seep will be sampled for VOC and metals analysis at the source, at the terminus, and between the source and terminus for a total of 3 samples per seep (See Figure 4). If sufficient volume has collected near the terminus (plastic barrel), then a sample will be collected for SVOCs, PCB/pesticides, and cyanide analysis. Prior to sampling, leachate will be measured for pH and conductivity using field instrumentation. A small excavation will likely be needed to collect leachate at the source to get sufficient volume. Discreet leachate samples will be collected at each location using bottle immersion. DQOs will be sufficient to make decisions regarding future state actions in accordance with current site assessment guidance. The practical quantitation limits will be sufficient to compare the analytical results to the screening criteria. Screening criteria are Ohio Water Quality Standards, Outside Mixing Zone Average, Human Health-Non-drinking (OAC 3745-1-34). If an analyte detected at the site is not listed in 3745-1-34 (OMZA, non-drinking), then the drinking water standard will be used as the screening level.

### **Surface Soil Investigation**

The objectives of the soil/sediment investigation are to (1) characterize the chemistry of the soil congruent with the leachate seeps and (2) identify and characterize other potential areas of surface soil contamination at the site. DQOs will be sufficient to compare results to screening criteria. Discreet soil samples will be collected in

## SECTION VII - Sampling Strategy

conjunction with the leachate samples using spoons or scoops for VOC, SVOC, PCBs/pesticides and metals analysis. An additional soil sample will be collected at the apparent drainage swale at the north end of the landfill, east of the plastic barrel. The practical quantitation limits must be sufficient to compare the analytical results to the screening criteria. Region 9 PRGs-residential direct contact standards will be the screening criteria.

All sampling locations will be geolocated with a Garmin Portable Global Positioning System. The locations will be further refined and plotted using Ohio EPA's GIS software.

Samples collected during the course of this investigation will be submitted to the state contract laboratory, Stantec for VOC analysis (SW846 8260B), pesticides/PCBs (SW846-80801/8082), total cyanide (SW846 9010), SVOC analysis (SW846-8270C), and metals analysis (SW846 6010B/7471A).

### Procedures:

Personal protective procedures, sample collection procedures, sample screening procedures and field decontamination procedures will be performed according to DERR's *Standard Operating Procedures (SOPs)*, January 2007. The relevant SOPs identified for this project are listed below:

- SOP 1.1.1 Initial Site Entry
- SOP 1.2.1 Sample Logbook
- SOP 1.2.2 Photograph Documentation
- SOP 1.2.3 Chain-of -Custody
- SOP 2.1.2 Surface Water Sampling by Bottle Immersion
- SOP 2.4.2 Surface Soil Sampling by Spoon or Scoop
- SOP 3.3.1 MiniRAE 2000 Photoionization Detector
- SOP 3.4.1 Garmin Portable Global Positioning System
- Oakton Portable pH/Conductivity Meter (10 series)-no SOP.

*Note: If visual observations or instrument readings indicate the need for further investigation to achieve the overall objective of this investigation, this work plan allows for the collection of two additional leachate/soil samples. In addition, leachate volume may not be sufficient to collect enough sample for all analysis.*

## SECTION VIII - Investigation-Derived Waste Plan

If, in the best professional judgment of the project manager, investigation-derived wastes are non-hazardous, the wastes will be double-bagged and transported back to the Ohio EPA offices for disposal as directed in the U.S. EPA Guide to Management of Investigation-Derived Wastes, Publication: 9345.3-03FS, January 1992.

Investigation-derived wastes will generally consist of disposable gloves and paper.

## SUMMARY TABLE OF SAMPLING AND ANALYSIS PROGRAM

<u>Sample Matrix</u>	<u>Field Parameters</u>	<u>Laboratory Parameters</u>	<u># Samples</u>	<u>Field Duplicate</u>	<u>Field Blanks</u>	<u>MS/MSD<sup>2,3</sup></u>	<u>Matrix Total</u>
Ground Water		CLP TCL VOC- OLM					
		CLP TCL SVOC- OLM					
		CLP TCL pest/PCB- OLM					
		CLP TAL metals -ILM (unfiltered)					
		CLP TAL cyanide-ILM					
Surface Water		CLP TCL VOC- OLM	3	1			5
		CLP TCL SVOC- OLM	1				1
		CLP TCL pest/PCB- OLM	1				1
		CLP TAL metals -ILM (unfiltered)	3	1			5
		CLP TAL cyanide-ILM	1				1
Soil***		CLP TCL VOC-OLM	4	1			5
		CLP TCL SVOC-OLM	4	1			5
		CLP TCL pest/PCBs- OLM	4	1			5
		CLP TAL metals-ILM	4	1			5
		CLP TAL cyanide-ILM	4	1			5
Sediment		CLP TCL VOC-OLM					
		CLP TCL SVOC-OLM					
		CLP TCL pest/PCBs- OLM					
		CLP TAL metals-ILM					
		CLP TAL cyanide-ILM					
Drinking Water		CLP TCL VOC-OLC					
		CLP TCL SVOC-OLC					
		CLP TCL pest/PCBs- OLC					
		CLP TAL metals-ILC					
		CLP TAL cyanide-ILC					

1. The field quality control samples also include trip blank, which is required for VOA water samples. One trip blank, which consists of two 40-ml glass vials (preserved) for water samples is shipped in each cooler of VOA samples.

2. Additional sample volume for the matrix spike/matrix spike duplicate (MS/MSD) is required for organic analysis, except for the OLC SOW. Samples designated for MS/MSD analysis will be collected, with extra sample volumes, at a frequency of one per group of 20 or fewer investigative samples. Triple the normal sample volumes will be collected for VOAs, and double the normal sample volumes will be collected for SVOCs and pesticides and PCBs.

3. For inorganic analysis, no extra sample volume is required for the spike and duplicate analyses, however, samples for the spike and duplicate analysis should be identified on the field COC at a rate of one per group of 20 or fewer investigative samples.

4. The number of samples to be collected for MS/MSD are not included in the matrix total. The number of trip blank samples is included in the matrix total.

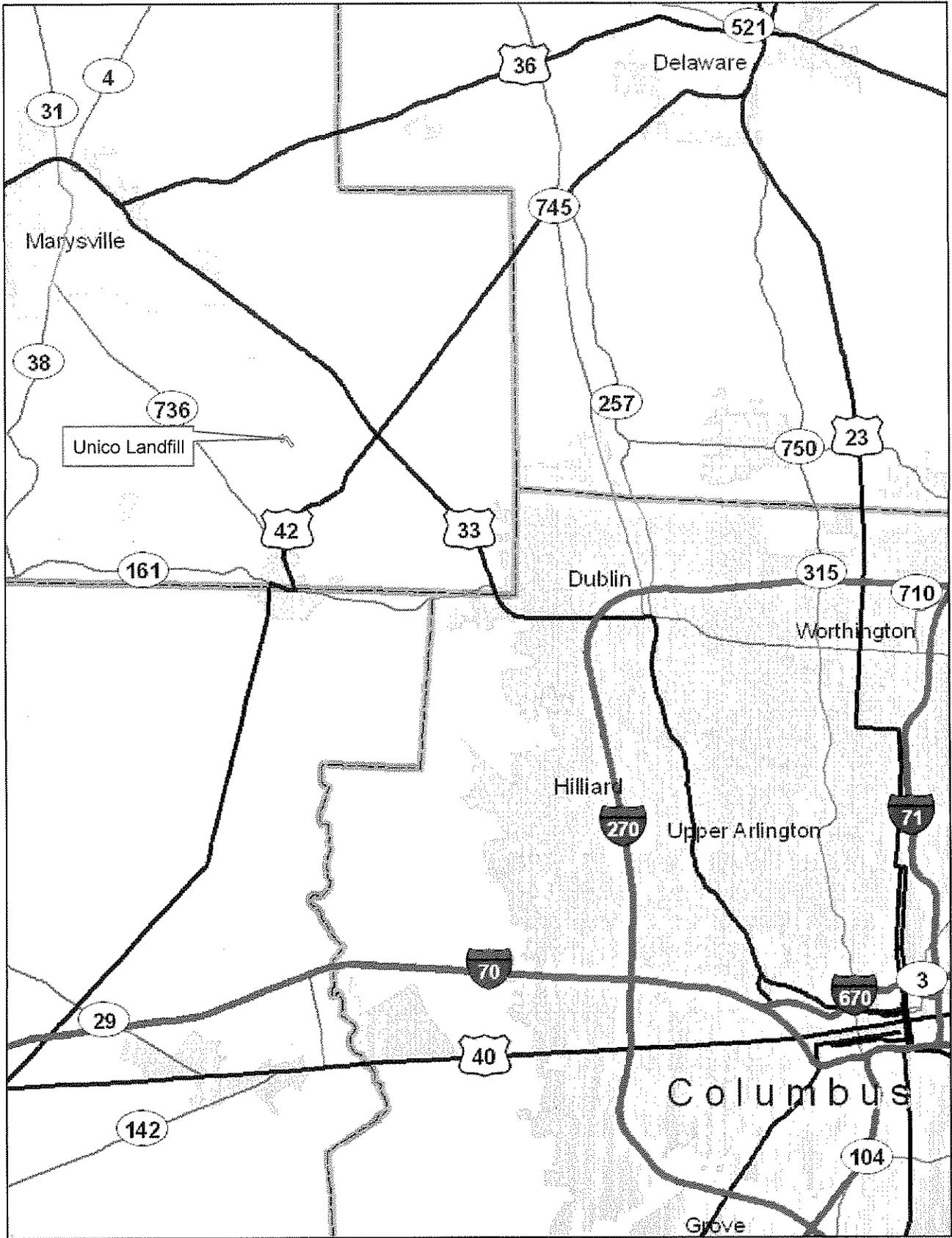


Figure 1  
 Site Location  
 Unico Landfill

5  
 Miles



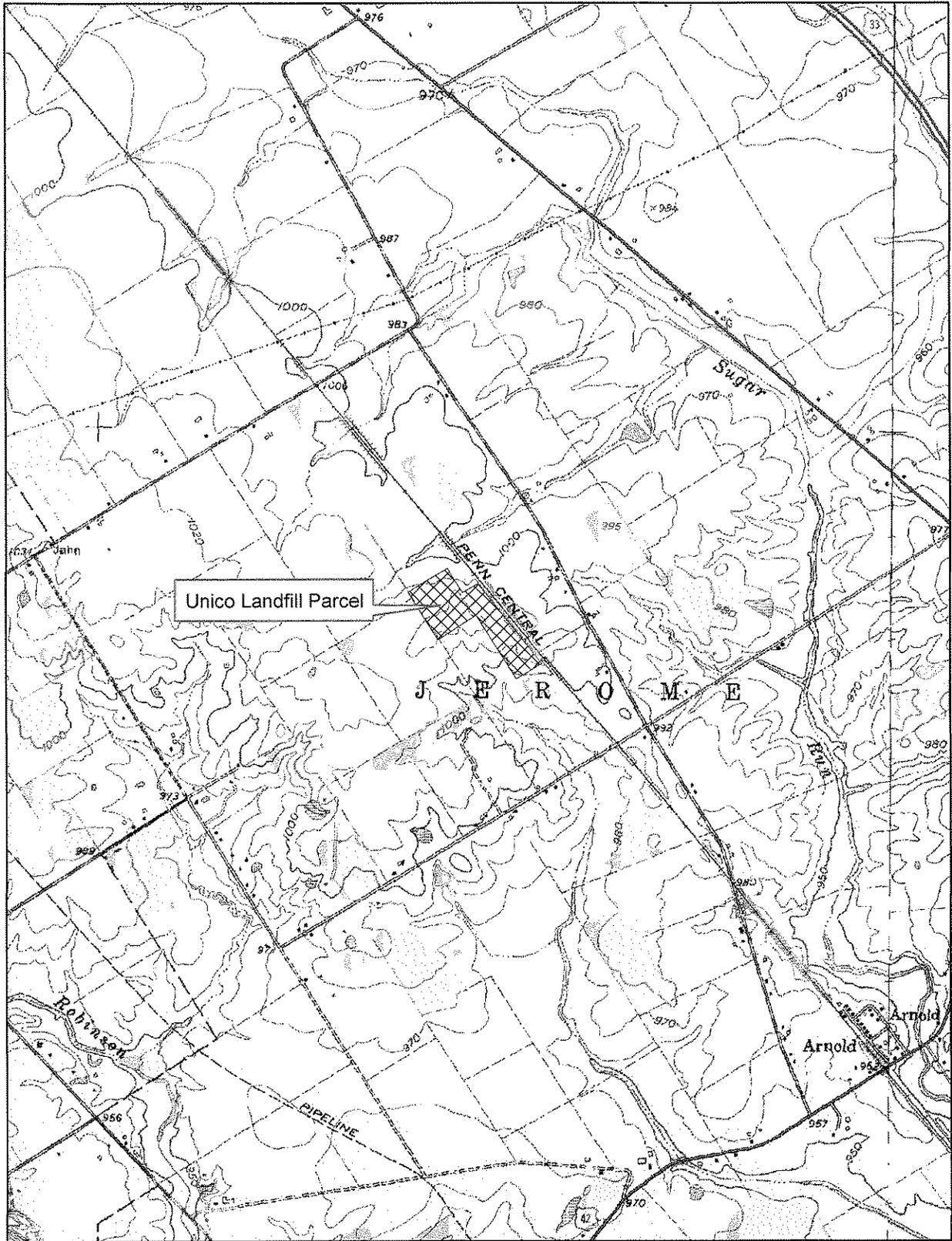


Figure 2  
 Topography and Area Features  
 Unico Landfill

2,000  
 Feet





Figure 3  
Site Features  
Unico Landfill

250  
Feet

OSIP Imagery 2006



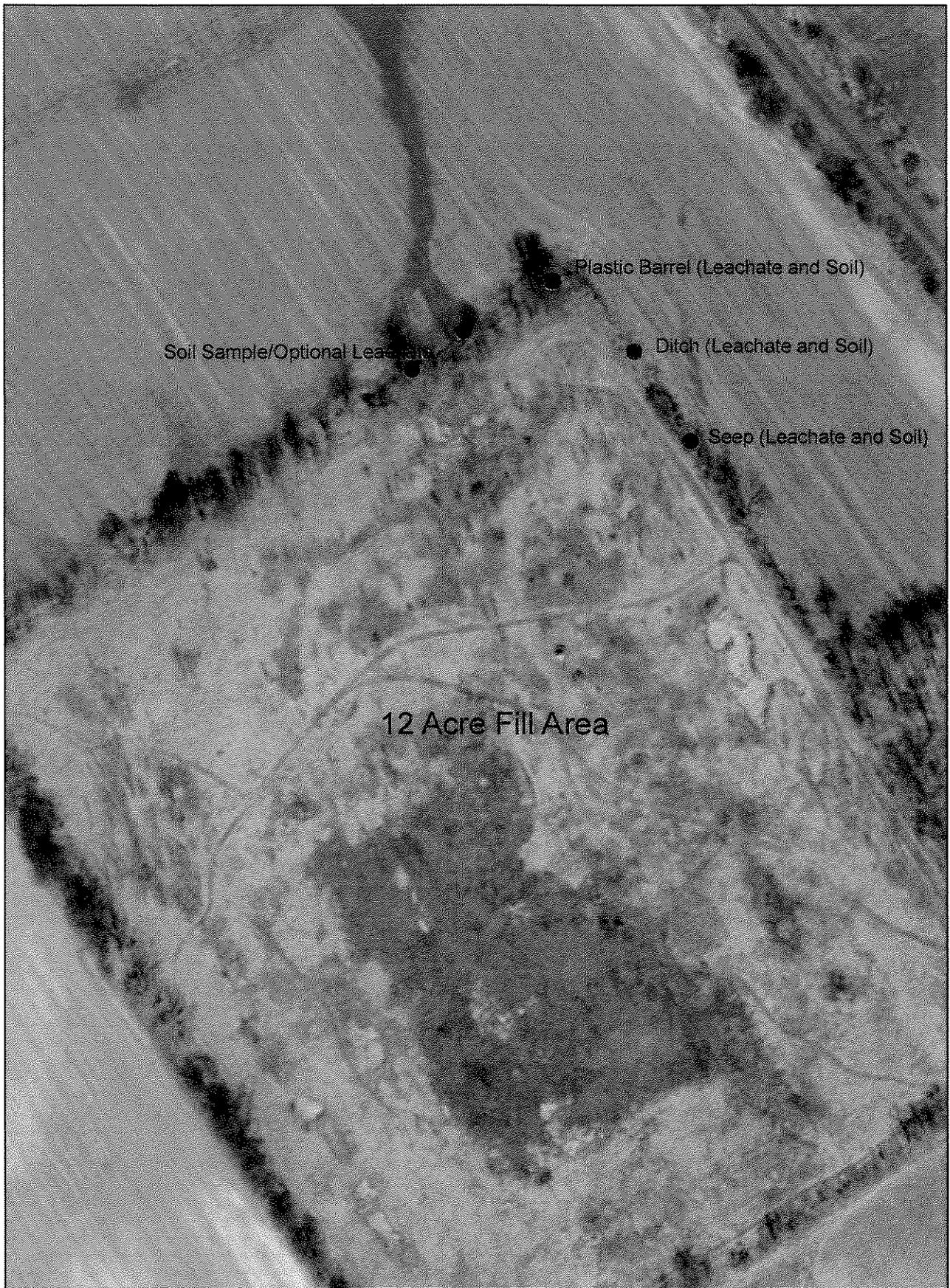
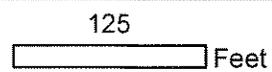


Figure 4  
Planned Sample Locations  
Unico Landfill State Site Assessment  
April 2009



# Unico Landfill Data Quality Objectives

## 2009 Site Assessment

**Problem Statement.** The CDO site coordinator will make recommendations to CDO management concerning further state actions. The recommendation will be based on current state SA guidance. The conditions that may pose a threat is the uncontrolled leachate seepage that occurs at the northern end of the 12-acre fill area. Based on the current conceptual site model, the only potential exposure pathway is direct contact with surface soil/leachate; however, there is a small possibility of impacts to surface water/sediment (if an undiscovered direct migration pathway exists to a surface water body). This site assessment needs to be completed by July 1, 2009.

**Decision Statement.** In 1998, several VOCs were detected in the leachate and underlying soil. Vinyl chloride (0.3 mg/kg) exceeded the soil PRG of 0.06 mg/kg (US EPA Region 9, residential land use-cancer). In order to complete the site assessment, a release of hazardous substances must be verified. This requires sampling the leachate and underlying soil for potential COCs. At this time there are no alternative actions. The decision is to verify a release of hazardous substances that exceed screening criteria.

**Decision Inputs.** Information is needed on the chemical characteristics of the leachate and underlying soil. New measurements are needed to meet the requirements of the site assessment in order to make the decision of whether or not to pursue further state actions. Sources of information are contained in the current state site assessment guidance. In accordance with the guidance, COC concentrations in soil will be compared to US EPA Region 9 PRGs for residential direct contact. COCs in leachate will be compared to OEPA water quality standards, human health (non-drinking). The action levels are derived from US EPA guidance and OEPA DSW. Standard SW 846 analytical methods should meet the detection limits required for this site assessment. Stantec, OEPA's contract lab, will perform the analysis.

**Boundaries.** The target population of interest is the leachate/soil samples within the Gingerich property boundary. Samples will be collected at all active leachate seeps and any other potentially impacted areas of the site. The only known active seep is at the north end of the 12-acre fill area. Temporally, data will be collected in spring, which is usually the time of higher precipitation and leachate production. The site assessment needs to be completed by July 1, 2009. Site access may be a constraint. Samples will be collected once.

**Decision Rule.** The population parameter will be maximum concentration detected. The soil data will be compared to US EPA Region 9 PRGs, residential direct contact (non-cancer adjusted by 0.1 multiplier). Arsenic is anticipated to exceed its PRG and will be compared to regional background (10-20 mg/kg). The leachate action level will be Ohio water quality standards (human health-non-drinking), outside mixing zone average, listed in OAC 3745-1-34. **If the concentration of one or more COCs exceeds the screening levels, then a release that may pose a threat to human health or the environment will have been documented.**

**Tolerable Limits on Decision Errors.** Sources of sampling error are minimal due to the small number of samples that will be collected and the relatively simple objective of comparing maximum concentrations to screening levels. Leachate VOC samples may be compromised due to methane or carbon dioxide gas at the source of the seeps, which can create bubbles in the VOC sample vial. However, the action levels for anticipated VOCs in leachate are high compared to the PQLs, and if this is encountered, it should not be a problem for the comparison. Analytes tagged with a J qualifier will be acceptable for comparison to screening levels.

**OHIO EPA DIVISION OF EMERGENCY AND REMEDIAL RESPONSE**  
**SITE HEALTH AND SAFETY PLAN**  
**State ASSESSMENT WORK PLAN**  
**Unico Landfill**

**SECTION I - General Information and Personnel**

**Site Name:** Unico Landfill

**Date of Investigations:**

**DERR I.D. No.:** 180-0830

**U.S. EPA I.D. No.:** OHD082747379

**District:** CDO

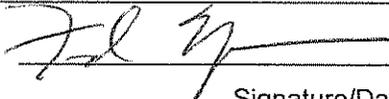
**County:** Union

**Site Address:** West of Crottinger Road, North of Plain City.

**Team Members and Responsibilities:**

Fred Myers

, Project Manager

 5/5/09  
Signature/Date

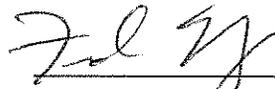
Fred Myers

, Sampling Team Leader

 5/5/09  
Signature/Date

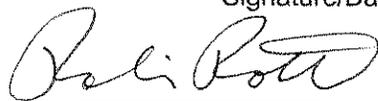
Fred Myers

, Site Health and Safety Officer

 5/5/09  
Signature/Date

Robin Roth

, Sampling Team Member; Alternate Health and Safety

 5/5/09  
Signature/Date

Prepared by Fred Myers:

Date: 5/5/09

**SECTION II - Table A - Safety and Health Risk Analysis Overview**

Complete the following table by highlighting or circling the appropriate answer based on site conditions. These answers will be used to complete Tables B and C.

<b>Media of Possible Exposure:</b>	Air	Ground Water	Sediment	<b>Soil</b>	<b>Surface Water</b>
<b>Overall Site Risk/Hazard:</b>	High	Medium	<b>Low</b>	Unknown	
<b>Waste Types:</b>	<b>Liquid</b>	Gas	Solid	Sludge	Unknown
<b>Waste Characteristics:</b>	Corrosive	Flammable	Inert	Radioactive	Reactive
	<b>Toxic</b>	<b>Volatile</b>	Unknown	Other (specify):	
<b>Hazards of Concern:</b>	Asbestos	Biological	Radiological	Cold Stress	Heat Stress
	Noise	Explosive/ Flammable	<b>Inorganic Chemicals</b>	<b>Organic Chemicals</b>	Oxygen Deficient
	Unknown	Other (specify):Insects			

**SECTION II - Table B - Safety and Health Risk Analysis**

**List of Potential Physical and Biological Hazards**

The following table must be included according to site-specific conditions. Example text below may be added to or removed as needed.

<b>Task</b>	<b>Hazard</b>	<b>Description/Location</b>	<b>Procedure used to Monitor/Hazard</b>
Driving to and from the site	<b>Vehicle or Traffic Accident</b>	Driving to and from the site.	Check vehicle condition. Defensive Driving
Accessing Sampling Locations.	<b>Adverse Weather Conditions</b> heat; cold; rain; wind; lightning.	Soil, surface water, sampling locations.	Drink plenty of fluids; dress appropriate -- cold, warm; rain; stop working when lightning.
Accessing Sampling Locations.	<b>Tripping, Falling sharp objects --</b> puncture wounds; railroad xing).	Soil, surface water, sampling locations.	Be cautious when crossing RR tracks. Observe appropriate safety practices; where steel toed boots.
Accessing Sampling Locations	<b>Biological.</b> Bites, Stings, Ticks.	Soil & SW sampling locations	Wear proper clothing. Use DEET if necessary. Check for ticks.
Accessing Sampling Locations	<b>Material Handling (sample containers)</b>	From vehicle to sampling location and back	Proper lifting techniques. Rest if tired.
Sampling Leachate and Soil	<b>Dermal Contact</b>	At sampling locations	Wear rubber boots or boot covers. Wear chemical resistant gloves during sampling.

**SECTION II - Table C - Characteristics of Chemicals of Concern**

Chemicals Present at Site	Highest Observed Concentration (specify units and media)	Exposure Limits PEL/TLV ppm or mg/m <sup>3</sup> (specify)	IDLH ppm or mg/m <sup>3</sup> (specify)	Symptoms/Effects of Acute Exposure	Instruments Used to Monitor Contaminant
Vinyl chloride	0.3 mg/kg soil 98 ug/l leachate	See Attached NIOSH Guide	See Attached NIOSH Guide	See Attached NIOSH Guide	PID
2-butanone	90 ug/l leachate	See Attached NIOSH Guide	See Attached NIOSH Guide	See Attached NIOSH Guide	PID
4-methyl 2 pentanone	200 ug/l leachate	See Attached NIOSH Guide	See Attached NIOSH Guide	See Attached NIOSH Guide	PID
Benzene	0.026 mg/kg soil	See Attached NIOSH Guide	See Attached NIOSH Guide	See Attached NIOSH Guide	PID
Toluene	0.45 mg/kg soil 160 ug/l leachate	See Attached NIOSH Guide	See Attached NIOSH Guide	See Attached NIOSH Guide	PID
Ethylbenzene	0.15 mg/kg soil 22 ug/l leachate	See Attached NIOSH Guide	See Attached NIOSH Guide	See Attached NIOSH Guide	PID
xylene	0.53 mg/kg soil 58 ug/l leachate	See Attached NIOSH Guide	See Attached NIOSH Guide	See Attached NIOSH Guide	PID
cis 1,2 dichloroethene	0.21 mg/kg soil 32 ug/l leachate	See Attached NIOSH Guide	See Attached NIOSH Guide	See Attached NIOSH Guide	PID
n-nitrosodiphenylamine	1.6 mg/kg soil	See Attached NIOSH Guide	See Attached NIOSH Guide	See Attached NIOSH Guide	PID
Bis 2 ethylhexyl phthalate	1.3 mg/kg soil	See Attached NIOSH Guide	See Attached NIOSH Guide	See Attached NIOSH Guide	
CARC = Carcinogen TLV = Threshold limit value PEL = Permissible exposure limit IDLH = Immediately dangerous to life or health					

### SECTION III - Site Control

#### Work Zones:

This site assessment does not require the establishment of work zones.

#### Communications:

Will have personal cellular phone on-site.

#### Safe Work Practices:

- Eating, drinking, gum chewing and smoking will not be permitted on site.
- The "buddy system" will be used during all field work activities. This is defined as two trained people working as a team and maintaining contact.
- Avoid contact with contaminated, or potentially contaminated, surfaces. Walk around discolored areas, do not kneel or set equipment down on potentially contaminated ground.

**Location of First Aid Kit:** First Aid Kits are located in each Ohio EPA field vehicle.

### SECTION IV - Employee Training

All Ohio EPA field staff working on-site have met the appropriate health and safety training requirements as stated in 29 CFR 1910.120(e). This includes initial health and safety training, annual refresher training, and three day on the job training. Included in this training is the recognition of the symptoms and signs of overexposure to chemical hazards. All Ohio EPA field staff have been trained to render first aid and CPR; and field supervisors have had the appropriate supervisory training. Health and safety training documentation is on file with the Ohio EPA Health and Safety Coordinator.

### SECTION V - Medical Surveillance

All Ohio EPA field staff are enrolled in a medical monitoring program. This program includes initial and annual medical examinations, examinations upon termination of employment, and medical record keeping.

### SECTION VI - Personal Protective Equipment

Ohio EPA has a comprehensive, written PPE program in place. Please refer to *Personal Protective Equipment*, OEPA-SM-06-004 for specific details.

Work will be conducted wearing steel-toed boots, safety glasses, safety gloves, and boot covers. Decisions to upgrade to a higher level (i.e., respiratory protection) or to evacuate/leave the site will be based on visual contamination and direct reading instruments as stated in Section VII, Air Monitoring.

## SECTION VII - Air Monitoring

Air monitoring will be conducted during initial site entry and sampling activities. All air monitoring equipment are on a maintenance and calibration schedule as recommended by the manufacturer. Background is to be established prior to site entry.

Instrument Name/Type	Hazard	Action Levels	Action Guidelines
MiniRae 2000 photoionization detector 10eV	Organic Vapors Gases	1-10 ppm above background >10 ppm above background	If exceed 10 ppm above background, evacuate site.

## SECTION VIII - Confined Space Entry Procedures

Areas defined as a confined space under 29 CFR 1910.120(j)(9) will not be entered. If it is deemed necessary to enter a confined space, Ohio EPA staff with the appropriate confined space training and equipment will be tasked under a separate investigation.

## SECTION IX - Spill Containment Program

There is little to no potential for a spill or release of a hazardous substance to occur based on Ohio EPA's activities at the site. However, if one should occur, the Ohio EPA spill hotline will be called to notify appropriate staff and to obtain guidance on the situation.

**Ohio EPA Spill Hotline: 1-800-282-9378**

## SECTION X - Decontamination Program

**Personnel Decontamination Procedures:** All Ohio EPA field staff working on-site shall, at a minimum, wear protective clothing. Disposable items will be used during all sampling events and disposed of at the end of the day per the investigation-derived waste plan in the work plan.

**Equipment Decontamination Procedures:** Disposable products are used when high levels of contamination are expected to be encountered. All sampling equipment shall be decontaminated per *OEPA-DERR Field Standard Operating Procedure 10.01*.

The site health and safety officer may monitor decontamination procedures.

## SECTION XI - Emergency Response Plan

In the event of a medical emergency, the following emergency information is provided.

## SECTION XI - Emergency Response Plan (Continued)

Emergency Information		Hospital Information	
Is 911 available:	Yes	Nearest Hospital:	Memorial Hospital of Union County
Police/Sheriff Department:	937-645-4102	Hospital Address:	500 London Ave., Marysville
Fire Department:	937-642-2065	Hospital Phone:	Emergency: 937-578-2402
Poison Control Center:	1-800-682-7625		General: 937-644-6115
Ohio EPA Spill Hotline:	1-800-282-9378	Facility Contact:	
		Facility Phone:	

\*\*\*Map and directions to hospital are attached:



**Do you know your Credit Score?**

Excellent	750 - 840
Good	660 - 749
Fair	620 - 659
Poor	340 - 619
I Don't Know	????

**Find out INSTANTLY!**

Total Time: 13 minutes    Total Distance: 10.03 miles

**A: Taylor Rd & Crottinger Rd, Plain City, OH 43064**

-  1: Start out going NORTHWEST on CROTTINGER RD/CR-29 toward ADAMS RD/CR-34. 1.3 mi

---

-  2: Turn LEFT onto ADAMS RD/CR-34. 2.0 mi

---

-  3: Turn RIGHT onto OH-736. 5.4 mi

---

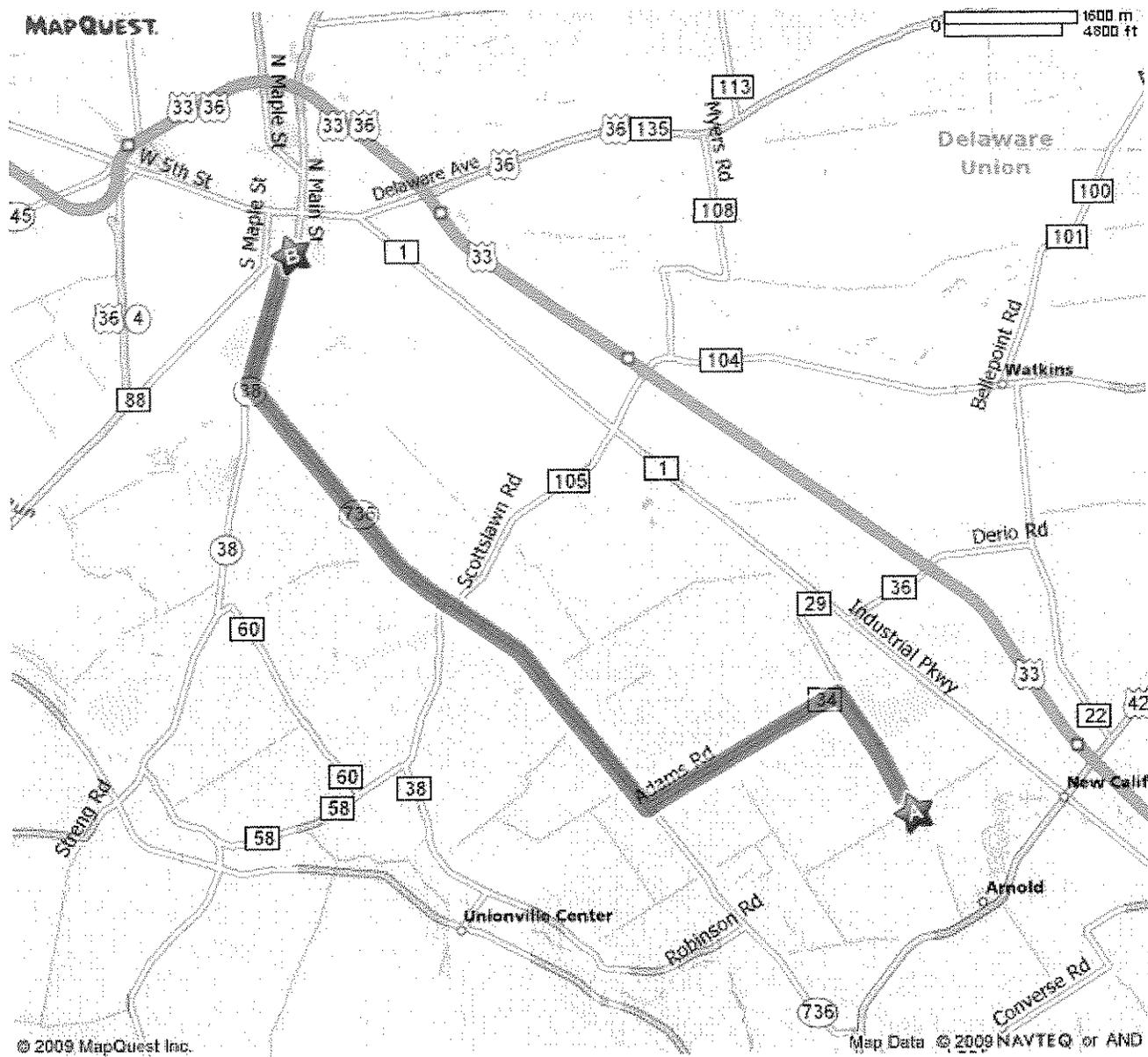
-  4: Turn RIGHT onto OH-38/LONDON AVE. 1.3 mi

---

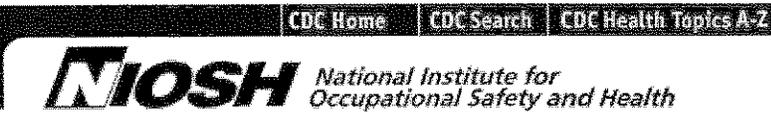
-  5: End at 500 London Ave Marysville, OH 43040-5512

**B: 500 London Ave, Marysville, OH 43040-5512**

Total Time: 13 minutes    Total Distance: 10.03 miles



All rights reserved. Use subject to License/Copyright Map Legend  
Directions and maps are informational only. We make no warranties on the accuracy of their content, road conditions or route usability or expeditiousness. You assume all risk of use. MapQuest and its suppliers shall not be liable to you for any loss or delay resulting from your use of MapQuest. Your use of MapQuest means you agree to our [Terms of Use](#)



[CDC Home](#) | [CDC Search](#) | [CDC Health Topics A-Z](#)

[Search NIOSH](#) | [NIOSH Home](#) | [NIOSH Topics](#) | [Site Index](#) | [Databases and Information Resources](#) | [NIOSH Products](#) | [Contact Us](#)

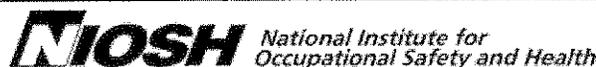
September 2005

# NIOSH Pocket Guide to Chemical Hazards

[NPG Home](#) | [Introduction](#) | [Synonyms & Trade Names](#) | [Chemical Names](#) | [CAS Numbers](#) | [RTECS Numbers](#) | [Appendices](#) | [Search](#)

<b>Benzene</b>		CAS 71-43-2	
<b>C<sub>6</sub>H<sub>6</sub></b>		RTECS CY1400000	
<b>Synonyms &amp; Trade Names</b> Benzol, Phenyl hydride		DOT ID & Guide 1114 130	
<b>Exposure Limits</b>	NIOSH REL: Ca TWA 0.1 ppm ST 1 ppm See Appendix A		
	OSHA PEL: [1910.1028] TWA 1 ppm ST 5 ppm See Appendix F		
<b>IDLH</b> Ca [500 ppm] See: 71432	<b>Conversion</b> 1 ppm = 3.19 mg/m <sup>3</sup>		
<b>Physical Description</b> Colorless to light-yellow liquid with an aromatic odor. [Note: A solid below 42°F.]			
MW: 78.1	BP: 176°F	FRZ: 42°F	Sol: 0.07%
VP: 75 mmHg	IP: 9.24 eV		Sp.Gr: 0.88
Fl.P: 12°F	UEL: 7.8%	LEL: 1.2%	
Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.			
<b>Incompatibilities &amp; Reactivities</b> Strong oxidizers, many fluorides & perchlorates, nitric acid			
<b>Measurement Methods</b> NIOSH 1500, 1501, 3700, 3800; OSHA 12, 1005 See: NMAM or OSHA Methods			
<b>Personal Protection &amp; Sanitation</b> (See protection codes)		<b>First Aid</b> (See procedures)	
Skin: Prevent skin contact		Eye: Irrigate immediately	
Eyes: Prevent eye contact		Skin: Soap wash immediately	
Wash skin: When contaminated		Breathing: Respiratory support	
Remove: When wet (flammable)		Swallow: Medical attention immediately	
Change: No recommendation			
Provide: Eyewash, Quick drench			
<b>Respirator Recommendations</b> (See Appendix E) NIOSH At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus <b>Escape:</b> (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus Important additional information about respirator selection			
<b>Exposure Routes</b> inhalation, skin absorption, ingestion, skin and/or eye contact			
<b>Symptoms</b> Irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion); dermatitis; bone marrow depression; [potential occupational carcinogen]			
<b>Target Organs</b> Eyes, skin, respiratory system, blood, central nervous system, bone marrow			
<b>Cancer Site</b> [leukemia]			
See also: <a href="#">INTRODUCTION</a> See <a href="#">ICSC CARD: 0015</a> See <a href="#">MEDICAL TESTS: 0022</a>			

[NIOSH Home](#) | [NIOSH Search](#) | [Site Index](#) | [Topic List](#) | [Contact Us](#)



[CDC Home](#) | [CDC Search](#) | [CDC Health Topics A-Z](#)

[Search NIOSH](#) | [NIOSH Home](#) | [NIOSH Topics](#) | [Site Index](#) | [Databases and Information Resources](#) | [NIOSH Products](#) | [Contact Us](#)

September 2005

# NIOSH Pocket Guide to Chemical Hazards

[NPC Home](#) | [Introduction](#) | [Synonyms & Trade Names](#) | [Chemical Names](#) | [CAS Numbers](#) | [RTECS Numbers](#) | [Appendices](#) | [Search](#)

<b>Toluene</b>		CAS 108-88-3
<b>C<sub>6</sub>H<sub>5</sub>CH<sub>3</sub></b>		RTECS XS5250000
<b>Synonyms &amp; Trade Names</b> Methyl benzene, Methyl benzol, Phenyl methane, Toluol		<b>DOT ID &amp; Guide</b> 1294 130
<b>Exposure Limits</b>	NIOSH REL: TWA 100 ppm (375 mg/m <sup>3</sup> ) ST 150 ppm (560 mg/m <sup>3</sup> ) OSHA PEL†: TWA 200 ppm C 300 ppm 500 ppm (10-minute maximum peak)	
<b>IDLH 500 ppm</b> See: 108883	<b>Conversion</b> 1 ppm = 3.77 mg/m <sup>3</sup>	
<b>Physical Description</b> Colorless liquid with a sweet, pungent, benzene-like odor.		
MW: 92.1	BP: 232°F	FRZ: -139°F
VP: 21 mmHg	IP: 8.82 eV	Sol(74°F): 0.07%
F.P.: 40°F	UEL: 7.1%	LEL: 1.1%
Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.		
<b>Incompatibilities &amp; Reactivities</b> Strong oxidizers		
<b>Measurement Methods</b> NIOSH 1500, 1501, 3800, 4000; OSHA 111 See: NMAM or OSHA Methods		
<b>Personal Protection &amp; Sanitation</b> (See protection codes) Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable) Change: No recommendation		<b>First Aid</b> (See procedures) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
<b>Respirator Recommendations</b> NIOSH Up to 500 ppm: (APF = 10) Any chemical cartridge respirator with organic vapor cartridge(s)* (APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)* (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister (APF = 10) Any supplied-air respirator* (APF = 50) Any self-contained breathing apparatus with a full facepiece <b>Emergency or planned entry into unknown concentrations or IDLH conditions:</b> (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus <b>Escape:</b> (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus important additional information about respirator selection		
<b>Exposure Routes</b> inhalation, skin absorption, ingestion, skin and/or eye contact		
<b>Symptoms</b> Irritation eyes, nose; lassitude (weakness, exhaustion), confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage		
<b>Target Organs</b> Eyes, skin, respiratory system, central nervous system, liver, kidneys		
See also: <a href="#">INTRODUCTION</a> . See ICSC CARD: <a href="#">0078</a> See MEDICAL TESTS: <a href="#">0232</a>		

[NIOSH Home](#) | [NIOSH Search](#) | [Site Index](#) | [Topic List](#) | [Contact Us](#)



[CDC Home](#) | [CDC Search](#) | [CDC Health Topics A-Z](#)

[Search NIOSH](#) | [NIOSH Home](#) | [NIOSH Topics](#) | [Site Index](#) | [Databases and Information Resources](#) | [NIOSH Products](#) | [Contact Us](#)

September 2005

# NIOSH Pocket Guide to Chemical Hazards

[NPG Home](#) | [Introduction](#) | [Synonyms & Trade Names](#) | [Chemical Names](#) | [CAS Numbers](#) | [RTECS Numbers](#) | [Appendices](#) | [Search](#)

<b>Ethyl benzene</b>		CAS 100-41-4	
<b>CH<sub>3</sub>CH<sub>2</sub>C<sub>6</sub>H<sub>5</sub></b>		RTECS DA0700000	
<b>Synonyms &amp; Trade Names</b> Ethylbenzol, Phenylethane		<b>DOT ID &amp; Guide</b> 1175 130	
<b>Exposure Limits</b>	NIOSH REL: TWA 100 ppm (435 mg/m <sup>3</sup> ) ST 125 ppm (545 mg/m <sup>3</sup> ) OSHA PEL†: TWA 100 ppm (435 mg/m <sup>3</sup> )		
<b>IDLH</b> 800 ppm [10%LEL] See: 100414	<b>Conversion</b> 1 ppm = 4.34 mg/m <sup>3</sup>		
<b>Physical Description</b> Colorless liquid with an aromatic odor.			
MW: 106.2	BP: 277°F	FRZ: -139°F	Sol: 0.01%
VP: 7 mmHg	IP: 8.76 eV		Sp.Gr: 0.87
Fl.P: 55°F	UEL: 6.7%	LEL: 0.8%	
Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.			
<b>Incompatibilities &amp; Reactivities</b> Strong oxidizers			
<b>Measurement Methods</b> NIOSH 1501; OSHA 7, 1002 See: NMAM or OSHA Methods			
<b>Personal Protection &amp; Sanitation</b> (See <a href="#">protection codes</a> ) Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable) Change: No recommendation		<b>First Aid</b> (See <a href="#">procedures</a> ) Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately	
<b>Respirator Recommendations</b> NIOSH/OSHA <b>Up to 800 ppm:</b> (APF = 10) Any chemical cartridge respirator with organic vapor cartridge(s)* (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister (APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)* (APF = 10) Any supplied-air respirator* (APF = 50) Any self-contained breathing apparatus with a full facepiece <b>Emergency or planned entry into unknown concentrations or IDLH conditions:</b> (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus <b>Escape:</b> (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus <i>Important additional information about respirator selection</i>			
<b>Exposure Routes</b> inhalation, ingestion, skin and/or eye contact			
<b>Symptoms</b> Irritation eyes, skin, mucous membrane; headache; dermatitis; narcosis, coma			
<b>Target Organs</b> Eyes, skin, respiratory system, central nervous system			
See also: <a href="#">INTRODUCTION</a> See ICSC CARD: <a href="#">0268</a> See MEDICAL TESTS: <a href="#">0098</a>			

[NIOSH Home](#) | [NIOSH Search](#) | [Site Index](#) | [Topic List](#) | [Contact Us](#)



[CDC Home](#) | [CDC Search](#) | [CDC Health Topics A-Z](#)

[Search NIOSH](#) | [NIOSH Home](#) | [NIOSH Topics](#) | [Site Index](#) | [Databases and Information Resources](#) | [NIOSH Products](#) | [Contact Us](#)

September 2005

# NIOSH Pocket Guide to Chemical Hazards

[NPG Home](#) | [Introduction](#) | [Synonyms & Trade Names](#) | [Chemical Names](#) | [CAS Numbers](#) | [RTECS Numbers](#) | [Appendices](#) | [Search](#)

<b>m-Xylene</b>		CAS 108-38-3	
<b>C<sub>6</sub>H<sub>4</sub>(CH<sub>3</sub>)<sub>2</sub></b>		RTECS ZE2275000	
<b>Synonyms &amp; Trade Names</b> 1,3-Dimethylbenzene; meta-Xylene; m-Xylol		<b>DOT ID &amp; Guide</b> 1307 130	
<b>Exposure Limits</b>	NIOSH REL: TWA 100 ppm (435 mg/m <sup>3</sup> ) ST 150 ppm (655 mg/m <sup>3</sup> )		
	OSHA PEL†: TWA 100 ppm (435 mg/m <sup>3</sup> )		
IDLH 900 ppm See: 95476		Conversion 1 ppm = 4.34 mg/m <sup>3</sup>	
<b>Physical Description</b> Colorless liquid with an aromatic odor.			
MW: 106.2	BP: 282°F	FRZ: -54°F	Sol: Slight
VP: 9 mmHg	IP: 8.56 eV		Sp.Gr: 0.86
F.P: 82°F	UEL: 7.0%	LEL: 1.1%	
Class IC Flammable Liquid; F.P. at or above 73°F and below 100°F.			
<b>Incompatibilities &amp; Reactivities</b> Strong oxidizers, strong acids			
<b>Measurement Methods</b> NIOSH 1501, 3800; OSHA 1002 See: <a href="#">NMAM</a> or <a href="#">OSHA Methods</a>			
<b>Personal Protection &amp; Sanitation</b> (See <a href="#">protection codes</a> ) Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable) Change: No recommendation		<b>First Aid</b> (See <a href="#">procedures</a> ) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately	
<b>Respirator Recommendations</b> NIOSH/OSHA <b>Up to 900 ppm:</b> (APF = 10) Any chemical cartridge respirator with organic vapor cartridge(s)* (APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)* (APF = 10) Any supplied-air respirator* (APF = 50) Any self-contained breathing apparatus with a full facepiece <b>Emergency or planned entry into unknown concentrations or IDLH conditions:</b> (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus <b>Escape:</b> (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus <a href="#">Important additional information about respirator selection</a>			
<b>Exposure Routes</b> inhalation, skin absorption, ingestion, skin and/or eye contact			
<b>Symptoms</b> Irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis			
<b>Target Organs</b> Eyes, skin, respiratory system, central nervous system, gastrointestinal tract, blood, liver, kidneys			
See also: <a href="#">INTRODUCTION</a> See ICSC CARD: 0085 See MEDICAL TESTS: 0243			

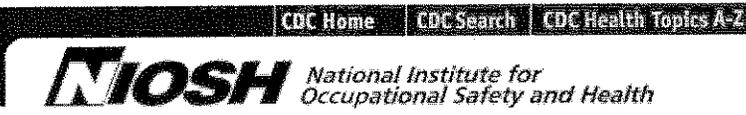
[NIOSH Home](#) | [NIOSH Search](#) | [Site Index](#) | [Topic List](#) | [Contact Us](#)



# NIOSH Pocket Guide to Chemical Hazards

[NPC Home](#) | [Introduction](#) | [Synonyms & Trade Names](#) | [Chemical Names](#) | [CAS Numbers](#) | [RTECS Numbers](#) | [Appendices](#) | [Search](#)

<b>1,2-Dichloroethylene</b>		CAS 540-59-0	
<b>CIH=CHCl</b>		RTECS KV9360000	
<b>Synonyms &amp; Trade Names</b> Acetylene dichloride, cis-Acetylene dichloride, trans-Acetylene dichloride, sym-Dichloroethylene		<b>DOT ID &amp; Guide</b> 1150 130P	
<b>Exposure Limits</b>	NIOSH REL: TWA 200 ppm (790 mg/m <sup>3</sup> ) OSHA PEL: TWA 200 ppm (790 mg/m <sup>3</sup> )		
<b>IDLH</b> 1000 ppm See: 540590	<b>Conversion</b> 1 ppm = 3.97 mg/m <sup>3</sup>		
<b>Physical Description</b> Colorless liquid (usually a mixture of the cis & trans isomers) with a slightly acrid, chloroform-like odor.			
MW: 97.0	BP: 118-140°F	FRZ: -57 to -115°F	Sol: 0.4%
VP: 180-265 mmHg	IP: 9.65 eV		Sp.Gr(77°F): 1.27
F.P: 36-39°F	UEL: 12.8%	LEL: 5.6%	
Class IB Flammable Liquid: F.P. below 73°F and BP at or above 100°F.			
<b>Incompatibilities &amp; Reactivities</b> Strong oxidizers, strong alkalis, potassium hydroxide, copper [Note: Usually contains inhibitors to prevent polymerization.]			
<b>Measurement Methods</b> NIOSH 1003; OSHA 7 See: NMAM or OSHA Methods			
<b>Personal Protection &amp; Sanitation</b> (See protection codes) Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable) Change: No recommendation		<b>First Aid</b> (See procedures) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately	
<b>Respirator Recommendations</b> NIOSH/OSHA Up to 1000 ppm: (APF = 25) Any supplied-air respirator operated in a continuous-flow mode <sup>£</sup> (APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s) <sup>£</sup> (APF = 50) Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s) (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister (APF = 50) Any self-contained breathing apparatus with a full facepiece (APF = 50) Any supplied-air respirator with a full facepiece <b>Emergency or planned entry into unknown concentrations or IDLH conditions:</b> (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus <b>Escape:</b> (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus <u>Important additional information about respirator selection</u>			
<b>Exposure Routes</b> inhalation, ingestion, skin and/or eye contact			
<b>Symptoms</b> Irritation eyes, respiratory system; central nervous system depression			
<b>Target Organs</b> Eyes, respiratory system, central nervous system			
See also: <a href="#">INTRODUCTION</a> . See ICSC CARD: <a href="#">0436</a>			



[CDC Home](#) | [CDC Search](#) | [CDC Health Topics A-Z](#)

[Search NIOSH](#) | [NIOSH Home](#) | [NIOSH Topics](#) | [Site Index](#) | [Databases and Information Resources](#) | [NIOSH Products](#) | [Contact Us](#)

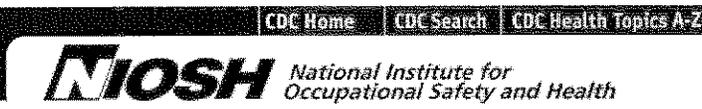
September 2005

# NIOSH Pocket Guide to Chemical Hazards

[NPG Home](#) | [Introduction](#) | [Synonyms & Trade Names](#) | [Chemical Names](#) | [CAS Numbers](#) | [RTECS Numbers](#) | [Appendices](#) | [Search](#)

<b>Vinyl chloride</b>		CAS 75-01-4	
<b>CH<sub>2</sub>=CHCl</b>		RTECS KU9625000	
<b>Synonyms &amp; Trade Names</b> Chloroethene, Chloroethylene, Ethylene monochloride, Monochloroethene, Monochloroethylene, VC, Vinyl chloride monomer (VCM)		<b>DOT ID &amp; Guide</b> 1086 116P (inhibited)	
<b>Exposure Limits</b>	NIOSH REL: Ca See Appendix A		
	OSHA PEL: [1910.1017] TWA 1 ppm C 5 ppm [15-minute]		
<b>IDLH</b> Ca [N.D.] See: IDLH INDEX	<b>Conversion</b> 1 ppm = 2.56 mg/m <sup>3</sup>		
<b>Physical Description</b> Colorless gas or liquid (below 7°F) with a pleasant odor at high concentrations. [Note: Shipped as a liquefied compressed gas.]			
MW: 62.5	BP: 7°F	FRZ: -256°F	Sol(77°F): 0.1%
VP: 3.3 atm	IP: 9.99 eV	RGasD: 2.21	
FLP: NA (Gas)	UEL: 33.0%	LEL: 3.6%	
Flammable Gas			
<b>Incompatibilities &amp; Reactivities</b> Copper, oxidizers, aluminum, peroxides, iron, steel [Note: Polymerizes in air, sunlight, or heat unless stabilized by inhibitors such as phenol. Attacks iron & steel in presence of moisture.]			
<b>Measurement Methods</b> NIOSH 1007; OSHA 4, 75 See: NMAM or OSHA Methods			
<b>Personal Protection &amp; Sanitation</b> (See protection codes)		<b>First Aid</b> (See procedures)	
Skin: Frostbite		Eye: Frostbite	
Eyes: Frostbite		Skin: Frostbite	
Wash skin: No recommendation		Breathing: Respiratory support	
Remove: When wet (flammable)			
Change: No recommendation			
Provide: Frostbite wash			
<b>Respirator Recommendations</b> (See Appendix E) NIOSH At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus <b>Escape:</b> (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern/Any appropriate escape-type, self-contained breathing apparatus Important additional information about respirator selection			
<b>Exposure Routes</b> inhalation, skin, and/or eye contact (liquid)			
<b>Symptoms</b> Lassitude (weakness, exhaustion); abdominal pain, gastrointestinal bleeding; enlarged liver; pallor or cyanosis of extremities; liquid: frostbite; [potential occupational carcinogen]			
<b>Target Organs</b> Liver, central nervous system, blood, respiratory system, lymphatic system			
<b>Cancer Site</b> [liver cancer]			
See also: <a href="#">INTRODUCTION</a> See ICSC CARD: 0082 See MEDICAL TESTS: 0241			

[NIOSH Home](#) | [NIOSH Search](#) | [Site Index](#) | [Topic List](#) | [Contact Us](#)



Search NIOSH | NIOSH Home | NIOSH Topics | Site Index | Databases and Information Resources | NIOSH Products | Contact Us

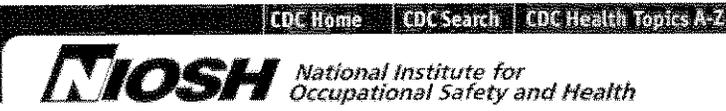
September 2005

# NIOSH Pocket Guide to Chemical Hazards

[NPG Home](#) | [Introduction](#) | [Synonyms & Trade Names](#) | [Chemical Names](#) | [CAS Numbers](#) | [RTECS Numbers](#) | [Appendices](#) | [Search](#)

<b>2-Butanone</b>		CAS 78-93-3	
<b>CH<sub>3</sub>COCH<sub>2</sub>CH<sub>3</sub></b>		RTECS <a href="#">EL6475000</a>	
<b>Synonyms &amp; Trade Names</b> Ethyl methyl ketone, MEK, Methyl acetone, Methyl ethyl ketone		<b>DOT ID &amp; Guide</b> 1193 127	
<b>Exposure Limits</b>	NIOSH REL: TWA 200 ppm (590 mg/m <sup>3</sup> ) ST 300 ppm (885 mg/m <sup>3</sup> ) OSHA PEL†: TWA 200 ppm (590 mg/m <sup>3</sup> )		
<b>IDLH 3000 ppm</b> See: 78933	<b>Conversion</b> 1 ppm = 2.95 mg/m <sup>3</sup>		
<b>Physical Description</b> Colorless liquid with a moderately sharp, fragrant, mint- or acetone-like odor.			
MW: 72.1	BP: 175°F	FRZ: -123°F	Sol: 28%
VP: 78 mmHg	IP: 9.54 eV		Sp.Gr: 0.81
F.P.: 16°F	UEL(200°F): 11.4%	LEL(200°F): 1.4%	
Class IB Flammable Liquid: F.P. below 73°F and BP at or above 100°F.			
<b>Incompatibilities &amp; Reactivities</b> Strong oxidizers, amines, ammonia, inorganic acids, caustics, isocyanates, pyridines			
<b>Measurement Methods</b> NIOSH 2500, 2555, 3800; OSHA 16, 84, 1004 See: <a href="#">NMAM</a> or <a href="#">OSHA Methods</a>			
<b>Personal Protection &amp; Sanitation</b> (See <a href="#">protection codes</a> )		<b>First Aid</b> (See <a href="#">procedures</a> )	
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable) Change: No recommendation Provide: Eyewash		Eye: Irrigate immediately Skin: Water wash immediately Breathing: Fresh air Swallow: Medical attention immediately	
<b>Respirator Recommendations</b> NIOSH/OSHA			
<b>Up to 3000 ppm:</b>			
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode <sup>E</sup>			
(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s) <sup>E</sup>			
(APF = 50) Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s)			
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister			
(APF = 50) Any self-contained breathing apparatus with a full facepiece			
(APF = 50) Any supplied-air respirator with a full facepiece			
<b>Emergency or planned entry into unknown concentrations or IDLH conditions:</b>			
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode			
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus			
<b>Escape:</b>			
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus			
<b>Important additional information about respirator selection</b>			
<b>Exposure Routes</b> inhalation, ingestion, skin and/or eye contact			
<b>Symptoms</b> Irritation eyes, skin, nose; headache; dizziness; vomiting; dermatitis			
<b>Target Organs</b> Eyes, skin, respiratory system, central nervous system			
See also: <a href="#">INTRODUCTION</a> . See <a href="#">ICSC CARD: 0179</a> . See <a href="#">MEDICAL TESTS: 0133</a>			

[NIOSH Home](#) | [NIOSH Search](#) | [Site Index](#) | [Topic List](#) | [Contact Us](#)



[Search NIOSH](#) | [NIOSH Home](#) | [NIOSH Topics](#) | [Site Index](#) | [Databases and Information Resources](#) | [NIOSH Products](#) | [Contact Us](#)

September 2005

# NIOSH Pocket Guide to Chemical Hazards

[NPG Home](#) | [Introduction](#) | [Synonyms & Trade Names](#) | [Chemical Names](#) | [CAS Numbers](#) | [RTECS Numbers](#) | [Appendices](#) | [Search](#)

<b>Hexone</b>		CAS 108-10-1	
<b>CH<sub>3</sub>COCH<sub>2</sub>CH(CH<sub>3</sub>)<sub>2</sub></b>		RTECS SA9275000	
<b>Synonyms &amp; Trade Names</b> Isobutyl methyl ketone, Methyl isobutyl ketone, 4-Methyl 2-pentanone, MIBK		DOT ID & Guide 1245 12Z	
<b>Exposure Limits</b>	NIOSH REL: TWA 50 ppm (205 mg/m <sup>3</sup> ) ST 75 ppm (300 mg/m <sup>3</sup> ) OSHA PEL†: TWA 100 ppm (410 mg/m <sup>3</sup> )		
IDLH 500 ppm See: 108101	Conversion 1 ppm = 4.10 mg/m <sup>3</sup>		
<b>Physical Description</b> Colorless liquid with a pleasant odor.			
MW: 100.2	BP: 242°F	FRZ: -120°F	Sol: 2%
VP: 16 mmHg	IP: 9.30 eV	Sp.Gr: 0.80	
Fl.P: 64°F	UEL(200°F): 8.0%	LEL(200°F): 1.2%	
Class IB Flammable Liquid; Fl.P. below 73°F and BP at or above 100°F.			
<b>Incompatibilities &amp; Reactivities</b> Strong oxidizers, potassium tert-butoxide			
<b>Measurement Methods</b> NIOSH 1300, 2555; OSHA 1004 See: <a href="#">NMAM</a> or <a href="#">OSHA Methods</a>			
<b>Personal Protection &amp; Sanitation</b> (See protection codes)		<b>First Aid</b> (See procedures)	
Skin: Prevent skin contact		Eye: Irrigate immediately	
Eyes: Prevent eye contact		Skin: Water flush promptly	
Wash skin: When contaminated		Breathing: Respiratory support	
Remove: When wet (flammable)		Swallow: Medical attention immediately	
Change: No recommendation			
<b>Respirator Recommendations</b> NIOSH			
<b>Up to 500 ppm:</b>			
(APF = 10) Any chemical cartridge respirator with organic vapor cartridge(s)*			
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister			
(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and organic vapor cartridge(s)*			
(APF = 10) Any supplied-air respirator*			
(APF = 50) Any self-contained breathing apparatus with a full facepiece			
<b>Emergency or planned entry into unknown concentrations or IDLH conditions:</b>			
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode			
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus			
<b>Escape:</b>			
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus			
<a href="#">Important additional information about respirator selection</a>			
<b>Exposure Routes</b> inhalation, ingestion, skin and/or eye contact			
<b>Symptoms</b> Irritation eyes, skin, mucous membrane; headache, narcosis, coma; dermatitis; in animals: liver, kidney damage			
<b>Target Organs</b> Eyes, skin, respiratory system, central nervous system, liver, kidneys			
See also: <a href="#">INTRODUCTION</a> See ICSC CARD: <a href="#">0511</a> See MEDICAL TESTS: <a href="#">0134</a>			

[NIOSH Home](#) | [NIOSH Search](#) | [Site Index](#) | [Topic List](#) | [Contact Us](#)



[CDC Home](#) | [CDC Search](#) | [CDC Health Topics A-Z](#)

[Search NIOSH](#) | [NIOSH Home](#) | [NIOSH Topics](#) | [Site Index](#) | [Databases and Information Resources](#) | [NIOSH Products](#) | [Contact Us](#)

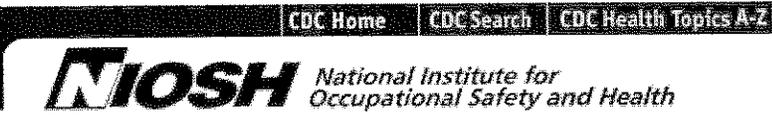
September 2005

# NIOSH Pocket Guide to Chemical Hazards

[NPG Home](#) | [Introduction](#) | [Synonyms & Trade Names](#) | [Chemical Names](#) | [CAS Numbers](#) | [RTECS Numbers](#) | [Appendices](#) | [Search](#)

<b>N-Nitrosodimethylamine</b>		<b>CAS</b> 62-75-9	
<b>(CH<sub>3</sub>)<sub>2</sub>N<sub>2</sub>O</b>		<b>RTECS</b> <a href="#">IQ0525000</a>	
<b>Synonyms &amp; Trade Names</b> Dimethylnitrosamine; N,N-Dimethylnitrosamine; DMNA; N-Methyl-N-nitroso-methanamine; NDMA; N-Nitroso-N,N-dimethylamine		<b>DOT ID &amp; Guide</b>	
<b>Exposure Limits</b>	<b>NIOSH REL:</b> Ca See Appendix A		
	<b>OSHA PEL:</b> [1910.1016] See Appendix B		
<b>IDLH</b> Ca [N.D.] See: <a href="#">IDLH INDEX</a>		<b>Conversion</b>	
<b>Physical Description</b> Yellow, oily liquid with a faint, characteristic odor.			
MW: 74.1	BP: 306°F	FRZ: ?	Sol: Soluble
VP: 3 mmHg	IP: 8.69 eV		Sp.Gr: 1.005
Fl.P: ?	UEL: ?	LEL: ?	
Combustible Liquid			
<b>Incompatibilities &amp; Reactivities</b> Strong oxidizers [Note: Should be stored in dark bottles.]			
<b>Measurement Methods</b> NIOSH 2522; OSHA 38 See: <a href="#">NMAM</a> or <a href="#">OSHA Methods</a>			
<b>Personal Protection &amp; Sanitation</b> (See protection codes) Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated/Daily Remove: When wet or contaminated Change: Daily Provide: Eyewash, Quick drench		<b>First Aid</b> (See procedures) Eye: irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately	
<b>Respirator Recommendations</b> (See Appendix E) NIOSH At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus <b>Escape:</b> (APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter. <a href="#">Click here</a> for information on selection of N, R, or P filters /Any appropriate escape-type, self-contained breathing apparatus <a href="#">Important additional information about respirator selection</a>			
<b>Exposure Routes</b> inhalation, skin absorption, ingestion, skin and/or eye contact			
<b>Symptoms</b> Nausea, vomiting, diarrhea, abdominal cramps; headache; fever; enlarged liver, jaundice; decreased liver, kidney, pulmonary function; [potential occupational carcinogen]			
<b>Target Organs</b> Liver, kidneys,lungs			
<b>Cancer Site</b> [in animals; lung, kidney, liver & nasal cavity tumors]			
See also: <a href="#">INTRODUCTION</a> See ICSC CARD: 0525 See MEDICAL TESTS: 0167			

[NIOSH Home](#) | [NIOSH Search](#) | [Site Index](#) | [Topic List](#) | [Contact Us](#)



[CDC Home](#) | [CDC Search](#) | [CDC Health Topics A-Z](#)

[Search NIOSH](#) | [NIOSH Home](#) | [NIOSH Topics](#) | [Site Index](#) | [Databases and Information Resources](#) | [NIOSH Products](#) | [Contact Us](#)

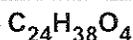
September 2005

# NIOSH Pocket Guide to Chemical Hazards

[NPG Home](#) | [Introduction](#) | [Synonyms & Trade Names](#) | [Chemical Names](#) | [CAS Numbers](#) | [RTECS Numbers](#) | [Appendices](#) | [Search](#)

## Di-sec octyl phthalate

CAS 117-81-7



RTECS T10350000

### Synonyms & Trade Names

DEHP, Di(2-ethylhexyl)phthalate, DOP, bis-(2-Ethylhexyl)phthalate, Octyl phthalate

DOT ID & Guide

### Exposure Limits

NIOSH REL: Ca TWA 5 mg/m<sup>3</sup> ST 10 mg/m<sup>3</sup> See Appendix A

OSHA PEL†: TWA 5 mg/m<sup>3</sup>

IDLH Ca [5000 mg/m<sup>3</sup>] See: 117817

### Conversion

### Physical Description

Colorless, oily liquid with a slight odor.

MW: 390.5

BP: 727°F

FRZ: -58°F

Sol(75°F): 0.00003%

VP: <0.01 mmHg

IP: ?

Sp.Gr: 0.99

Fl.P(oc): 420°F

UEL: ?

LEL(474°F): 0.3%

Class IIIB Combustible Liquid: Fl.P. at or above 200°F.

### Incompatibilities & Reactivities

Nitrates; strong oxidizers, acids & alkalis

### Measurement Methods

NIOSH 5020

See: NMAM or OSHA Methods

### Personal Protection & Sanitation (See protection codes)

Skin: No recommendation  
Eyes: No recommendation  
Wash skin: No recommendation  
Remove: No recommendation  
Change: No recommendation

### First Aid (See procedures)

Eye: Irrigate immediately  
  
Breathing: Respiratory support  
Swallow: Medical attention immediately

### Respirator Recommendations NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:

(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode

(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:

(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter. [Click here](#) for information on selection of N, R, or P filters./Any appropriate escape-type, self-contained breathing apparatus

[Important additional information about respirator selection](#)

### Exposure Routes inhalation, ingestion, skin and/or eye contact

**Symptoms** Irritation eyes, mucous membrane; in animals: liver damage; teratogenic effects; [potential occupational carcinogen]

**Target Organs** Eyes, respiratory system, central nervous system, liver, reproductive system, gastrointestinal tract

**Cancer Site** [in animals: liver tumors]

See also: [INTRODUCTION](#) See ICSC CARD: 0271

[NIOSH Home](#) | [NIOSH Search](#) | [Site Index](#) | [Topic List](#) | [Contact Us](#)

ATTACHMENT 7  
DETERMINATION OF REGULATORY AUTHORITY  
CHECKLIST

## DETERMINATION OF REGULATORY AUTHORITY CHECKLIST

### UNICO LANDFILL SITE ASSESSMENT JUNE 2009

Question	Yes	No	If yes, refer to (unless otherwise noted)
1. Does the site meet the U.S. EPA removal action criteria and/or warrant a potential U.S. EPA removal action <sup>1</sup> ?		x	U.S. EPA
2. Is the site the result of a potential violation of a permit or of orders <sup>2</sup> ? If yes, which program's permit or orders? _____		x	Appropriate Division
3. If the site is a landfill, was it closed under pre-1976 rules?		x	DERR
4. If the site is a landfill, was it closed under the 1976 rules?	x		DERR
5. If the site is a landfill, was it closed under the 1990 rules?		x	DSIWM
6. Is the site an operating solid waste landfill?		x	DSIWM
7. Is the release from an injection well?		x	DDAGW-UIC
8. If the site is a contaminated public water supply, is the source known?		x	If no, DERR If yes, refer to appropriate division
9. Is this a contaminated sediment site?		x	DSW/DERR
10. Is this an air deposition site?		x	DAPC/DERR
11. Is this an abandoned drum site?		x	Orphan drum program or evaluate for U.S. EPA removal action
12. Is the site on the National Corrective Action Plan Sites or NCAPS list (RCRA corrective action sites list)?		x	DHWM
13. Is the site a permitted treatment, storage, or disposal (TSD) facility or has it applied for a Part B permit?		x	DHWM
14. Is the release from a RCRA regulated or permitted unit?		x	DHWM
15. Is the release from a production process or of product material?		x	Consult with DHWM
16. Is the release from a closed RCRA unit?		x	Consult with DHWM

<sup>1</sup>Refer to the *Procedure for Referring Removal Actions to U.S. EPA*, DERR-00-DI-027.

<sup>2</sup>Permits can include DAPC Title V or open burning permits, DHWM Part B permits, DSIWM 02(G) exemptions and DSW NPDES or storm water permits.

17. If the release is from a closed RCRA unit, does it have an approved post-closure plan?		x	DHWM
18. Is the release a petroleum product from a BUSTR regulated underground storage tank		x	BUSTR
19. Is the release from a closed DSW treatment unit?		x	DSW/ DERR
20. Did the release occur prior to 1980?		x	DERR
21. Did the facility operate prior to 1980 only?		x	DERR
22. Are the owners and operators bankrupt and/or non-viable <sup>3</sup> ?	x		DERR
23. Is the release from an operating C&D Landfill?		x	Consult with DSIWM
24. Is the release from a closed C&D Landfill?		x	Consult with DSIWM

---

<sup>3</sup>Determine if there is a closure assurance account that DERR can use to work on the site.