Site Review And Update

INDUSTRIAL EXCESS LANDFILL

UNIONTOWN, STARK COUNTY, OHIO

CERCLIS NO. OHD000377911

SEPTEMBER 16, 1992

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

SITE REVIEW AND UPDATE

INDUSTRIAL EXCESS LANDFILL

UNIONTOWN, STARK COUNTY, OHIO

CERCLIS NO. OHD000377911

Prepared by

Remedial Programs Branch
Division of Health Assessment and Consultation
Agency for Toxic Substances and Disease Registry

SUMMARY OF BACKGROUND AND HISTORY

The Industrial Excess Landfill (IEL), a former sand and gravel quarry, was operated as a landfill from 1966 through 1980. The 29.9-acre site is in Lake Township, Stark County, Ohio (Figure 1). The landfill received wastes from industrial, commercial, and municipal sources. It was reported that waste was received from hospitals, septic-tank cleaning firms, and the general public (QAPP, March, 1990). It was used to store fly ash, masonry rubble, paper and lumber scraps, and a variety of solid and liquid wastes. The rubber industry in Akron, Ohio was a major contributor of wastes to the landfill (ROD, 1987). The administrative record at the United States Environmental Protection Agency (US EPA) indicates that fires occurred at the landfill in the early 1970s.

According to 1980 population estimates, 20,000 residents live within a 3-mile radius of IEL and approximately 3,000 people reside within a one-mile radius. There are approximately 400 residential homes within a 0.5 mile radius. Most residents obtain drinking water from private wells. A short summary of IEL milestones is presented in Table 1 and discussed below.

In December of 1984, US EPA authorized a Remedial Investigation/Feasibility Study (RI/FS) of the landfill. During the Remedial Investigation, soil, subsoil, soil gas, surface water, and groundwater were sampled at the site and in residential areas surrounding the site. Methane and volatile organic compounds (VOCs) in soil gas migrated beyond the landfill boundaries, reaching residences adjacent to the landfill and east of Cleveland Avenue. From 1986 through 1987, an active methane vent system (MVS) was completed, which replaced the passive methane gas vent system installed by the landowner. US EPA determined that a groundwater plume of contaminants was migrating westward off the site, posing a threat to public health. They sampled water from 67 private wells from November 1986 through July 1987. Ten of the wells showed contaminated water. Some contaminants of concern in the groundwater were benzene, 1,2-dichloroethane, vinyl chloride, barium, nickel and lead. Air strippers were installed in April 1987 to remove VOCs from contaminated wells.

In September 1987, US EPA signed a Record of Decision to provide alternate water to approximately 100 homes west of IEL. Construction of the alternate water system began in April 1990 and was completed in January 1991. The area being served by the alternate water system, the North Canton water supply system, is shown in Figure 2.

CDC and ATSDR have provided health consultations to residents from 1984 through 1992. The consultations included a verbal

consultation on drinking water at Greentown Elementary School, verbal consultations on site-specific chemicals such as vinyl chloride and suspected chemicals such as phosgene, and a written consultation on rounds of radiation testing of groundwater.

In June of 1988, ATSDR's Epidemiology and Medicine Branch released a final technical assistance report to the Ohio Department of Health on measurements of VOCs in whole blood for 13 of 16 nearby residents. The test results were within established norms for all but two participants, who had elevated levels of tetrachloroethene. The Ohio Department of Health conducted several assessments of pediatric cancer from 1979 through 1988, which included Stark County residents.

The Final Record of Decision was issued in July 1989. Remedial action systems proposed for IEL include a groundwater extraction and collection system, a groundwater treatment system, an effluent discharge system, an expansion to the existing Methane Venting System (MVS), and a multilayer cap. The MVS is on-line. The active methane venting system pulls gas from extraction wells on the west, north and south perimeters of the site and vents it to a single flaring point. The MVS is being sampled at the input and output points of the stack for VOCs and radiological parameters. Some downwind ambient air samples have been collected. According to US EPA, the system is successfully halting off-site soil gas migration as shown by off-site soil gas probes and gas extraction wells. Metzger Ditch hinders lateral gas migration to the east. The other treatment systems are currently under design.

The Technical Information Committee (TIC) was established by the ROD in 1989. It is composed of the Concerned Citizens of Lake Township (CCLT), their Technical Assistance Grant consultants, Ohio EPA, the County Health Department and other local government agencies, representatives of the Potentially Responsible Parties (PRPs), the general public, ATSDR, and US EPA. The TIC has reviewed and made extensive comments on the Remedial Design Studies, Workplan and the Quality Assurance Project Plan/Field Sampling Plan. TIC members meet to discuss technical issues pertaining to characterization of the site and remedial design.

The Final Remedial Investigation report was completed in July 1988. The ATSDR Petitioned Public Health Assessment for the site was issued in July 1989. Residents adjacent to IEL were temporarily and then permanently relocated. By July 1990, twenty-two properties (including 12 homes and 2 businesses) were purchased by US EPA for implementation of remedial activities.

US EPA began sampling residential and monitoring wells in August 1990. They have continued to sample on a quarterly basis. US EPA sampled water from eight residential wells near the landfill from December 1990 through December 1991. These wells border the

current alternate water system. Ohio EPA also gathered some well water samples for analyses. In general, traces of many organic contaminants and heavy metals below Maximum Contaminant Levels (MCLs) were found. Radiological analysis of that data are forthcoming.

Both US EPA and Ohio EPA have collected groundwater samples for radiochemical analyses. Ohio EPA collected groundwater and soil samples at IEL in December and January 1991 for radiochemical analyses. Elevated levels of gross alpha and beta were obtained from a borehole near the northeast corner of the landfill. US EPA has drilled another borehole and sampled the zone where radioactivity was previously detected by Ohio EPA. This data are forthcoming. Two previous rounds of groundwater testing for radiation, August and December 1990, were invalidated (rejected due to poor quality assurance and quality control) by US EPA. Radiological analyses from the May 1992 and August 1992 quarterly samplings are forthcoming.

Field work for remedial design studies was conducted from May 1991 through February 1992. The activities included groundwater and aquifer characterization, landfill gas characterization, surface water, sediment, and soil contaminant characterization and landfill cap evaluation. US EPA conducted pneumatic slug tests as part of the design studies at IEL. They estimated horizontal hydraulic conductivity (in shallow, intermediate, and deep intervals) in the 42 monitoring wells that had been installed by February of 1992. An adjacent property west of the site, Uniontown Tire property, showed elevated levels of metals in soils. Of those, arsenic, barium, cadmium and chromium exceed ATSDR comparison values. Although no significant concentrations of organic compounds were detected in the surface water of Metzger Ditch, inorganics exceeding background were barium, cobalt, and mercury. Some of the off-site ponds south of IEL and west of Cleveland Avenue also contained organic and inorganic contaminants.

As of May of 1992, US EPA has been testing well water from approximately 58 monitoring wells (approximately 21 of those wells are off site, as shown in Figure 3) and eight residential wells for contaminants on a quarterly basis. The August 1992 sampling will include 59 monitoring wells. Completion of the remedial design is scheduled for Spring 1993.

DATE	EVENTS AT IEL 1972 - 1992
1972	Stark County Board of Health issued a prohibition against the dumping of wastes at the IEL landfill.
1980	The landfill was closed by consent agreement order of Stark County Common Pleas Court. The landfill was covered with clean fill and seeded. Explosive levels of methane gas were discovered in the basement of several homes. The landfill owner installed a passive gas venting system.
1/84 - 5/92	CDC/ATSDR health consultations.
1984 - present	US EPA and Ohio EPA conduct investigations at the site.
10/84	IEL proposed to the NPL.
9/85	Remedial Investigation field work was initiated.
6/86	IEL listed on the NPL.
86 - 87	Active Methane Venting System (MVS) installed.
2/87	Local citizen petitions ATSDR to do a health assessment.
4/87	Air strippers were installed in ten private wells west of IEL.
8/87	Focused Feasibility Study on the provision of alternate water.
9/87	ROD signed to provide alternate water to 100 homes west of IEL.
6/88	ATSDR volatile organic compound testing of blood of persons living near IEL.
7/88	US EPA Final Remedial Investigation Report.
12/88	US EPA Final Feasibility Study Report. US EPA proposed remedial alternatives.
7/17/89	ROD, selected remedial alternative: RCRA Cap, expansion of the MVS, groundwater extraction and treatment systems.
7/89	ATSDR public health assessment completed.
7/89 -7/90	Residents adjacent to IEL temporarily and later permanently relocated.
Winter 1990	US EPA establishes the TIC, Technical Information Committee, to obtain the involvement of interested parties.
2/90 - 5/91	During TIC meetings, TIC members comment on the workplan and the Quality Assurance Project Plan/ Field Sampling Plan for Design Studies.
11/90	US EPA invalidates the August 1990 radiation testing of groundwater.
2/91	Demolition of residences and businesses bordering IEL was completed.
5/91 - 2/92	Field work for the Remedial Design Studies.
9/91	US EPA invalidates the December 1990 radiation testing of groundwater.
3/31/92	A public information meeting was held by US EPA in Uniontown to discuss management of the site (Tom Grumbly Report).
5/4/92	US EPA begins first full round of groundwater sampling (including radiation) of residential and monitoring wells.

CURRENT CONDITIONS OF SITE

Access to IEL has been restricted by a fence on all sides of the site. In 1988, only the west side and parts of the north and south sides were fenced. The IEL property is bound on the east side by Metzger Ditch, a man-made channel that is 10 feet deep. The site has been covered with a clayey top soil and is well vegetated in most areas. During the ATSDR site visit on February 19, 1992, there were drums of soil from drilling activities in the northwest corner, within the fenced portion of the landfill. Residential communities surround the landfill to the north, west, and south. A sod farm still exists east of the landfill. IEL is sloped and graded so that runoff is directed toward Metzger Ditch.

The primary drinking water source surrounding the landfill is still private well water, even though additional alternate water systems are being planned. Residential wells near the landfill draw groundwater from both the shallow sand and gravel aquifer and the sandstone bedrock. The Stark County Engineering Department has been planning extensions to the city water lines since 1991 (Figure 2).

The shallow aquifer near IEL has been contaminated by organic compounds and heavy metals. Although contaminants were hindered from migrating from the landfill by a more impermeable fine-grained layer beneath the landfill, contaminants did penetrate that layer. However, no off-site groundwater plume could be traced by US EPA. They believe that natural degradation and dilution have led to the lack of a traceable groundwater plume from the landfill. The highest groundwater contamination to date has been found at the water table surface on site. A bedrock valley exists beneath the site and trends east to west.

CURRENT ISSUES

Health Concerns

Residents have reported the following health concerns which they believe were or are related to landfill contaminants: nausea, headaches, miscarriages, low birth weights, urticaria/angioedema or skin rash, leukemia and other cancers (lymphoma, chondroblastoma, chondrosarcoma, breast cancer, and soft tissue cancers).

Contamination of Private Residential Wells

Off-site contaminant migration from the landfill is a concern shared by state agencies, ATSDR, US EPA, and the community. Residential wells are in the unconsolidated sand and gravel and in the bedrock (shale and sandstone). The unconsolidated sediments and bedrock are interconnected. The shallow

groundwater interval is contaminated at the landfill. Concentrations of contaminants in groundwater and surface water are probably significantly different now than in the past because dumping has ended and dilution, dispersion, and volatilization of contaminants have continued. US EPA, residents, and others support expansion of the existing alternate water supply system.

Migration of Landfill Gases after Capping

Residents and others are concerned that the cap will cause lateral gas migration and that the gas extraction system will not be adequate to prevent off-site migration. Expansion of the MVS was proposed as an additional precaution against off-site migration. Residents are also concerned that radioactive gas will be released during the venting process; in response, US EPA has conducted testing of vented gas for radiological parameters. These data are forthcoming.

Sewer Lines

US EPA, Ohio EPA, and others are pursuing the sewer line issue in response to community concerns. Residents are concerned that sewer lines may serve as conduits which transport contaminants from the site.

Direction of Groundwater Flow

US EPA has initiated a reassessment of the 1988 USGS evaluation (conducted under an interagency contractual agreement with ATSDR) of the hydrogeology of the site. Radial groundwater flow in the shallow unconfined aquifer is an issue because of potential contamination of private wells near the landfill. Additional data is now available, from monitoring wells, for inclusion in that reassessment. Groundwater flow in the lower unconsolidated sediment and bedrock is primarily to the west.

CONCLUSIONS

On-site soil was covered by clean fill in 1980, eliminating this soil ingestion route. The potential for exposure to methane and other VOCs in air has been significantly reduced by the active methane venting system.

Further analysis of groundwater data is needed to determine the past extent of groundwater contamination. Given the trace organic compounds and heavy metals above background in residential wells and past private well use, some residents west of IEL were exposed to contaminants in groundwater. Until groundwater is remediated, the landfill will remain a potential source of off-site contamination in the area.

The surface water pathway also needs to be re-examined because of additional data which were not evaluated in the 1989 ATSDR public health assessment. Concentrations of contaminants in groundwater and surface water are probably significantly different now than in the past because dumping has ended and dilution, dispersion, and volatilization of contaminants have continued.

RECOMMENDATIONS

The IEL site has been further characterized since the 1989 ATSDR public health assessment. Specific exposure pathways such as groundwater, surface water, and air need further analysis and interpretation in an update to the 1989 assessment. An in-depth look at specific pathways is recommended.

Data sets need to be reviewed as they are received by ATSDR so that community concerns can be addressed immediately. Status reports, including a data review section, are recommended.

ATSDR should complete a health consultation on health outcome data.

ATSDR should continue to attend the Technical Information Committee so that the agency is aware of community concerns and can evaluate whether public health hazards exist.

ATSDR should support a reassessment of the 1988 USGS report. ATSDR should reevaluate groundwater flow directions based on additional information obtained since the 1988 report.

ATSDR should obtain and review current monitoring data on the Methane Venting System, particularly the flare stack emission data.

ATSDR should gather information on background radioactivity expected in the Uniontown area.

A GIS system, as recommended in the 1989 ATSDR public health assessment, should be used to track contaminant concentrations and to provide a database for modeling past conditions. Specifically, residential well contamination should be addressed. The results of the modeling and summary of present groundwater conditions should be reviewed with respect to the area supplied and areas proposed to be supplied with alternate water. This could be conducted by ATSDR or another agency (with US EPA cooperation).

The data and information developed in this site review and update have been evaluated to determine if follow-up actions may be indicated. Further site evaluation, as specified in the above recommendations, is needed to determine public health actions.

DOCUMENTS REVIEWED

Documents reviewed by ATSDR during the development of this summary are as follows:

1. Administrative Record at US EPA, reviewed on August 10 and 11, 1992.

2. Administrative Record at ATSDR, Region V, reviewed August 12, 1992.

3. ATSDR File for Industrial Excess Landfill in Region IV.

4. ATSDR, Volatile Organic Compound Testing of Blood of Persons living near the IEL NPL Site, June 1988.

5. ATSDR, Public Health Assessment, July 21, 1989.

U.S. EPA Documents:

1. Draft Work Plan for Design Studies, Jan. 19, 1990.

2. Draft QAPP for Design Studies, March 1990.

3. Draft QAPP (Revision 1A and 2A) for Design Studies.

4. Draft QAPP for Design Studies, Vol II, Appendices D & E, March 1990.

5. Addendum to draft QAPP, Apr 19, 1990.

6. Addendum No.2 to draft QAPP, July 27, 1990.

7. Final QAPP for Design Studies, Vol I, July 1991.

8. Final QAPP for Design Studies,Vol II, Appendices D & E, July 1991.

9. Fact Sheets, June 1991 - Feb 92.

10. Record of Decision & Responsiveness Summary, July 1989.

11. Responsiveness Summary (to Aug. 1987 Focused Feasibility Study).

12. Technical Memorandum, Groundwater Sampling Data, March 1991.

13. Technical Memorandum, Groundwater Sampling Data, June 17, 1991.

14. Preliminary Draft, Technical Memorandum, Analytical Data for surface soil, surface water, sediment, etc., Feb 1992.

15. Draft Remedial Investigation Report, March 1988, Vol. II.

16. Final Remedial Investigation Report, July 1988, Vol.I, Vol II-Appendices, Appendix G.

17. Information Notebooks-meeting March 6, 1987.

18. Letter on TIC's (Aug 1990 groundwater sampling), March 21, 1991.

Ohio EPA Documents:

19. Residential Well Sampling Results, March 1991.

20. Residential Well Sampling Results, June 1991.

21. Groundwater Sampling Results, Dec 91 /Jan 92.

22. Volatile Organic Analysis, 11/90.

23. Northwest Uniontown Investigation Summary, Stark & Summit Counties, Oct 31, 1991.

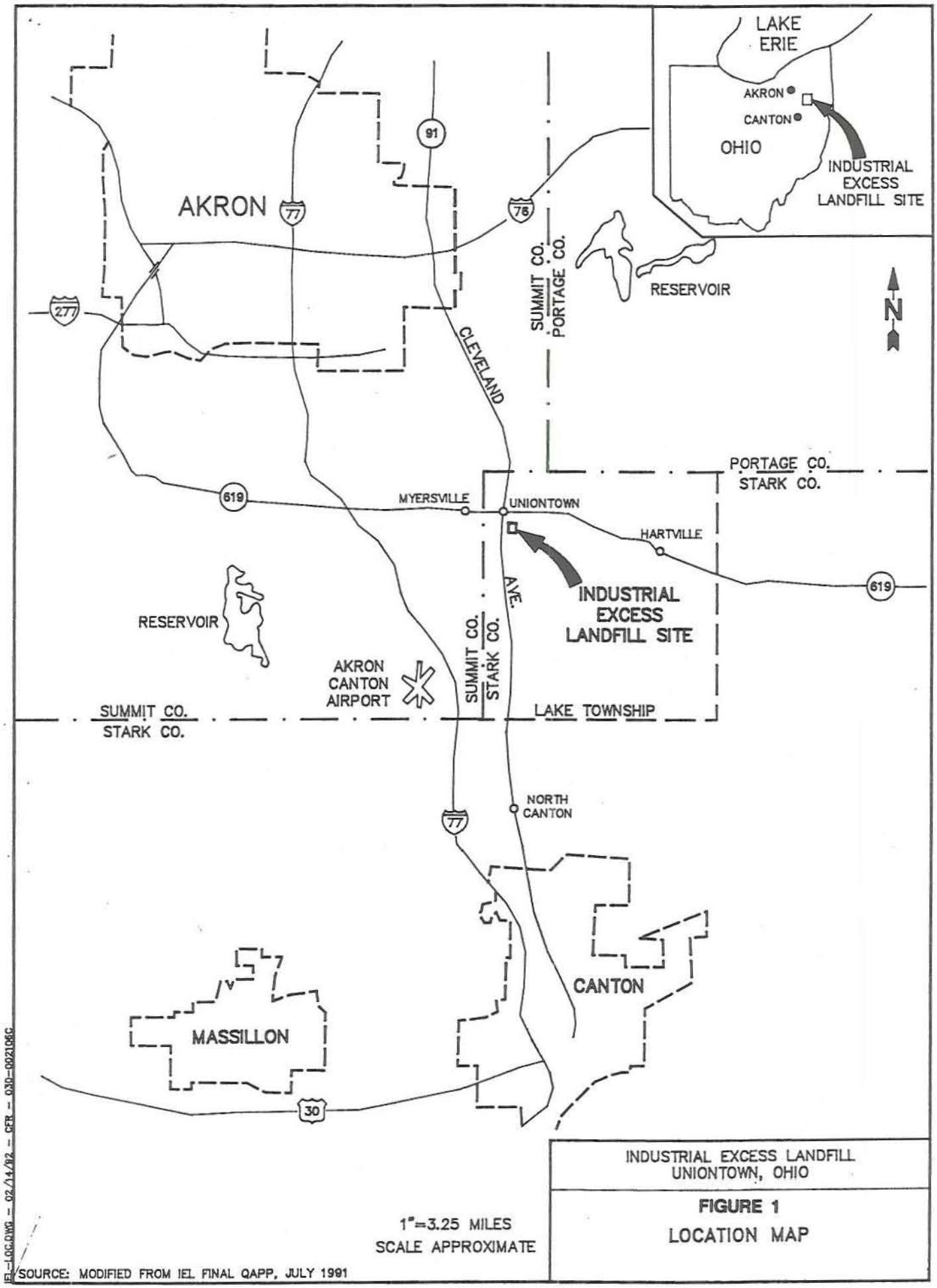
Health Documents:

1. Childhood Cancer Burden in Portage, Stark, and Summit Counties, Ohio 1979-1987. Update Report #1 (Protocol).

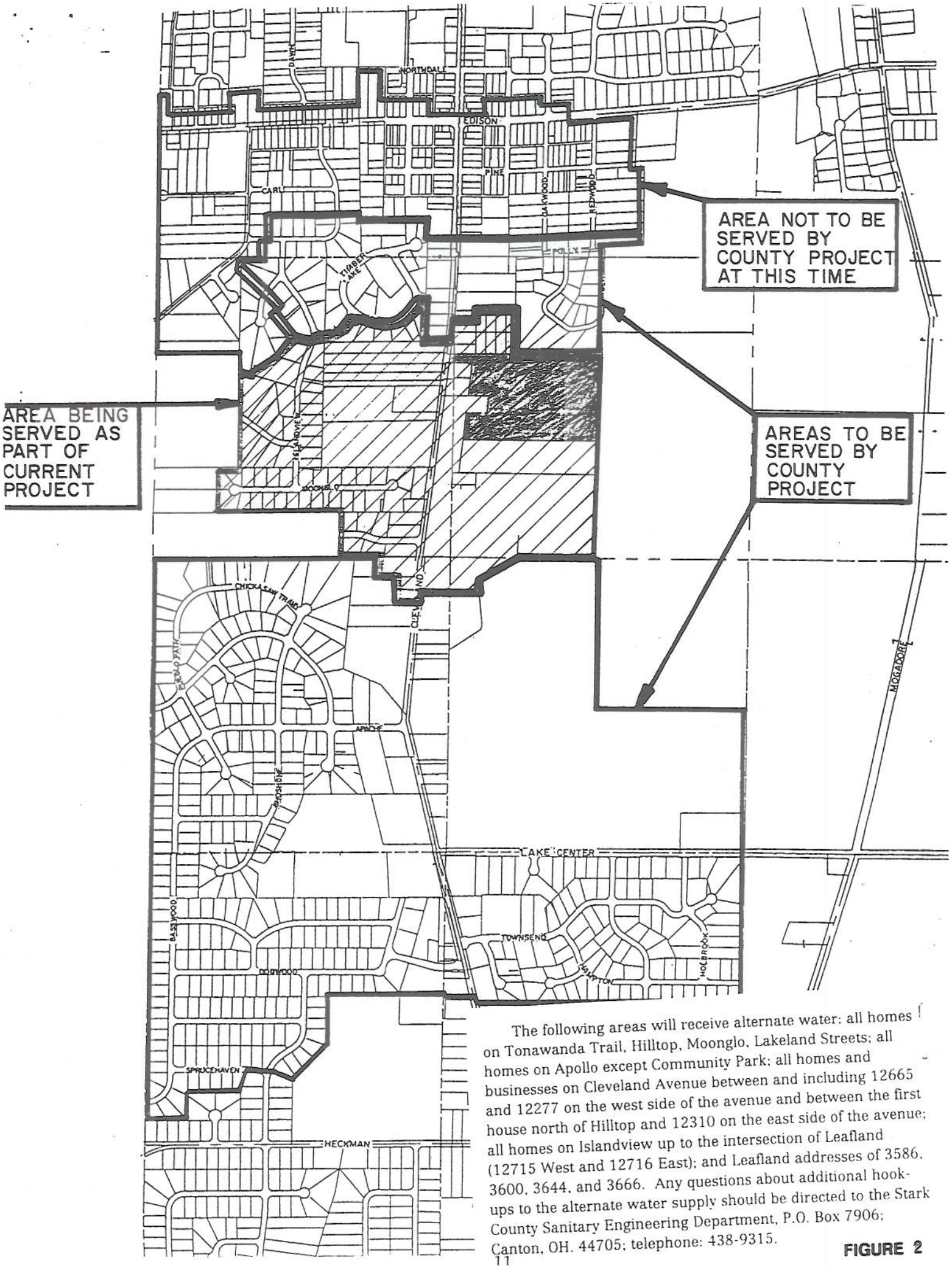
2. Assessment of the Pediatric Cancer Burden in Portage, Stark, and Summit Counties, Ohio, Div. of Epidemiology, Ohio Dept. of Health, 1988.

3. Cancer Mortality in Ohio 1986/1988, Bureau of Chronic Diseases, Ohio Department of Health, 1990.

Preparer of the report:
Laura Barr, Environmental Health Scientist, ATSDR/RPB/ESS

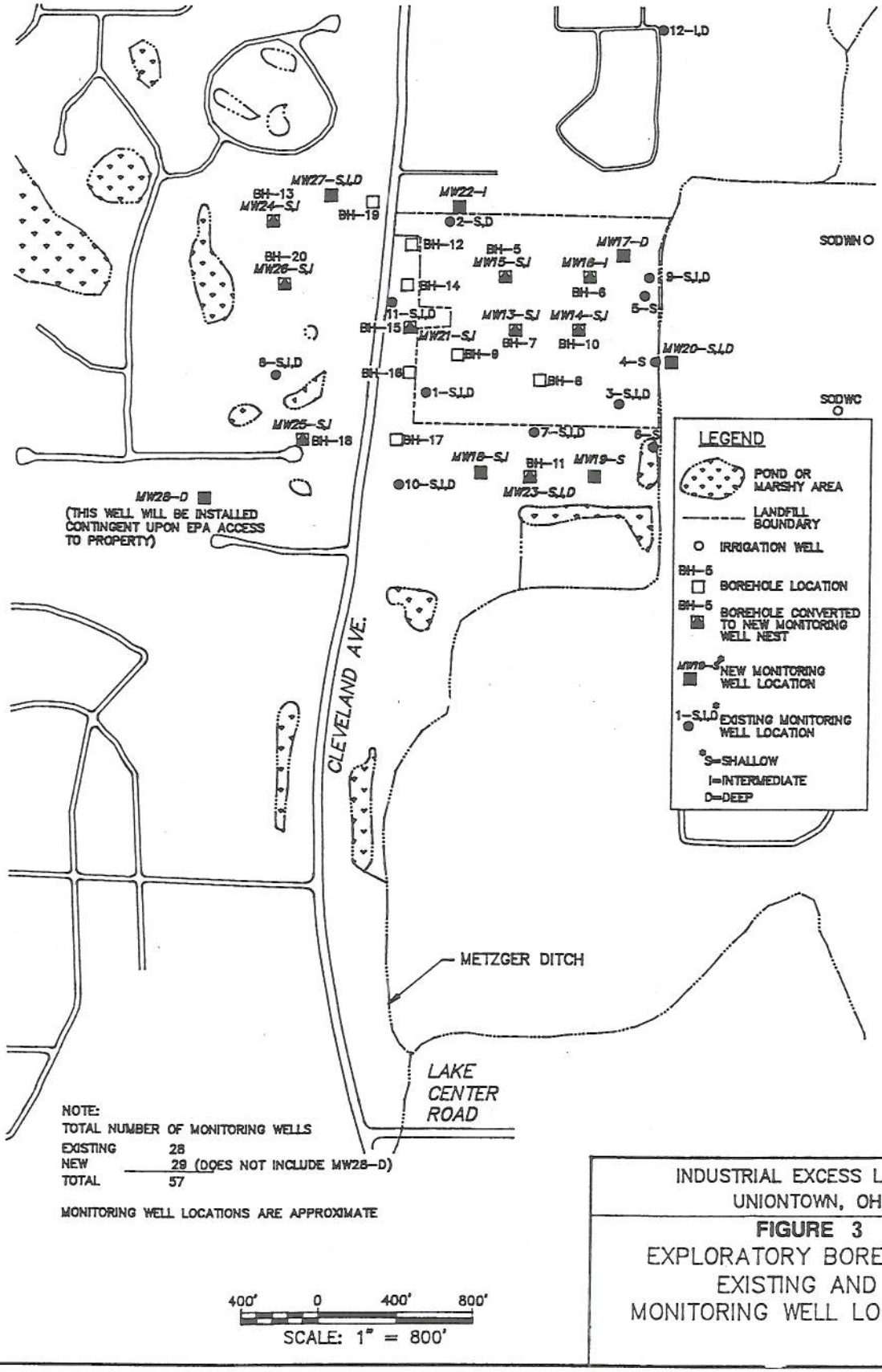


Source: PRC Environmental Management, Inc.



The following areas will receive alternate water: all homes on Tonawanda Trail, Hilltop, Moonglo, Lakeland Streets; all homes on Apollo except Community Park; all homes and businesses on Cleveland Avenue between and including 12665 and 12277 on the west side of the avenue and between the first house north of Hilltop and 12310 on the east side of the avenue; all homes on Islandview up to the intersection of Leafland (12715 West and 12716 East); and Leafland addresses of 3586, 3600, 3644, and 3666. Any questions about additional hook-ups to the alternate water supply should be directed to the Stark County Sanitary Engineering Department, P.O. Box 7906; Canton, OH. 44705; telephone: 438-9315.

FIGURE 2



IE-FST1.DWG - 02/14/92 - MB

INDUSTRIAL EXCESS LANDFILL
UNIONTOWN, OHIO

FIGURE 3
EXPLORATORY BOREHOLE, AND EXISTING AND NEW MONITORING WELL LOCATION MAP

Source: PRC Environmental Management, Inc.