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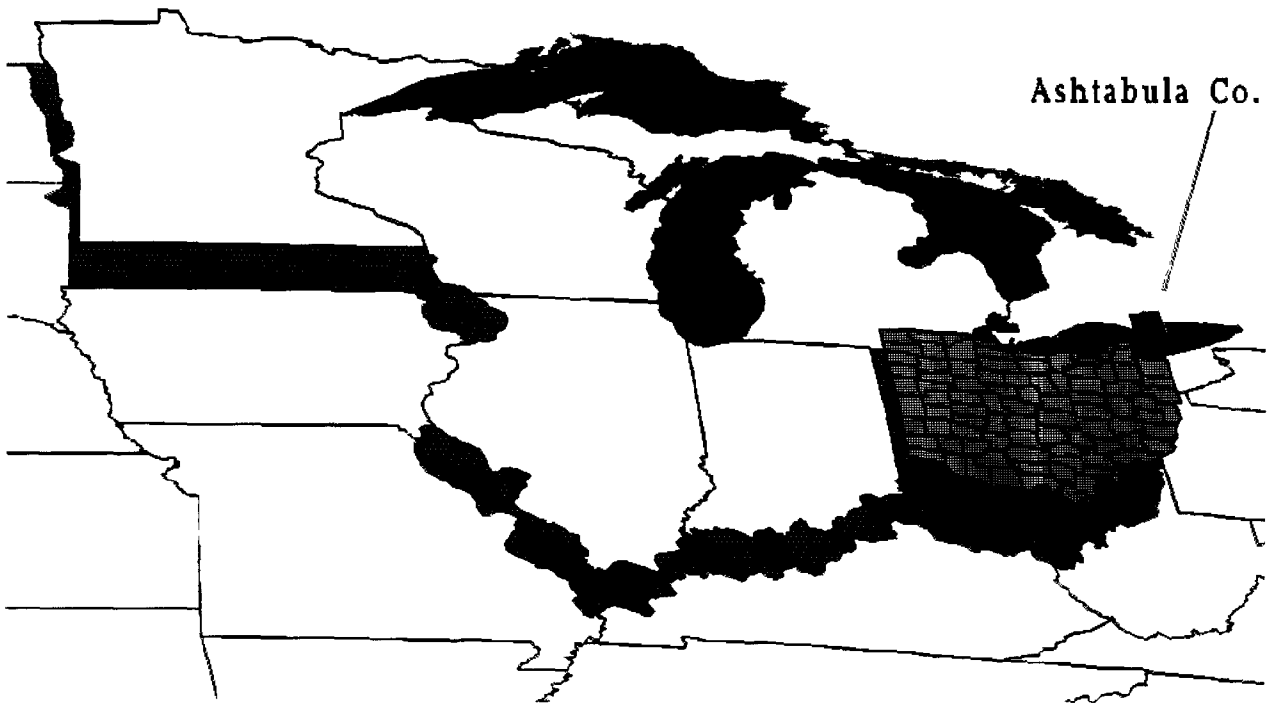
Ashtabula, Ohio Geographic Information Systems Demonstration Project



Final Report
September 1990

U.S. Environmental Protection Agency
Region V
Geographic Information Systems Management Office
Environmental Sciences Division

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
230 SOUTH DEARBORN ST.
CHICAGO, ILLINOIS 60604

REPLY TO THE ATTENTION OF:

5S

To The Reader:

I am delighted to provide you with the Final Report on the Ashtabula, Ohio Geographic Information Systems Demonstration Project. This project was designed and requested by Senior Staff of Region V as a basis, in part, for bringing GIS technology to the Region. The Final Report serves as a "primer" on GIS capabilities for future reference by program staff. In addition, the Final Report integrates and analyzes data from many different U.S. EPA programs.

The publication of this report marks the end of the successful demonstration phase for GIS technology in Region V, and indeed the Geographic Information Systems Management Office has been performing analyses and providing products to the programs for the past year. My staff, in the GIS Management Office, looks forward to productive cooperation with the program staffs on future projects, especially projects that will use GIS to facilitate environmental decision-making in the programs.

W. Sanders

William H. Sanders III, Director
Environmental Sciences Division

ASHTABULA, OHIO
GEOGRAPHIC INFORMATION SYSTEMS
DEMONSTRATION PROJECT

FINAL REPORT

SEPTEMBER 1990

John P. Schneider, Barry J. Bolka, Noel W. Kohl

Geographic Information Systems Management Office

and

Dawn E. McWha

Computer Sciences Corporation

U.S. Environmental Protection Agency
Region 5
Environmental Sciences Division
536 South Clark St.
Chicago IL 60605

EXECUTIVE SUMMARY

Environmental management of a defined geographic area such as a National Priority List (NPL) Superfund site or a Great Lakes Area of Concern (AOC) must utilize data from many different sources. A Geographic Information System (GIS) is the best available technology for managing these myriad data. Pollutants can be discharged to the area in surface water, ground water, air or on land. Soil types largely determine the possible spread of contamination in ground water or as airborne particulates. Hydrography determines the potential dissemination of contaminants in surface water. Land use defines the potential exposure of the human population to the pollutants. The proximity of schools, homes for the elderly and drinking water supply sources is important to the estimation of human health risk associated with the pollutants. A GIS can manage, spatially relate, integrate and analyze all of these data.

The purpose of this GIS demonstration project was as follows: (1) to demonstrate GIS capabilities to Region 5 program offices dealing with many different media; (2) to provide a set of data layers that could be used for the future management of the Ashtabula Area of Concern (AOC) and the Fields Brook National Priority List Superfund site; and (3) to provide a training exercise for the newly established GIS Management Office in Region 5 of the U.S. EPA. This project did not attempt to analyze all of the available data for a specific goal, such as the clean-up of a Superfund site. Rather, data from many different sources, and different types of analyses were chosen to specifically meet these goals. Future applications of GIS technology for management of the Superfund site or AOC would require that the Remedial Program Manager of the Superfund site or the Remedial Action Plan Coordinator of the AOC would guide more comprehensive data collection and analyses. However, these site managers could use all of the work performed for this demonstration project, and the now well developed capabilities of the GIS Management Office as the basis for the comprehensive management of the Superfund site and the Area of Concern.

The Plan of Study (EPA 1989) for this demonstration project included the Multi-media Environmental Actions Tracking System (MEATS). As noted in the Plan of Study, the inclusion of MEATS was dependent on additional funding and the "beta-testing" of MEATS by non-GIS personnel. Attempts to secure additional funding were unsuccessful and therefore MEATS was not included in this Final Report.

This Final Report was designed to serve the following functions: (1) to document the results of the Ashtabula GIS Demonstration Project; (2) to serve as an introduction to EPA managers of GIS capabilities; and (3) to provide examples of specific GIS analyses and display methods, that can be used as a reference guide by GIS "clients"; therefore, some discussion of basic GIS concepts and terminology is included in the text.

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INTRODUCTION

Geographic Information Systems

Geographic Information Systems provide data entry, storage, manipulation, analysis and display capabilities for geographic, environmental, cultural, statistical and political data in a common spatial framework. The data analyzed are a collection of spatial information (represented by points, lines and polygons) and their associated tabular and spatial attributes (characteristics of the features which the points, lines and polygons represent). The attributes associated with these spatial data may include ownership information, chemical characteristics or land use activities. Sources of data for GISs include maps, aerial photographs, satellite images, census data, field measurements, etc. These data may be in digital format or on paper. GISs are fully integrated systems that analyze and map spatial data and provide graphic and tabular products. GIS technology bridges the disciplines of geography, computer science, information management, cartography, environmental science and environmental management. The GIS is distinguished from other computer systems by its ability to perform spatial analyses. A GIS has five major components as follows: (1) Hardware - used to store, process and display digital map data; (2) Software - performs GIS operations; (3) Digital Map Data - which is manipulated with the GIS; (4) Procedures - followed to perform various operations; and (5) Expertise - the people who provide the intelligence to use the system. While not strictly a part of a GIS, a 6th component is necessary for the successful use of GIS by the EPA - people in media specific programs to design projects and formulate hypotheses to be tested using GIS.

Ashtabula Area of Concern

The City of Ashtabula is in Ashtabula County, Ohio on the shore of Lake Erie. The Ashtabula River near its entrance to Lake Erie has been contaminated with heavy metals, chlorinated organic compounds, PCBs and oxygen consuming pollutants. Eighteen industries and one wastewater treatment plant discharge to the Area of Concern (AOC) as designated by the International Joint Commission of Canada and the United States (IJC). Fish consumption advisories for the lower river and Ashtabula harbor have been issued due to PCBs and toxic organic chemicals in fish tissue. Ground water near Fields Brook and the lower Ashtabula River has been contaminated by past disposal practices and landfills. Clearly the ground water, surface water and sediments of the lower Ashtabula River may pose a substantial health risk to the local populace

and may be impairing ecosystem function. Several different approaches to the clean-up of the lower Ashtabula River are simultaneously occurring. The U.S. EPA Superfund Program is concentrating on Fields Brook, the state of Ohio is developing a Remedial Action Plan for the AOC, U.S. EPA's NPDES permit process has improved the quality of the effluent that continues to be discharged, and the U.S. Army Corp of Engineers (COE) proposes to dredge some contaminated sediments from Ashtabula Harbor.

Fields Brook National Priority List Superfund Site

Fields Brook, a tributary to the lower Ashtabula River, is a Superfund site due primarily to sediments contaminated by toxic pollutants. The contaminants include chlorobenzene; 1,1,1-trichloroethane; 1,1,2-trichloroethane; 1,1-dichloroethene; tetrachloroethene; trichloroethene; vinyl chloride; hexachloroethane; hexachlorobutadiene; toluenediamine; toluene diisocyanate; 1,2,4-trichlorobenzene; hexachlobenzene; PCBs; zinc; mercury; lead; chromium and titanium. Because of the possibility of direct contact with the sediment, movement of the contaminated sediment into the Ashtabula River and Lake Erie, possible movement of contaminants into the public water supply of the City of Ashtabula, and the possibility of uncontrolled releases of hazardous materials from the sediment, the site was included on the National Priority List of Superfund sites.

DATA LAYERS

One way to organize data in a GIS is as thematic "data layers". These data layers can be thought of as a series of transparent map overlays, each for a specific feature such as streams, roads, wells or soils.

--- GIS FYI ---

A data layer is a digital representation of spatial and tabular information. In ARC/INFO, the Agency standard GIS, data layers are referred to as 'coverages'. For example, a point coverage of Toxic Release Inventory (TRI) facilities may include a map with each facility represented by a point and a table for each facility with the amount of chemical pollutants reported. This coverage would allow the mapping of all facilities with a specific discharge of a particular pollutant.

FIGURES

The spatial information from data layers can be displayed on 'maps' either by itself or combined and integrated with other data layers. The data features are characterized as points (single locations), lines (multiple locations which are topologically consistent), polygons (areas of homogeneous features), annotation (graphic text), or combinations of the above. The tabular or attribute information in relation to the spatial information is used to graphically delineate and symbolize data features. All figures are in numerical order at the end of the text. These figures consist of maps produced at two different scales, each appropriate to the data being displayed. The large scale maps, at a scale of 1:29,230, are limited by the boundaries of the Ashtabula AOC (Ohio EPA 1990). The latitude and longitude (degrees and minutes) are indicated on the edges of the AOC boundary. The small scale maps, at a scale of 1:315,590, encompass all of Ashtabula County and parts of adjacent counties in Ohio and Pennsylvania. This scale permits the mapping of features that extend beyond the AOC boundary.

--- GIS FYI ---

With the ARC/INFO software, the GIS Analyst has the ability to display data with reference to geography, data scale and feature delineation. Maps and features can be presented at any physical size, with many colors and many customized user-generated symbols. Examples in the Ashtabula project display only a few of these capabilities.

DATA DICTIONARY

The importance of maintaining a data dictionary or data documentation is critical to any GIS project. The general goal of data documentation is to provide reviewers and potential users a history of the data and a means to determine the viability and integrity of the data. Constructive data documentation persists despite system, personnel and administrative changes. The most critical elements of data layer description, data layer source information and data layer quality information have been included in this report. The Data Dictionary for each coverage is in alphabetical order at the end of the text.

--- GIS FYI ---

For the Ashtabula project several specialized programs were developed to input, update, display and query GIS data documentation. The data layer description provides an explanation of the data, its type and areal extent. The data layer source information indicates the original source of the data (reports, maps, offices, conversations etc.), original data scale and dates of the source and automation. The data layer quality information is a subjective but important account by the GIS Analyst of the accuracy, integrity and reliability of the data.

GIS DESCRIPTION AND ANALYSIS OF THE ASHTABULA AREA OF CONCERN

Hydrography

Hydrography describes the location and direction of flow (if any) of surface waters. Many different maps of the AOC show portions of the Ashtabula River or Fields Brook. Digital data are available at two different scales, 1:2,000,000 and 1:100,000 from the USGS as Digital Line Graphs (DLGs). The 1:2M data are too coarse for this large scale study. The 1:100K hydrography data provide the Lake Erie shoreline and the Ashtabula River in Figure 1 and the baseline hydrography in many of the other figures. Paper maps for the AOC provide larger scale hydrography with greater detail than the 1:100K DLGs. Hydrography from four different sources (USGS 1978; USGS 1979; CH2M HILL 1987; Woodward-Clyde 1990) was digitized and combined in Figure 1, to provide a spatial definition of the hydrography of the AOC far superior to any previous document. Figure 1.1 provides some of the details about the types of features mapped on Figure 1. The reader interested in details of features and data sources should refer to the Data Dictionary for a description of each coverage named on a figure.

--- GIS FYI ---

Figure 1 provides an example of a combination arc and polygon coverage. It also demonstrates the ability of GIS to integrate data by simply overlaying data from different sources. The ecoregion coverage (Figure 2) is an example of data sharing between different offices within EPA.

Ecoregions and Soils

A map of the ecoregions of the Upper Midwest States was compiled by the USEPA Environmental Research Lab in Corvallis (Omernik and Gallant 1988). The ecoregions represent areas that are relatively homogeneous in patterns of combinations of factors including land use, land-surface form, potential natural vegetation and soils. Figure 2 indicates that the AOC is all in one ecoregion according to the Corvallis delineation. By comparing Figure 3, the detailed Soils map for Ashtabula County (USDA 1973), with Figure 2, it becomes apparent that the soils in the AOC are far from homogeneous. Clearly the data collected for these two maps were designed to address very different goals. The data that are appropriate to use for decision-making are dependent on the specific question being asked.

--- GIS FYI ---

Figures 2 and 3 provide examples of polygon coverages. These figures highlight the importance of study design prior to data collection. Further, when using existing data, knowledge of the scale and purpose of those data is mandatory for data interpretation.

Ownership

Land ownership is dynamic. The ownership shown in Figure 4 is the result of an aerial photo interpretation (EMSL-LV 1985). If the goal of a project were to create a series of maps showing historical land ownership, GIS would be the perfect tool for the job.

---GIS FYI---

A GIS can utilize data from many sources that already exist in EPA, such as aerial photos and remote sensing data from EMSL and EPIC.

Transportation

Roads, railroads and pipelines (Figures 5 and 6) provide references for locating other map features. They also allow the potential analysis of risk associated the accidental spill of materials in transport. These figures (5 and 6) were produced from digital data purchased from the U.S. Geological Survey (USGS).

---GIS FYI---

Digital Line Graphs (DLGs) are available from the USGS at several different scales - 1:2,000,000; 1:250,000; 1:100,000; and 1:24,000. Many different data are available - hydrography, transportation, census tracts, etc. However, availability of these data nationally is very incomplete.

Land Use

A description of the land use in a defined geographic area may serve many functions. A crude risk analysis could use the land use in Figure 7 to determine the proximity of residential areas to industrial areas. However, as with all data, the source and scale must be considered. The data used to produce Figure 7 were from 1973 and were produced at a scale of 1:250,000. These data are old and perhaps too coarse for a detailed risk assessment in the AOC.

---GIS FYI---

These land use data are from the USGS Geographic Information Retrieval and Analysis System (GIRAS), another source of digital data from a federal agency.

Ownership and "Made Land"

On Figure 3, the classification "Ma" indicates "made land". Made land consists of areas of earth fill, of borrow pits, and of areas where much of the soil surface is covered by streets, homes, factories or docks. In all of these areas, the original soils have been greatly altered (USDA Soil Conservation Service 1973). An immediate question that arises is - who made that land? By combining soils and ownership data into Figure 8, it becomes apparent that some of the industrial owners occupy a large percentage of the "made land". This analysis starts the complete inquiry into the question of who made that land.

---GIS FYI---

None of the data used for the analysis shown in Figure 8 came in digital format. Paper maps were manually digitized on a digitizing tablet and attributes were assigned to each polygon by the analyst.

Schools and Hospitals

Part of a risk assessment is determining the population exposed. Children, the elderly and the ill are high risk populations for some types of exposure. Figure 9 shows the location of schools, hospitals, day care centers and senior care facilities in the Ashtabula AOC.

---GIS FYI---

The location of points, such as schools, on a map is only part of a GIS coverage. The other part is a database that contains information about the point. For the school coverage, the database contains enrollment figures that would allow the GIS analyst to interactively identify a school and the GIS would respond with the enrollment data.

Drinking Water Supply

The proximity of drinking water supply sources to pollutant dischargers or in-place contaminants is important in determining the pathway of exposure in risk assessment. Figures 10 and 11 show the drinking water supply sources in the AOC and in Ashtabula County.

---GIS FYI---

These data are from EPA's Federal Reporting Data System (FRDS). All databases maintained by the EPA should strive to contain actual locational coordinates for the facility, well, stack, etc. which is being described. County or zip code centroids are not adequate and Global Positioning Systems (GPSs) should become part of the tool kit of all field personnel collecting data to be entered into any EPA database.

Zip Codes

The zip code areas in Ashtabula County are shown in Figure 12. These can be used as a cross-reference with the county name or locational coordinates to provide a Quality Assurance check on the locational coordinates.

---GIS FYI---

This zip code coverage was purchased from a private vendor. There are many vendors creating digital data for use with GISs. In addition to off-the-shelf data, many vendors will create custom coverages. These services are expensive, but they do provide high quality data and relatively short turn-around times when contract money is in greater supply than FTEs.

Pollution Dischargers

Figure 13 shows the location of municipal and industrial dischargers in the AOC. It also shows the location of the STORET sampling stations in the AOC. With the high concentration of dischargers in the AOC, perhaps more STORET sampling stations should be monitoring water quality.

---GIS FYI---

The ability of GIS to perform a quality assurance check on locational data is also shown in Figure 13. The Cleveland Electrical Co. (CLEVE ELEC) is actually located on the shore of Lake Erie, but the Permit Compliance System (PCS) data places it in the southeast corner of the AOC. This error was apparent only because of the ability of a GIS to integrate and compare data from different sources.

Sediment and Effluent Sampling Stations

Figure 14 shows the location of the sampling stations used during the scoping effort on the Fields Brook NPL site (CH2M HILL 1987). A comparison of this figure with Figures 1 and 4 indicates that many of the surface water bodies and land owners did not have sampling stations.

---GIS FYI---

A GIS could help design a sampling network that would insure adequate sampling near important features. For example, a GIS could answer the following questions (1) Are all identified water bodies being sampled? (2) Are all property owners being sampled? (3) Are enough samples being taken near schools, hospitals, etc.

Air Monitoring

As seen in Figure 15, there are no Aerometric Information Reporting System (AIRS) monitoring stations in the AOC, and there are only two in Ashtabula County.

---GIS FYI---

The integration of data from different media programs is one of the main strengths of GIS. If all of the air, water, sediment and biota sampling stations were overlaid with high priority sites (such as NPL sites), all programs would benefit from a more comprehensive and integrated sampling network.

Superfund Sites

There are 46 Superfund sites (not all National Priority List, NPL, sites) in Ashtabula County and 15 of those are in the AOC. Figure 16 and 17 map all of these sites as points. Clearly, many of the sites have the same coordinates in CERCLIS, the Superfund database; and many of the coordinates are incorrect. In CERCLIS, the Fields Brook NPL site is in Lake Erie.

---GIS FYI---

When errors in locational data are found by Region 5 GIS analysts, the error and often the correct coordinates are reported to the appropriate database manager for correction. Thus, all database users benefit from the QA check performed by a GIS.

RCRA sites

The RCRA database is the Hazardous Waste Data Management System (HWDMS). While HWDMS has fields defined for latitude and longitude, only 19 of 161 records for Ashtabula County had coordinate values in those fields. Since the city of Ashtabula is not a Standard Metropolitan Area (SMA), as defined by the Bureau of Census, coordinates can not be assigned to the addresses using TIGER files. The RCRA program has recognized the utility of latitude and longitude by including fields in the national database but clearly the reporting of coordinates has not become mandatory for RCRA facilities. The addition of coordinates to HWDMS would make these data much more useful in future analyses involving GIS.

Toxic Release Inventory (TRI)

TRI facilities in the AOC are mapped in Figure 18. In addition to a point representing the location of the facility, a shaded circle around each facility is exponentially proportional in size to the total amount of chemical release or transfer reported by that facility in 1988.

---GIS FYI---

Figure 18 highlights the GIS ability to display tabular data graphically. Often a graphic display of data receives more attention than a table of numbers.

QA of TRI data

Since this demonstration project mapped actual ownership boundaries, the locational errors in the TRI database were readily apparent (Figure 19). These errors have been reported to the national TRI database manager.

Buffer Zones Around Selected Features

Places that people congregate should receive emphasis during a risk assessment. Figure 20 displays 100 meter and 500 meter buffer zones around schools, hospitals, day care centers and senior care facilities. Using this coverage and the sampling station coverage (Figure 14), the GIS analyst could determine how many sampling stations are within the buffer zones. Or, using the buffer coverage and the TRI release coverage (Figure 18), the analyst could determine if significant releases of toxic chemicals had occurred in the buffer zones.

---GIS FYI---

Analyses such as suggested above, using the buffer coverage, are relatively simple GIS functions once the coverages are built. However, GIS analysts are not specialists in the daily functions of EPA's media programs and meaningful analyses must be guided by media program staff.

Triangulated Irregular Network (TIN)

A TIN is a method of displaying three-dimensional data. Since volumes are 3-D data, TIN can be used to analyze volume data also. Figure 21 displays the population of Ohio as a TIN.

---GIS FYI---

While TINs provide eye-catching displays, they are not always appropriate for the data to be displayed. For example, should population peaks be "smoothed" from county to county, or are population peaks really discreet "spikes" in only a small portion of the county? The GIS analyst can help media program staff choose the most effective and accurate analysis and display of media program data.

Color vs. Black-and-White Figures

Color graphics are easily produced by GIS and provide a more readily understood map with higher information content, as can be seen by comparing Figures 1,3 and 7 with Figures 22, 23 and 24. However, the production and reproduction of color graphics are expensive and most reports that will be widely distributed still depend on black-and-white graphics for economic reasons. Large maps or presentation graphics are presently the most viable use for color graphics. GISMO has been trying to acquire a color electrostatic plotter for Region 5 which would make color graphics much more accessible.

SUMMARY

Demonstration Project Educational Value

The primary goals of this project were to demonstrate GIS capabilities to Region 5 program offices and to provide a training exercise for the newly established Geographic Information Systems Management Office (GISMO). These goals were more than fulfilled by this project. Data were used from many different sources and in many different formats; many different analyses were performed; all of the major modules of the software were used; and the basics of database design and documentation were invoked. In addition, contact was made with many media program staff and state personnel.

The utility of this project to other offices in EPA is apparent in several cases. The necessity for better coordinate data has been strongly noted by several EPA database managers. Several Remedial Program Managers (RPMs) are now acutely aware of the need to have GIS personnel help design site plans for the collection of data. These RPMs are now also insisting on electronic copies of data and reports from contractors, whereas in the past only paper or microfilm copies were available.This final report was written to serve as an introduction to GIS for media program staff. The value of this report as a primer and reference on GIS capabilities will not be known until after distribution. We hope the readers will provide suggestions and comments.

The following important lessons were learned during this demonstration project:

(1) All GIS demonstration projects need a clear client to guide the study.

(2) Demonstration projects need clear, well-defined modest goals. Each coverage should provide a stand-alone product or display of a GIS capability.

(3) EPA should insist that all contractors provide their reports and data to EPA in an electronic format.

(4) Zip code and county name do not provide adequate locational data.

(5) Street addresses are of little value unless the site is in a Standard Metropolitan Area (SMA) for which a TIGER file is available; and even then extracting coordinates using address-matching is a painstaking process.

(6) All field inspectors collecting data to be used by EPA need to use a GPS as part of their routine inspection.

(7) EPA needs to select a standard locational data format as much as EPA needs locational data accuracy standards.

(8) EPA needs Arc/Info coverage documentation standards to facilitate coverage sharing and to prevent obsolescence of coverages.

Future Use of the Coverages Developed

These coverages will be used to help evaluate the field sampling conducted on the Fields Brook NPL site in the spring of 1990. The future management of the NPL site may make extensive use of these coverages and of GIS. These coverages will be exported and provided to the USEPA Great Lakes National Program Office and the State of Ohio for use in the management of the Ashtabula Area of Concern. A future risk assessment of the Ashtabula area may be performed in conjunction with the Office of Health and Environmental Assessment and a sponsoring program office.

ACKNOWLEDGEMENTS

We thank the U.S. EPA Great Lakes National Program Office for funds to purchase digital data, for the loan of equipment and for staff support provided by Barry Manne; Pete Sanders, the Fields Brook RPM, for guidance and the provision of data and documents; Walt Francis, Steve Ostrodka, Dennis Wesolowski, Larry Lehrman, Pat Morris and Tom Poleck, all of Region 5, for data; Dave Evans of Ohio EPA for data; Tracy Shelly of Ohio Public Health for data; Betty Johnson of the City of Ashtabula for data; Connie Yocum of the Ashtabula Area School District for data; Roger Colucci of the Buckeye Local Board of Education for data; the staff of St. John's High School for data; and finally we thank William Sanders, Dave Kee, Carol Finch, Robert Springer, Charles Sutfin, Dale Bryson, Basil Constantelos, Rich Winklhofer, Milton Clark, John Anagnost, Pranas Pranckevicius, Walt Francis, Allen Wojtas, Pete Sanders, Pam Blakley, Jeff Wentz, Dan Werbie, Bill Melville and Carole Braverman for comments and guidance during the course of this project.

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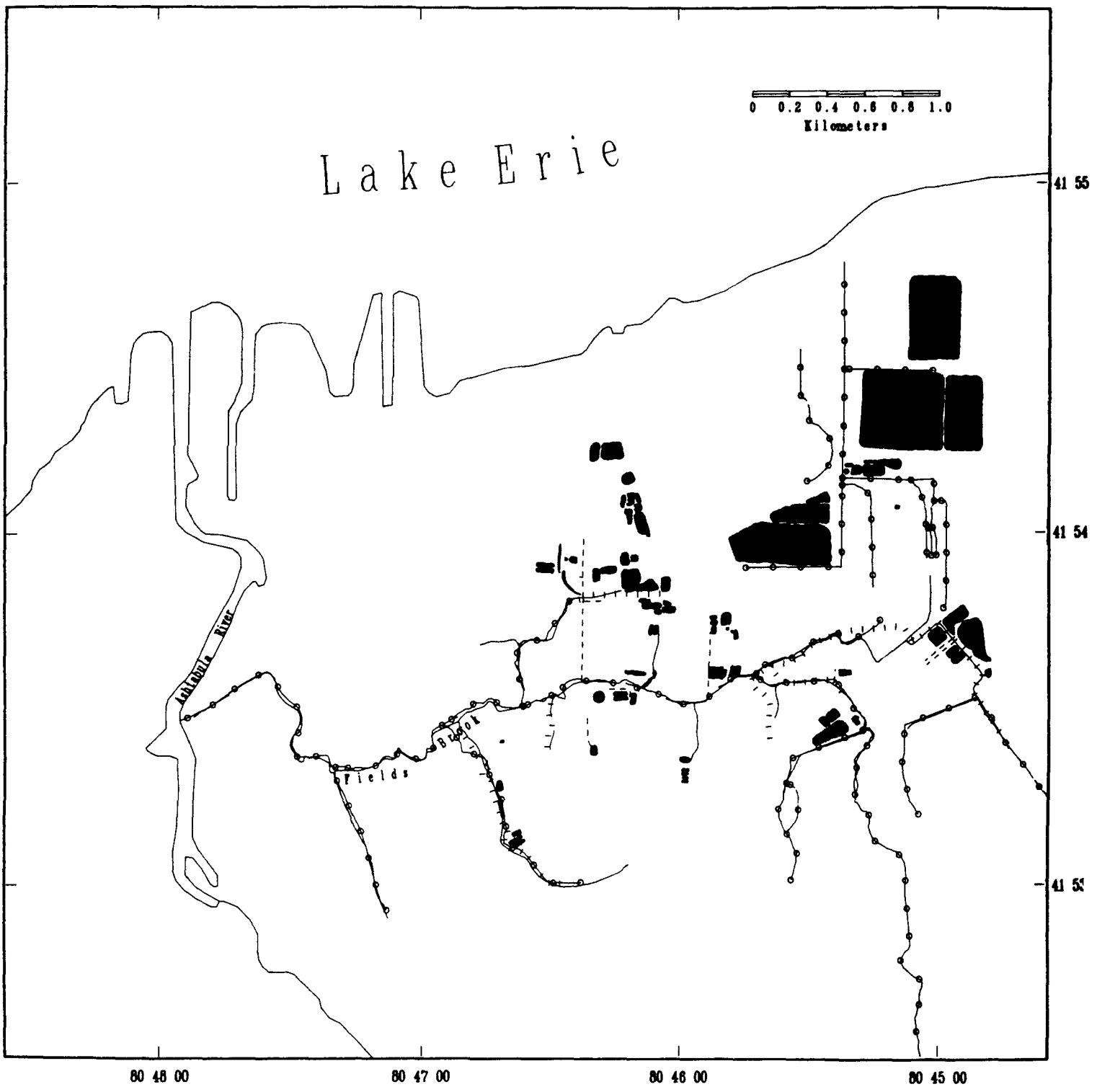
FIGURES



Coverage Names: CULTHYD-87, HYDRO-24, HYDRO-WC, TRIB-87

CULTHYD-87 (Polygons)

CULTHYD-87 (Lines)

HYDRO-24

HYDRO-WC

TRIB-87

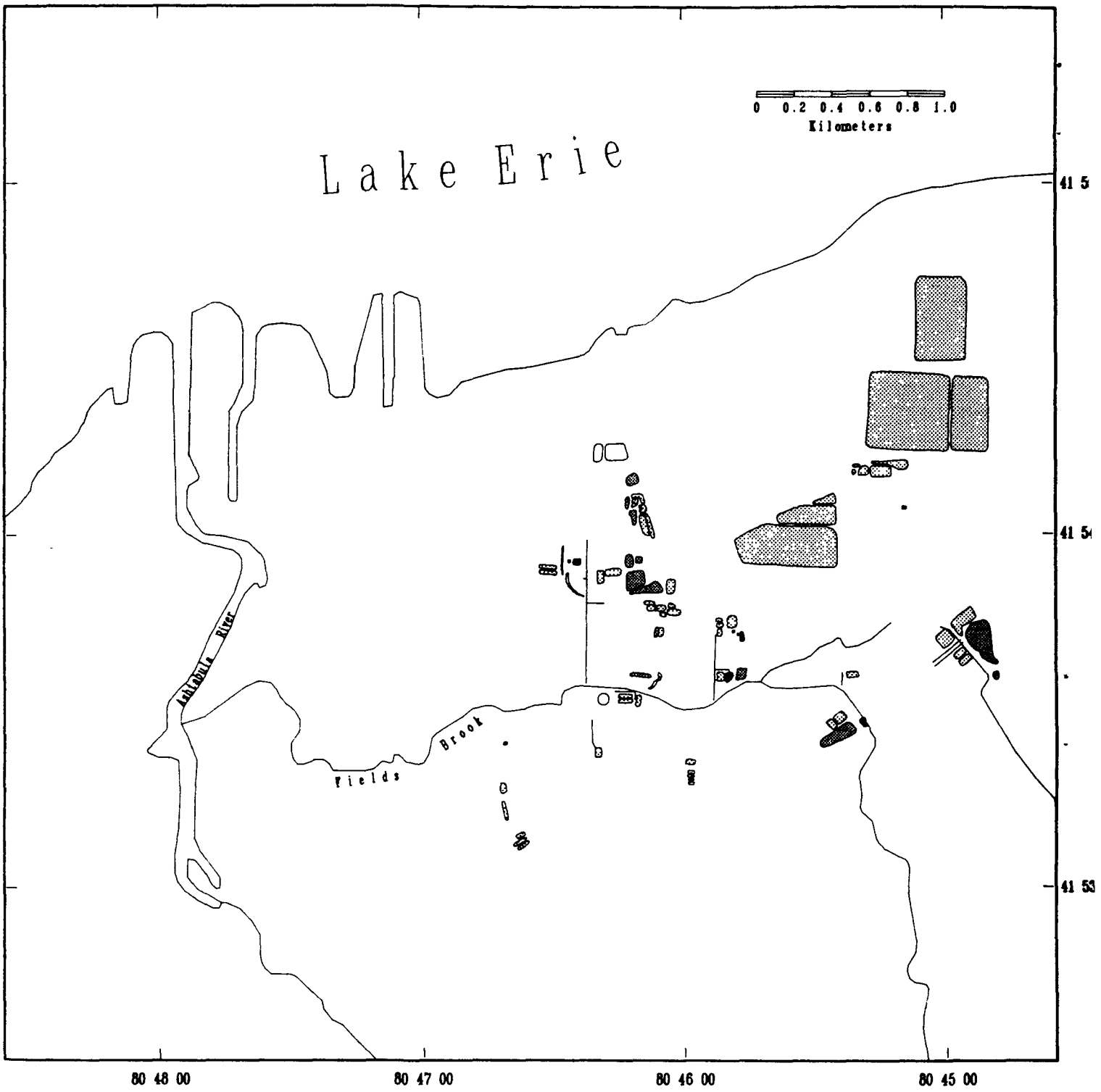
Showing Sources of Hydro Features

Map Scale 1 : 29,230

Projection: UTM, Zone 17

USEPA REGION V
Environmental Sciences Division
Geographic Information Systems
Management Office

FIGURE 1.1



Coverage Name: CULTHYD-87

- Ditch, Sewer, Water Supply
- Lagoons, Ponds, Basins
- Landfill, Waste Piles, Disposal Areas
- Drum Storage

Map Scale 1 : 29,230

Projection: UTM, Zone 17

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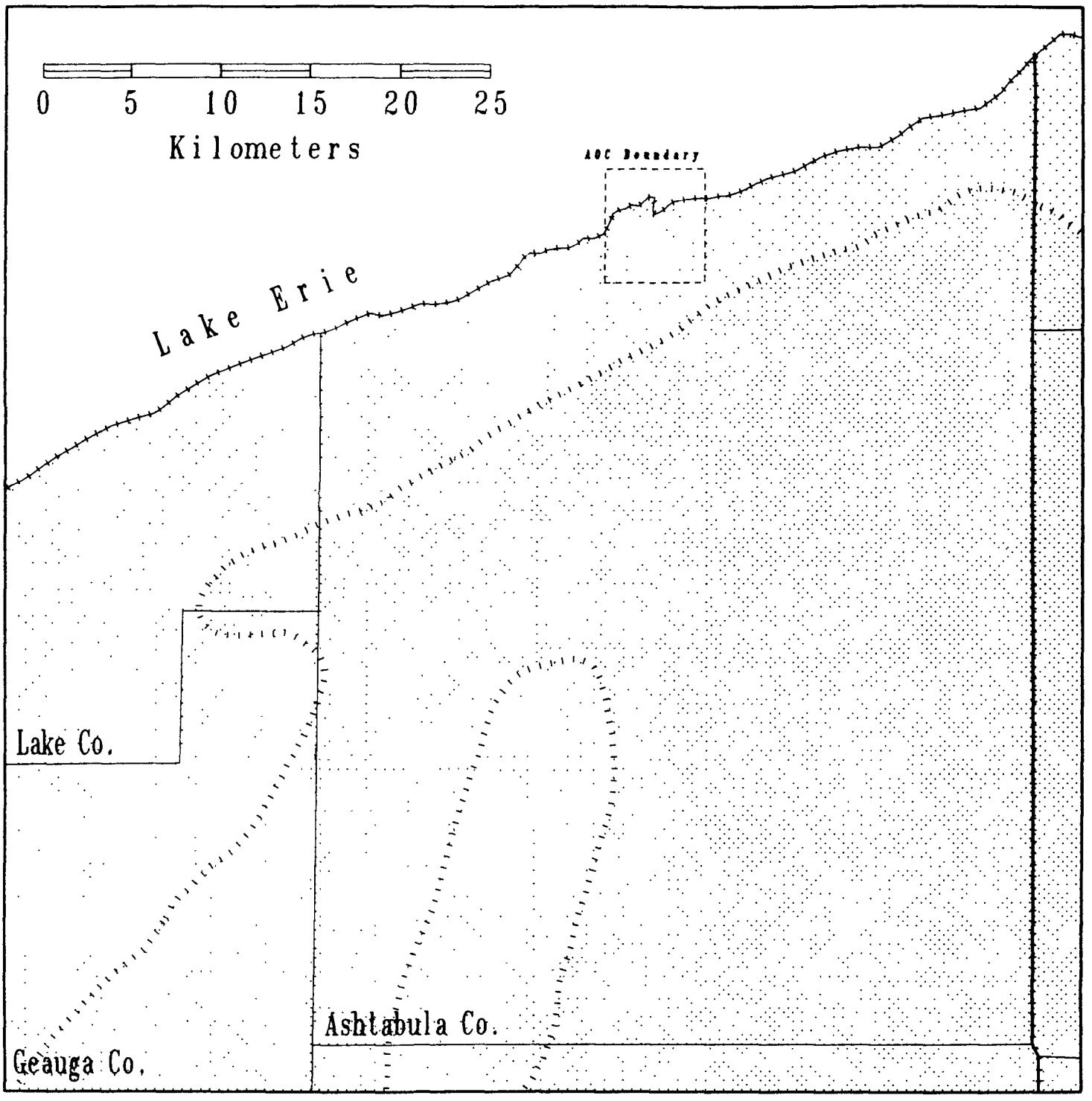

Coverage Name: ECO

Lake Erie/Ontario Lake Plain Ecoregion

Ecoregion Boundary

Ecoregion 610 (Most Typical)

Ecoregion 611

Map Scale 1 : 315,590

Projection: UTM, Zone 17

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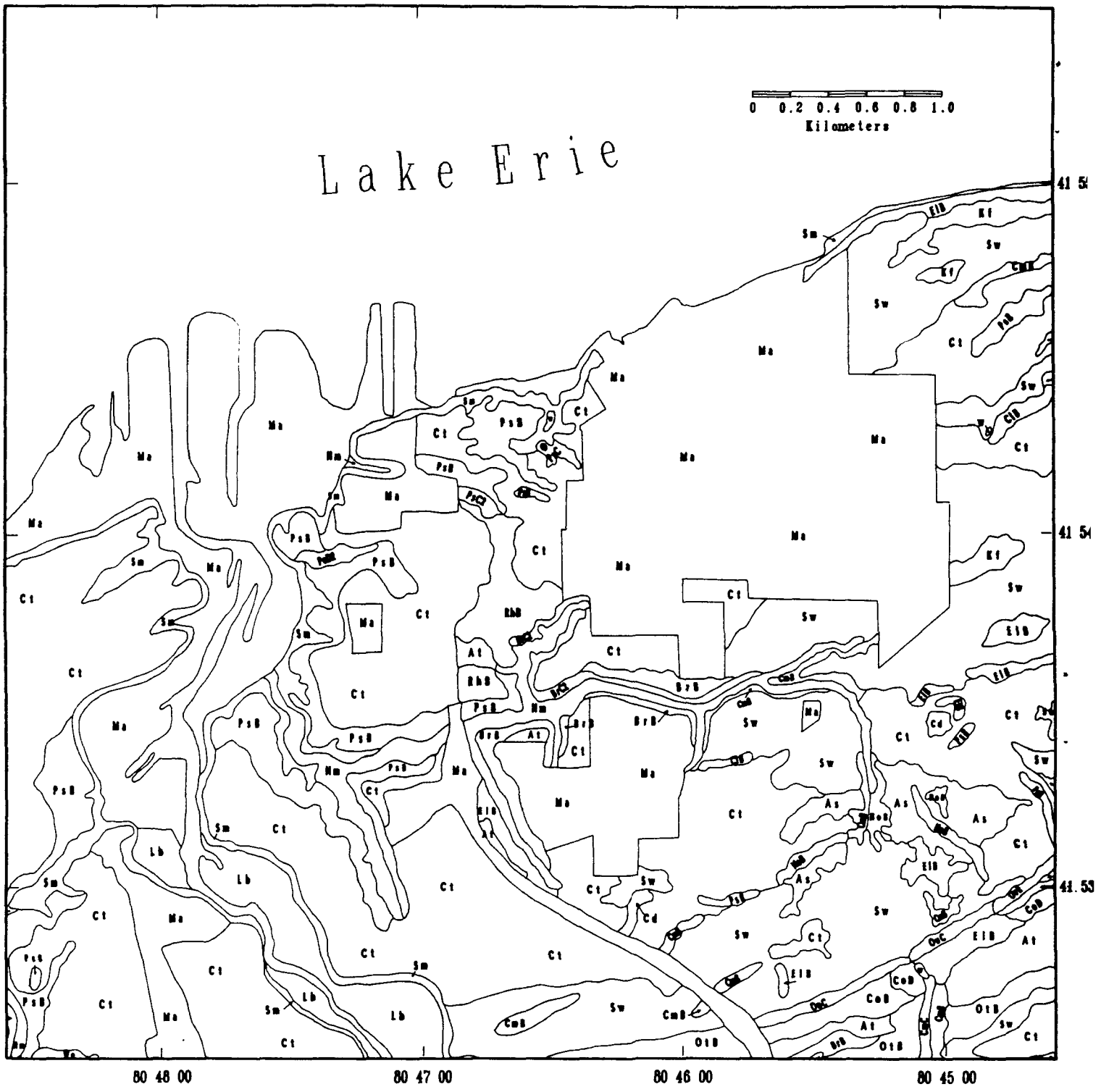
FIGURE 3



Coverage Name: SOILS

Soil Type Boundaries

Soil Type Name Abbreviations Shown

Map Scale 1 : 29,230

Projection: UTM, Zone 17

USEPA REGION V
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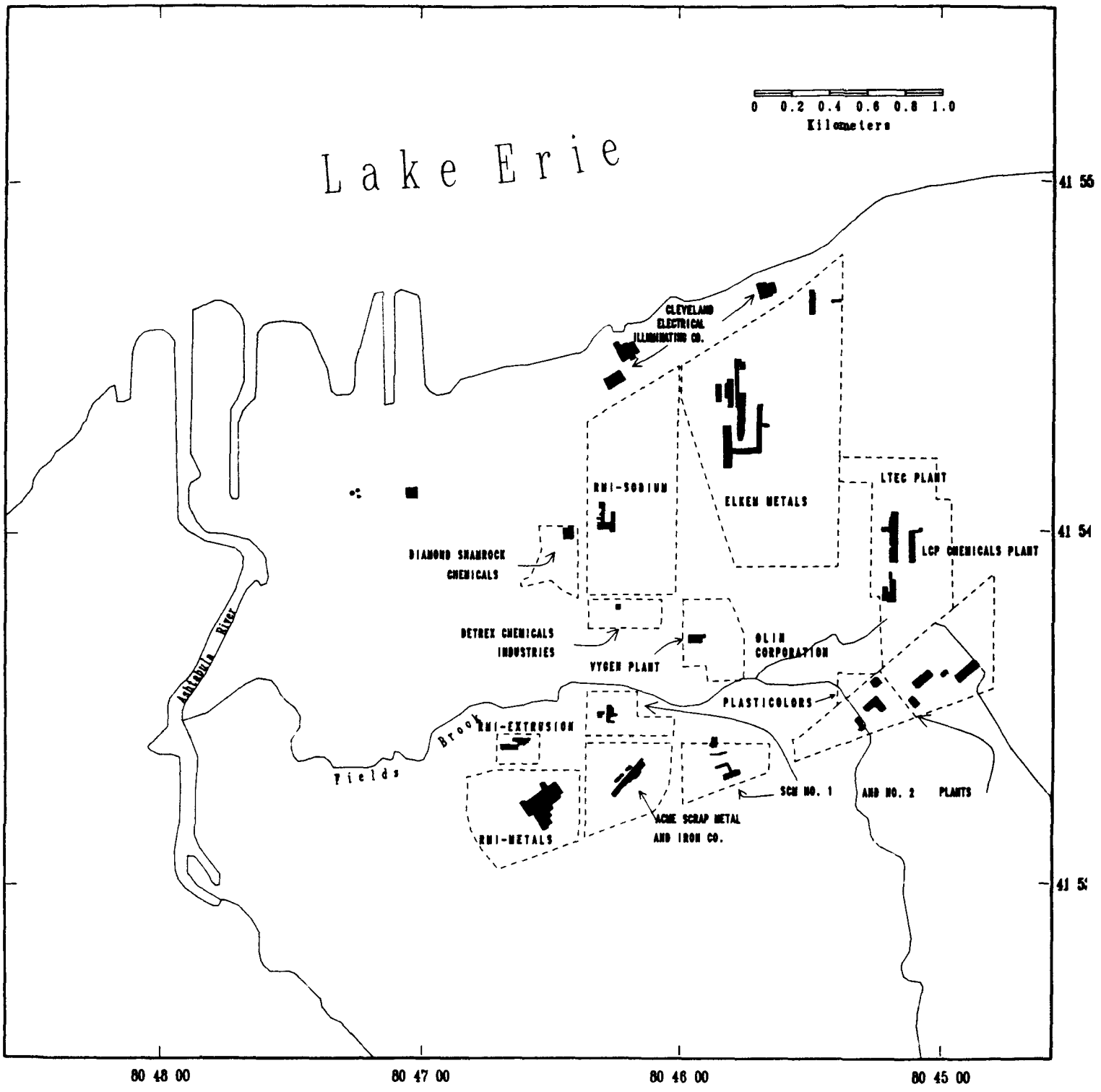

Coverage Names: OWNER-AP, OWNER-AN, BUILD-24

Property Lines

Buildings

Map Scale 1 : 29,230

Projection: UTM, Zone 17

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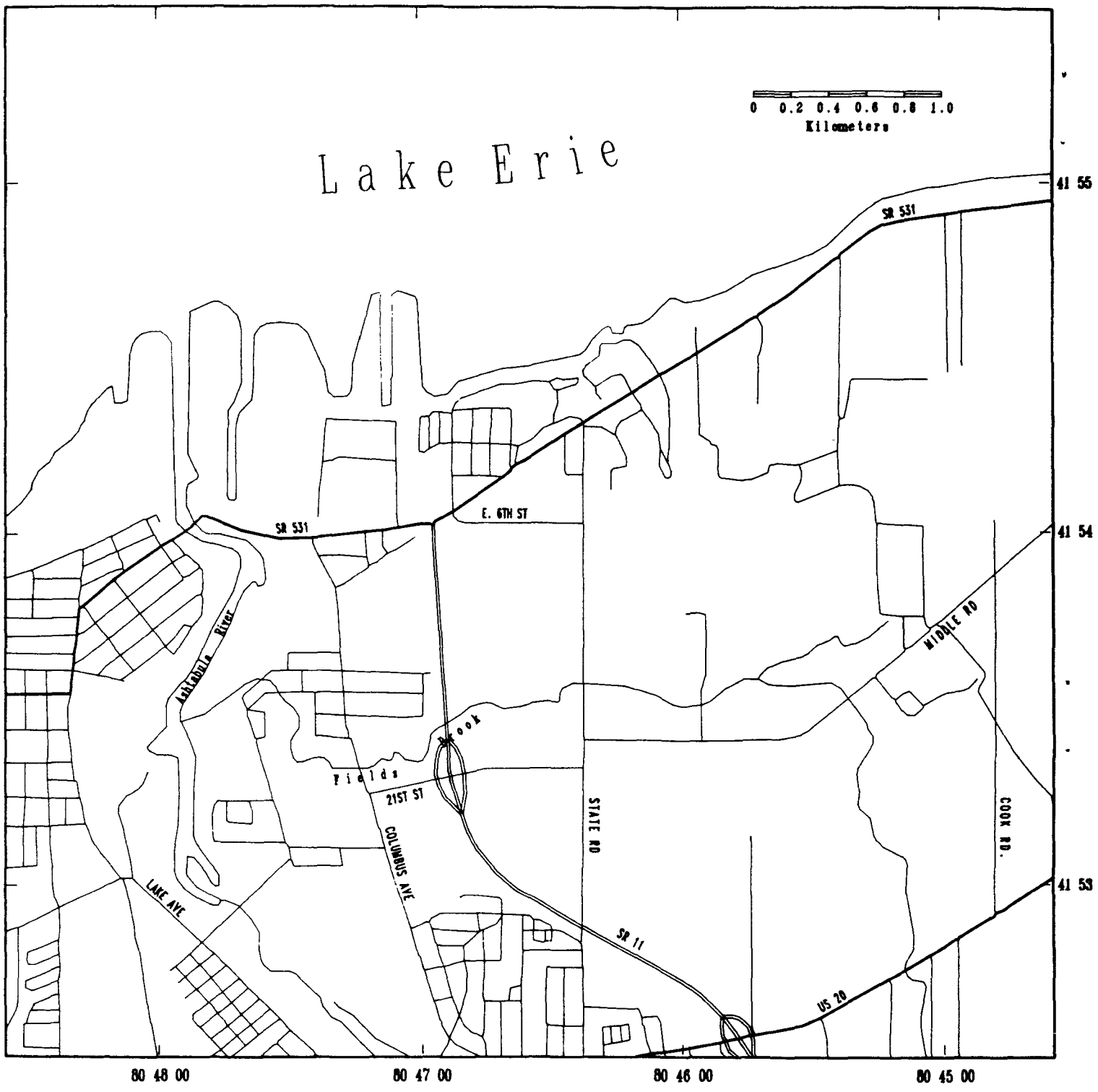
Management Office

FIGURE 5



Coverage Name: ROADS-100

Divided Highway

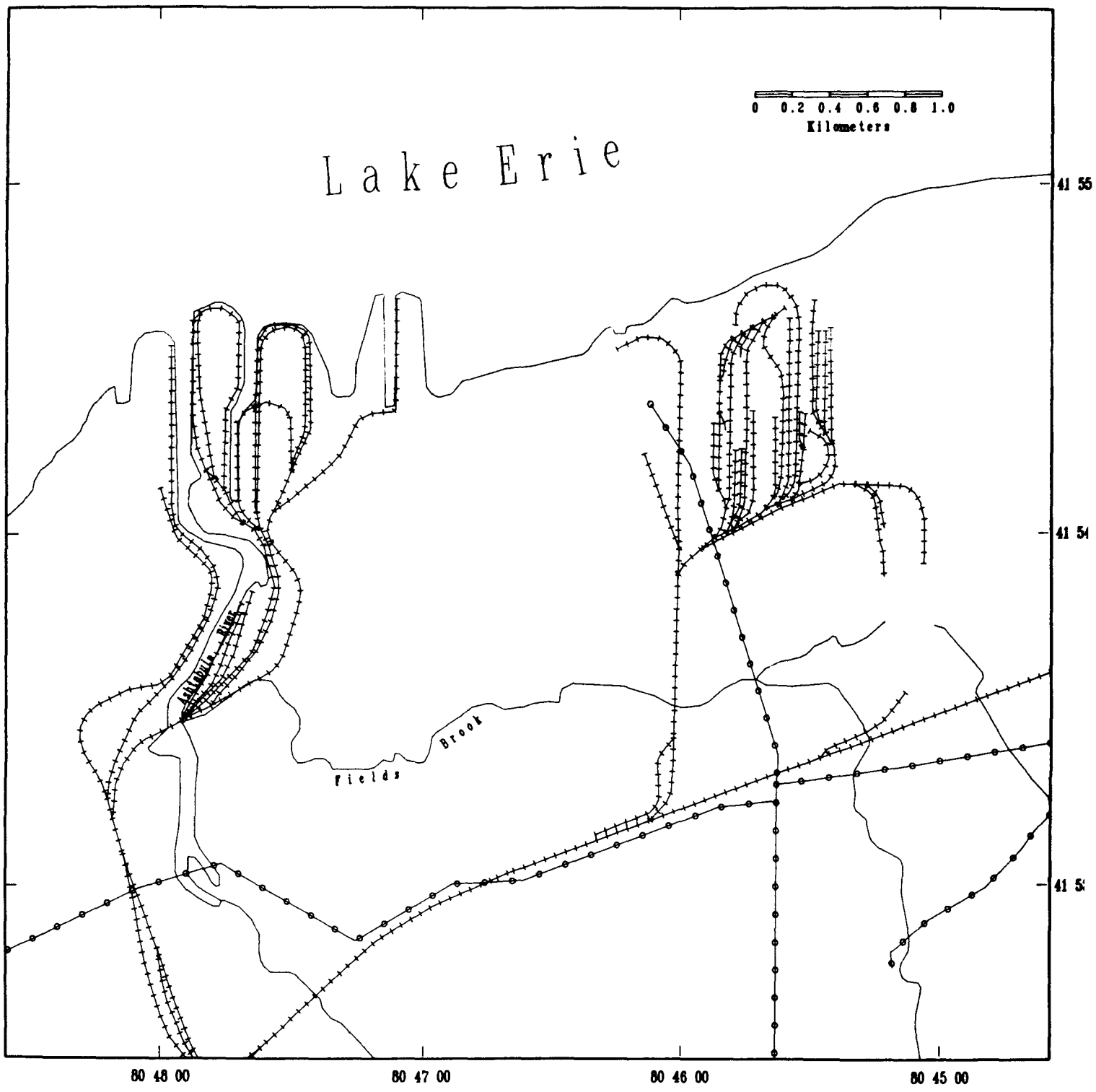
Major

Minor

Map Scale 1 : 29,230

Projection: UTM, Zone 17

USEPA REGION V
Environmental Sciences Division
Geographic Information Systems
Management Office



Coverage Names: RAIL-100, PIPE-100

Rail Lines

Pipelines

Map Scale 1 : 29,230

Projection: UTM, Zone 17

USEPA REGION V
Environmental Sciences Division
Geographic Information Systems
Management Office

FIGURE 7

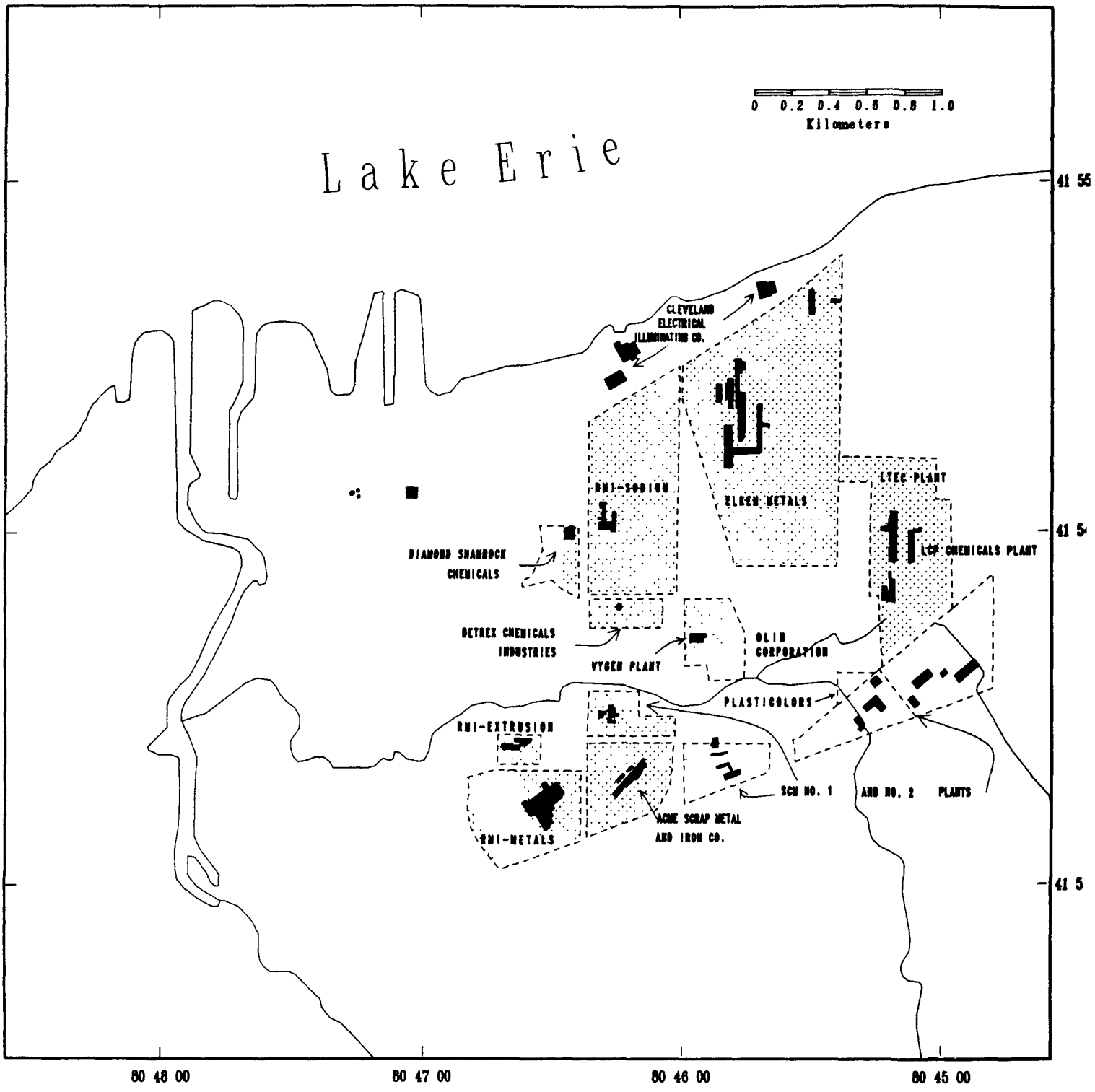
Coverage Name: LANDUSE

Map Scale 1 : 29,230
Projection: UTM, Zone 17

- Residential
- Commercial
- Industrial
- Transportation
- Mixed/Other Urban
- Agricultural
- Forest Land
- Water
- Wetlands

USEPA REGION V
Environmental Sciences Division
Geographic Information Systems
Management Office

FIGURE 8



Coverage Names: OWNER-AP, BUILD-24, OWNER-APMA

Property Lines

Made Land

Buildings

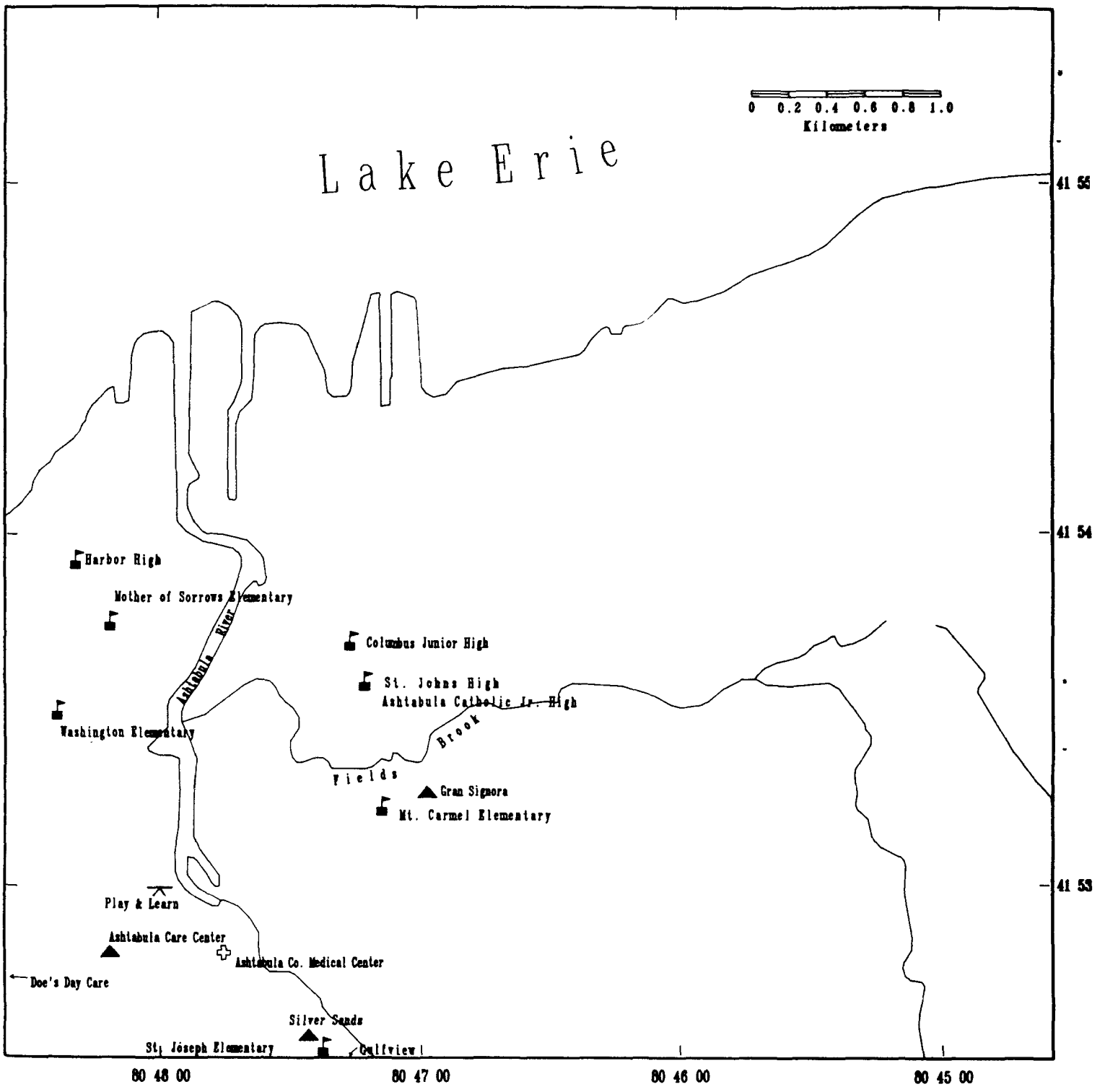
Showing Industries Built on 'Made Land'

Map Scale 1 : 29,230

Projection: UTM, Zone 17

USEPA REGION V
Environmental Sciences Division
Geographic Information Systems Management Office

FIGURE 9



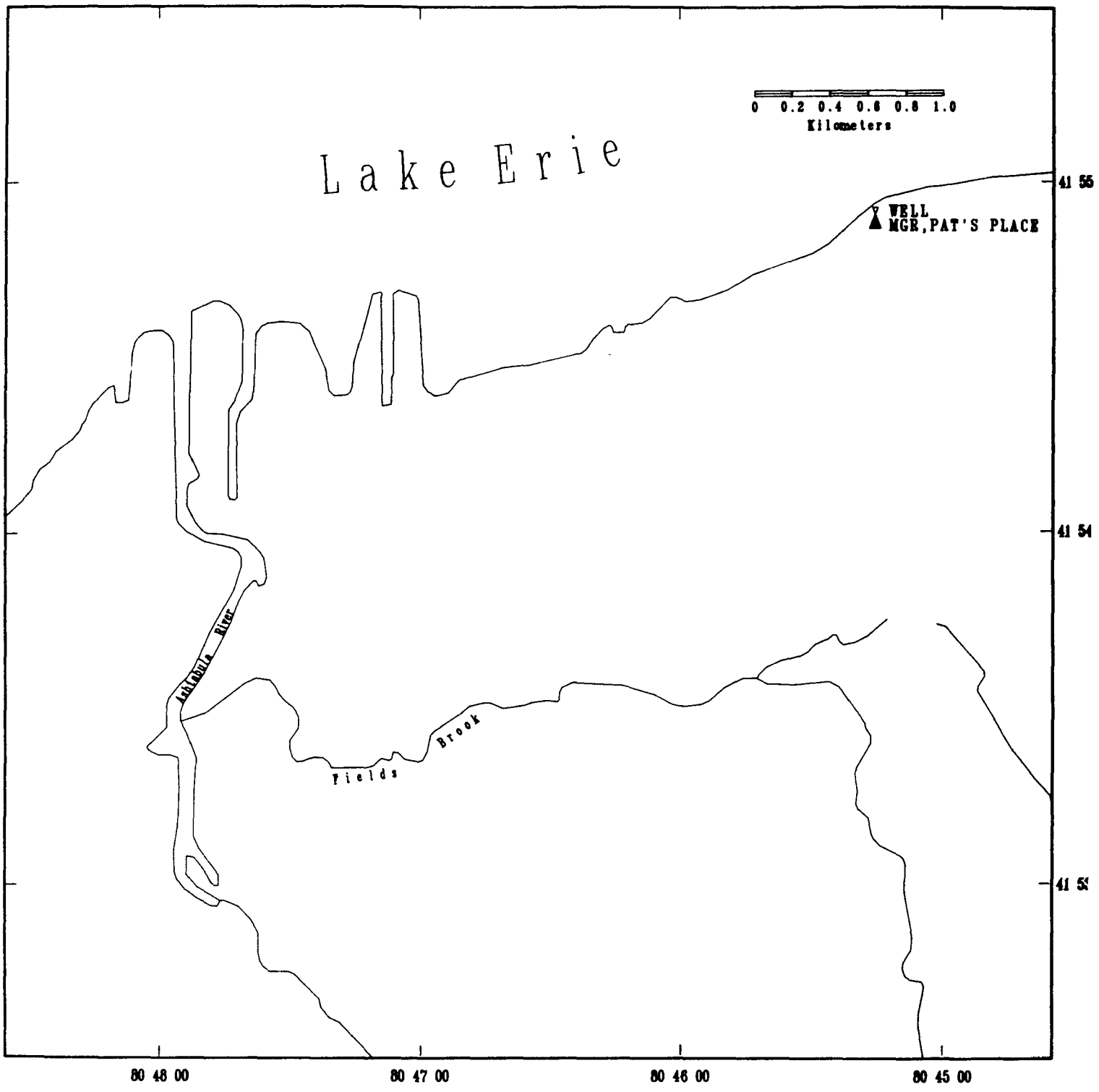
Coverage Names: SCHOOLS, HEALTH

- Schools
- Hospitals
- Senior Care Facilities
- Day Care Centers

Map Scale 1 : 29,230

Projection: UTM, Zone 17

USEPA REGION V
Environmental Sciences Division
Geographic Information Systems
Management Office



Coverage Name: DRINK

Drinking Water Supplies

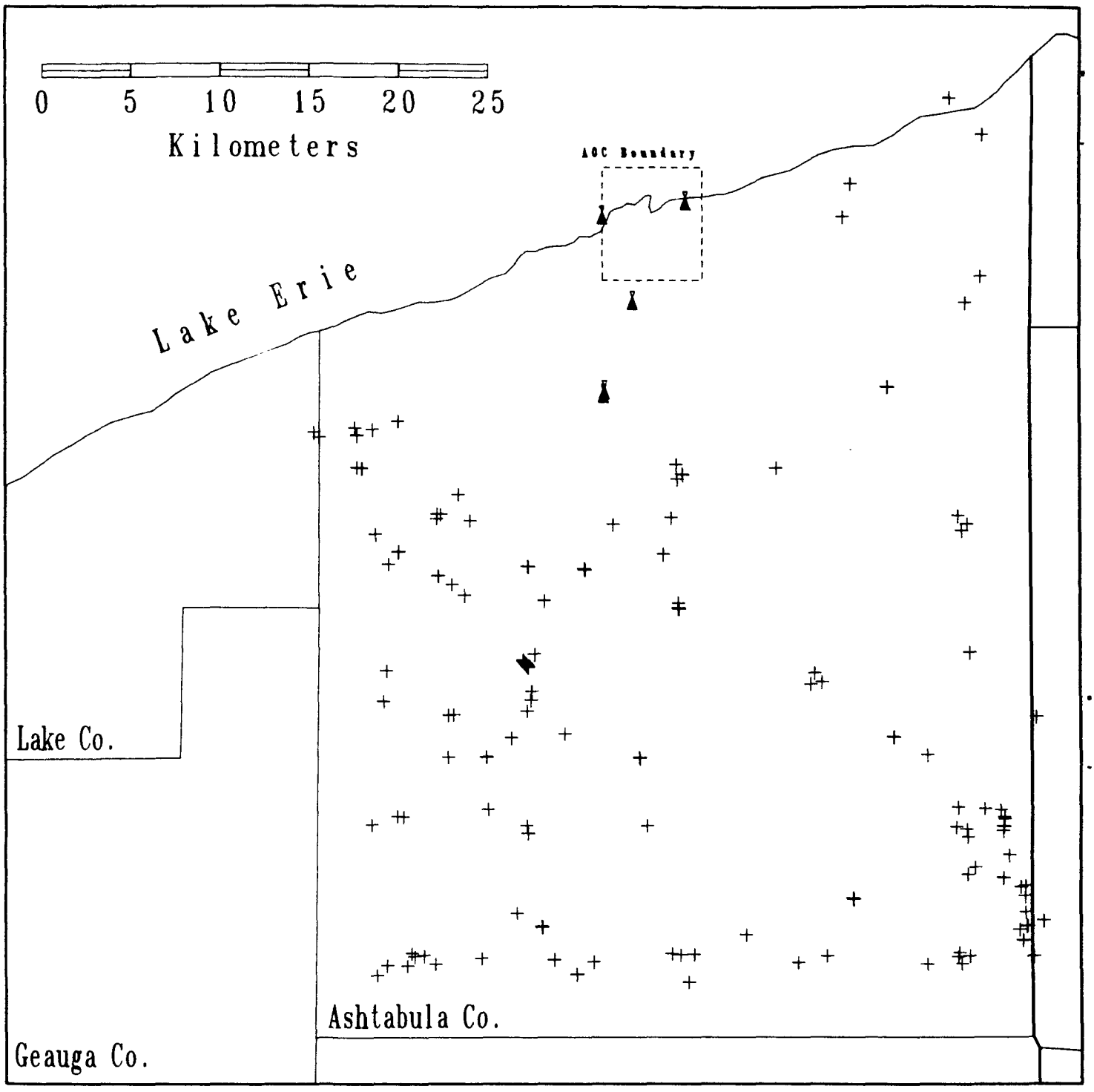
Name and Owner Shown

Map Scale 1 : 29,230

Projection: UTM, Zone 17

USEPA REGION V
Environmental Sciences Division
Geographic Information Systems
Management Office

FIGURE 11



Coverage Name: DRINK

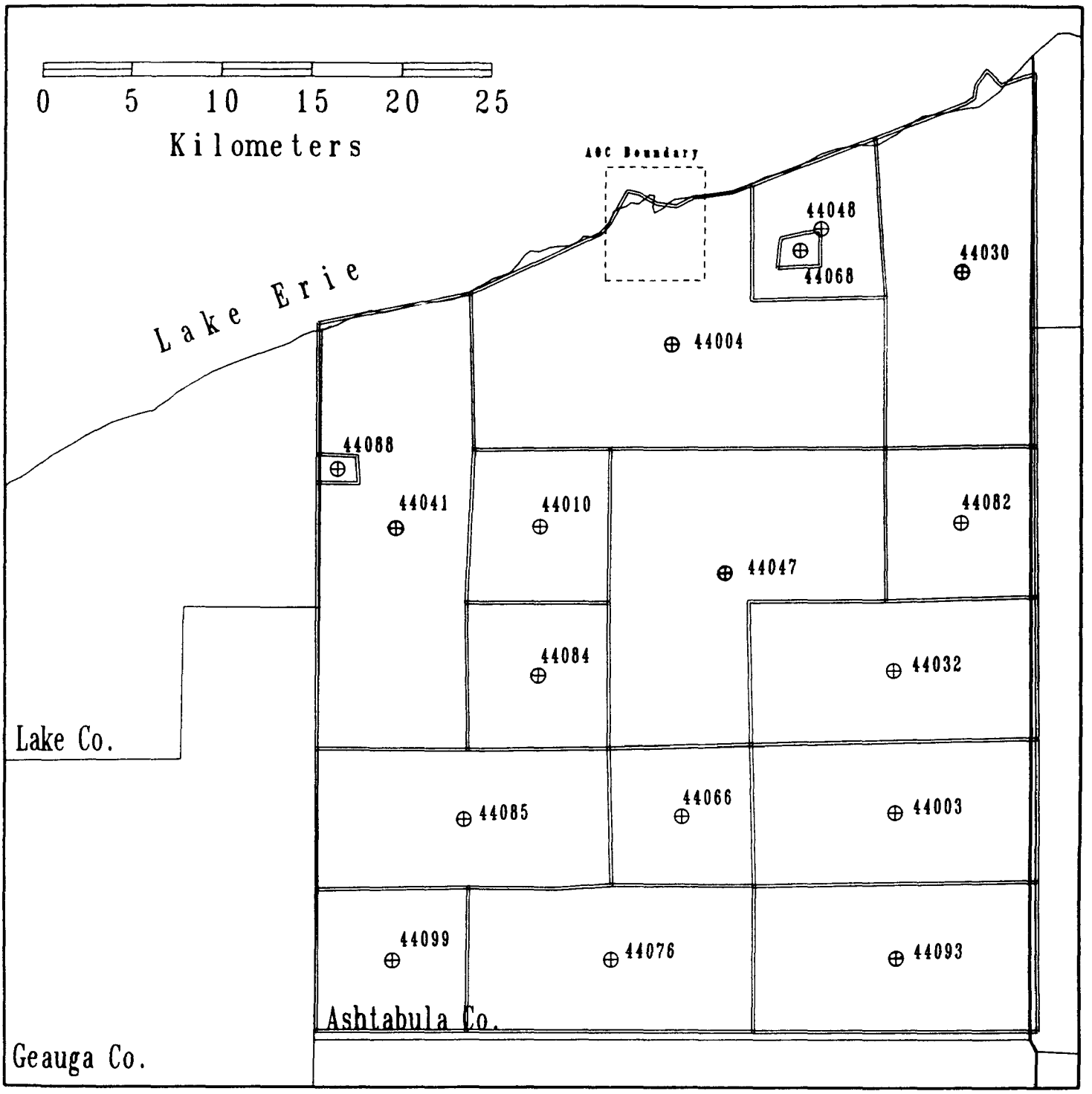
Water Supplies with City Name 'Ashtabula'

Other Water Supplies in Ashtabula Co.

Map Scale 1 : 315,590

Projection: UTM, Zone 17

USEPA REGION V
Environmental Sciences Division
Geographic Information Systems
Management Office



Coverage Names: ZIPPOLY, ZIPCENTROID

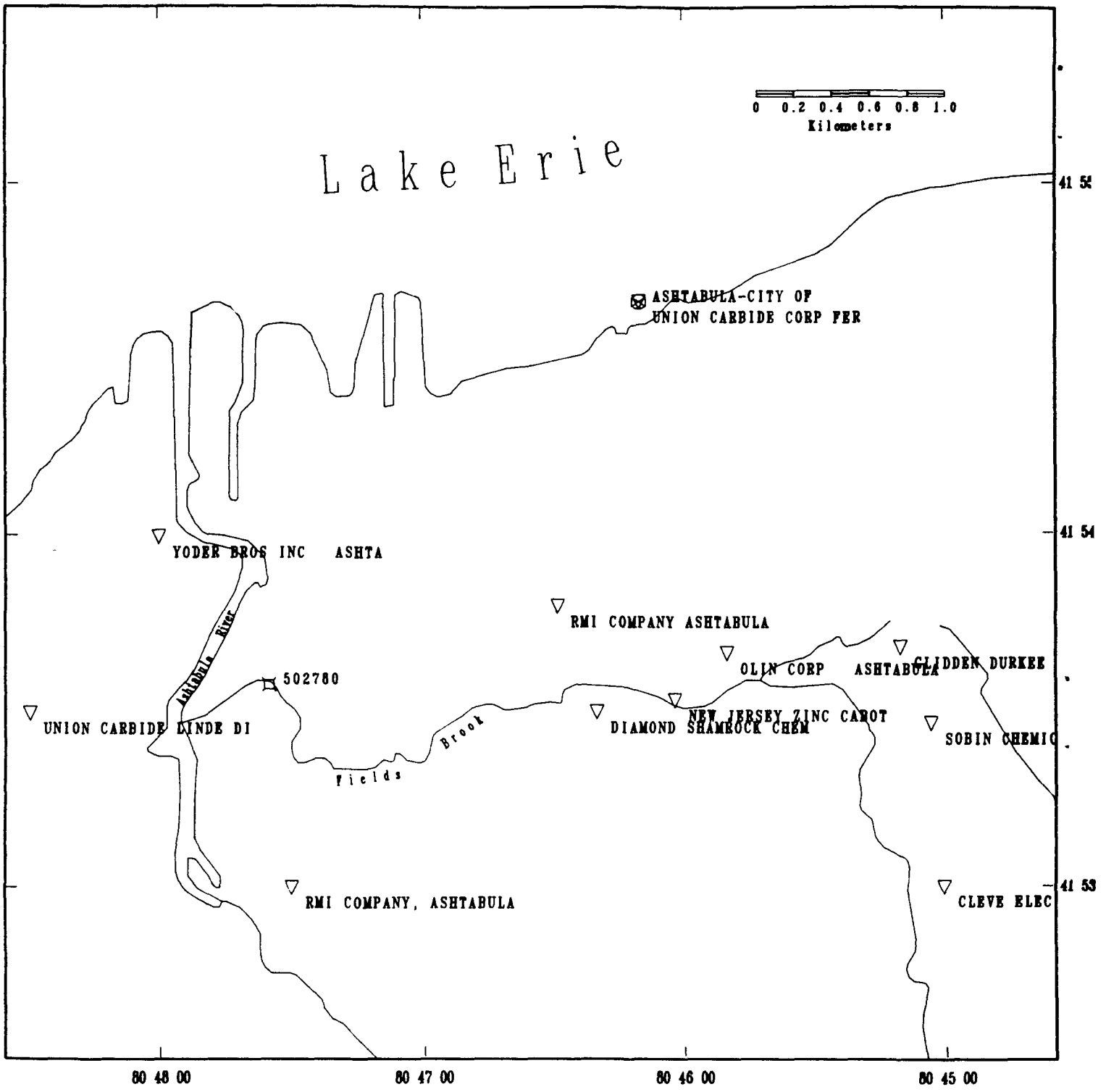
⊕ Zip Code Centroid

Zip Code Boundary

Map Scale 1 : 315,590
Projection: UTM, Zone 17

USEPA REGION V
Environmental Sciences Division
Geographic Information Systems
Management Office

FIGURE 13



Coverage Names: STORET, MUNICIPALS, INDUSTRIALS

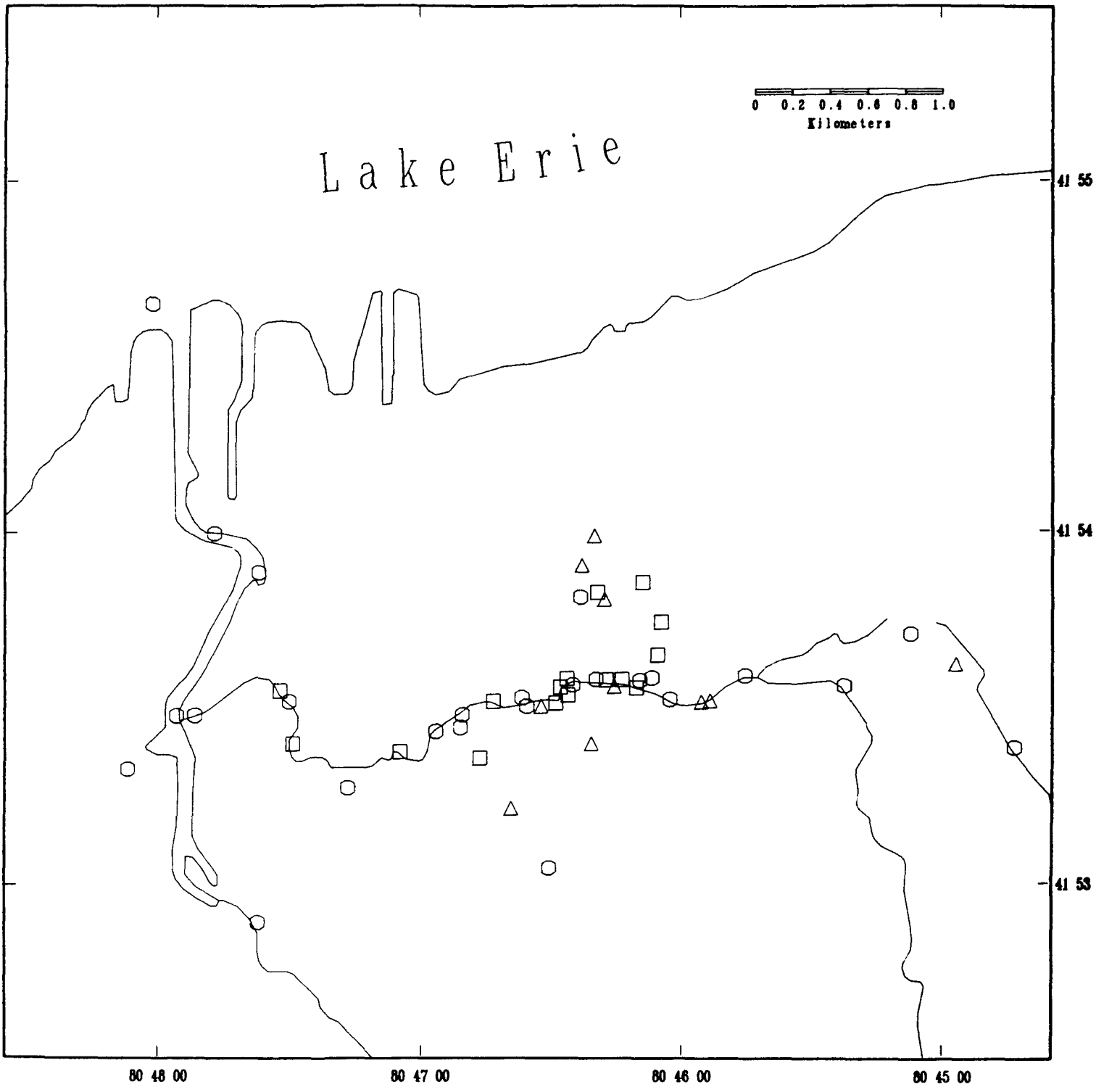
- Active STORET Stations
- Municipal Dischargers
- Industrial Dischargers

(Locations Based on Original Coordinates)

Map Scale 1 : 29,230

Projection: UTM, Zone 17

USEPA REGION V
Environmental Sciences Division
Geographic Information Systems
Management Office



Coverage Name: SEDEFF-87

○ Phase I Sampling

□ Phase II Sediment Sampling

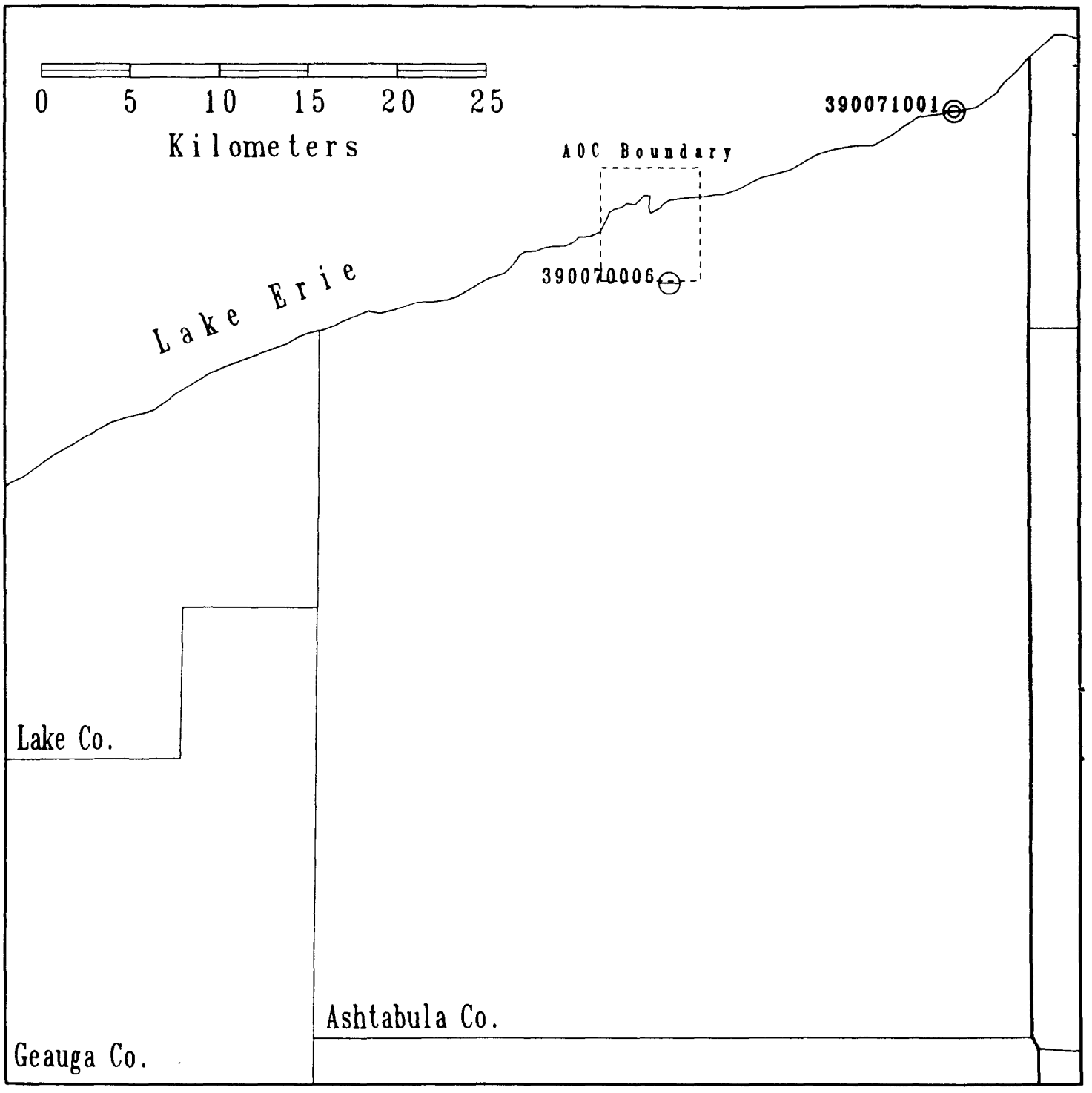
△ Effluent Sampling

Map Scale 1 : 29,230

Projection: UTM, Zone 17

USEPA REGION V
Environmental Sciences Division
Geographic Information Systems
Management Office

FIGURE 15



Coverage Names: AIRS88, AIRS89

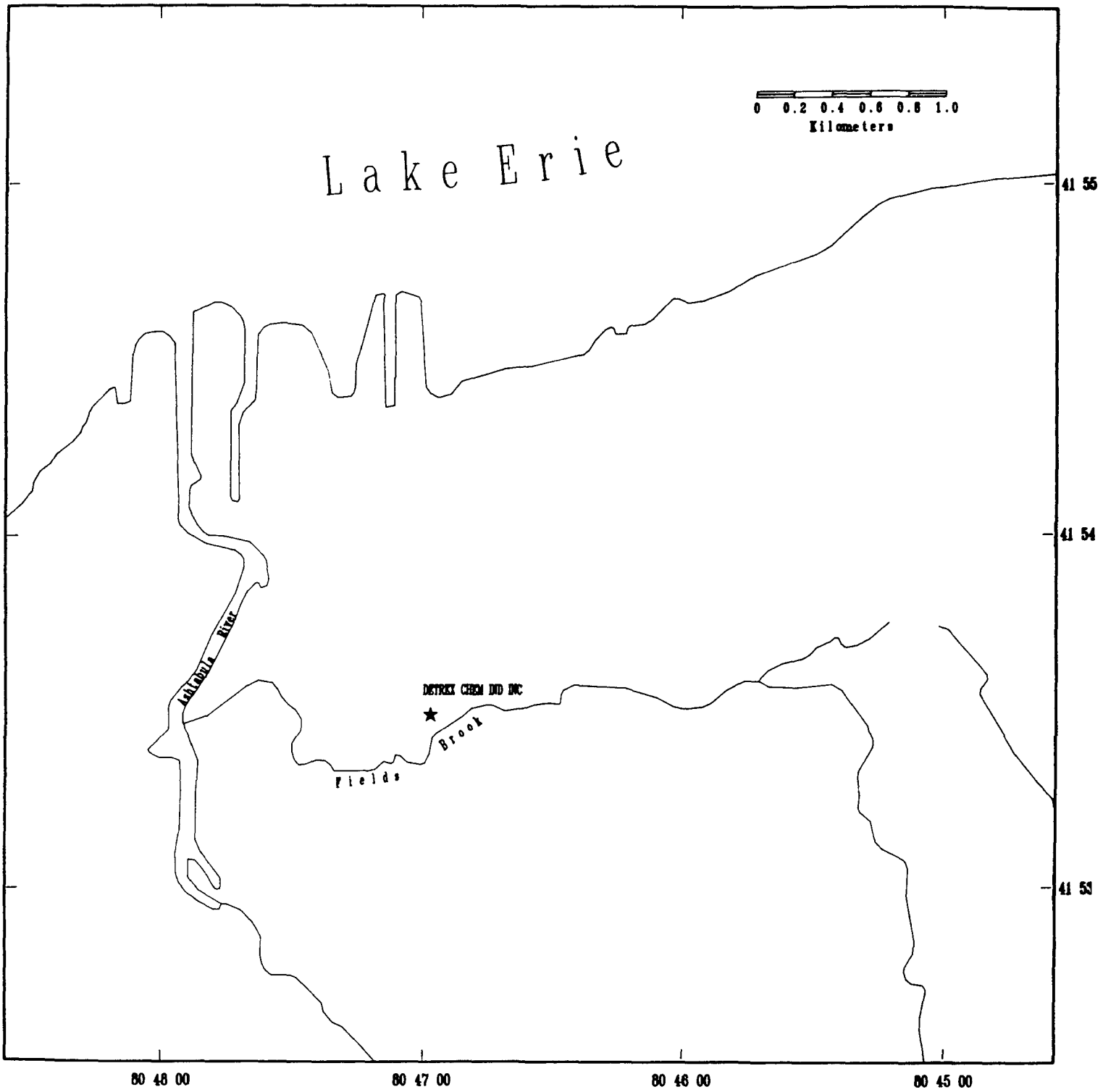
AIRS Ambient Monitoring
1988 Site Locations
1989 Site Locations

Showing Site ID
for SLAMS Sites

Site	Parameter
0006	11101
1001	42401
	44201
	62107

Map Scale 1 : 315,590
Projection: UTM, Zone 17

USEPA REGION V
Environmental Sciences Division
Geographic Information Systems
Management Office



Coverage Name: CERCLA

★ Cercla Site Locations

(Locations Based on Original Coordinates)

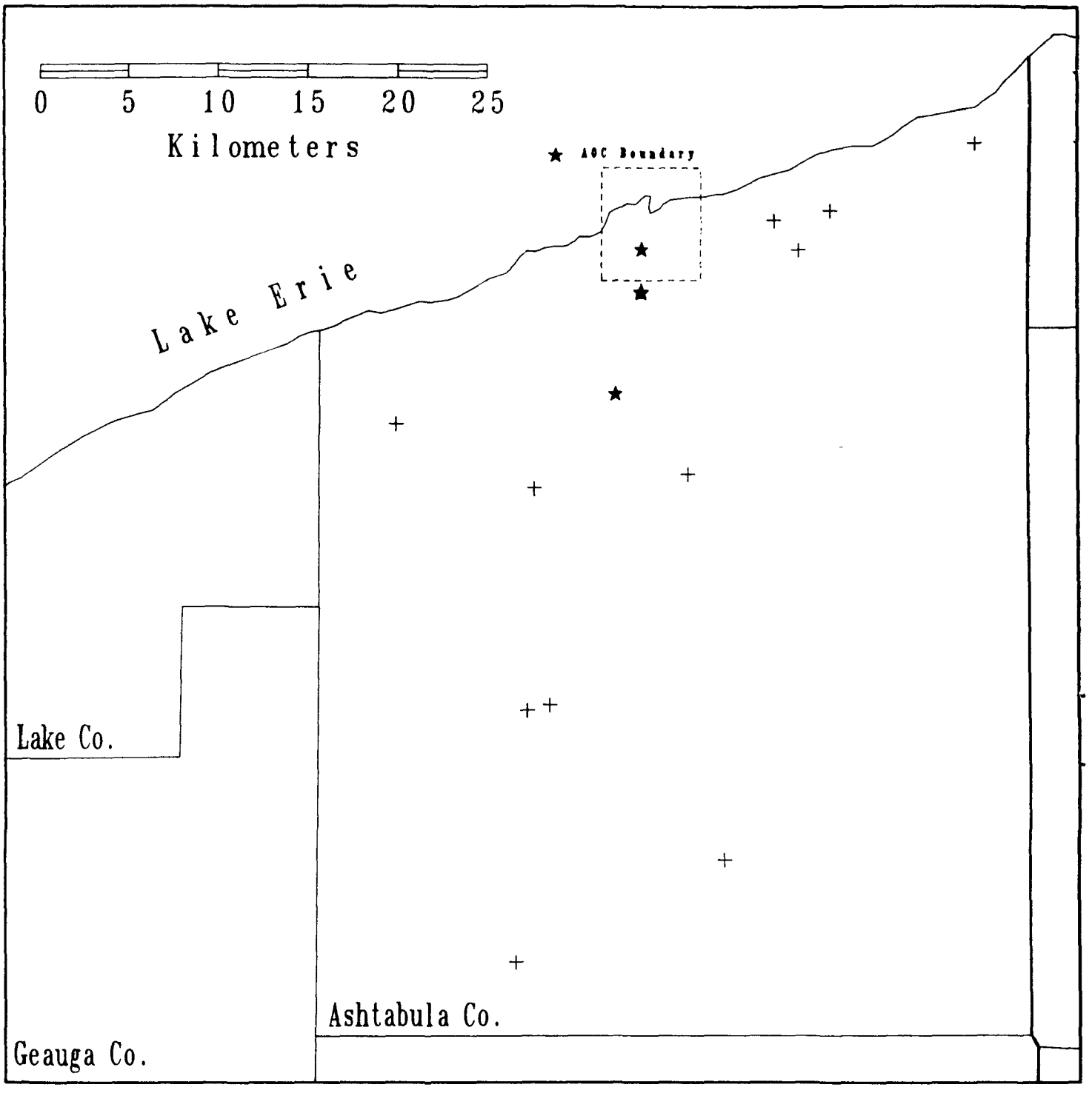
N

Map Scale 1 : 29,230

Projection: UTM, Zone 17

USEPA REGION V
Environmental Sciences Division
Geographic Information Systems
Management Office

FIGURE 17



Coverage Name: CERCLA

★ CERCLA Sites Known to be Located in AOC (15)

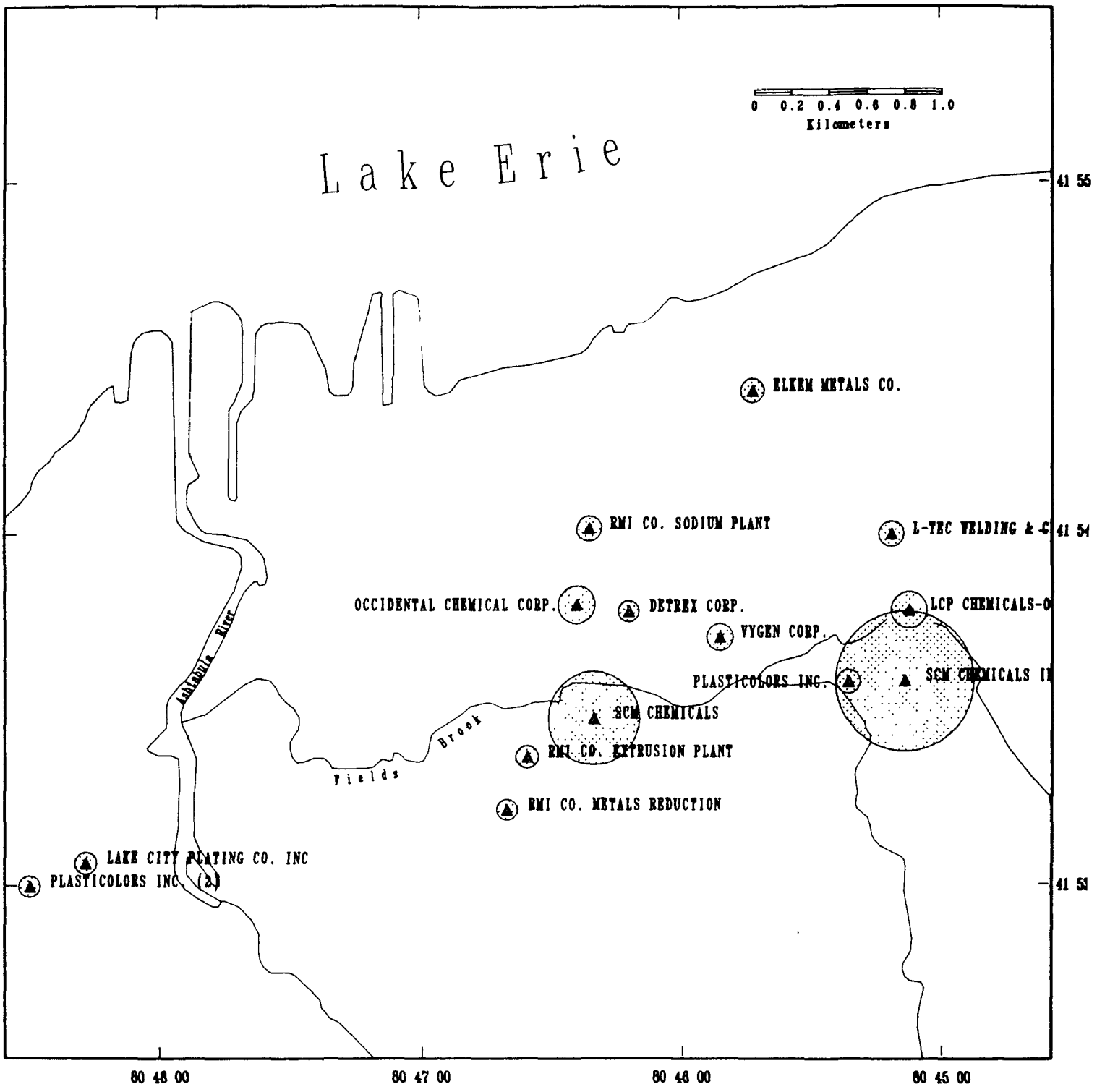
\+ Other CERCLA Sites (31)

(Multiple Sites Located at Same Coordinates)

Map Scale 1 : 315,590

Projection: UTM, Zone 17

USEPA REGION V
Environmental Sciences Division
Geographic Information Systems
Management Office



Coverage Name: TRI88

▲ TRI Facility Locations Shaded Circles Showing Levels of Total Releases and Transfers of All Chemicals by Facility (Exponential Scaling)

Range of TRI Grand Totals:
(Pounds per Year)

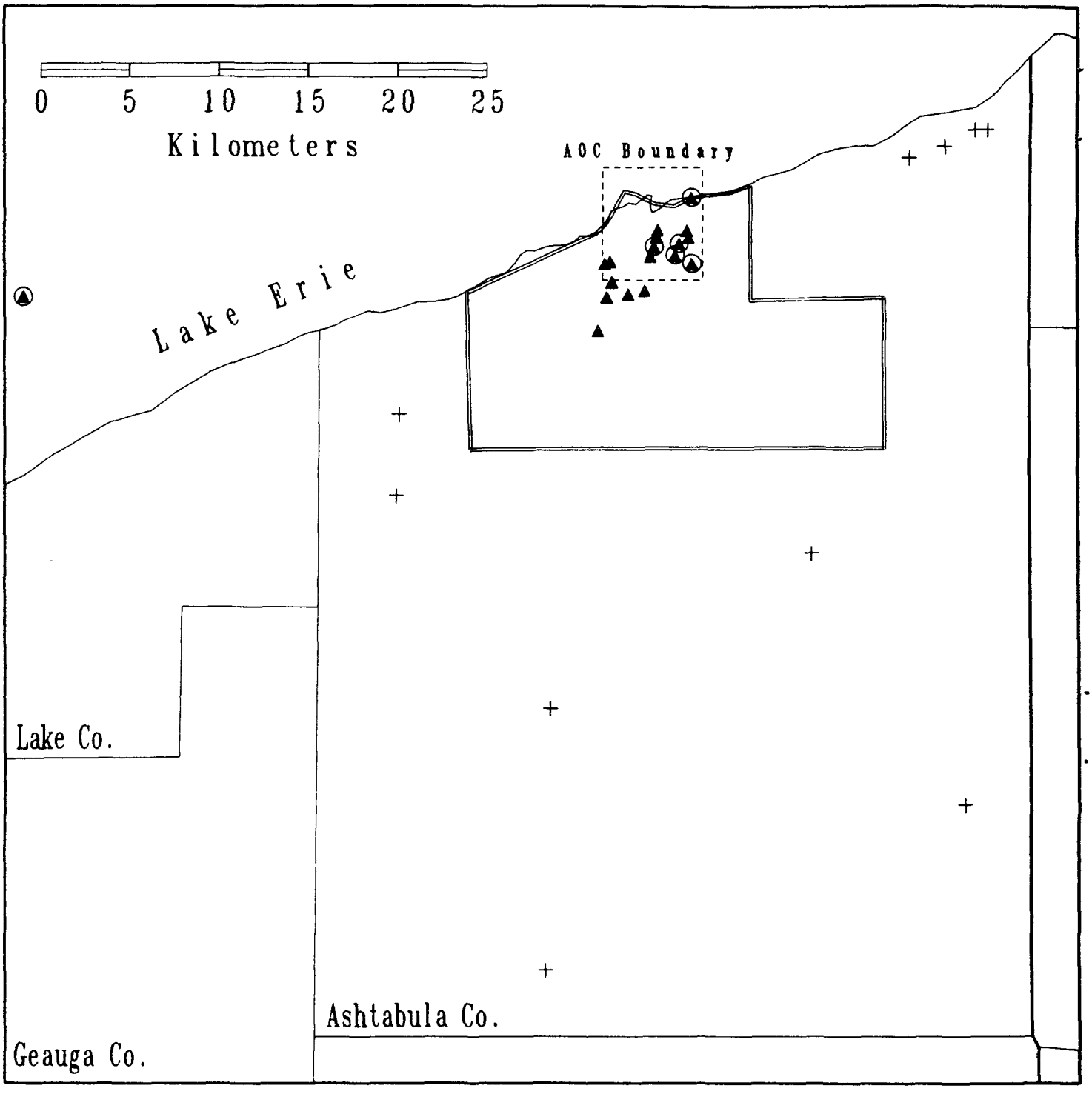
SCM Chemical Ind.	16,597,300
Detrex Corp.	1,500

Map Scale 1 : 29,230

Projection: UTM, Zone 17

USEPA REGION V
Environmental Sciences Division
Geographic Information Systems
Management Office

FIGURE 19



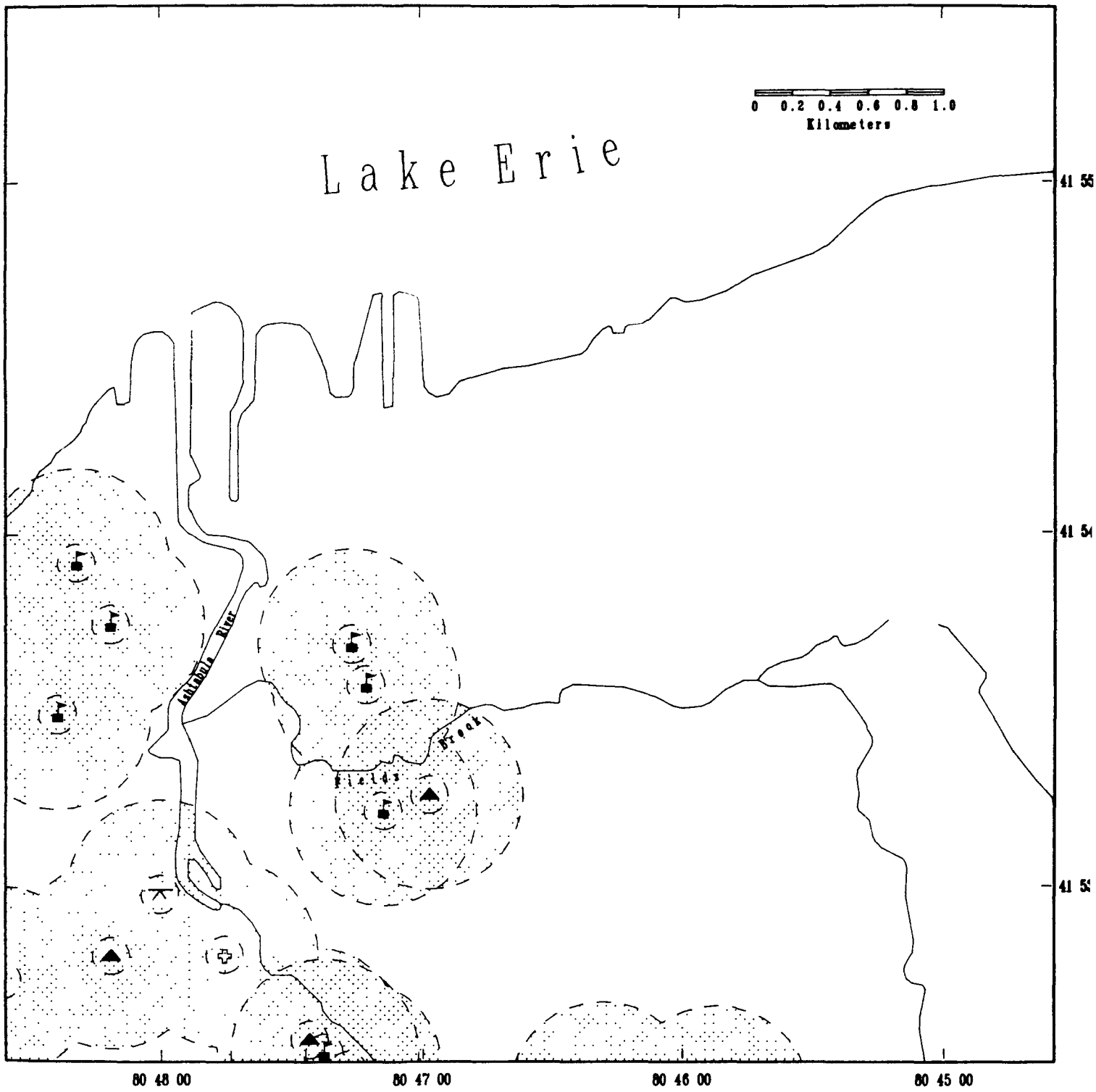
Coverage Name: ASH-TRI88

- TRI Facilities with ZIP = 44004
- TRI Facilities with Incorrect Coordinates
- Other Ashtabula Co. TRI Facilities
- ZIP Code 44004

Map Scale 1 : 315,590

Projection: UTM, Zone 17

USEPA REGION V
Environmental Sciences Division
Geographic Information Systems
Management Office



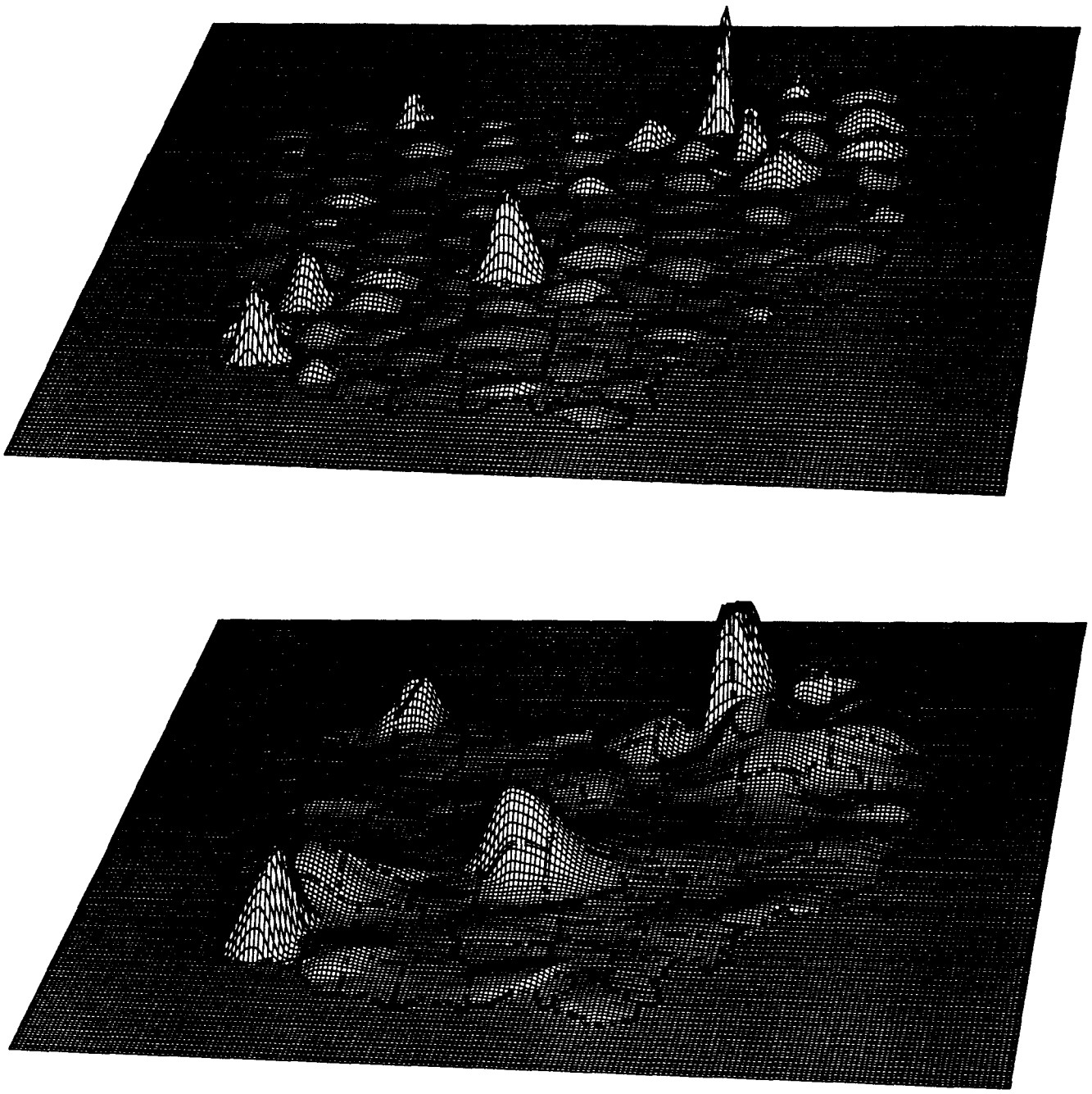
Coverage Names: SCH-100, SCH-500, HEA-100, HEA-500

- Schools
- Hospitals
- Senior Care Facilities
- Day Care Centers
- 100 and 500 Meter Buffer Zones

Map Scale 1 : 29,230
Projection: UTM, Zone 17

USEPA REGION V
Environmental Sciences Division
Geographic Information Systems
Management Office

FIGURE 21

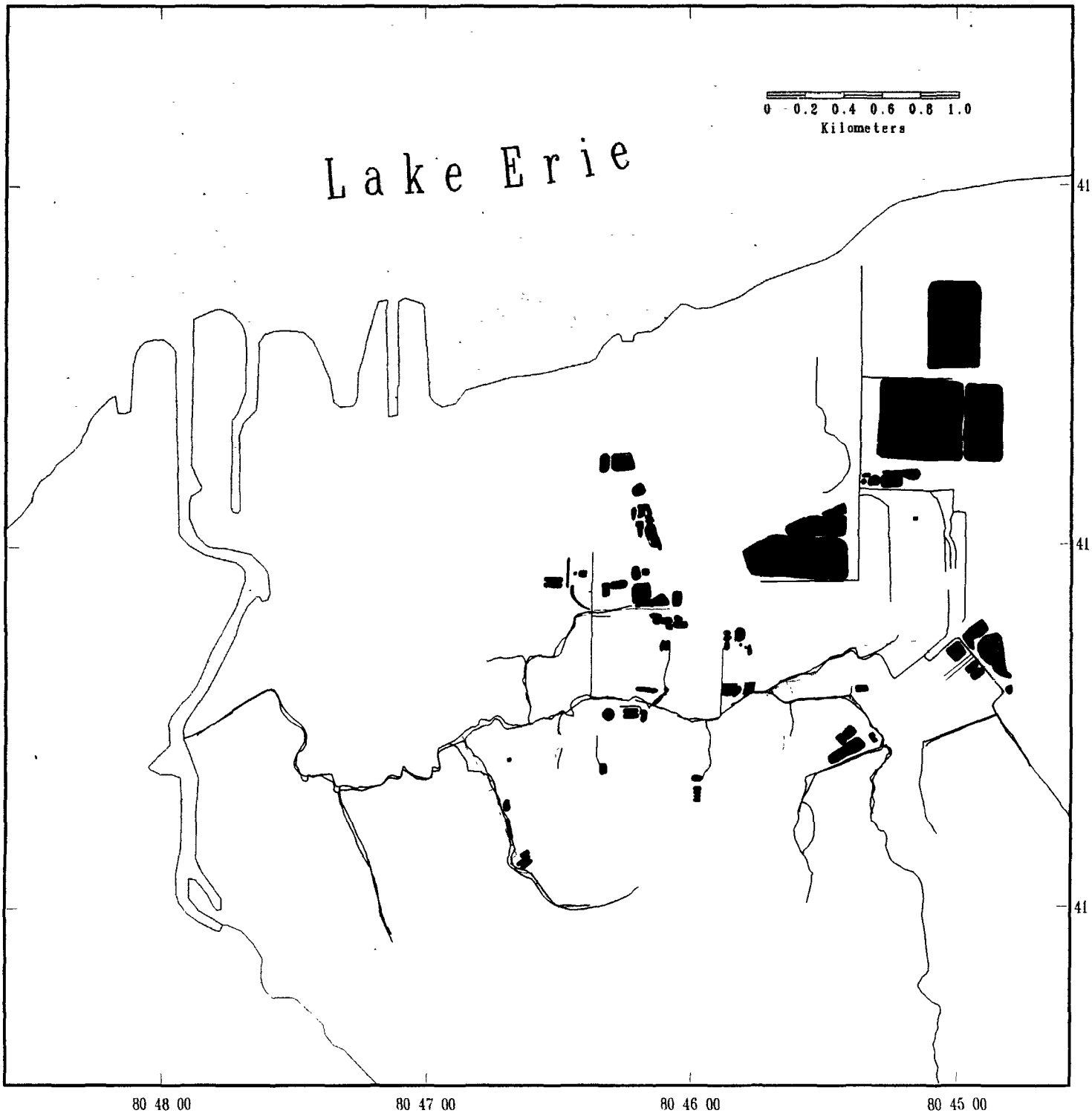


Coverage Names: OH88-A1.3D, V88.3D

TIN Displays of Ohio 1988
County Population Estimates
TOP: TIN for Discrete Data
BOTTOM: TIN for Continuous Data

Projection: Perspective

USEPA REGION V
Environmental Sciences Division
Geographic Information Systems
Management Office



Coverage Names: CULTHYD-87, HYDRO-24, HYDRO-WC, TRIB-87

- 100K DLG Lines
- CULTHYD-87 (Lines)
- HYDRO-24
- HYDRO-WC
- TRIB-87

- 100K DLG Polygons
- CULTHYD-87 (Hydro Features)
- CULTHYD-87 (Other Polygons)

Showing Sources of Hydro Features

Map Scale 1 : 29,230
Projection: UTM, Zone 17

USEPA REGION V
Environmental Sciences Division
Geographic Information Systems
Management Office

SOILS

)undaries

As – Allis silt loam
At – Atherton silt loam
BrB – Braceville loam, 2–6% slope
BrC2 – Braceville loam, 6–12% slope, moderately eroded
Cd – Canadice soils, mucky variants
ClB – Chenango gravelly loam, 2–6% slope
CmB – Claverack loamy fine sand, 2–6% slope
CmC – Claverack loamy fine sand, 6–12% slope
CoB – Colonie loamy fine sand, 2–6% slope
CoD – Colonie loamy fine sand, 6–18% slope
Ct – Conneaut silt loam
ElB – Elnora loamy fine sand, 1–5% slope
Hm – Holly silt loam
HoB – Hornell silt loam, 2–6% slope
Kf – Kingsville fine sandy loam
Lb – Lobdell silt loam
Ma – Made land
OtB – Otisville sandy loam, 1–6% slope
OuC – Otisville gravelly sandy loam, 6–12% slope
OvE – Otisville and Chenango soils, 12–25% slope
PoD2 – Pierpont and Platea soils, 12–18% slope, moderately eroded
PsA – Platea silt loam, 0–2% slope
PsB – Platea silt loam, 2–6% slope
PsC – Platea silt loam, 6–12% slope
PsC2 – Platea silt loam, 6–12% slope, moderately eroded
RhB – Red Hook silt loam, 0–4% slope
Sm – Steep land, loamy
Sw – Swanton fine sandy loam

DATA DICTIONARY

Layer Name: AIRS88
****

Data Layer Information

Layer Description:

Aerometric Information Reporting System (AIRS) monitoring site locations. Active State and Local Air Monitoring Sites (SLAMS) for 1988.

Layer Type: Point

Areal Extent: Ashtabula County, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

The AIRS workfiles were retrieved from the AIRS database by the Regional AIRS Database Manager, Larry Lehrman. The workfiles had slightly different formats for the 1988 and 1989 retrievals.

Source Scale: na.

Source Date: 6/15/89

Automation Date: 7/11/89

Data Quality Information

Quality Report for AIRS88

The locational information from the AIRS site files are very good especially in comparison with other EPA databases. Thus far, it appears that the state agencies responsible for the sites are accurately recording the site coordinates. In the SE Chicago/NW Indiana area, sites were located very accurately ie. on the proper block and on the proper side of the street when compared to 1:100,000 converted DLG road data.

For More Information Contact:

Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-6227

Layer Name: AIRS89
****

Data Layer Information

Layer Description:

Aerometric Information Reporting System (AIRS) monitoring site locations. Active State and Local Air Monitoring Sites (SLAMS) for 1988.

Layer Type: Point

Areal Extent: Ashtabula County, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

The AIRS workfiles were retrieved from the AIRS database by the Regional AIRS Database Manager, Larry Lehrman. The workfiles had slightly different formats for the 1988 and 1989 retrievals.

Source Scale: na.

Source Date: 2/23/90

Automation Date: 6/ 6/90

Data Quality Information

Quality Report for AIRS89

The locational information from the AIRS site files are very good especially in comparison with other EPA databases. Thus far, it appears that the state agencies responsible for the sites are accurately recording the site coordinates. In the SE Chicago/NW Indiana area, sites were located very accurately ie. on the proper block and on the proper side of the street when compared to 1:100,000 converted DLG road data.

For More Information Contact: Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-6227

Layer Name: ASH-TRI88
****

Data Layer Information

Layer Description:

Toxic Release Inventory (TRI), 1988 for Ashtabula County, Ohio.

Layer Type: Point, Annotext

Areal Extent: Ashtabula County, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

National Toxic Release Inventory database for 1988 calendar year. A flat file was extracted from a dBaseIII version of the data.

Source Scale: na.

Source Date: 4/ 4/90

Automation Date: 7/18/90

Data Quality Information

Quality Report for ASH-TRI88

For the 1988 Toxic Release Inventory (TRI) database each reporting facility is required to supply latitude and longitude coordinates for the location of their facility. A quality assurance assessment of this data is difficult since it has not been previously integrated with other data. This layer represents only those points which have a Federal Information Processing Standard (FIPS) number equal to that for Ashtabula County, Ohio. When the data was referenced to the Ashtabula county boundary several points mapped outside and beyond the boundary by as much as 122 kilometers.

For More Information Contact: Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-6227

Layer Name: ASH-TRI88-COR
****

Data Layer Information

Layer Description:

Toxic Release Inventory (TRI), 1988 for Ashtabula County, Ohio. (This is a corrected version - see the Quality Report for details).

Layer Type: Point

Areal Extent: Ashtabula County, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

National Toxic Release Inventory database for 1988 calendar year. A flat file was extracted from a dBaseIII version of the data.

Source Scale: na.

Source Date: 4/ 4/90

Automation Date: 7/18/90

Data Quality Information

Quality Report for ASH-TRI88-COR

This is a corrected version of the ASH-TRI88 data layer. The ASH-TRI88 data layer was referenced to the facility property boundaries data layer (OWNER-AP) and the facility structures data layer (BUILD-24). Incorrect coordinates were rectified by 'moving' the data points in ARCEDIT with a screen cursor so as to have them coincide with the related property boundary and the structures for that facility.

For More Information Contact: Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-6227

Layer Name: ASHCO-UTM
****

Data Layer Information

Layer Description:

County boundary of Ashtabula County, Ohio. Data is in the UTM meters coordinate system for Zone 17.

Layer Type: Network

Areal Extent: Ashtabula County, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

U.S. Geological Survey Digital Line Graphs (DLG) from 1:2,000,000 scale maps. Middle Atlantic States cell. Political boundary layer. Alber's Conic Projection.

Source Scale: 1:2000000

Source Date: 4/ 6/89

Automation Date: 8/24/90

Data Quality Information

Quality Report for ASHCO-UTM

The smallest data collection unit for the source data is 50.8 meters for 1:2,000,000 scale data. The source data was manually digitized with a resolution of 0.001 inches. USGS has visually checked this data against the original stable-base source material. Topological processing was generated 1 time. The converted DLG-to-ARC data as proof-plots has not been compared to the original source material. This layer was RESELECTed from a layer containing all county boundaries in the State of Ohio and PROJECTed into the UTM meters coordinate system for Zone 17.

For More Information Contact: Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-6227

Layer Name: BOTH-TC
****

Data Layer Information

Layer Description:

APPENDed data layer of tics generated for the North Ashtabula and North Kingsville 7.5 minute quadrangles.

Layer Type: Tic

Areal Extent: North Ashtabula and North Kingsville 7.5 quadrangle

Project Name: Ashtabula Demonstration

Data Source Information

Source:

U.S. Geological Survey 7.5 Minute Topographic Series Maps, NAD27. Polyconic projection. Maps used for this layer include:
Ashtabula North, 1978
Ashtabula South, 1970
North Kingsville, 1979

Source Scale: 1:24000

Source Date: / /

Automation Date: 3/15/90

Data Quality Information

Quality Report for BOTH-TC

See Quality report for NASHT-TC or NKINGS-TC data layers.

For More Information Contact: Dawn E. McWha
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-4571

Layer Name: BOUND-AOC
****

Data Layer Information

Layer Description:

Current boundary definition of the Ashtabula Area of Concern.

Layer Type: Polygon

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

Ohio EPA, Division of Water Quality Planning and Assessment. Ashtabula River Remedial Action Plan (RAP), Stage 1, Draft. 1989.

Source Scale: na.

Source Date: 12/31/90

Automation Date: 5/10/90

Data Quality Information

Quality Report for BOUND-AOC

The boundary for the Ashtabula Area of Concern was generated using screen cursor input based on the description in the RAP. Where possible existing road intersections, 7.5 minute quadrangle tics or map edges were used for lines or nodes in this data layer.

For More Information Contact: Dawn E. McWha
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-4571

Layer Name: BUILD-24
****

Data Layer Information

Layer Description:

Structures on each industrial site in the AOC study area.

Layer Type: Network

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

U.S. Geological Survey 7.5 Minute Topographic Series Maps, NAD27.
Polyconic projection. Maps used for this layer include:
Ashtabula North, 1978
Ashtabula South, 1970
North Kingsville, 1979

Source Scale: 1:24000

Source Date: / /

Automation Date: 3/15/90

Data Quality Information

Quality Report for BUILD-24

Building structures for each of the industrial sites in the study area were table digitized from the various USGS 7.5 minute quadrangle maps using a Calcomp 9100 series digitizer. RMS errors of 0.001 and 0.003 were consistently recorded during input.

For More Information Contact: Dawn E. McWha
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-4571

Layer Name: CERCLA
****

Data Layer Information

Layer Description:

All Region V Superfund sites with the National Priority List (NPL) sites flagged.

Layer Type: Point

Areal Extent: Ashtabula County, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

Ascii file of WASTELAN retrieval, U.S.E.P.A., Region V, Waste Management Division.

Source Scale: na.

Source Date: 9/29/89

Automation Date: 7/18/90

Data Quality Information

Quality Report for CERCLA

The locational coordinates for the sites from CERCLIS are poor and incorrect. There are 46 Superfund sites in Ashtabula County; 15 of which are knowingly located within the Ashtabula AOC. After rectifying the data with the Ashtabula AOC boundary and Ashtabula County coverages only ONE (1 of 15) was mapped within the AOC boundary.

For More Information Contact: John P. Schneider
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-0880

Layer Name: CITY-LIMITS
****

Data Layer Information

Layer Description:

Ashtabula City Limits.

Layer Type: LINE

Areal Extent: City of Ashtabula, Ohio

Project Name:

Data Source Information

Source:

Ashtabula County Highway Map, Ashtabula County Engineer, Jefferson, Ohio, 1988.

Source Scale: 1:250000

Source Date: 1/31/88

Automation Date: 8/27/90

Data Quality Information

Quality Report for CITY-LIMITS

The Ashtabula city limits boundary was digitized using screen cursor input. This was accomplished by using the road and hydrography network data as reference coverages.

For More Information Contact: Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60505
312-886-6227

Layer Name: CULTHYD-AP
****

Data Layer Information

Layer Description:

Man-made hydrology features.

Layer Type: Network

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

EMSL-Las Vegas Aerial Photo Analysis Report. Report titled "Ten Priority Hazardous Waste Sites" for Fields Brook, Ohio. AMD/PIC# 84025/84700-10 May 1, 1985.

Source Scale: 1:24000

Source Date: 5/31/90

Automation Date: 7/25/90

Data Quality Information

Quality Report for CULTHYD-AP

The data for this layer was digitized from an air photo (Figure 8) in the analysis report using a Calcomp 9100 series digitizer. The scale of the air photo was noted as 1:24,000 and could overlay perfectly with the corresponding 7.5 minute quadrangle map. Tics used to orient the map were from the quadrangle maps.

For More Information Contact: Dawn E. McWha
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-4571

Layer Name: CULTHYD-87
****

Data Layer Information

Layer Description:

Man-made hydrology features.

Layer Type: Network

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

CH2MHILL Source Control Scoping Document, Fieldsbrook, Ashtabula, Ohio. U.S.E.P.A., Region V, EPA WA19-5L460, 1987. Various maps.

Source Scale: 1:12000

Source Date: 12/31/87

Automation Date: 8/ 7/90

Data Quality Information

Quality Report for CULTHYD-87

Data for this layer was table digitized using a Calcomp 9100 series digitizer. Several maps from the Scoping Document were used. RMS errors were consistently reported of 0.003 to 0.005 using tics located at nodes of road intersections or other stable locations. The raw digitized data was TRANSFORMed into the UTM meters coordinate system.

For More Information Contact: Dawn E. McWha
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-4571

Layer Name: DRINK
****

Data Layer Information

Layer Description:

Water supply sources from the Federal Reporting Data System (FRDS) database for Ashtabula County, Ohio.

Layer Type: Point

Areal Extent: Ashtabula County, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

Federal Reporting Data Systems (FRDS), Tom Polleck, U.S.E.P.A., Region V, Water Division.

Source Scale: na.

Source Date: 6/ 4/90

Automation Date: 7/24/90

Data Quality Information

Quality Report for DRINK

Several of the sample locations had poor locational coordinates. This layer represents only those locations which fall exclusively within the boundary of Ashtabula County, Ohio.

(Note: This layer combined with the DRINK-BADC layer represents the full retrieval from the FRDS database for Ashtabula County, Ohio).

For More Information Contact: Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-6227

Layer Name: DRINK-BADC
****

Data Layer Information

Layer Description:

Water supply sources from the Federal Reporting Data System (FRDS) database for Ashtabula County, Ohio.

Layer Type: Point

Areal Extent: Ashtabula County, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

Federal Reporting Data Systems (FRDS), Tom Polleck, U.S.E.P.A., Region V, Water Division.

Source Scale: na.

Source Date: 6/ 4/90

Automation Date: 7/24/90

Data Quality Information

Quality Report for DRINK-BADC

Sample locations for Ashtabula County, Ohio with poor locational coordinates. Some of these points when rectified to other data layers are mapped outside of Region V.

For More Information Contact: Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-6227

Layer Name: ECO
****

Data Layer Information

Layer Description:

Ecoregions of the Upper Midwest States.

Layer Type: Polygon

Areal Extent: Ashtabula County, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

Environmental Research Lab, U.S.E.P.A., Corvallis, Oregon

Source Scale: 1:2000000

Source Date: 1/10/89

Automation Date: 8/10/90

Data Quality Information

Quality Report for ECO

The true lineage and processing steps and quality remains with ERL, Corvallis, Oregon. The data was IMPORTed and PROJECTed into the UTM coordinate system.

For More Information Contact: Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-6227

Layer Name: HEALTH
****

Data Layer Information

Layer Description:

Point locations of hospitals, day care centers, and senior citizen homes.

Layer Type: Point, Annotext

Areal Extent: Ashtabula Area of Concern (AOC) and beyond, Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

City of Ashtabula, Division of Engineering (letter and hand drafted map of locations).

Source Scale: na.

Source Date: 5/ 3/90

Automation Date: 7/27/90

Data Quality Information

Quality Report for HEALTH

The point locations of the care facilities were digitized in ARCEDIT using screen cursor input. The 1:100,000 converted DLG road data was used as a reference coverage. A visual comparison of drafted locations on source maps was used to position the point locations. Accuracy level is to city blocks. Annotation exists for the name of each care facility for cartographic enhancement purposes.

For More Information Contact: Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-6227

Layer Name: HEA-100
****

Data Layer Information

Layer Description:

Point locations of hospitals, day care centers and senior citizens homes BUFFERed by 100 meters.

Layer Type: Polygon

Areal Extent: Ashtabula Area of Concern (AOC) and beyond, Ashtabula, Ohio

Project Name: Ashtabula Demonstration Project

Data Source Information

Source:

Original data from the City of Ashtabula, Division of Engineering (letter and hand drafted map of locations).

Source Scale: na.

Source Date: 5/ 3/90

Automation Date: 8/30/90

Data Quality Information

Quality Report for HEA-100

The BUFFER used a fuzzy tolerance of 0.454 meters. See the original data quality report for the data layer HEALTH for a more complete assessment.

For More Information Contact: Dawn E. McWha
GIS Management Office
536 S. Clark St., Chicago,
IL,
312-886-4571

Layer Name: HEA-250
****

Data Layer Information

Layer Description:

Point locations of hospitals, day care centers and senior citizens homes BUFFERed by 250 meters.

Layer Type: Polygon

Areal Extent: Ashtabula Area of Concern (AOC) and beyond, Ashtabula, Ohio

Project Name: Ashtabula Demonstration Project

Data Source Information

Source:

Original data from the City of Ashtabula, Division of Engineering (letter and hand drafted map of locations).

Source Scale: na.

Source Date: 5/ 3/90

Automation Date: 8/30/90

Data Quality Information

Quality Report for HEA-250

The BUFFER used a fuzzy tolerance of 0.454 meters. See the original data quality report for the data layer HEALTH for a more complete assessment.

For More Information Contact: Dawn E. McWha
GIS Management Office
536 S. Clark St., Chicago,
IL,
312-886-4571

Layer Name: HEA-500
****

Data Layer Information

Layer Description:

Point locations of hospitals, day care centers and senior citizens homes BUFFERed by 500 meters.

Layer Type: Polygon

Areal Extent: Ashtabula Area of Concern (AOC) and beyond, Ashtabula, Ohio

Project Name: Ashtabula Demonstration Project

Data Source Information

Source:

Original data from the City of Ashtabula, Division of Engineering (letter and hand drafted map of locations).

Source Scale: na.

Source Date: 5/ 3/90

Automation Date: 8/30/90

Data Quality Information

Quality Report for HEA-500

The BUFFER used a fuzzy tolerance of 0.454 meters. See the original data quality report for the data layer HEALTH for a more complete assessment.

For More Information Contact: Dawn E. McWha
GIS Management Office
536 S. Clark St., Chicago,
IL,
312-886-4571

Layer Name: HYDRO-24
****

Data Layer Information

Layer Description:

Hydrology features.

Layer Type: Network

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

U.S. Geological Survey 7.5 Minute Topographic Series Maps, NAD27.
Polyconic projection. Maps used for this layer include:
Ashtabula North, 1978
Ashtabula South, 1970
North Kingsville, 1979

Source Scale: 1:24000

Source Date: / /

Automation Date: 7/25/90

Data Quality Information

Quality Report for HYDRO-24

Hydrology features in the study area were table digitized from the various USGS 7.5 minute quadrangle maps using a Calcomp 9100 series digitizer. RMS errors of 0.002 were consistently recorded during input.

For More Information Contact: Dawn E. McWha
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-4571

Layer Name: HYDRO-2M
****

Data Layer Information

Layer Description:

Hydrology features.

Layer Type: Network

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

U.S. Geological Survey Digital Line Graphs (DLG) for 1:2,000,000 scale maps. Multistate cells include Middle Atlantic States, Northern Great Lakes States, and Central Mississippi Valley States. Albers Conic Projection. Hydrography DLG category from magnetic tape.

Source Scale: 1:2000000

Source Date: 10/28/87

Automation Date: 6/25/89

Data Quality Information

Quality Report for HYDRO-2M

The smallest data collection unit for the source data is 50.8 meters for 1:2,000,000 scale data. The source data was manually digitized with a resolution of 0.001 inches. USGS has visually checked this data against the original stable-base source material. Topological processing was generated once. The converted DLG-to-ARC data as proof plots has not been compared to the original source material. This layer was PROJECTed into the UTM meters coordinate system for Zone 17

For More Information Contact:

Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-6227

Layer Name: HYDRO-AN
****

Data Layer Information

Layer Description:

Annotation of major hydrologic features.

Layer Type: Annotext

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

U.S. Geological Survey 7.5 Minute Topographic Series Maps, NAD27.
Polyconic projection. Maps used for this layer include:
Ashtabula North, 1978
Ashtabula South, 1970
North Kingsville, 1979

Source Scale: 1:24000

Source Date: / /

Automation Date: 6/20/90

Data Quality Information

Quality Report for HYDRO-AN

The annotation for this layer was generated with screen cursor input.

For More Information Contact: Dawn E. McWha
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-4571

Layer Name: HYDRO-WC
****

Data Layer Information

Layer Description:

Hydrology features.

Layer Type: Network

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

Woodward-Clyde Consultants. Proposed Piezometer and Soil/Gas Survey Point Locations, Fieldsbrook, Ashtabula, Ohio. Map. July 1, 1990.

Source Scale: 1:12000

Source Date: 6/25/90

Automation Date: 8/10/90

Data Quality Information

Quality Report for HYDRO-WC

Data for this layer was digitized using a Calcomp 9100 series digitizer. Tics to orient the map were extracted from existing 7.5 minute quadrangle corners and node coordinates at road intersections.

For More Information Contact: John P. Schneider
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-0880

Layer Name: HYDRO100-A
****

Data Layer Information

Layer Description:

Hydrology features.

Layer Type: Network

Areal Extent: Ashtabula 1:100,000 quadrangle

Project Name: Ashtabula Demonstration

Data Source Information

Source:

U.S. Geological Survey Digital Line Graphs (DLG) for 1:100,000 scale maps, West portion of Ashtabula 1:100,000 quadrangle. Albers Conic Projection. Hydrography DLG category from magnetic tape.

Source Scale: 1:100000

Source Date: 10/28/87

Automation Date: 1/24/90

Data Quality Information

Quality Report for HYDRO100-A

The smallest data collection unit for the source data is 2.54 meters for 1:100,000 scale data. The source data was manually digitized with a resolution of 0.001 inches. USGS has visually checked this data against the original stable-base source material. Topological processing was generated once. The converted DLG-to-ARC data as proof plots has not been compared to the original source material. This layer was PROJECTed into the UTM meters coordinate system for Zone 17.

For More Information Contact:

Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-6227

Layer Name: HYDRO100-P
****

Data Layer Information

Layer Description:

Hydrology features.

Layer Type: Network

Areal Extent: Ashtabula 1:100,000 quadrangle

Project Name: Ashtabula Demonstration

Data Source Information

Source:

U.S. Geological Survey Digital Line Graphs (DLG) for 1:100,000 scale maps, West portion of Ashtabula 1:100,000 quadrangle. Albers Conic Projection. Hydrography DLG category from magnetic tape.

Source Scale: 1:100000

Source Date: 10/28/87

Automation Date: 1/24/90

Data Quality Information

Quality Report for HYDRO100-P

The smallest data collection unit for the source data is 2.54 meters for 1:100,000 scale data. The source data was manually digitized with a resolution of 0.001 inches. USGS has visually checked this data against the original stable-base source material. Topological processing was generated once. The converted DLG-to-ARC data as proof plots has not been compared to the original source material. This layer was PROJECTed into the UTM meters coordinate system for Zone 17.

For More Information Contact:

Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-6227

Layer Name: INDUSTRIALS
****

Data Layer Information

Layer Description:

NPDES Dischargers.

Layer Type: Point

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

National Pollutant Discharge Elimination System (NPDES) data of the Permit Compliance System (PCS) database, by the Great Lakes National Program Office and Large Lakes Research Lab, Grosse Ile, Michigan.

Source Scale: na.

Source Date: 6/15/89

Automation Date: 2/ 5/90

Data Quality Information

Quality Report for INDUSTRIALS

Contact Large Lakes Research Lab or the Great Lakes National Program Office for a quality assessment.

For More Information Contact: Barry L. Manne
Great Lakes National Program Office
111 W. Jackson Blvd., Chicago,
IL, 60604
312-353-7942

Layer Name: LANDUSE
****

Data Layer Information

Layer Description:

Landuse and land cover digital data converted from the Geographic Information Retrieval and Analysis System (GIRAS).

Layer Type: Polygon

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

Land Use and Land Cover Digital Data, U. S. Geological Survey from National High-Altitude Photography (NHAP), 1973. Digital data in quadrangle. Digital data in Geographic Information Retrieval and Analysis System (GIRAS) based on the UTM projection.

Source Scale: 1:250000

Source Date: 1/ 1/73

Automation Date: 3/ 1/90

Data Quality Information

Quality Report for LANDUSE

In the original GIRAS digital data the resolution of an internal coordinate unit is set to 10 meters. The units are local UTM with a local origin of (x,y = 0,0). DMS values were extracted from the file header and PROJECTed into UTM Zone 17 with no Y shift. The original GIRASARC coverage was TRANSFORMed into the UTM Zone 17 coverage with an RMS of (input,output = 3.227,32.272). A plot of this data has NOT been quality controlled against the original landuse-land cover basemap. Original data CLIPped to Ashtabula AOC boundary.

For More Information Contact:

Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-6227

Layer Name: LLGRID-UTM
****

Data Layer Information

Layer Description:

Grid of lines of latitude and longitude at minute intervals for the full extent of the Ashtabula AOC. The purpose of this data layer was to create tic marks at minute intervals around the AOC.

Layer Type: Line

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

Derived from the BOUND-AOC data layer by PROJECTing BOUND-AOC layer into the GEOGRAPHIC coordinate system, generating NODEs at minute intervals along ARCS, connecting the NODEs to the ARCs and PROJECTing the resultant data back to the UTM coordinate system.

Source Scale: na.

Source Date: 8/10/90

Automation Date: 8/10/90

Data Quality Information

Quality Report for LLGRID-UTM

A quality assessment for this data layer is unwarranted. Review the data source information if required.

For More Information Contact: Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-6227

Layer Name: LLHASH
****

Data Layer Information

Layer Description:

Point data layer to draw tic marks of degrees, minutes and seconds of latitude and longitude around Ashtabula AOC boundary.

Layer Type: Point

Areal Extent: *Ashtabula Area of Concern (AOC), Ashtabula, Ohio*

Project Name: Ashtabula Demonstration

Data Source Information

Source:

Derived from the results of the NODEPOINT command executed upon the LLGRID-UTM layer.

Source Scale: na.

Source Date: 8/10/90

Automation Date: 8/10/90

Data Quality Information

Quality Report for LLHASH

A quality assessment for this data layer is unwarranted. Review the data source information if required.

For More Information Contact: Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-6227

Layer Name: MUNICIPALS
****

Data Layer Information

Layer Description:

NPDES Dischargers.

Layer Type: Point

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

National Pollutant Discharge Elimination System (NPDES) data of the Permit Compliance System (PCS) database, by the Great Lakes National Program Office and Large Lakes Research Lab, Grosse Ile, Michigan.

Source Scale: na.

Source Date: 6/15/89

Automation Date: 2/ 5/90

Data Quality Information

Quality Report for MUNICIPALS

Contact Large Lakes Research Lab or the Great Lakes National Program Office for a quality assessment.

For More Information Contact: Barry L. Manne
Great Lakes National Program Office
111 W. Jackson Blvd., Chicago,
IL, 60604
312-353-7942

Layer Name: NASHT-TC
****

Data Layer Information

Layer Description:

Tics generated for the North Ashtabula 7.5 minute quadrangle.

Layer Type: Tic

Areal Extent: North Ashtabula 7.5 minute quadrangle.

Project Name: Ashtabula Demonstration

Data Source Information

Source:

U.S. Geological Survey 7.5 Minute Topographic Series Maps, NAD27.
Polyconic projection. Maps used for this layer include:
Ashtabula North, 1978
Ashtabula South, 1970
North Kingsville, 1979

Source Scale: 1:24000

Source Date: / /

Automation Date: 3/15/90

Data Quality Information

Quality Report for NASHT-TC

The four corner tics for this coverage were PROJECTed into the UTM coordinate system from Geographic coordinates (degrees, minutes, seconds). To generate more tics needed for TRANSFORMing other data layers etc. these four original tics were used to orient the map on the digitizing table. New tics were added at road intersections, sections corners etc. in the UTM coordinate system with a Calcomp 9100 series digitizer.

For More Information Contact: Dawn E. McWha
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-4571

Layer Name: NKINGS-TC
****

Data Layer Information

Layer Description:

Tics generated for the North Kingsville 7.5 minute quadrangle.

Layer Type: Tic

Areal Extent: North Kingsville 7.5 minute quadrangle.

Project Name: Ashtabula Demonstration

Data Source Information

Source:

U.S. Geological Survey 7.5 Minute Topographic Series Maps, NAD27.
Polyconic projection. Maps used for this layer include:
Ashtabula North, 1978
Ashtabula South, 1970
North Kingsville, 1979

Source Scale: 1:24000

Source Date: / /

Automation Date: 3/15/90

Data Quality Information

Quality Report for NKINGS-TC

The four corner tics for this coverage were PROJECTed into the UTM coordinate system from Geographic coordinates (degrees, minutes, seconds). To generate more tics needed for TRANSFORMing other data layers etc. these four original tics were used to orient the map on the digitizing table. New tics were added at road intersections, sections corners etc. in the UTM coordinate system with a Calcomp 9100 series digitizer.

For More Information Contact: Dawn E. McWha
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-4571

Layer Name: OHCO-UTM
****

Data Layer Information

Layer Description:

All county boundaries within the conterminous Ohio state outline.
Data is in the UTM meters coordinate system for Zone 17.

Layer Type: Network

Areal Extent: State of Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

U.S. Geological Survey Digital Line Graphs (DLG) from 1:2,000,000 scale maps.
Middle Atlantic States cell. Political boundary layer. Alber's Conic Projection.

Source Scale: 1:2000000

Source Date: 4/ 6/89

Automation Date: 8/11/89

Data Quality Information

Quality Report for OHCO-UTM

The smallest data collection unit for the source data is 50.8 meters for 1:2,000,000 scale data. The source data was manually digitized with a resolution of 0.001 inches. USGS has visually checked this data against the original stable-base source material. Topological processing was generated once. The converted DLG-to-ARC data as proof plots has not been compared to the original source material. This layer was PROJECTed into the UTM meters coordinate system for Zone 17.

For More Information Contact: Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-6227

Layer Name: OLDPI-BOUND
****

Data Layer Information

Layer Description:

Original boundary definition of the Fieldsbrook National Priority List (NPL) Superfund site.

Layer Type: Polygon

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

EMSL-Las Vegas Aerial Photo Analysis Report. Report titled "Atlas Priority CERCLA Hazardous Waste Sites Vol. 5" for Fields Brook, Ohio. AMD/PIC# 82111-82700-5. April 1, 1985.

Source Scale: 1:24000

Source Date: 4/ 1/85

Automation Date: 2/ 3/90

Data Quality Information

Quality Report for OLDPI-BOUND

The data for this layer was digitized from an air photo (Figure 8) in the analysis report using a Calcomp 9100 series digitizer. The scale of the air photo was noted as 1:24,000 and could overlay perfectly with the corresponding 7.5 minute quadrangle map. Tics used to orient the map were from the quadrangle maps.

For More Information Contact: Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-6227

Layer Name: OWNER-AN
****

Data Layer Information

Layer Description:

Annotation of names of industrial sites in the Ashtabula AOC.
Included only for cartographic enhancement purposes.

Layer Type: Annotext

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

CH2MHILL Source Control Scoping Document, Fieldsbrook, Ashtabula, Ohio.
U.S.E.P.A., Region V, EPA WA19-5L460, 1987. Map entitled
'Property Locations for Industries in the Fieldsbrook Area'

Source Scale: 1:12000

Source Date: 12/31/87

Automation Date: 6/ 4/90

Data Quality Information

Quality Report for OWNER-AN

The annotation for this layer was generated with screen cursor input.

For More Information Contact: Dawn E. McWha
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-4571

Layer Name: OWNER-AP
****

Data Layer Information

Layer Description:

Property boundaries of the industrial sites in the Ashtabula Area of Concern.

Layer Type: Polygon

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

EMSL-Las Vegas Aerial Photo Analysis Report. Report titled "Ten Priority CERCLA Hazardous Waste Sites" for Fields Brook, Ohio. AMD/PIC# 84025/84700-10 May 1, 1985.

Source Scale: 1:24000

Source Date: 5/31/84

Automation Date: 3/15/90

Data Quality Information

Quality Report for OWNER-AP

The data for this layer was digitized from an air photo (Figure 8) in the analysis report using a Calcomp 9100 series digitizer. The scale of the air photo was noted as 1:24,000 and could overlay perfectly with the corresponding 7.5 minute quadrangle map. Tics used to orient the map were from the quadrangle maps.

For More Information Contact:

Dawn E. McWha
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-4571

Layer Name: OWNER-WC
****

Data Layer Information

Layer Description:

Property boundaries of the industrial sites in the Ashtabula Area of Concern.

Layer Type: Polygon

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

Woodward-Clyde Consultants. Proposed Piezometer and Soil/Gas Survey Point Locations, Fieldsbrook, Ashtabula, Ohio. Map. July 1, 1990.

Source Scale: 1:12000

Source Date: 6/25/90

Automation Date: 8/10/90

Data Quality Information

Quality Report for OWNER-WC

Data for this layer was digitized using a Calcomp 9100 series digitizer. Tics to orient the map were extracted from existing 7.5 minute quadrangle corners and node coordinates at road intersections.

For More Information Contact: John P. Schneider
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-0880

Layer Name: OWNER-87
****

Data Layer Information

Layer Description:

Property boundaries of the industrial sites in the Ashtabula Area of Concern.

Layer Type: Polygon

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

CH2MHILL Source Control Scoping Document, Fieldsbrook, Ashtabula, Ohio.
U.S.E.P.A., Region V, EPA WA19-5L460, 1987. Map entitled
'Property Locations for Industries in the Fieldsbrook Area'

Source Scale: 1:12000

Source Date: 12/31/87

Automation Date: 8/ 6/90

Data Quality Information

Quality Report for OWNER-87

Data for this layer was table digitized using a Calcomp 9100 series digitizer. One map was used from the Scoping Document. RMS errors were consistently reported of 0.003 to 0.005 using tics located at nodes of road intersections or other stable locations. The raw digitized data was TRANSFORMed into the UTM meters coordinate system.

For More Information Contact: John P. Schneider
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-0880

Layer Name: PAC03
****

Data Layer Information

Layer Description:

Boundaries of the three adjacent counties to Ashtabula County, Ohio in the State of Pennsylvania.

Layer Type: Polygon

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

U.S. Geological Survey Digital Line Graphs (DLG) from 1:2,000,000 scale maps. Middle Atlantic States cell. Political boundary layer. Alber's Conic Projection.

Source Scale: 1:2000000

Source Date: 10/27/87

Automation Date: 8/11/89

Data Quality Information

Quality Report for PAC03

The smallest data collection unit for the source data is 50.8 meters for 1:2,000,000 scale data. The source data was manually digitized with a resolution of 0.001 inches. USGS has visually checked this data against the original stable-base source material. Topological processing was generated once. The converted DLG-to-ARC data as proof plots has not been compared to the original source material. This layer was PROJECTed into the UTM meters coordinate system for Zone 17.

For More Information Contact:

Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-6227

Layer Name: PHOTO-BX
****

Data Layer Information

Layer Description:

Photo corners of aerial photography of the Ashtabula Area of Concern.

Layer Type: Polygon

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

EMSL-Las Vegas Aerial Photo Analysis Report. Report titled "Ten Priority CERCLA Hazardous Waste Sites" for Ashtabula, Ohio. AMD/PIC# 84025/84700-10. May 1, 1985.

Source Scale: 1:24000

Source Date: 5/31/84

Automation Date: 3/15/90

Data Quality Information

Quality Report for PHOTO-BX

The data for this layer was digitized from an air photo (Figure 8) in the analysis report using a Calcomp 9100 series digitizer. The scale of the air photo was noted as 1:24,000 and could overlay perfectly with the corresponding 7.5 minute quadrangle map. Tics used to orient the map were from the quadrangle maps.

For More Information Contact: Dawn E. McWha
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-4571

Layer Name: PIPE-100
****

Data Layer Information

Layer Description:

Pipelines and transmission lines.

Layer Type: Line

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

U.S. Geological Survey Digital Line Graphs (DLG) for 1:100,000 scale maps, West portion of Ashtabula 1:100,000 quadrangle. Albers Conic Projection. Transportation DLG category from magnetic tape.

Source Scale: 1:100000

Source Date: 10/28/87

Automation Date: 1/24/90

Data Quality Information

Quality Report for PIPE-100

The smallest data collection unit for the source data is 2.54 meters for 1:100,000 scale data. The source data was manually digitized with a resolution of 0.001 inches. USGS has visually checked this data against the original stable-base source material. Topological processing was generated once. The converted DLG-to-ARC data as proof plots has not been compared to the original source material. This layer was PROJECTed into the UTM meters coordinate system for Zone 17.

For More Information Contact:

Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-6227

Layer Name: RAIL-100
****

Data Layer Information

Layer Description:

Railways.

Layer Type: Line

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

U.S. Geological Survey Digital Line Graphs (DLG) for 1:100,000 scale maps, West portion of Ashtabula 1:100,000 quadrangle. Albers Conic Projection. Transportation DLG category from magnetic tape.

Source Scale: 1:100000

Source Date: 10/28/87

Automation Date: 1/24/90

Data Quality Information

Quality Report for RAIL-100

The smallest data collection unit for the source data is 2.54 meters for 1:100,000 scale data. The source data was manually digitized with a resolution of 0.001 inches. USGS has visually checked this data against the original stable-base source material. Topological processing was generated once. The converted DLG-to-ARC data as proof plots has not been compared to the original source material. This layer was PROJECTed into the UTM meters coordinate system for Zone 17.

For More Information Contact: Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-6227

Layer Name: ROADS-100
****

Data Layer Information

Layer Description:

Major and minor road networks.

Layer Type: Line

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

U.S. Geological Survey Digital Line Graphs (DLG) for 1:100,000 scale maps, West portion of Ashtabula 1:100,000 quadrangle. Albers Conic Projection. Transportation DLG category from magnetic tape.

Source Scale: 1:100000

Source Date: 10/28/87

Automation Date: 1/24/90

Data Quality Information

Quality Report for ROADS-100

The smallest data collection unit for the source data is 2.54 meters for 1:100,000 scale data. The source data was manually digitized with a resolution of 0.001 inches. USGS has visually checked this data against the original stable-base source material. Topological processing was generated once. The converted DLG-to-ARC data as proof plots has not been compared to the original source material. This layer was PROJECTed into the UTM meters coordinate system for Zone 17.

For More Information Contact:

Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-6227

Layer Name: ROADS-2M
****

Data Layer Information

Layer Description:

Major and minor road networks.

Layer Type: Line

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

U.S. Geological Survey Digital Line Graphs (DLG) for 1:2,000,000 scale maps. Multistate cells include Middle Atlantic States, Northern Great Lakes States, and Central Mississippi Valley States. Albers Conic Projection. Transportation DLG category from magnetic tape.

Source Scale: 1:2000000

Source Date: 10/28/87

Automation Date: 6/18/89

Data Quality Information

Quality Report for ROADS-2M

The smallest data collection unit for the source data is 50.8 meters for 1:2,000,000 scale data. The source data was manually digitized with a resolution of 0.001 inches. USGS has visually checked this data against the original stable-base source material. Topological processing was generated once. The converted DLG-to-ARC data as proof plots has not been compared to the original source material. This layer was PROJECTed into the UTM meters coordinate system for Zone 17

For More Information Contact: Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-6227

Layer Name: SCHOOLS
****

Data Layer Information

Layer Description:

Locations and enrollments in the Ashtabula area city schools, Buckeye local schools and Ashtabula catholic schools.

Layer Type: Point, Annotext

Areal Extent: Ashtabula Area of Concern (AOC) and beyond, Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

Buckeye Local Board of Education (letter and hand drafted map), City of Ashtabula Division of Engineering (letter and map), Ashtabula area city schools' Superintendant's office (phone conversation), and Ashtabula Catholic schools (phone conversation).

Source Scale: na.

Source Date: 5/ 3/90

Automation Date: 7/26/90

Data Quality Information

Quality Report for SCHOOLS

The point locations of the schools were digitized in ARCEDIT using screen cursor input. The 1:100,000 convert DLG road data was used as a reference coverage. A visual comparison of drafted locations on source maps was used to position point locations. Accuracy level is to city blocks. Annotation exists for each school name for cartographic enhancement purposes.

For More Information Contact: Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-6227

Layer Name: SCH-100
****

Data Layer Information

Layer Description:

Locations and enrollments in the Ashtabula area city schools, Buckeye local schools and Ashtabula catholic schools BUFFERed by 100 meters.

Layer Type: Polygon

Areal Extent: Ashtabula Area of Concern (AOC) and beyond, Ashtabula, Ohio

Project Name: Ashtabula Demonstration Project

Data Source Information

Source:

Original data from the Buckeye Local Board of Education (letter and hand drafted map), City of Ashtabula Division of Engineering (letter and map), Ashtabula area schools' Superintendant's office (phone conversation), and Ashtabula Catholic schools (phone conversation).

Source Scale: na.

Source Date: 5/ 3/90

Automation Date: 8/30/90

Data Quality Information

Quality Report for SCH-100

The BUFFER used a fuzzy tolerance of 2.124 meters. See the original data quality report for the data layer SCHOOLS for a complete assessment.

For More Information Contact: Dawn E. McWha
GIS Management Office
536 S. Clark St., Chicago,
IL,
312-886-4571

Layer Name: SCH-500
****

Data Layer Information

Layer Description:

Locations and enrollments in the Ashtabula area city schools, Buckeye local schools and Ashtabula catholic schools BUFFERed by 500 meters.

Layer Type: Polygon

Areal Extent: Ashtabula Area of Concern (AOC) and beyond, Ashtabula, Ohio

Project Name: Ashtabula Demonstration Project

Data Source Information

Source:

Original data from the Buckeye Local Board of Education (letter and hand drafted map), City of Ashtabula Division of Engineering (letter and map), Ashtabula area schools' Superintendant's office (phone conversation), and Ashtabula Catholic schools (phone conversation).

Source Scale: na.

Source Date: 5/ 3/90

Automation Date: 8/30/90

Data Quality Information

Quality Report for SCH-500

The BUFFER used a fuzzy tolerance of 2.124 meters. See the original data quality report for the data layer SCHOOLS for a complete assessment.

For More Information Contact: Dawn E. McWha
GIS Management Office
536 S. Clark St., Chicago,
IL,
312-886-4571

Layer Name: SEDEFF-87
****

Data Layer Information

Layer Description:

Remedial investigation sediment and effluent sampling locations.

Layer Type: Point

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

CH2MHILL Source Control Scoping Document, Fieldsbrook, Ashtabula, Ohio.
U.S.E.P.A., Region V, EPA WA19-5L460, 1987. Map entitled
'RI Sediment and Effluent Locations'

Source Scale: 1:12000

Source Date: 12/31/87

Automation Date: 8/ 8/90

Data Quality Information

Quality Report for SEDEFF-87

Data for this layer was table digitized using a Calcomp 9100 series digitizer. One map was used from the Scoping Document. RMS errors were consistently reported of 0.003 to 0.005 using tics located at nodes of road intersections or other stable locations. The raw digitized data was TRANSFORMed into the UTM meters coordinate system.

For More Information Contact:

Dawn E. McWha
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-4571

Layer Name: SOILS
****

Data Layer Information

Layer Description:

Soil Survey of Ashtabula County, Ohio.

Layer Type: Polygon, Annotext

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

The Soil Conservation Service Soil Survey of Ashtabula County, Ohio. Major fieldwork for this soil survey was completed during the period of 1953–64. Soil names and descriptions were approved in 1967. The Soil Survey report was issued in 1973 and contains sheets or plates of soil boundaries and types drafted upon unrectified aerial photos.

Source Scale: 1:15840

Source Date: 12/31/73

Automation Date: 7/ 5/90

Data Quality Information

Quality Report for SOILS

The soil survey of Ashtabula County within the Ashtabula AOC boundary was d digitized on a Calcomp 9100 series digitizing table. The minimum four tics used to orient the soil survey sheets were extracted from exact and known node coordinates (road intersections) of the 1:100,000 converted DLG data. RMS values during the automation averaged 0.010. This high value is related to digitizing from the 'unstable' paper soil survey sheets. A hardcopy plot was quality controlled and rectified with the soil survey sheets and 7.5 minute quadrangle maps.

For More Information Contact: Dawn E. McWha
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312–886–4571

Layer Name: STORET
****

Data Layer Information

Layer Description:

STORET (Storage and Retrieval) monitoring stations active in 1988.

Layer Type: Point

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

STORET from the Air Monitoring Section, Monitoring and Quality Assurance Branch, U.S.E.P.A., Region V.

Source Scale: na.

Source Date: 2/17/90

Automation Date: 5/23/90

Data Quality Information

Quality Report for STORET

Latitude and longitude coordinates were PROJECTed into the UTM meters coordinate system. Locations for stations appear good when rectified with data layers.

For More Information Contact: Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-6227

Layer Name: TRI88
****

Data Layer Information

Layer Description:

Toxic Release Inventory (TRI), 1988 for Ashtabula County, Ohio. This layer is corrected (see Quality Report).

Layer Type: Point

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name:

Data Source Information

Source:

National Toxic Release Inventory database for 1988 calendar year. A flat file was extracted from a dBaseIII version of the data. Data is CLIPped to the Ashtabula AOC boundary.

Source Scale: na.

Source Date: 4/ 4/90

Automation Date: 8/21/90

Data Quality Information

Quality Report for TRI88

This data layer is CLIPped to the Ashtabula AOC boundary from the ASH-TRI88-COR data layer. Review the quality report for ASH-TRI88-COR for a thorough assessment.

For More Information Contact: Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60505
312-886-6227

Layer Name: TRIB-87
****

Data Layer Information

Layer Description:

Layer Type:

Areal Extent:

Project Name: Ashtabula Demonstration

Data Source Information

Source:

CH2MHILL Source Control Scoping Document, Fieldsbrook, Ashtabula, Ohio. U.S.E.P.A., Region V, EPA WA19-51460, 1987. Various maps.

Source Scale: 1:12000

Source Date: 12/31/87

Automation Date: 8/ 9/90

Data Quality Information

Quality Report for TRIB-87

Data for this layer was table digitized using a Calcomp 9100 series digitizer. Several maps from the Scoping Document were used. RMS errors were consistently reported of 0.003 to 0.005 using tics located at nodes of road intersections or other stable locations. The raw digitized data was TRANSFORMed into the UTM meters coordinate system.

For More Information Contact: Dawn E. McWha
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-4571

Layer Name: ZIPCENTROID
****

Data Layer Information

Layer Description:

Zipcodes as centroids.

Layer Type: Point

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

5-Digit Zip Code Boundary File, 1989, Geographic Data Technology

Source Scale: 1:2000000

Source Date: 6/15/89

Automation Date: 6/19/89

Data Quality Information

Quality Report for ZIPCENTROID

Data geo-processing lineage was not supplied by GDT for this data layer. The data was IMPORTed and PROJECTed into the UTM meters coordinate system. Zone 17.

For More Information Contact:

Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-6227

Layer Name: ZIPPOLY
****

Data Layer Information

Layer Description:

Boundaries of zipcodes.

Layer Type: Polygon

Areal Extent: Ashtabula Area of Concern (AOC), Ashtabula, Ohio

Project Name: Ashtabula Demonstration

Data Source Information

Source:

5-Digit Zip Code Boundary File, 1989, Geographic Data Technology

Source Scale: 1:2000000

Source Date: 6/15/89

Automation Date: 6/19/89

Data Quality Information

Quality Report for ZIPPOLY

Data geo-processing lineage was not supplied by GDT for this data layer.
The data was IMPORTed and PROJECTed into the UTM meters coordinate system.
Zone 17.

For More Information Contact: Barry J. Bolka
GIS Management Office
536 S. Clark St., Chicago,
IL, 60605
312-886-6227

APPENDIX I - EQUIPMENT USED FOR THIS STUDY

Equipment available for this study (GISMO unless noted).

- Prime 2755 computer with 9 track tape drive and two 315 Mb, two 817 Mb, one 496 Mb disk drives
- Arc/Info software, version 5.01 with TIN & COGO enhancements
- Tektronix 4325 workstation with 12 Mb RAM, floating point accelerator, 300 Mb disk and 16" monitor
- Arc/Info (v. 5.01) software for 4325 workstation
- 9 track tape drive for 4325
- external 300Mb disk drive for 4325
- Tektronix 4207 terminals (3 total, 1 GLNPO)
- Tektronix 4510A rasterizer
- Tektronix 4693D wax printer
- Calcomp 1044 GT plotter (GLNPO)
- Calcomp 91480 digitizer (GLNPO)