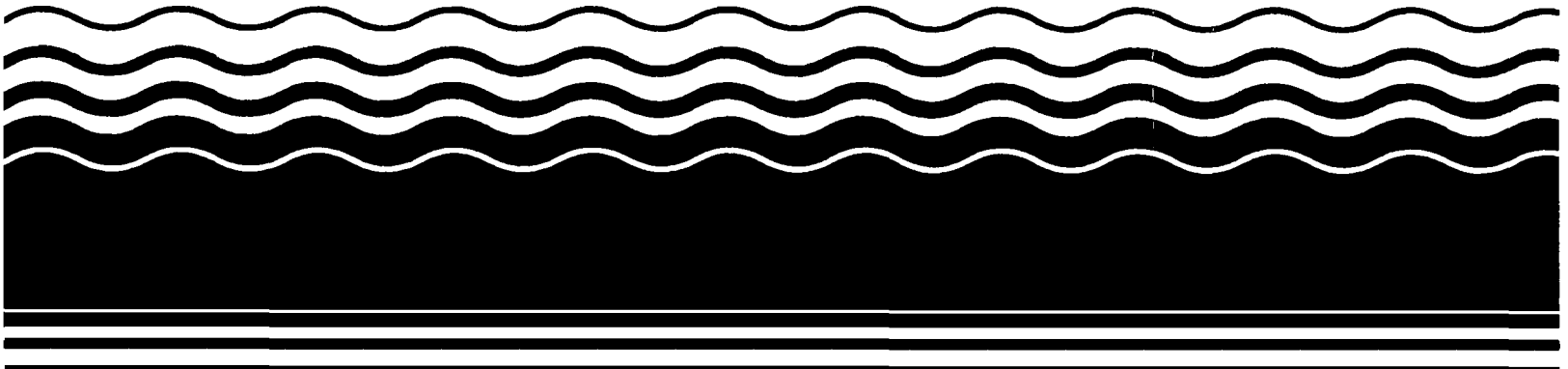


**PB98-963142
EPA 541-R98-154
March 1999**

**EPA Superfund
Explanation of Significant Difference
for the Record of Decision:**

**Refuse Hideaway Landfill
Middleton, WI
9/30/1998**



SEP 30 1998

**EXPLANATION OF SIGNIFICANT DIFFERENCES
REFUSE HIDEAWAY LANDFILL SITE
MIDDLETON, WISCONSIN
SEPTEMBER, 1998**

INTRODUCTION

This Explanation of Significant Differences (ESD) is for the Refuse Hideaway Landfill Superfund site in Middleton, Wisconsin. This ESD is being issued pursuant to Section 117 of the Comprehensive Environmental Response, Compensation and Liability Act, as amended, and Section 40 CFR 300.435(c)(2)(i) of the National Contingency Plan by the United States Environmental Protection Agency (U.S. EPA) in cooperation with the Wisconsin Department of Natural Resources (WDNR). U.S. EPA is the lead agency for this site and WDNR is the support agency.

This ESD describes and provides explanation of significant differences in the following components of the remedy selected in the June 28, 1995 Record of Decision (ROD): "Alternative F, Groundwater Extraction and Treatment with ReInjection to Enhance Natural Breakdown of Contaminants." This ESD will be included in the Administrative Record for the site. The Administrative Record is available at the information repositories identified at the end of this document.

SITE BACKGROUND

Site Description

Refuse Hideaway Landfill was listed on the National Priorities List (NPL) by the U.S. EPA in October 1992. Refuse Hideaway Landfill (RHL) is located in the SW1/4, NW1/4, Section 8, T7N, R8E, Town of Middleton, Dane County, Wisconsin (See Figure 2-1, Site location map). The 1.2 million cubic yard landfill containing municipal, commercial and industrial waste is located in the rural portion of the Town of Middleton, 2 miles west of the City of Middleton and 4 miles east of the Village of Cross Plains. According to the 1990 census, there are 3,628 persons living in the Town of Middleton.

RHL is located in the easternmost section of the upper Black Earth Creek drainage basin. Land use in the area surrounding the landfill is diverse. The landfill property itself, outside the fill boundary, is currently being rented by the landfill owner to a sand and gravel company as a storage area for truck and construction equipment. The north and west side of the landfill property are bounded by a Christmas tree farm, while the remaining area surrounding RHL is predominantly agricultural with field corn and other dairy support crops being the most common output. A small wetland area is located southeast of the landfill. Several residences are located near the landfill. Most homes are located adjacent to County Highway 14 or in the Deer Run Heights Subdivision to the southwest of the landfill.

Private water supply wells provide water for the residences and agricultural uses in the RHL

area. Approximately 53 homes are within 1 mile of the Site. Three private wells down gradient of the landfill have had Volatile Organic Compounds (VOCs) detected in them. One of these residences is currently vacant while two others have treatment systems in place to treat the documented groundwater contamination.

Immediately surrounding the landfill, there appears to be a localized radial component of groundwater flow from the landfill. To the north of the landfill, groundwater at the water table flows to the north, essentially against the regional flow direction. The apparent radial flow pattern emanating from the landfill to the north appears to be limited to the upper 50 feet of the saturated strata. Groundwater flow at depth migrates to the southwest, consistent with the documented regional flow pattern to the southwest.

Groundwater flow in the unconsolidated deposits to the south and east of the landfill is to the south, while further off the Site to the south, the flow direction changes and merges with the regional flow direction which trends in a southwesterly direction. This southwesterly direction of flow is also observed within the topographic ridges to the west and southwest of the landfill.

No endangered species are known to be located in the vicinity of RHL. There are no historic landmarks that would be potentially affected by RHL.

Site History and Enforcement Activities

John Debeck, the owner and operator of the Refuse Hideaway Landfill, received a landfill license from the Wisconsin Department of Natural Resources (WDNR) in 1974 to operate a 23 acre landfill. The main engineering requirement was that he maintain at least 10 feet of soil between the waste and bedrock and that he daily cover the waste. Numerous violations of the daily cover requirements are noted in the WDNR file of the site. The site was filled from south to north, but was not operated in "phases". Therefore, the entire waste volume (approximately 1.2 million cubic yards) was exposed to leaching by rain and snow melt throughout the operating history. The landfill owner reported receiving a variety of commercial and industrial wastes including: full barrels of glue and paint, barrels of ink and ink washes, spray paint booth by-products and paint stripper sludge, and spill residue containing VOCs. In addition, large volumes of other types of waste were received from local industries, businesses, and cities and towns in Dane County were also disposed at the landfill.

John Debeck closed the landfill under court order in May, 1988. At that time, he covered the landfill in accordance with NR 504.07, WI Adm. Code, and placed a 6 inch grading layer of coarse soil over the waste, followed by 2 feet of clay soils. Two and a half feet of general soils were placed over the clay and 6 inches of topsoil, seeded and mulched, finished the cap. The final cover was completed in October, 1988. In January, 1989, John DeBeck declared bankruptcy and was unable to undertake additional remediation of the landfill or investigation of the degree and extent of groundwater contamination.

Therefore, in early 1989, the State of Wisconsin undertook the continued remediation and investigation of the site, as well as all operation and maintenance activities. Costs for this work were paid by the State of Wisconsin's Environmental Fund which are monies from a variety of sources, including fees paid by the owners and operators of solid waste landfills, hazardous substance generator fees, licensing fees for pesticide use and general tax revenues.

In Fall, 1989, the State began a number of actions designed to remediate the immediate problems of :

1. Methane gas and leachate migration from the landfill.
2. Private water supply contamination at three wells.
3. Groundwater contamination and possible contamination of additional private wells.

The following actions were taken:

1. Installation of a gas and leachate extraction system in the landfill.
2. Long-term operation and maintenance of the gas/leachate extraction system.
3. Repair of the landfill cap.
4. Methane gas monitoring at private homes.
5. Point-of-entry (POE) water treatment systems installed in two private water supply wells.
6. Testing of private water supplies within one mile of the landfill.
7. Groundwater monitoring study. In Summer, 1990, the State undertook an intensive groundwater investigation to determine the degree and extent of VOC contamination. Hydro-Search, Inc. of Brookfield, WI performed the investigation. Twenty-seven groundwater monitoring wells were installed. There were 30 existing monitoring wells at the Site, for a total of 57 monitoring wells in the study. (See Figure 3-4, total VOCs in groundwater, 1991) The study evaluated the geology, the vertical and horizontal groundwater flow, the average groundwater velocity in each geologic unit, the extent of aquifer contamination the direction of plume movement, preliminarily evaluated four remedial actions, and made recommendations on future work at the Site. The study showed that the groundwater plume had the potential to contaminate groundwater 1 mile southwest of the landfill. In January, 1991, the State began monitoring private wells in the southern portion of Deer Run Heights.
8. Numerical model simulation and assessment of contaminant plume migration.
9. Testing for metals, semi-volatiles compounds, pesticides and PCBs.

10. Long term groundwater monitoring.

In 1991, the WDNR offered to enter into a contract with a group of PRPs to undertake a remedial investigation and feasibility study (RI/FS) at RHL. After being unable to secure an agreement, and after reviewing data from the site, the WDNR recommended to EPA that the site be included on the National Priorities List (NPL). The site was listed on the NPL in October 1992. A Cooperative Agreement was signed between U.S. EPA and WDNR in April 1993 allowing the WDNR to act as lead agency in performing an RI/FS pursuant to s. 144.442, Wisconsin Statutes (now renumbered as s. 292.31 Wisconsin Statutes) and CERCLA. The RI/FS for this site was financed by the federal Superfund program. The WDNR secured a consultant, Hydro-Search, Inc., and the RI/FS officially began in October 1993.

The RI for RHL was completed in September 1994 and the FS was completed in February 1995. The WDNR issued a Record of Decision (ROD) in June, 1995. The ROD selected Alternatives B (Limited Action for Source Control), Alternative F (Groundwater Extraction and Treatment with Reinjection to enhance In-Situ Bioremediation) and Alternative G (Supply Individual Water Treatment Units) as the Final Remedy for the site.

DESCRIPTION OF SIGNIFICANT DIFFERENCES AND BASIS FOR THE DIFFERENCE

This ESD documents a significant difference in the selected remedy. The June 28, 1995 ROD required groundwater extraction and treatment of the most highly contaminated groundwater (greater than 200 ppb total volatile organic compounds (VOCs)), treatment of groundwater to discharge standards and injection of the treated water into the aquifer upgradient of the landfill to stimulate in-situ biodegradation of the degradable components of the contamination. Sampling conducted in early 1998 as part of Remedial Design demonstrated that groundwater contamination has decreased below the 1995 ROD action level of 200 ppb total VOCs (See Figure 3-5, total VOCs in groundwater, 1998). Therefore, this ESD documents that U.S. EPA, in consultation with the WDNR, has determined, based on the 1998 groundwater data, that it is not necessary to implement the groundwater extraction and treatment component of the selected remedy. At the time that the 1995 ROD was issued groundwater levels underneath the landfill exceeded 700 ppb total VOCs (see Figure 3-5 of the February 3, 1995 Feasibility Study (FS) Report). In 1998, groundwater contaminant levels under the landfill are less than 200 ppb total VOCs (See Figure 3-5 in this ESD). This significant decrease of total VOCs in groundwater over a short period of time indicates that groundwater should meet the remedial action objective of NR 140 PALs within a reasonable period of time if source control measures continue to be operated and maintained. The groundwater remedial action objective, as stated on page 29 of the 1995 ROD, to "attain the Wisconsin NR 140 Preventative Action Levels (PALs) for all groundwater impacted by the RHL at and beyond the landfill boundary," is not being modified by this ESD. Monitoring of groundwater and continued operation and maintenance of the landfill cap and gas/leachate extraction systems in conjunction with five year reviews will continue until the groundwater remedial action objectives are attained.

The other key provisions of the June 28, 1995 ROD that will remain the same are:

- Alternative B, Source Control Limited Action. Add deed restrictions/zoning and perimeter signs to the site. Maintain the existing soil cap and operate and maintain the existing gas/leachate collection system. Continue to monitor 21 groundwater monitoring wells and 12 private homes for VOCs.
- Alternative G, Supply Individual Water Treatment Units. This is a contingent option if the area of groundwater contamination moves and additional homes become contaminated. Point-of-entry (POE) treatment units would be installed at homes that become contaminated or are imminently threatened with contamination. Currently, POE systems are successfully treating water at two homes downgradient of the landfill.

The Remedial Design (RD) phase began on April 8, 1997 when U.S. EPA entered into an Administrative Order on Consent (AOC) for RD with forty-two (42) Potentially Responsible Parties (PRPs). The AOC requires the PRPs to conduct Pre-Design Studies and then Remedial Design. The Pre-Design Studies were completed in July 1998 and consisted of: (1) sampling of 51 groundwater monitoring wells for VOCs; (2) sampling leachate extraction wells, 13 gas extraction wells, and 11 gas probes on the landfill; (3) sampling of 12 groundwater monitoring wells for natural attenuation parameters; and (4) an evaluation of the integrity of the new Schultz well.

The groundwater samples collected in February and March 1998 were analyzed in accordance with the EPA-approved Quality Assurance Project Plan (QAPP) procedures established for analytical work at this site. The results of groundwater sampling showed that none of the wells contained total VOCs at concentrations above 200 ppb (See Figure 3-5, total VOCs in groundwater, 1998). The highest total VOC concentration was found in well P-21D at 178 ppb. Therefore, the concentrations of total VOCs in groundwater are below the action level of 200 ppb total VOCs set in the June 28, 1995 ROD that would have triggered groundwater extraction and treatment. In other words, because the 1995 ROD called for installation of groundwater recovery wells in order to remediate groundwater contaminated above 200 ppb total VOCs, and because groundwater is no longer contaminated above this level, no groundwater extraction and treatment is currently required by the 1995 ROD.

The decrease of total VOC concentrations in groundwater is likely the result of several processes: source control measures consisting of leachate extraction and gas extraction from the landfill are removing significant mass of VOC contamination from the landfill and thus reducing the mass of VOCs entering groundwater; and to a lesser degree natural degradation, dilution and dispersion of VOC contamination in groundwater. Analysis of natural attenuation parameters indicate that conditions appropriate for degradation of PCE and TCE are present within and probably beneath the landfill. Conditions appropriate for degradation of DCE and vinyl chloride are present in the groundwater around and downgradient of the landfill. These contaminants (PCE, TCE, DCE and vinyl chloride) constitute the majority of the VOC contamination in groundwater.

U.S. EPA in consultation with WDNR has determined, based on the 1998 groundwater data, that it is not necessary to implement the groundwater extraction and treatment component of the selected remedy. The groundwater plume appears to be stable and thus does not pose any additional threat to human health or the environment. Five year reviews of the site will be conducted until the groundwater remedial action objectives are achieved.

COST

The 1995 ROD estimated that the cost of groundwater extraction and treatment with reinjection would be \$2,737,000. Because groundwater sampling in 1998 indicates there is no groundwater exceeding the 1995 ROD action level of 200 ppb total VOCs these costs will not need to be incurred at this time.

SUPPORT AGENCY COMMENTS

The WDNR has indicated their concurrence with this ESD.

AFFIRMATION OF STATUTORY DETERMINATIONS

The modified remedy continues to satisfy statutory requirements. Considering the new information that has been developed and the change that has been made to the selected remedy, U.S. EPA and WDNR believe that the remedy remains protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to this remedial action, and is cost effective. In addition this revised remedy utilizes permanent solutions and alternative treatment (or resources recovery) technologies to the maximum extent practicable for this site.

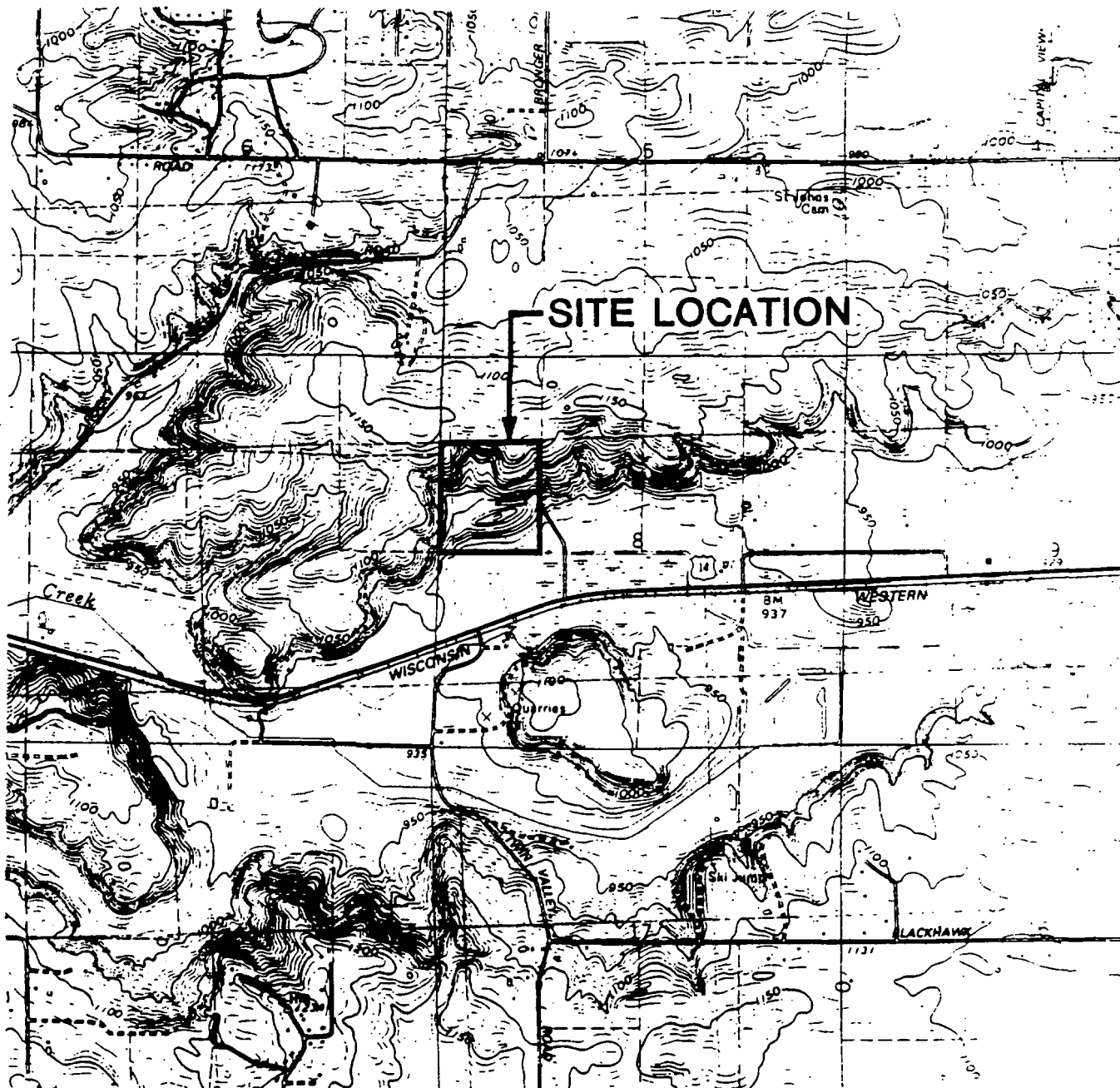
PUBLIC PARTICIPATION ACTIVITIES

U.S. EPA and WDNR held a meeting on February 23, 1995 to announce the completion of Remedial Investigation and Feasibility Study activities and explain the ROD components for final remedial action at the site. Copies of the June 28, 1995 ROD and other site related documents including this ESD are available at the information repositories mentioned below:

Middleton Public Library
7425 Hubbard Avenue
Middleton, Wisconsin

U.S. EPA
Records Center, 7th floor Metcalf Building
77 W. Jackson Blvd.
Chicago, IL 60604

R07E | R08E

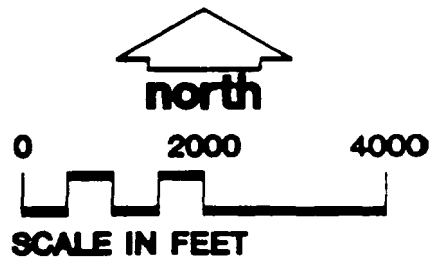


NOTE

BASE MAP DEVELOPED FROM THE
MIDDLETON, WISCONSIN 7.5 MINUTE
U.S.G.S. TOPOGRAPHIC QUADRANGLE MAP,
DATED 1983.



QUADRANGLE LOCATION



Developed By	RJR	Drawn By	DLF
Approved By	Doug J. Bach	Date	7/20/98
Reference			
Revisions			

SITE LOCATION MAP

PREDESIGN AND ADDITIONAL STUDIES
REFUSE HIDEAWAY LANDFILL
MIDDLETON, WISCONSIN

Drawing Number

Figure 2-1

**MONTGOMERY
WATSON**



Management Review
Other

Technical Review
Project Manager DLR 7-20-98

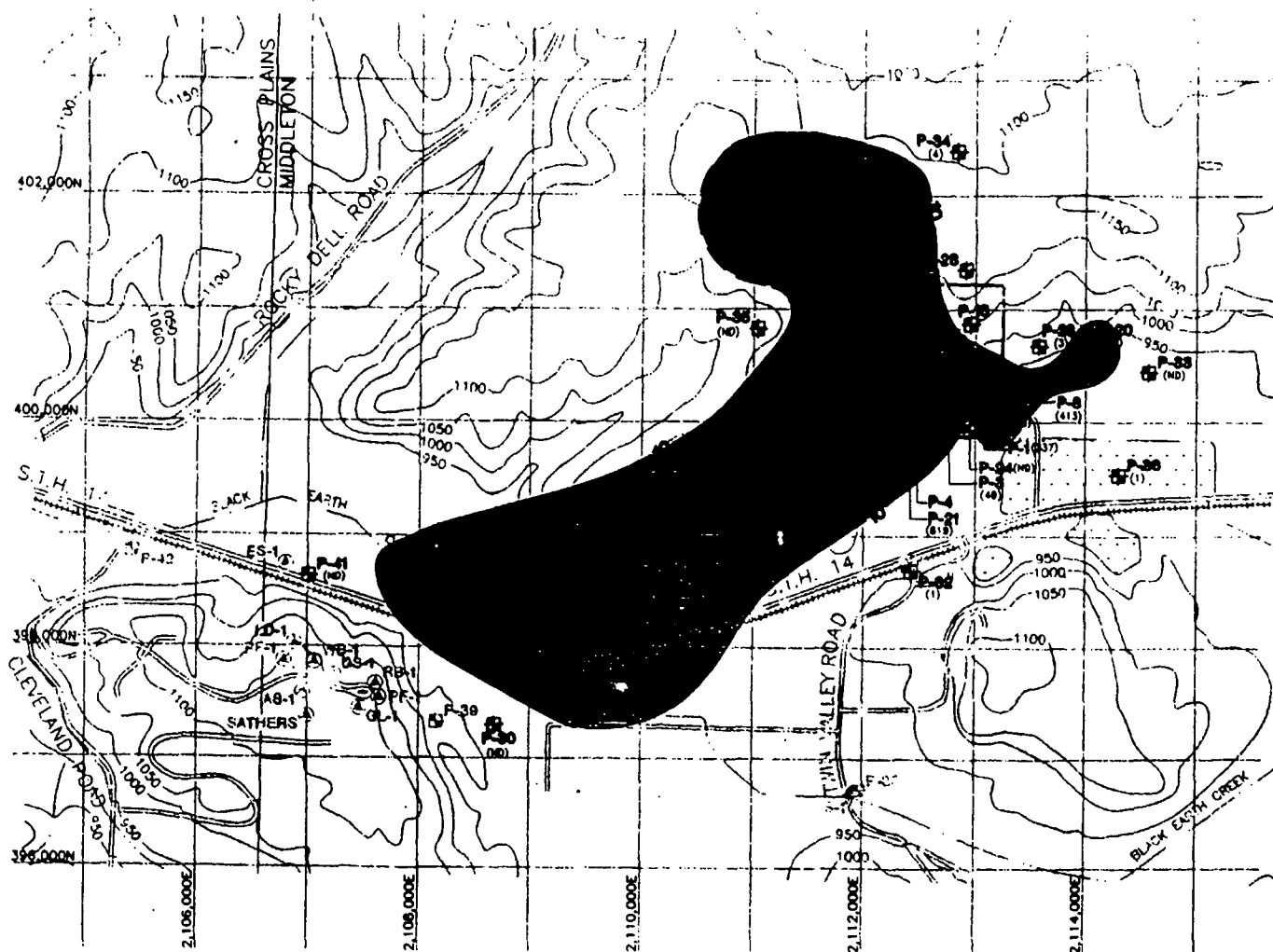
Graphic Standards DLF 7-20-98
Lead Professional DLR 7-20-98

QUALITY
CONTROL

This document has been developed for a specific application and may not be used without the written approval of Montgomery Watson.

11/01/98 2-1.5

11/01/98



LEGEND

- REFUSE HIDEAWAY LANDFILL PROPERTY BOUNDARY
- FILL LIMITS
- P-34 (4) MONITORING WELL LOCATION, NUMBER, AND TOTAL VOC CONCENTRATION RESULTS (ug/L)
- P-38 MONITORING WELL LOCATION AND NUMBER (NOT SAMPLED)
- P-1-1 PRIVATE WELL LOCATION AND NUMBER (NOT SAMPLED)
- NEW SCHULTZ WELL LOCATION
- S-1 STAFF GAGE LOCATION AND NUMBER
- RAILROAD
- WETLANDS
- CREEK OR INTERMITTENT STREAM
- ISO-CONCENTRATION CONTOUR (CONTOUR INTERVAL VARIES, DASHED WHERE INFERRED)
- >500 ug/L
- 200 - 500 ug/L
- 100 - 200 ug/L
- 50 - 100 ug/L
- 10 - 50 ug/L

NOTES

- BASE MAP DEVELOPED FROM MARCH 1991 EXISTING CONDITIONS PLAN FOR REFUSE HIDEAWAY LANDFILL, PREPARED BY HYDRO-SEARCH, INC., DATED JUNE 20, 1994.
- DATA USED FOR ISO-CONCENTRATION MAP FROM JANUARY 1991 SAMPLING EPISODE. IF NO JANUARY EPISODE OCCURRED, THE EARLIEST SAMPLING TIME IN 1991 WAS USED.
- WHERE WELL NESTS OCCUR, THE WELL WITH THE HIGHEST TOTAL VOC CONCENTRATION WAS USED FOR PLOTTING.

