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OHIO EPA/CDO

ARCADIS G&M, Inc
6397 Emerald Parkway
Suite 150
Dublin
Ohio 43016
Tel 614 764 2310
Fax 614 764 1270
www.arcadis-us.com

ENVIRONMENTAL

Ms. Karla Auker
United States Environmental Protection Agency
25089 Canter Ridge Road
Westlake, OH 44145

Subject:
Final Report John Mercer Property Site Removal Action, John Mercer Property Site, Alexandria, Ohio

Date:
26 November 2002

Contact:
Denis Balcer

Phone:
614 799 4714

Our ref:
OH000879.0030.00003

Dear Ms. Auker:

On behalf of Akzo Nobel Coatings, Inc., ARCADIS is submitting to the United States Environmental Protection Agency (USEPA) the Final Report John Mercer Property Site Removal Action, John Mercer Property Site, Alexandria, Ohio. Per our conversation, we have sent copies of the report to the persons indicated in the carbon copy (cc) list below.

Please contact me with any questions or comments.

Sincerely,

ARCADIS G&M, Inc.

Denis M. Balcer
Project Manager

Enclosure

Copies:
D. Tanaka, USEPA (1 copy)
J. Justice, USEPA (1 copy)
S. Yebaile, Ohio EPA (1 copy)
B. Frey, Ohio DH (1 copy)
T.J. McFarland, Weston (2 copies)
D. Butler, Akzo Nobel (3 copies)
A. Hagen, ARCADIS

Final Report

John Mercer Property Site
Removal Action
3780 Hardscrabble Road
Alexandria, Ohio

November 2002

ARCADIS
Infrastructure, buildings, environment, communications

ARCADIS

M. Kent Adkins, P.G.
Task Manager

Denis M. Balcer
Project Manager

Amy Hagen
Senior Project Manager

Final Report

John Mercer Property Site
Removal Action
3780 Hardscrabble Road
Alexandria, Ohio

Prepared for:
Akzo Nobel Coatings, Inc.

Prepared by:
ARCADIS G&M, Inc.
6397 Emerald Parkway
Suite 150
Dublin
Ohio 43016
Tel 614 764 2310
Fax 614 764 1270

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Executive Summary

On September 6, 2000, Akzo Nobel Coatings, Inc. (Akzo Nobel) and the U.S. Environmental Protection Agency Region V (USEPA) entered an Administrative Order by Consent (AOC) under which Akzo Nobel agreed to undertake specified tasks at the John Mercer Property Site (the Site) at Alexandria, Ohio. The tasks have been fully accomplished, and work under the AOC is complete. Confirmation soil sampling and groundwater monitoring indicate that no contamination above action levels is present at the Site. This document constitutes the "Final Report" required under Section 2.5 of the AOC and (the confirmation) in conformance with 40 CFR §300.165.

In particular, the AOC required, and Akzo Nobel has completed, the following tasks:

a. *Develop and implement a Site-specific Health & Safety Plan;*

   Akzo Nobel, through its contractor ARCADIS, developed and implemented a Health and Safety Plan and subsequent amendments as work conditions changed during the work under the AOC. The Health and Safety Plan and amendments were approved by USEPA as part of the Work Plan for Removal Action dated November 1, 2000, and the Phase II Work Plan for Removal Action dated August 17, 2001.

b. *Secure and contain all hazardous substances on Site related to Section III-Findings of Fact of this AOC;*

   Identified hazardous substances were excavated, secured and contained on-Site within roll-off boxes designed and United States Department of Transportation (USDOT) certified for hazardous waste transport. Site hazardous liquids were contained in a liquid containment fractionization tank per the USEPA approved Site work plans. Hazardous materials were characterized for off-site disposal and shipped to USEPA approved facilities.

c. *Conduct additional drum sampling to identify, inventory, and characterize hazardous substances or pollutants or contaminants on Site, including ignitable wastes;*

   USEPA collected drum contents samples for analytical analyses on May 2, 2000, as presented in the Site Assessment Report for the John Mercer Property dated June 2000. During Removal Action excavation activities completed by

ARCADIS, samples from drum liquid within excavated areas were sampled and analyzed for USEPA approved parameters. Drum contents samples were collected during work completed in Intersection Area 1, Intersection Area 2 and the Below the Ravine Area, under the direction of USEPA. Additionally, TCLP and ignitability analyses were completed on waste samples as required by the USEPA approved off-site disposal facilities.

d. *Stabilize and dispose off-site all hazardous substances or pollutants or contaminants from drums and containers at a U.S.EPA-approved disposal facility in accordance with the U.S. EPA Off-Site Rule CFR §300.440);*

Waste shipped off-site was either treated and stabilized or incinerated at USEPA approved disposal facilities. If appropriate, waste was treated by chemical oxidation to approved land disposal restriction levels. The treated waste was then stabilized into a solid form and disposed in a Subtitle C Landfill.

e. *Take any response action to address any release or threatened release of a hazardous substance, pollutant, or contaminant related to Section III Findings of Fact of this AOC that the U.S.EPA determines may pose an imminent and substantial endangerment to the public health or the environment.*

Materials within excavated drums were contained within the excavation or in US DOT certified roll-of boxes. Liquids which collected in excavations were pumped to a containment fractionization tank prior to off-site incineration. Spill control procedures and Emergency Response Contingency Plans were approved by USEPA as part of the Work Plan for Removal Action and Phase II Work Plan for Removal Action. No releases occurred during the Removal Action which required actions included in the spill control procedures or Emergency Response Contingency Plans.

f *Sample residential wells to evaluate groundwater quality following a plan developed and included as part of the overall Work Plan for the Site. Samples will be analyzed for constituents which were identified pursuant to the U.S.EPA site assessment activities, and for volatiles, semi-volatiles, metals and PCBs which were identified by analysis pursuant to Respondent's removal activities. The residential well samples must be analyzed using methodology consistent with 40 CFR Part 141 and must include all detected parameters. The sampling and sample plan shall not include pesticides and herbicides. The sample work plan and*

revisions shall following the procedures and approvals detailed in Section 2.1, below.

On-site residential well sampling was completed on November 17, 2000, as part of the USEPA approved Work Plan for Removal Action. Residential well samples were analyzed for VOCs (Method 524.2), SVOCs (Methods 525.2 or 8270) and the Resource Conservation and Recovery Act (RCRA) metals (Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium and Silver) as discussed and approved by the USEPA during the week of November 13, 2000.

g. *Sample the wetland area downgradient of the Site following a plan developed and included as part of the overall Work Plan for the Site. Samples will be analyzed for constituents which were identified pursuant to the U.S.EPA site assessment activities, and for volatiles, semi-volatiles, metals and PCBs which were identified by analysis pursuant to Respondent's removal activities.*

Soil sampling in the Wet Field Area was completed by the USEPA oversight contractor on February 28, 2001. Samples were analyzed for VOCs, SVOCs, and metals. The sampling by the USEPA contractor satisfied the proposed sampling of the wet field area in the USEPA approved Work Plan for Removal Action as stated in the USEPA approved Phase II Work Plan for Removal Action.

Removal actions at the Site are complete, and no further action is required or warranted. As part of post-removal Site control, monitor wells will remain in-place until November 2003 to permit USEPA to conduct additional groundwater sampling.

1. Introduction

1.1 Site Description

The Mercer Property Site consists of approximately 54 acres in two adjacent parcels in a rural area northeast of the Village of Alexandria, in Licking County, Ohio (Figure 1). The property is primarily farmland with the western portion of the property consisting of relatively flat to gently rolling grass-covered topography. The eastern half is about 40 to 50 feet higher in elevation than the western portion of the property and generally drains to the west into the north-south trending intermittent stream. The Mercer Property Site includes the residence of Margaret Emblem (formerly Margaret Mercer) as well as the Ferguson residence of 3938 Hardscrabble Road, Steve Mercer residence of 3724 Hardscrabble Road, David Mercer residence of 3880 Hardscrabble Road and the Joyce Drumm residence at 3824 Hardscrabble Road.

The Site is bordered to the west and northwest by Hardscrabble Road and private residences and to the south by an open field and residence. Open fields and woodlands bound the property tract to the east and northeast, respectively.

1.2 Site History

The Findings of Fact of the AOC state that during the 1970s Mr. John Mercer, owner of the Site, disposed of drums containing various industrial wastes at the Site. The AOC names Hanna Paint Company, a predecessor to Akzo Nobel, as a source of such wastes. In 1990, in response to citizen complaints, representatives of the Ohio Environmental Protection agency identified the presence of drums buried at the Site. In May, 2002, USEPA conducted a Site Assessment and determined the presence of hazardous substances in drums buried at the Site.

1.3 Project Objectives

In accordance with Section I, paragraph 3 of the September 6, 2000 AOC for the Mercer Property, the project objective was "...to conduct removal actions described herein to abate any imminent and substantial endangerment to public health, welfare or the environment that may be presented by the actual or threatened release of hazardous substances at or from the Site".

USEPA defined objectives for the Mercer Property Site are summarized as follows:

- Identify areas on the Mercer Property where potential drum waste disposal has occurred.

- Assess areas of potential drum waste disposal in order to quantify and qualify constituents and develop approach to remove and dispose of buried waste and impacted soil.

- Develop analytical standards acceptable to USEPA to demonstrate confirmation of impacted soils removal.

- Implement and complete excavation and disposal of drum waste, associated impacted soil and liquids at USEPA approved facilities.

- Assess and evaluate potential of waste constituents to impact local water supply.

- Restoration of the excavated areas at the Mercer Property to a reasonable condition once the extents of impacted material have been analytically confirmed as being removed and properly disposed.

- Submission of a plan documenting a proposal for Post-Removal Site Control which addresses the potential for additional site monitoring or assessment.

- Submission of a Final Report summarizing the actions and methods employed to comply with the conditions of the September 6, 2000 AOC in completion of this project.

Response actions were prepared to address any potential release of hazardous materials identified during the removal action such that the Site does not pose an undue risk or hazard to human health or the environment. Work Plans were submitted to the USEPA for approval that described the procedures to be utilized to perform and document waste and impacted soil removal efforts. Procedures described in these Work Plans include field monitoring, collection of samples, laboratory analyses, and quality assurance/quality control (QA/QC) procedures used to collect and report data representative of Site conditions after completion of the Removal Action. All work was completed in accordance with the National Contingency Plan (NCP) (40 Code of Federal Regulations [CFR] Part 300) and applicable Resource Conservation and Recovery Act (RCRA) waste management regulations. No work was performed on-site until USEPA Work Plan approval was received by ARCADIS.

1.4 Identified Areas

Two areas were identified in the Phase I Work Plan for Removal Action and eight areas were identified in the Phase II Work Plan for Removal Action (ARCADIS 2000 and 2001, respectively) for evaluation to determine if they had been subjected to potential waste disposal on the John Mercer Property Site (Figure 2). During the course of performing Phase II waste removal activities, an additional area, the East Pole Barn Area, was identified for further evaluation. The selection criteria for evaluation of the Identified Areas was based upon characteristics such as the visible presence of drums at ground surface, history of the Site as provided by local residents and the surviving relatives of Mr. John Mercer, proximity to areas of known waste disposal, or a combination of these characteristics. In addition, two Electromagnetic (EM) surveys were conducted, in the vicinity of known and suspected burial locations (the first on February 15, 2001 and the second on September 4, 2001). The EM reports are provided in Appendix A. Of these identified areas, the Pole Barn and Ravine Areas were evaluated as part of Phase I activities with the remainder of the Site being addressed in Phase II.

Area 1 – Ravine Area – The Ravine Area is located in a wooded section in the north central area of the Site with a relatively steep westward sloping grade towards the Below the Ravine Area. During the initial inspection of this area, it was discovered to be littered with residential debris, garbage, miscellaneous white goods, discarded farm equipment, and vehicles indicative of an open dumping area.

Area 2 – Pole Barn Area – The Pole Barn Area is situated adjacent to the east side of the Pole Barn on the south side of the east-west trending residence access road. This area was initially covered with grass and is relatively flat with a slight eastward slope.

Area 3 – Wet Field Area – Relatively flat and low-lying, the Wet Field Area is located in the meadow east-northeast of the Intersection Areas and south-southwest of the Below the Ravine Area. A north-to-south trending intermittent stream dissects this Area. The Wet Field Area is characterized by poor soil infiltration, relatively level topography and poor surface drainage.

Area 4 – Intersection Areas 1 and 2 – The Intersection Areas are located immediately north-northeast of the Pole Barn across the east-west trending residence access road and north of the East Pole Barn Area. These areas were formerly utilized as grasslands and characterized by a gentle slope eastward into the Wet Field Area. Strong evidence in support of drum burial in these areas was established utilizing the EM survey results

and visual observation of portions of drums exposed at ground surface. The reason for distinguishing the Intersection Area into two separate areas was based upon the EM survey that indicated two separate areas of potential drum burial.

Area 5 – Below the Ravine Area – The Below the Ravine Area has a slight westward slope and is situated at the toe of the Ravine Area drainage shed which is located just to the east. Strong evidence in support of drum burial in this area was established using the EM survey results and visual observation of a portion of a drum exposed at ground surface.

Area 6 – South Property Line Area – The South Property Line Area is situated along the south-central border of the Mercer Property. The area is gently sloping to the east–northeast and mowed as part of the lawn of the Steve Mercer residence at 3724 Hardscrabble Road. Surrounding neighbors reported possible historical waste burial activity in this area. An EM survey and subsequent excavator trenching along the South Property Line Area did not reveal any evidence of drummed waste disposal.

Area 7 – South Pole Barn Area – Located south of the Pole Barn Area, the South Pole Barn Area is relatively level with a gradual eastward slope. A small sheet metal pole barn was previously located in this area. A geophysical survey of the area indicated the presence of buried metallic debris.

Area 8 – 3824 Hardscrabble Area - One partially buried drum was identified protruding above the ground surface along the south side of the driveway to the residence of Joyce Drumm located at 3824 Hardscrabble Road.

Area 9 – East Pole Barn Area – The East Pole Barn Area is located due east of the Pole Barn Area and adjacent to the south side of the east-west trending residence access road that transects the property between the Pole Barn and Intersection Areas. This area was formerly grass covered with a gentle eastern slope similar to the Intersection and South Pole Barn Areas.

Detailed discussions of Removal Action activities are discussed further in Section 2.4.

1.5 Summary of Removal Action

The Removal Action was completed in two phases. The initial phase (Phase I) was conducted based upon the USEPA approved Work Plan for Removal Action dated November 1, 2000 (ARCADIS, 2000). The original project was anticipated to be

relatively limited in scope because of the low initial estimates of waste buried on the Mercer Property. However, soon after initiation of the project in October 2000, it was determined the number of drums was greater than originally estimated. Phase I was completed in July 2001. The Phase II Work Plan was prepared utilizing historical information provided by local residents, EM geophysical surveys, Site reconnaissance as well as discussions and correspondence with Ms. Karla Auker of USEPA Region V. The June 28, 2001 Phase II Work Plan for Removal Action was conditionally approved by USEPA on August 13, 2001. The Phase II removal activities were initiated in September 2001 and completed February 7, 2002. Demobilization and Site restoration activities were concluded through September 2002.

The activities performed by ARCADIS and it subcontractors included investigation, waste material and soil sampling, waste and soil characterization and removal activities. The removed materials included:

- 994 drums containing waste resins and paints were removed from the Mercer Property Site.
- 11,408.54 tons of drums, waste resins, paints and contaminated soils were removed from the Mercer Property Site.
- 86,528 gallons of waste liquids treated at Ross Incineration.

In addition to the waste excavation and disposal activities was the evaluation to determine if the presence of the buried waste impacted groundwater in the immediate Site vicinity. Evaluation of the uppermost aquifer completed during the Phase I Groundwater Investigation and supplemented during the Phase II Groundwater Investigation indicated no evidence of any impact from the buried waste material. Furthermore, the underlying soil stratigraphy displays very low permeability silty-clay and clay, which limits potential downward migration of fluids. This was further supported by geotechnical test results and groundwater quality results from the deeper groundwater unit that is used locally for private domestic wells. The deeper groundwater results indicated no evidence of impact by the waste material. Per the conditions of the September 6, 2000 AOC, excavation and disposal of the waste material, post-excavation assessment of the excavated areas and the evaluation of the local groundwater quality beneath the Mercer Property is complete. The remaining sections of this report discuss the activities and findings.

2. Removal Action Activities and Waste Management

Between October 2000 and February 2002 ARCADIS conducted two phases (Phase I and II) of sampling and removal/disposal activities, which are discussed below.

ARCADIS oversaw and managed the daily field activities on behalf of Akzo Nobel Coatings, Inc. UST Environmental Contractors (UST) of Carroll, Ohio performed excavation activities. All fieldwork was performed under the oversight of the USEPA's contracted engineering firm. Ecology & Environment, Inc., served as the USEPA oversight contractors from October 2000 to December 2000. Roy F. Weston, Inc. (Weston) served as the USEPA oversight contractor from December 2000 to July 2002. The USEPA oversight contractors responsibility for the project was to ensure all work was conducted in accordance with USEPA's guidelines. RF Weston will prepare a standalone report for USEPA documenting their own sample collection procedures and results as well as conclusions regarding the clean-up action

Photographs obtained throughout the duration of the project are presented in Appendix B.

2.1 Removal of Drums, Liquids and Surrounding Soils

In the Identified Areas where excavation activities were required, hydraulic excavation equipment was used to remove drums and soil. As drums and potentially impacted soils were encountered, they were removed and placed in plastic lined, sealed gate roll-off boxes with the drums being crushed. The waste material was characterized for disposal using procedures detailed in the USEPA approved Removal Action Work Plans (ARCADIS 2000 and 2001). Drums, waste and soils were disposed at the USEPA approved hazardous waste disposal facility, Environmental Quality Company of Bellevue, Michigan (EQ). Some additional soils were disposed, as authorized by USEPA, at Ross Environmental Services of Grafton, Ohio (Ross). The waste characterization and disposal procedures are briefly summarized in Sections 2.2.1 and 2.2.2 of this report.

The excavations were kept free of liquids to the extent possible during removal activities. Liquids from the drums and the excavations were transferred to on-site USEPA approved above ground temporary storage vessels using a vacuum truck. The temporary storage vessels were emptied as necessary using the transport and off-site disposal facility capabilities of Ross.

In accordance with the USEPA approved Phase II Work Plan for Removal Action (ARCADIS 2001), the preliminary extent of volatile organic compounds (VOCs) in soil at each excavation was determined based upon soil screening readings from a field photoionization detector (PID) or flame ionization detector (FID). All soils with field PID/FID readings greater than 1,000 parts per million (ppm) were removed for disposal. The 1,000 ppm preliminary field screening standard was determined based upon the fact that soils with field readings of 1,000 ppm or less obtained laboratory results that showed constituent concentrations well under the USEPA approved soil cleanup standards determined for the Site. In addition, all soils with visual evidence of impact with PID/FID readings less than 1,000 ppm, were also removed for disposal. This approach was verified to be appropriate based upon the results of the soil confirmation sampling from the excavations after soils were removed. Section 2.2.4.2 of this report discusses the fact that all soil confirmation sample results are below the USEPA approved soil cleanup standards selected for the Site.

Sedimentation control around the excavations was conducted by diverting surface flow away from excavations, using straw bales to address sediment load and slope erosion and seeding to re-establish vegetation cover.

2.2 Soil Management

2.2.1 Waste Characterization

During Phase II of the Removal Action, at the request of U.S.EPA, the waste materials in the drums were directly sampled in order to characterize the type and concentrations of constituents contained in the drums. Characterization samples of the liquid and solid waste were analyzed by USEPA SW846 Method 8260 for VOCs, Method 8270 for semi volatile organic compounds (SVOCs), Method 8080 or 8082 for polychlorinated biphenyls (PCBs), and Methods 6010, 7060, and 7471 for the 8 Resource Conservation and Recovery Act (RCRA) metals. Initially samples were collected from each batch of 10 drums removed from each Identified Area excavation. Because of the consistency in the analytical results from these samples, the frequency was decreased to one sample from each batch of 20 drums removed from each area excavation. The USEPA oversight coordinator approved this change. Waste characterization analytical data is presented in Appendix C.

2.2.2 Waste Characterization for Disposal

Waste materials and impacted soils were placed in the lined roll off boxes and composite samples were collected per the direction of the USEPA approved disposal facilities, EQ and Ross. Per these disposal facilities direction, once the waste stream consistence was established at each Identified Area, continuous sampling was not required. The analytical results for waste disposal characterization are provided in Appendix C.

2.2.3 Soil Stockpiles

During Phase I excavation in the Ravine and Pole Barn Areas, soil segregation based on field measurements and observations did not occur. During these excavations work was initiated in areas of known drum disposal and soil was removed based on visual inspection and elevated PID readings and placed directly into roll off boxes. Once the excavation extended into non-impacted soil, removal ceased and confirmation samples were collected. Upon the initiation of Phase II fieldwork, Mr. Jim Augustyn of the USEPA requested that excavations be initiated outside the anticipated waste drum areas as a means to confirm the results of EM surveys. The USEPA's reasoning for requesting this approach was the desire to start the excavations on the outer fringe of the drum areas and continue the excavations inward, toward the center portion of the drum areas. In this way, the excavated area corresponded to the same approximate area encompassed by the EM survey. This approach resulted in considerable amounts of soil being excavated that was not impacted. Per the USEPA's verbal and written approval documented in a letter from ARCADIS to the USEPA dated October 12, 2001, non-impacted soil demonstrated by the PID/FID readings was used as backfill once the excavation was completed. Soils that were observed to have PID/FID readings above 5 ppm, yet below 1,000 ppm, were segregated into approximately 20 cubic yard stockpiles that were placed on and covered with plastic sheeting liner. These soil stockpiles were sampled for VOC by Method 8260. The laboratory analytical results were compared to the Ohio Voluntary Action Plan (VAP) soil standards as provided in Ohio Administrative Code (OAC) 3745-300-08 promulgated December 16, 1996 (Generic Direct-contact Soil Standards for Carcinogenic and Non-carcinogenic Chemicals of Concerns Residential Land Use). Segregated stockpiles falling within the acceptable Ohio VAP standards were utilized as excavation backfill while those stockpiles found to be above Ohio VAP standards were properly disposed off-site. Tables 1 through 3 summarize the analytical results for these soil piles. Analytical data for the soil piles is provided in Appendix C.

2.2.4 Confirmation Soil Sampling

Confirmation samples were collected from each excavation by ARCADIS personnel to verify removal of soils above Ohio VAP direct contact standards for residential land use. Confirmation samples throughout the project were collected according to the procedures described in Sections 3.1.2 and 3.1.2.1 of the Work Plan for Removal Action (ARCADIS, November 2000). In addition to ARCADIS, the USEPA oversight contractor also collected samples to confirm that appropriate soil had been removed from the excavated areas.

2.2.4.1 Confirmation Sample Collection

Selection of confirmation sample points along the base and sidewalls of each excavation were conservatively selected in areas that would likely contain the highest, or potential worst-case, residual concentrations of drum constituents. Confirmation soil sample locations were selected based upon but not limited to the following characteristics at each excavation area:

- Location of drums in the excavation,
- Locations of visually impacted soils or other Site-specific evidence of contamination (e.g. elevated FID/PID readings or sheens),
- Slope direction and degree,
- Changes in soil characteristics (e.g. sand/clay interfaces), and
- Surface drainage direction.

The numbers of sampling points from each area were determined using the following table, which was included in the removal action work plans.

CONFIRMATORY SOIL SAMPLES

Removal Area (square feet)	Minimum Number of Samples
<250	1
>250 and < 500	2
> 500 and < 1,000	3

CONFIRMATORY SOIL SAMPLES	
Removal Area (square feet)	Minimum Number of Samples
>1,000 and < 1,500	4
>1,500 and < 2,500	5
> 2,500 and < 4,000	6
> 4,000 and < 6,000	7
> 6,000 and < 8,500	8
> 8,500 and <10,890	9

Locations of the final confirmation samples were selected in conjunction with the USEPA oversight contractor.

2.2.4.2 Confirmation Sample Analyses

Confirmation samples of the soil were analyzed by U.S.EPA SW846 Method 8260 for VOCs, Method 8270 and 8310 for SVOCs, and Methods 6010, 7060, and 7471 for the 8 RCRA Metals. The analysis of PCBs (Method 8080 or 8082) was conducted during confirmation sampling completed during the Phase I Removal Activities. Analysis of PCBs was not completed on confirmation samples associated with the Phase II Removal Activities unless PCBs were detected in the waste characterization samples collected from that Identified Area.

Confirmation samples were analyzed by Test America, Inc., Dayton, Ohio. Level II data validation was performed on the analytical data reported by Test America. Data validation was completed according to the procedures detailed in the approved Work Plans. The data validation summary sheets for each data package are included with the analytical data in Appendix C.

2.2.4.3 Confirmation Sample Results and Interpretation

Confirmation sample analytical results were compared to the Ohio VAP generic numeric soil direct-contact cleanup standards for residential land use. The generic Ohio VAP soil standards are risk-based cleanup standards applied to either residential, commercial, or industrial land use. The residential soil standards are the most

protective cleanup standards of the three land use types. For the purposes of this removal action, the residential soil standards were selected.

Once confirmation samples were collected, the associated excavated areas were not backfilled or disturbed until receipt of the laboratory analytical results. If the samples were below the Ohio VAP residential soil clean-up standards, the excavation was backfilled to grade. If detections above the Ohio VAP soil standards were encountered, additional soil was removed for off-site disposal and additional confirmation samples were collected until all areas of each excavation were below the Ohio VAP residential soil standard.

No additional soil removal was completed at excavated areas if both, 1) the concentrations of detected constituents were below the Ohio VAP residential soil standards and 2) the USEPA representative agreed that a sufficient number of confirmatory samples were collected. The locations of the final confirmation samples for each excavation area are presented on Figures 3 through 9. Laboratory analytical results are presented in Appendix C and summarized in Tables 4 through 9. After excavation activities were complete, all confirmation soil results were below Ohio VAP residential soil standards.

Additional USEPA confirmation samples were collected by USEPA's onsite contractor. The USEPA oversight contractor, collected confirmation samples for comparison of results and additional excavation coverage. Sample locations were selected using the same criteria as provided in Section 2.2.4.1 and utilized by ARCADIS field personnel. The USEPA oversight contractor used the laboratory analytical services of Kemron Environmental Services in Marietta, Ohio and Environmental Chemical Corporation in Cincinnati, Ohio to perform similar analyses. Review of the data by USEPA during field activities concluded that their data is comparable to the confirmation data collected by ARCADIS and the results confirm that soils in the vicinity of each drum excavation were successfully removed for disposal and that the remaining soil is below the Ohio VAP residential land use standards. Removal Action areas were not backfilled or restored until USEPA reviewed both ARCADIS and USEPA confirmation results. The results of the USEPA confirmation samples and the summary of their oversight activities will be provided in a separate site report issued by USEPA.

2.3 Naturally Occurring Arsenic Concentrations

During Phase 1 of the Removal Action in conjunction with drum removal and soil sampling, surface soil samples were collected in the Wet Field Area along the most likely path of surface water flow from the Ravine Area. The sampling was conducted by USEPA's oversight contractor. The analytical results for these samples indicated the presence of arsenic in soil ranging from 7.8 milligrams per kilogram (mg/kg) to 15.4 mg/kg.

Because arsenic is a naturally occurring constituent in soils and its concentrations often exceed conservative risk-based standards such as those established for Ohio VAP (6.9 mg/kg for residential land use), the USEPA suggested collection of additional soil samples at the Site for background concentrations purposes, in areas where there is no evidence or suspicion of any potential impact from the buried drum locations. Additional samples were collected from the adjacent southern property as well as the northeast area of the Site. The analytical concentrations for arsenic in these samples ranged from 4.45 mg/kg to 12.6 mg/kg, establishing that arsenic occurs naturally in soil at the Site at concentrations above the Ohio VAP residential land use standard. The Site arsenic concentrations were also compared to published background studies in Ohio and the eastern United States and found to be within comparable background concentrations.

The activities of this background arsenic evaluation were summarized in the May 16, 2001 correspondence from ARCADIS submitted to the USEPA on behalf of Akzo Nobel Coatings, Inc., which is provided in Appendix D.

2.4 Activities in Identified Areas

The following sections provide details on the work completed at each of the nine Identified Areas of the Site, including the type of work conducted, dates the work was conducted, amount of material removed from the area (where applicable), and analytical results of samples collected at each area. The locations of the Identified Areas are shown on Figure 2. Figures 3 through 9 show each Identified Area including dimensions of excavations and locations of final confirmation samples. Tables 4 through 9 provide a summary of the final confirmation sample analytical results for each area and a comparison to the Ohio VAP generic numeric soil standards for residential land use. Confirmation soil samples in each area were analyzed for constituents as listed in the Work Plan for Removal Action, John Mercer Property, 3780 Hardscrabble Road, Alexandria, Ohio dated 1 November 2000 and Phase II Work

Plan for Removal Action, John Mercer Property, 3780 Hardscrabble Road, Alexandria, Ohio dated 28 June 2001. Confirmation sample analytical data and waste characterization analytical data is presented in Appendix C.

Disposal facilities were pre-approved by the USEPA before off-site disposal of excavated material. Soil and debris were primarily disposed at The EQ Landfill while a minor amount of soil and all the liquid waste were disposed at Ross Incineration Services, Inc. Copies of the disposal manifests are provided in Appendix E.

2.4.1 Area 1 - Ravine Area

The Ravine Area is located in the wooded north central section of the Site with a grade of approximately 20 to 30 degrees to the west (Figure 3). In addition to the removal of the buried drums and impacted soils, the solid waste (discarded kitchen appliances, farm equipment, household trash, etc.) strewn along the ravine in the proximity of the drum locations was placed into piles outside of the work area as necessary to proceed with removal of the drums.

Removal/excavation activities in the Ravine Area began in October 2000 and completed in August 2001. Work in the Ravine Area was halted after removal of the majority of the drums, from mid November 2000 until late April 2001, due to work progression in the Pole Barn Area. A total of 269 drums were excavated from the Ravine Area with 2,545 tons of material removed. The final dimensions of the Ravine Area excavation and confirmation sample locations are shown on Figure 3. No constituents were detected above the Ohio VAP residential soil standards in confirmation samples. A summary of the analytical results from the final confirmation samples is presented in Table 4.

Three confirmation test trenches were dug approximately 10 feet outside the excavation perimeter to the west, south and east of the Ravine Area excavation. The purpose for these confirmatory trenches were to ensure the area of impacted soil associated with the drummed waste had been defined and that no additional areas of buried drums were present. The test trenches were screened with a FID to check for the presence in impacted soils. No additional areas of impacted soils or buried drums were encountered in the west, south, or east test trenches. A trench was not excavated on the north side of the ravine because of steep topography of the ravine wall and the lack of evidence for access roads or disturbed areas. Regardless, the soil on the north wall was screened with an FID to check for the presence of impacted soil. FID screening readings did not indicate the presence of impacted soils on the north wall.

During the excavation of the South Test Trench on overturned junk car had to be moved in order for trenching to be completed. When the vehicle was moved out of the trench path (Figure 3) an area of gasoline impacted soil was encountered beneath the car. The gasoline impacted soils were excavated and staged on plastic sheeting, until a roll-off box became available. The excavation was screened with a FID to verify the complete removal of the gasoline impacted soils. A waste characterization sample from the staged soils was collected for benzene, toluene, ethylbenzene, and xylenes (BTEX) by Method 8260. Upon receipt of the analytical results the staged soil was appropriately disposed off-site.

2.4.2 Area 2 - Pole Barn Area

The Pole Barn Area is located adjacent to the east side of the Pole Barn where farm equipment is stored. This area was initially identified for further investigation in the Fall of 2000 due to a piece of exposed metal and interviews with the residents indicated that a "burn pit" was located in the vicinity. Excavation in this area was initiated in November 2000 and concluded in mid-March of 2001. A total of 388 drums were removed from the Pole Barn excavation with 2,099 tons of material was excavated for disposal. No constituents were detected above the Ohio VAP residential soil standards in the final confirmation samples. Final dimensions of the excavation and confirmation sample locations are shown on Figure 4. Table 5 summarizes the confirmation sample analytical results.

2.4.3 Area 3 - Wet Field Area

This area is located in the meadow east-northeast of the Intersection Areas and south-southwest of the Ravine Area (Figure 2). The Wet Field Area is mainly fine grained silt clay which prevents easy infiltration of surface water. This soil characteristic in combination with relatively level topography and vegetative cover, results in damp to marshy conditions in this area throughout most of the year. Small fresh water springs are also present in the north portion of the field (Figure 2). In order to begin excavation activities in the Below the Ravine Area, a drainage ditch was dug transecting the Wet Field Area from north to south to accommodate surface water. The north-south trending ditch connected the springs at the north end with the culvert at the south end bypassing the excavated area.

Based upon the results of the EM survey report dated March 15, 2001 (Appendix A), there was no supporting geophysical data indicative of buried drums or metal in this area. Therefore, no further evaluation or excavation was necessary.

2.4.4 Area 4 - Intersection Areas 1 & 2

The Intersection Areas were considered potential locations of former drum burial based upon Site history provided by local residents and evidence of metal exposure at ground surface in Intersection Area 1. Areas of buried metal drums were confirmed by the EM survey, which assisted in focusing excavation activities. The Intersection Area was divided into two areas because of the distinct evidence in the EM survey indicating that two areas of buried metal were separated laterally by approximately 15 feet to 20 feet of soil.

Excavation in Intersection Area 1 began on September 4, 2001 and was completed September 6, 2001. There were 39 drums excavated from Intersection Area 1 and approximately 257 tons of material was removed for proper disposal. No constituents were detected above the Ohio VAP residential soil standards in the confirmation samples. Figure 5 shows the final dimensions of the excavation and confirmation sample locations. Confirmation sample analytical results for Intersection Area 1 are presented in Table 6.

Excavation work in Area 2 was initiated on September 7, 2001 and completed October 30, 2001. There were 209 drums excavated from Intersection Area 2 while approximately 2,883 tons of material was removed for proper disposal. No constituents were detected above the Ohio VAP residential soil standards in the confirmation samples. Figure 5 shows the final dimensions of the excavation and confirmation sample locations. Confirmation sample analytical results for Intersection Area 2 are presented in Table 7.

2.4.5 Area 5 - Below the Ravine Area

As with the Pole Barn and Intersection Areas, the Below the Ravine Area was suspected to have been a former drum burial site based upon Site history provided by local residents and metal exposure at ground surface. The EM survey confirmed the presence of metal in this area. Excavation activities were initiated in the Below the Ravine Area on September 4, 2001 and concluded October 23, 2001. Eighty-four drums and approximately 853 tons of material were excavated in this Area. No constituents were detected above the Ohio VAP residential soil standards in the confirmation samples. Figure 6 shows the dimensions of the excavation and confirmation sample locations. Analytical data for the confirmation samples is summarized on Table 8.

2.4.6 Area 6 - South Property Line Area

During interviews with the adjacent property owner to the south of the Mercer Property proximate to the 3724 Hardscrabble residence of Steve Mercer, activities were reported to have possibly occurred along the south property line that required investigation per USEPA's direction. An EM survey was conducted in this area to search for buried metal. However, the EM survey results from a portion of the surveyed area were inconclusive due to interference from a metal building frame and other metal objects at the surface. Therefore, on October 30, 2001, two exploratory trenches were dug in the area beneath the building frame and adjacent to the property line. The trenches were 4 feet wide, 19 feet in length, and approximately 6 feet deep (Figure 7). No visually impacted soil or evidence of drum debris were encountered. Soil was field screened throughout the trench with no elevated PID/FID readings. The trenches were backfilled and the area was graded.

2.4.7 Area 7 - South Pole Barn Area

While conducting an EM survey in the Pole Barn Area, an anomaly was noted in an area approximately 50 feet south of the main Pole Barn excavation (Figure 2). An exploratory trench was dug on October 29, 2001 to further investigate this anomaly. The trench measured 4 feet in width and 23 feet in length. During excavation activities, a metal bar measuring 2 feet by 3 feet was discovered. Soil was field screened with a PID/FID and no elevated readings over encountered. No impacted soil was encountered and the trench was backfilled.

2.4.8 Area 8 - 3824 Area

During Site activities, a partially buried drum was noted adjacent to the driveway leading to the Drumm residence at 3824 Hardscrabble Road. An EM survey was completed in the area to determine if additional buried metal was present. The EM survey indicated that no additional metal objects were located in the vicinity of the partially buried drum. On October 11, 2001, excavation equipment was mobilized to the area and the partially buried drum was removed (Figure 8). The drum and approximately two (2) tons of material were disposed off-site. One confirmation soil sample, DACS-01, was collected from the bottom of the excavation, directly beneath the location of the drum. The confirmation soil sample was analyzed for VOCs, SVOCs, and the 8 RCRA Metals. No constituents were detected above the Ohio VAP residential soil standards in the confirmation samples. Figure 8 shows the final

dimensions of the excavation and the confirmation sample location. Confirmation sample analytical results for the 3824 Area are included in Appendix C.

2.4.9 Area 9 – East Pole Barn Area

During Site restoration grading activities in the Pole Barn Area in the spring of 2001, what appeared to be a very limited area of impacted soil was uncovered east of the excavation. With consent of the USEPA oversight contractor, a decision was made to continue excavation of this area after proposed Phase II work in the Intersection Areas was completed. This decision was made so that drum and soil excavation in the Ravine Area could be resumed. Equipment was re-mobilized to the East Pole Barn Area on October 31, 2001. The extent of the excavation is attributed to a former "burn pit" area as noted during a conversation with Mr. Steve Mercer prior to the re-mobilization of equipment to the East Pole Barn Area. A total of four drums and 2,771 tons of material were excavated. No constituents were detected above the Ohio VAP residential soil standards in the confirmation samples. The dimensions of the excavation and sample locations are shown on Figure 9. Analytical results from the confirmation samples are summarized on Table 9.

2.5 Health and Safety Activities

ARCADIS developed a Site-specific Health and Safety Plan (HASP), which was included as part of the Work Plans (ARCADIS, 2000 and 2001). The HASP addressed worker activities, including but not limited to drum and solid waste removal, waste characterization, soil excavation, and soil sampling. The HASP was designed to meet the criteria specified in the 29 CFR 1910.120.

Prior to initiating Phase II field activities, ARCADIS coordinated with the appropriate township, local, and Licking County government agencies regarding the Site HASP and garnered their input for coordination in the event of an accident. As part of this effort, an instruction sheet was distributed to the surrounding community in the event of an emergency at the Mercer Property. No emergency action, injuries or accidents occurred during the course of the entire project.

2.6 Site Air Monitoring

In accordance with the Phase I and Phase II Removal Action Work Plans, air monitoring was conducted at the Site to ensure the health and safety of onsite personnel and off-site private residences.

During Phase I activities, continuous air monitoring was performed at the excavations using PID or FID instruments properly calibrated to the manufacturers specifications. In addition, five air monitoring locations were established around the Site perimeter and monitored twice daily with a PID or FID to ensure that no detectable vapors were migrating offsite (Figure 2). During the course of the Phase I Removal Action no detections were noted. Copies of the air monitoring logs are provided in Appendix F.

A more stringent air monitoring plan was adopted during the Phase II removal activities. Continuous air monitoring was conducted during excavation activities at each excavation area using a properly calibrated PID or FID. Chemical-specific air monitoring was also conducted at the excavations using Summa® canisters. The Summa® Canisters were placed in the excavations to collect composite air samples and determine if additional constituents of potential concern other than those already identified are present and ensure the protection of on-site workers and off-site personnel. The canisters were sent to Data Chem Laboratories in Cincinnati, Ohio for analysis of VOCs by USEPA Method TO15. No additional constituents of potential concern were identified by the Summa® Canister samples. Copies of the analytical data can be found in Appendix F.

In addition to the air monitoring at the excavations during Phase II activities, monitoring was also performed at the Site perimeter. Constituent specific monitoring was performed by ARCADIS personnel at the Site perimeter using a USEPA approved Thermo Sapphire unit. The unit was calibrated to monitor for xylenes (total) and methyl ethyl ketone (MEK). The location of the unit was determined each morning by USEPA oversight personnel and was reevaluated each afternoon, to ensure that it remained down-wind from the excavation activities. In addition to monitoring with the Thermo Sapphire unit, monitoring continued at the five perimeter air monitoring stations established during the Phase I activities using a PID or FID (Figure 2). No detections were noted by the Thermo Sapphire unit or during the perimeter air monitoring. Copies of the Thermo Sapphire monitoring reports and the perimeter air monitoring station logs are provided in Appendix F.

2.7 Site Restoration

Once confirmation soil analyses for the excavated areas were received, and weather permitted, the areas were graded with a bulldozer then seeded and covered with straw. Care was taken to attempt to restore the land topography and drainage directions to as near original conditions as feasible. The east-west trending residential access road had to be temporarily relocated due to excavation in the East Pole Barn Area. After

completion of the East Pole Barn Area, which was the last area to be excavated, the excavation and primary access road were restored by grading and bringing in off-site stone as well as using stone excavated from the roll off box storage yard. Additionally, the temporary residential access road, roll off box storage yard, the area of the temporary site office and storage trailers were restored via stone removal, grading, reseeding and being covered with straw.

Final Site restoration activities were concluded in July 2002.

3. Phase II Groundwater Investigation

The Groundwater Investigation was completed in two phases. The Phase I work was conducted as detailed in Section 5 (Groundwater Investigation) in the USEPA approved Phase II Work Plan for Removal Action dated June 28, 2001 (ARCADIS, 2001). Phase II was conducted based upon the USEPA approved Phase II Groundwater Investigation Work Plan dated April 23, 2002 (ARCADIS, 2002). The Phase II Groundwater Investigation was initiated on May 15, 2002 and concluded on June 3, 2002.

3.1 Introduction

The purpose of the Phase I Groundwater Investigation was to determine if a release to groundwater had occurred from the drum removal areas. The Phase I Groundwater Investigation, initiated on August 27, 2001, involved the installation of three shallow monitor wells and two deep soil borings shown in Figure 10 and described in the Phase II Work Plan for Removal Action (ARCADIS 2002). The monitoring wells were installed in the upper most saturated zone at each location. The Phase I groundwater investigation results indicated no evidence of a release to subsurface soil outside of the immediate drum excavations or the shallow groundwater downgradient of the drum areas. Two deep soil borings (SB-1 in the northern portion of the Site and SB-2 in the southern portion) were installed in order to obtain accurate information regarding the subsurface materials at the Site. Both borings encountered a substantial sequence of dense, low permeability clay and clayey silts to a depth of 100 feet at SB-1 and 98 feet at SB-2.

The Phase II Groundwater Investigation focused on deeper groundwater quality beneath the Site, which is utilized locally as a potable water source. The Phase II investigation was also designed to provide additional Site groundwater information as well as to verify that the subsurface throughout the Site contains a significant sequence of relatively impermeable clay and silty clay.

Based upon the data obtained from the Phase II investigation as well as from domestic well logs, this low permeability clay zone is present above bedrock at a depth ranging from approximately 75 feet to 125 feet below land surface (bls). Underlying the massive clay sequence is a zone of discontinuous sand and gravel lenses which is recognized locally as the uppermost aquifer. This uppermost aquifer, where present, supplies drinking water to some area residents while most residential wells are screened in the underlying bedrock aquifer. In order to conservatively determine if

Site related constituents could have migrated downward to the uppermost aquifer, four deep wells were installed to determine groundwater quality and flow direction as part of the Phase II work (Figure 11).

Two of the four Phase II deep monitor wells, MW-5D and MW-6D, were installed adjacent to the Pole Barn and Below the Ravine Areas, respectively, which were two of the largest drum excavations. The other two deep monitor wells, MW-7D and MW-8D, are located along Site boundaries to the northeast and to the south, respectively, between the property boundary and off-site residential wells. In addition, as part of the Phase II work, a shallow well was installed to provide additional information on groundwater quality and to further delineate flow direction.

The results and methodologies of the Phase I Groundwater Investigation and a detailed scope of the Phase II Groundwater Investigation can be found in the Phase II Groundwater Investigation Work Plan dated April 23, 2002. The Findings of the Phase I Groundwater Investigation are summarized below.

- No significant field headspace readings were detected in soil from any of the continuously logged monitor well borings MW-1, MW-2, MW-3, or soil borings SB-1 and SB-2;
- Soil descriptions from the Phase I borings indicate the presence of laterally and horizontally continuous low-permeability clay and clayey silt, from seventy feet thick beneath the Site;
- Groundwater flow from depth to water measurements indicate that shallow groundwater flows toward the southward along the axis of the surface drainage;
- No VOCs were detected in the soil sample collected from SB-2 at a depth of 18 feet to 20 feet bls, which is the only location and depth with a field headspace reading above ambient background;
- No VOCs attributable to the drum constituents were detected in groundwater collected from monitor wells by ARCADIS during Phase I, with the exception of methylene chloride, a commonly recognized laboratory contaminant. Methylene chloride was detected at MW-1, at a concentration well below USEPA safe drinking water standards. Shallow monitor wells were installed in the uppermost saturated zone, the zone most likely to detect a release to shallow groundwater from the drum areas;

- No SVOCs were detected in groundwater collected from the Phase I monitor wells. Initial results from U.S.EPA indicated that bis-2(ethylhexyl)pthalate was present in a shallow groundwater sample; however, its presence was determined during USEPA's data validation to be a laboratory containment;

- No dissolved metals were detected above Federal Drinking Water Maximum Contaminant Levels (MCLs) in groundwater collected from the Phase I monitor wells; and

- No concentrations of VOCs attributable to the drum constituents were detected in groundwater from on-site residential drinking water samples collected during the removal action.

3.2 Methodology

Five Phase II monitor wells were installed, developed and sampled in accordance with the Phase II Groundwater Investigation Work Plan (ARCADIS, 2002). Figure 11 presents the location of the Phase II monitor well locations. During the Phase II investigation, both soil and groundwater samples were collected for laboratory analyses. The existing Phase I monitor wells were also re-sampled during the Phase II Groundwater sampling event.

3.2.1 Monitor Well Installation

All wells were installed following the procedures detailed in the Phase II Groundwater Investigation Work Plan dated April 23, 2002. A summary of the well installation and construction details of shallow monitor well MW-4 and four deep monitor wells, MW-5D, MW-6D, MW-7D and MW-8D, are described in Sections 3.2.1.1 through 3.2.2.

3.2.1.1 Monitor Well Borehole Drilling

The boreholes were completed using hollow stem auger and rotasonic drilling techniques. The shallow Phase II monitor well, MW-4, was installed using standard hollow-stem auger drilling methods to a depth of 20 feet bls. The four deep monitor wells were installed using rotasonic drilling methods to depths ranging from 85 feet to 115 feet bls. Continuous soil samples and soil cores were field screened with a PID for headspace VOCs and described lithologically in the field by an ARCADIS geologist. No elevated headspace readings were noted from any of the borings. Therefore, one soil sample was collected from the interval directly above the saturated zone in each of

the four deep monitor wells. This interval was chosen to characterize potential vadose zone soil. Each of these samples was analyzed for VOCs by Method 8260 by Test America in Dayton, Ohio. Two geotechnical soil samples were collected from MW-5D and MW-6D for analysis of permeability, porosity, and grain-size distribution. The geotechnical results are discussed in Section 3.3.4. Copies of the boring logs are provided in Appendix G.

Because the deep monitor wells MW-5D and MW-6D were located adjacent to excavation areas, they were constructed with a surface outer casing (double-cased) to reduce the potential of cross-contamination to deeper unconsolidated zones during drilling. The steel outer casing was placed to a depth of about 30 feet bls using hollow-stem auger drilling techniques. Once the outer casing was properly installed, these wells were completed utilizing rotasonic drilling methods.

Soil cuttings and soil cores from each drilling location were stockpiled on and covered with a plastic liner. This method of soil management is consistent with soil pile management completed during the Removal Action and documented in a letter from ARCADIS to the USEPA dated October 12, 2001. The analytical sampling results indicated that the drummed waste constituents did not impact the soil at the drilling locations; therefore, the soil cuttings were spread on the ground surface in the area of the wells.

3.2.1.2 Monitor Well Construction

Monitor well construction materials consisted of threaded 2-inch diameter, Schedule 40 polyvinyl chloride (PVC) threaded casing and a 10-foot length of a Schedule 40 PVC 10-slot size well screen. Overall well casing length is sufficient to allow 2 ½-feet of stickup above the ground surface. Each well screen sand pack consists of clean silica sand to approximately 2 feet above the screen. Bentonite pellets were carefully added to the annular space above the sand pack to prevent bridging. Each bentonite seal is approximately two feet thick. The remaining annular space was filled by a tremie pipe to land surface with a bentonite-amended grout. The riser pipe in the well was capped with a locking cap. Well construction logs are provided in Appendix G.

Monitoring wells MW-5D and MW-6D were installed with an outer steel casing extending from above land surface to a depth of 30 feet bls. The outer casing was installed to seal off the zone of shallow groundwater from the uppermost aquifer within the boring. After the 6-inch diameter steel outer casing was installed, drilling

continued though the annulus of the casing until the designated depth was reached. The installation of the monitoring wells was completed as described carlier.

The wellhead of each monitor well is protected by a 6-inch diameter steel protective casing set a minimum of 36-inches below grade with a hinged locking lid. In the case of double-cased monitor wells, MW-5D and MW-6D, the steel casing serves as the protective covering and is outfitted with a locking lid. A concrete pad was placed at the ground surface at each well for protection and to direct surface water runoff away from the well. Well construction details such as screen, sand pack, bentonite seal, and grouting intervals were recorded in the field by a qualified geologist. Following installation, the monitoring wells were surveyed for horizontal coordinates (+ 1-foot) and vertical elevations (+ 0.01-foot).

All well construction materials were obtained from a reputable supply company and were inspected prior to use. Well pipe and screen material was plastic wrapped and factory cleaned. The drilling rig and drilling equipment was steam cleaned before beginning work at the Site, between boreholes, and prior to leaving the Site when work was completed.

3.2.1.3 Monitor Well Development

No less than 48 hours after completion, the monitor wells were developed to remove fine grained material generated during the drilling process. Proper well development was performed to ensure free entry of formation water into the well. This procedure allows for collection of representative formation samples and minimizes the amount of suspended solids present in the samples. Well development was accomplished using a bailer and/or a submersible pump. When a pump was used during development, water was removed through the entire column of water in the well by periodically raising and lowering the pump intake.

Turbidity, pH, temperature, and specific conductivity parameters were monitored using properly calibrated field instruments to ensure proper well development. Well development procedures followed Ohio EPA's Technical Guidance Manual for Hydrogeologic Investigations and Ground Water Monitoring (Ohio EPA, 1995) as outlined in the Phase II Groundwater Investigation Work Plan dated April 23, 2002.

Development water was containerized and labeled until appropriate on-site water management was determined based on groundwater analytical results from individual monitor wells.

3.2.2 Groundwater Sampling

Groundwater was sampled from each of the four deep and the one shallow monitor wells installed as part of Phase II activities. In addition, groundwater was also sampled at each of the three existing shallow monitor wells installed as part of the Phase I Investigation. Results of soil and groundwater sampling are presented below. Groundwater sampling logs are provided in Appendix H.

Monitor wells were purged prior to sampling using low flow sampling procedures. A submersible pump capable of low pumping rates was used to maintain minimal water level drawdown (less than or equal to 6-inches) within each monitor well. During purging and sampling, the pump intake was positioned at the mid-point of the well screen. Purging was complete when field parameters stabilized within 10% for three consecutive measurements taken at least three minutes apart or three well volumes were purged. In the case of MW-4, the well exhibited such low yields that a low-flow purge could not be maintained and was purged to dryness. In accordance with the Ohio EPA 1995 Technical Guidance Manual the groundwater sample was collected as soon as sufficient recharge water was available. Purge water was containerized and labeled until appropriate on-site water management was determined based on groundwater analytical results from individual monitor wells.

Groundwater sample collection began immediately after purging was complete. While filling the sample containers, extreme caution was taken to prevent volatilization of constituents. Groundwater was analyzed by U.S.EPA Drinking Water Method 524.2 for VOCs, Methods 525.2 for SVOCs, Methods 8080 or 8082 for PCBs, and Method 200 series for the eight RCRA Metals. Both filtered and unfiltered samples were collected for metals analyses.

3.3 Phase II Groundwater Investigation Results

Geology, hydrogeology, soil and groundwater results, geotechnical results and groundwater flow information are discussed below.

3.3.1 Geology and Hydrogeology

Lithology beneath the Site consists primarily of silty clay and clay to a depth of approximately 75 feet to 125 feet bls. A saturated sand to clayey sand was encountered in two borings (MW-2 and MW-3) at depths of 14 feet and 15.8 feet bls and is approximately 2 feet in thickness. This relatively shallow saturated sand to clayey

sand was not encountered in any other borings at the Site and appears to be discontinuous.

The predominant silty clay and clay unit present below the Site has a very low permeability as discussed in Section 3.3.4. This silty clay and clay unit extends downward to the uppermost groundwater aquifer. The uppermost groundwater aquifer is utilized as a domestic drinking water source by some of the local residences in the area.

Three geological cross-sections of the unconsolidated sediments above bedrock were constructed from the soil boring bls for the Site. The cross-sections show that the clay soils are laterally continuous throughout the Site and range in thickness from approximately 75 feet to 125 feet bls. The cross-sections also show that the uppermost groundwater aquifer is laterally continuous throughout most of the Site. The locations of the cross-section lines are shown on Figure 12. Figures 13, 14, and 15 show the geological cross-sections A-A', B-B', and C-C', respectively.

Shallow groundwater flow direction at the Site mimics the surface topography. Shallow groundwater flows towards the drainage ditch which runs southward through the center of the Site. Groundwater in the deeper sand and gravel zone (uppermost groundwater aquifer), has a south-southeastward groundwater flow direction. Potentiometric surface maps for the shallow and deep wells are presented on Figures 16 and 17, respectively.

3.3.2 Soil Analytical Results

Soil analytical results from the Phase II Groundwater Investigation are summarized in Table 10. Copies of the laboratory analytical data are provided in Appendix I. Some very low level VOC laboratory detections, well below the Ohio VAP soil cleanup standards for residential land use, were initially detected in these soil samples. Data validation determined these spurious low-level VOC detections were the same constituents detected in associated laboratory method blanks and thus the reported detected constituents are considered to be due to laboratory contamination. This validation is further supported by the groundwater quality samples collected out of the same deep monitoring wells which displayed no indication of environmental impact.

3.3.3 Groundwater Analytical Results

Upon completion of the Phase II groundwater investigation, one groundwater sample was collected from each existing and new monitoring well. Each sample was analyzed for VOCs by Method 524.2, SVOCs by Method 525.2, PCBs by Method 8082, and total and dissolved 8 RCRA Metals by Test America in the Dayton, Ohio and Orlando, Florida facilities. VOCs were detected in MW-4 and MW-8D at very low estimated concentrations below the Federal Drinking Water MCLs. VOCs were not detected in any of the other groundwater samples collected during the Phase II investigation. Both total and dissolved metals were below MCLs. All SVOCs were non-detect with the exception of di (2-ethlhexyl) phthalate in MW-4, which was reported as an estimated detection of 3.07 micrograms per liter (ug/L). Di (2-ethlhexyl) phthalate is a common laboratory contaminant and is a constituent that may be associated with PVC, the material composing the monitor well casings. PCBs were not detected in any of the Phase II groundwater samples. The metals, total and dissolved, were detected in all eight groundwater samples. The concentrations of metals detected were below the Federal Drinking Water MCLs. Groundwater analytical results from the Phase II Groundwater Investigation are summarized in Table 11.

3.3.4 Permeability/Geotechnical Results

Two Shelby tube soil samples were collected to assess the geotechnical properties of permeability, porosity, and grain size distribution. These samples were collected during the drilling of monitoring wells MW-5D (38 feet to 40 feet bls) and MW-6D (47 feet to 49 feet bls). Both geotechnical samples exhibited very low permeability with MW-5D having a value 2.6×10^{-8} centimeters per second (cm/sec) and MW-6D being 2.7×10^{-8} cm/sec. The grain size analysis shows that the soil contains mostly very fine-grained silt and clay material. Based on the grain size analysis and the very low permeability results, it is concluded that the waste drum contents would not leach through this confining clay layer to the deep domestic-use. Copies of these geotechnical results are provided in Appendix J.

3.3.5 Residential Well Sampling

Residential well sampling was completed early in the project to ensure the protection of local residents and provide information to assess if impacts from the buried wastes at the Site affected groundwater used by the residents. This sampling was not completed as part of the Phase I or Phase II Groundwater Investigations but provides

important assessment information. On November 17, 2000, residential drinking water wells at 3724, 3780, 3824, 3880, and 3938 Hardscrabble Road, as well as 4516 Battee Road, were sampled by ARCADIS personnel. The samples were analyzed for VOCs (Method 524.2), SVOCs (Methods 525.2 or 8270) and the Resource Conservation and Recovery Act (RCRA) metals (Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium and Silver) by Aqua Tech Environmental Laboratories, Inc., of Melmore, Ohio. None of the constituents were detected above method detection limits, further supporting the results of the Phase I and Phase II Groundwater Investigations. Groundwater beneath the Site has not been impacted by constituents related to the waste buried at the Site.

Additional residential drinking water samples were collected by USEPA's oversight contractor in February and September 2001. The USEPA collected the additional residential drinking water samples to ensure the residential wells in the area were not impacted by the historical Site activities. The USEPA sampled the same wells ARCADIS sampled in November 2000 along with additional residential wells surrounding the Site. The USEPA oversight contractors used the laboratory analytical services of Kemron Environmental Services in Marietta, Ohio and Environmental Chemical Corporation in Cincinnati, Ohio to perform analyses which included the same analyses performed by ARCADIS plus additional analyses. Review of the data by USEPA during field activities concluded that their data is comparable to the residential well data collected by ARCADIS. The results of the USEPA residential drinking water samples and the summary of their sampling activities will be provided in a separate site report issued by the USEPA.

4. Removal Action Project Costs

As part of the requirements of the AOC, project costs are provided for Removal Action activities. The Removal Action resulted in an overall direct project cost to Akzo Nobel Coatings, Inc., of approximately $6.25 million dollars. A breakdown of the costs incurred are listed below:

Soil/Water Disposal	$4,017,000
Engineering/Contracted Services	$2,103,000
Analytical Services	$129,000
Total	$6,249,000

This estimate does not include internal labor and expenses incurred by Akzo Nobel Coatings, Inc.

5. Project Timeline

The completed Site removal action included the following events, listed in chronological order.

Date	Event
September 5, 2000	Signing of AOC with USEPA
October 16, 2000	USEPA approval with comments of the Removal Action Work Plan
October 2000	Began Removal Action field activities
October 2000 – August 2001	Area 1 – Ravine Area Drums removed: 269 Tons of material removed: 2,545
November 17, 2000	Collection of on-site residential well samples
November 2000 – March 2001	Area 2 – Pole Barn Area Drums removed: 388 Tons of material removed: 2,099
February 15, 2001	EM survey of IA-1, south of the Pole Barn area, Below the Ravine Area and area along south property line
August 13, 2001	Conditional USEPA Approval of Phase II Work Plan For Removal Action
August 13, 2001	Phase I Groundwater Investigation approved USEPA
August 20, 2001 – August 27, 2001	Phase I Groundwater Investigation
August 17 - 30, 2001	Phase II Work Plan for Removal Action approved by USEPA
September 2001	EM survey of South Property Line, 3824 Hardscrabble Road, and wet field area
September 2001 – October 2001	Area 4 – Intersection Areas 1 and 2 Drums removed: 248 Tons of material removed: 3,140
September 2001 – October 2001	Area 5 – Below the Ravine Area Drums removed: 84 Tons of material removed: 853

Date	Event
October 11, 2001	Area 8 – 3824 Area Drum removed: 1 Tons of material removed: 2
October 30, 2001	Area 6 – South Property Line Exploratory trenching, no evidence of waste material encountered
October 2001 – February 2002	Area 9 – East Pole Barn Area Drums removed: 4 Tons of material removed: 2,771
March 1, 2002	Phase II Groundwater Investigation Work Plan approved by USEPA
May 15, 2002 – May 30, 2002	Phase II Groundwater Investigation
July 17, 2002	Site restoration of access road and disturbed areas.
August 26, 2002	Phase II Groundwater Investigation-final soil analytical results received. End of Site restoration activities – Removal Action Complete

All removal actions at the John Mercer Property are considered complete and no further remedial or investigation is required or warranted by Akzo Nobel Coatings, Inc. Site monitor wells will remain in-place until November 2003 to permit USEPA to conduct additional groundwater sampling events to provide additional confirmation of the Phase I and Phase II Groundwater Investigations results.

6. Conclusions

The Removal Action at the John Mercer Property is complete. USEPA field representatives concurred with the extents of excavation and removal of buried drums, associated solid and liquid wastes and adjacent affected soil at each removal area. All waste material has been removed and confirmation soil sample results indicate that the remaining soil is well under the applicable health-based soil cleanup standards, which are the Ohio EPA VAP direct-contact soil standards for residential land use. Objectives outlined within the September 6, 2000 AOC, were completed as indicated below:

- Nine areas of historical drum and waste burial/dumping were identified by visual inspection, electromagnetic geophysical surveys, exploratory trenching, and interviews with persons familiar with the Site history. All areas were investigated for the presence of buried drum waste. All waste detected was removed and confirmation soil sampling was conducted to ensure that soil removal was complete according to USEPA approved project work plans and USEPA directives.

- Confirmation soil results from excavated areas were compared to Ohio EPA VAP direct-contact soil standards developed for residential land use. All final confirmation soil results were below the clean up standards.

- A total of 994 drums, 11,408 tons of affected soil and 86,528 gallons of waste liquids were removed and disposed off-site at USEPA-approved disposal facilities.

- Air monitoring was completed according to the USEPA approved air monitoring program. Air quality monitoring during the excavation activities did not detect any elevated readings at Site perimeter locations.

- The two phased investigation of shallow groundwater in the vicinity of the excavations and the Site indicated that constituents attributable to the drummed waste were not detected in shallow groundwater at the Site.

- Groundwater sample results from residential wells and deep monitor wells screened in the uppermost aquifer indicate that no constituents were detected above Federal drinking water standards (MCLs) which were attributable to the buried/dumped waste at the Site.

- Detected low levels of arsenic in Site soil is naturally occurring and not attributable to disposal of wastes at the Site.

- A thick sequence of silty-clay and clay underlies the Site. This silty-clay and clay layer effectively confined the waste material to the immediate vicinity of the original burial locations. The thickness of the silty-clay and clay ranges from approximately 75 feet to 125 feet across the Site and is in effective barrier that has prevented the downward migration of waste constituents to the uppermost aquifer present beneath the Site in a sand and gravel zone at approximately 90 to 120 feet below land surface.

- Two geotechnical sample results from the silty-clay and clay zone were collected during the installation of deep monitor wells MW-5D and MW-6D. The results indicate that this zone displays very low permeabilities, with results of 2.6×10^{-8} cm/sec and 2.7×10^{-8} cm/sec. These data further demonstrate the clay zone provides an effective barrier to downward migration of waste constituents at the Site.

- Water levels collected from the deep monitoring wells at the Site indicate that the groundwater flow direction in the upper-most aquifer is towards the south-southeast.

- Site grading and grass seeding activities were completed to restore the disturbed areas to reasonable pre-Removal Action conditions.

The activities completed as part of the Removal Action, including the extensive removal of affected soil and drums and associated evaluation of the soils and groundwater underlying the Site against applicable Ohio VAP and USEPA standards, have satisfied the objectives of the September 6, 2000 AOC. Therefore, the Removal Action at the John Mercer Property in Alexandria, Ohio, is complete.

7. Post Removal Site Control

The following discusses Post-Removal Site Controls in accordance with Section 2.4 of the AOC. The results of confirmation soil sampling, groundwater quality sampling for residential and Site monitor wells and completion of all activities per the USEPA approved project work plans demonstrate that the removal action is complete. All drums and waste impacted areas have been removed and all remaining Site soils are below the USEPA-approved health-base cleanup standards. Therefore, no additional controls are necessary at the drum removal and soil excavation areas.

Site monitor wells installed as part of the Phase I and Phase II Groundwater Investigation will remain in place and protected by locked well boxes until their abandonment, scheduled for November 2003. Access to the monitoring wells will be controlled by Akzo Nobel Coatings, Inc. Per discussions between USEPA, Akzo Nobel Coatings, Inc., and ARCADIS groundwater sampling from the on-site monitor wells may be conducted by USEPA. This sampling is intended to provide additional confirmation of groundwater quality results from the previous sampling events completed by Akzo Nobel Coatings, Inc. The groundwater results indicate that no constituents attributable to Site related waste were detected above MCLs. USEPA access to the monitor wells will be arranged through Akzo Nobel Coatings' consultant, ARCADIS. An ARCADIS representative will unlock wells as necessary and be present during groundwater sampling events. Akzo Nobel Coatings, Inc. requests that copies of laboratory data and field notes be submitted to ARCADIS after USEPA completes data validation and review of the field notes. Monitor wells will be abandoned per the Ohio EPA Technical Guidance Manual for Hydrogeologic Investigations and Groundwater Sampling dated February 1995. Well abandonment reports will be completed and filed with the Ohio Department of Natural Resources per Ohio Revised Code 1521.05(B). Copies of the well abandonment reports will be submitted to USEPA for inclusion into the project file.

8. Certification

Under penalty of law, I certify that, to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of this report, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. This document and all attachments were prepared under my direction or supervision.

9. References

ARCADIS Geraghty & Miller, Inc. 2000. Work Plan for the Removal action, John Mercer Property, 3780 Hardscrabble Road, Alexandria, Ohio. Prepared for Akzo Nobel Coatings, Inc. November 1, 2000.

ARCADIS G&M, Inc. 2001. Phase II Work Plan for Removal Action, John Mercer Property, 3780 Hardscrabble Road, Alexandria, Ohio. Prepared for Akzo Nobel Coatings, Inc. June 28, 2001.

ARCADIS. 2002. Phase II Groundwater Investigation Work Plan, John Mercer Property Site, 3780 Hardscrabble Road, Alexandria, Ohio. Prepared for Akzo Nobel Coatings, Inc. April 23, 2002.

United States Environmental Protection Agency 2000. Administrative Order By Consent Pursuant to Section 106 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980. In the Matter of: John Mercer Property Site. Respondent: Akzo Nobel Coatings, Inc. September 2000.

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Table 1. Below the Ravine Area Analytical Results from Soil Stockpile Confirmation Samples and Comparisons to Ohio VAP Generic Residential Direct Contact Standards for Soil, John Mercer Property Site, Alexandria, Ohio.

Sample ID Laboratory ID Sample Date Constituents	Units	BRSP-1 705629 9/10/01	BRSP-2 705630 9/10/01	BR-SP03 714472 10/18/01	BR-SP04 714478 10/18/01	BR-SP05 714479 10/18/01	BR-SP06 714473 10/18/01	8R-SP07 714480 10/18/01	BR-SP08 714481 10/18/01	Ohio VAP Direct-Contact Residential Soil Standards[1]
VOCs - Method 8260										
Acetone	mg/kg	--	--	0.690	--	--	--	--	--	4,500
tert-Butylbenzene	mg/kg	--	--	0.072	--	--	--	--	--	390
p-Isopropyltoluene	mg/kg	--	--	0.832	--	--	--	--	--	110
Toluene	mg/kg	--	--	0.103	--	--	--	--	--	520
Xylenes, Total	mg/kg	--	0.011	0.072	--	--	--	--	--	1,500
SVOCs - Method 8270										
Benzo(b)fluoranthene	mg/kg	--	--	0.697	--	--	--	--	--	5.50
Benzo(a)pyrene	mg/kg	--	--	0.396	--	--	--	--	--	0.550
Chrysene	mg/kg	--	--	0.473	--	--	--	--	--	550
Fluoranthene	mg/kg	--	--	1.10	--	--	--	--	--	1,300
Phenanthrene	mg/kg	--	--	0.881	--	--	--	--	--	9,400
Pyrene	mg/kg	--	--	0.866	--	--	--	--	--	950
Metals -Methods 6010, 7060, & 7471	mg/kg									
Arsenic	mg/kg	14.6	10.6	16.6	3.01	16.1	12.6	14	17.7	6.9
Barium	mg/kg	95.8	111	119	94.6	114	149	103	116	5,000
Chromium	mg/kg	12	13.1	17.3	15.1	14.7	16	15.8	16.5	230
Lead	mg/kg	29.0	22.7	20.2	19.7	18.1	20.2	20.7	17.0	400
Mercury	mg/kg	--	0.049	0.057	0.0420	0.0604	0.0462	0.0606	0.0713	16

VOCs - Volatile Organic Compounds.
SVOCs - Semi-Volatile Organic Compounds
mg/kg - Milligrams per kilogram (parts per million).
J - Estimated Concentration.

-- No Constituent(s) detected above laboratory reporting limits.
VAP - Voluntary Action Program
[1] - Ohio VAP; OAC 3745-300-08 promulgated December 16, 1996.

Table 1. Below the Ravine Area Analytical Results from Soil Stockpile Confirmation Samples and Comparisons to Ohio VAP Generic Residential Direct Contact Standards for Soil, John Mercer Property Site, Alexandria, Ohio.

Sample ID Laboratory ID Sample Date Constituents	Units	BR-SP09 714474 10/18/01	BR-SP10 714482 10/18/01	BR-SP11 714483 10/18/01	BR-SP12 714475 10/18/01	BR-SP13 714484 10/18/01	8R-SP14 714485 10/18/01	BR-SP15 714476 10/18/01	Ohio VAP Direct-Contact Residential Soil Standards [1]
VOCs - Method 8260									
Acetone	mg/kg	--	--	--	--	--	--	--	4,500
tert-Butylbenzene	mg/kg	--	--	--	--	--	--	--	390
p-Isopropyltoluene	mg/kg	--	--	--	--	--	--	--	110
Toluene	mg/kg	--	--	--	--	--	--	--	520
Xylenes, Total	mg/kg	--	--	--	--	--	--	--	1,500
SVOCs - Method 8270									
Benzo(b)fluoranthene	mg/kg	--	--	--	--	--	--	--	5.50
Benzo(a)pyrene	mg/kg	--	--	--	--	--	--	--	0.550
Chrysene	mg/kg	--	--	--	--	--	--	--	550
Fluoranthene	mg/kg	--	--	--	--	--	--	--	1,300
Phenanthrene	mg/kg	--	--	--	--	--	--	--	9,400
Pyrene	mg/kg	--	--	--	--	--	--	--	950
Metals - Methods 6010, 7060, & 7471									
Arsenic	mg/kg	17.6	18.4	17.9	11.5	20.3	17.8	17	6.9
Barium	mg/kg	79.8	134	144	89.8	132	80.4	84.9	5,000
Chromium	mg/kg	15.4	17.3	18.6	12.8	18.1	11	15.2	230
Lead	mg/kg	14.8	19.6	14.5	16.5	24.3	16.1	23.2	400
Mercury	mg/kg	0.0404	0.0459	0.0752	0.0376	0.0385	0.0276	0.0398	16

VOCs - Volatile Organic Compounds.
SVOCs - Semi-Volatile Organic Compounds
mg/kg - Milligrams per kilogram (parts per million).
I - Estimated Concentration.

-- No Constituent(s) detected above laboratory reporting limits.
VAP - Voluntary Action Program
[1] - Ohio VAP; OAC 3745-300-08 promulgated December 16, 1996.

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Table 2. Intersection Areas 1 and 2 Analytical Results from Soil Stockpile Confirmation Samples and Comparisons to Ohio VAP Generic Residential Direct Contact Standards for Soil, John Mercer Property Site, Alexandria, Ohio.

Sample ID Labratory ID Sample Date Constituent	Units	IA-SP01 714487 10/18/01	IA-SP02 714486 10/18/01	IA-SP03 714477 10/18/01	IA-SP04 714488 10/18/01	IA-SP05 716030 10/25/01	IA-SP06 716031 10/25/01	IA-SP07 716040 10/25/01	IA-SP08 716033 10/25/01	IA-SP09 716035 10/25/01	Ohio VAP Direct-Contact Residential Soil Standards [1]
VOCs - Method 8260	mg/kg	--	--	--	--	--	--	--	--	--	NA
SVOCs - Methods 8270 & 8310	mg/kg	--	--	--	--	--	--	--	--	--	NA
PCBs - Methods 8080 & 8082	mg/kg	NS	NS	--	NS	NS	NS	--	NS	--	1.0
Metals - Methods 6010, 7060, & 7471											
Arsenic	mg/kg	19	21.7	17.1	13.7	18.8	14.1	10.9	17.4	16	6.90
Barium	mg/kg	538	58.5	78.4	67.6	71.9	69	47.4	115	51.2	5,000
Chromium	mg/kg	11	9.1	11	9.8	11	12.1	10	16.3	12	8,800
Lead	mg/kg	25.6	13.7	17	16.6	16	15.6	12	22.9	17	400
Mercury	mg/kg	0.05	0.0312	0.0252	0.029	0.0222	0.0214	0.0214	0.0449	0.0177	16

NS - Not sampled
VOCs - Volatile Organic Compounds.
SVOCs - Semi-Volatile Organic Compounds
PCBs- Polychlorinated Biphenyls.
mg/kg - Milligrams per kilogram (parts per million).
-- No Constituent(s) detected above laboratory reporting limits.
VAP - Voluntary Action Program
NA - No VAP residential single chemical generic direct contact standard for constituent.
[1] - Ohio VAP; OAC 3745-300-08 promulgated December 16, 1996.

Table 3. East Pole Barn Area Analytical Results from Soil Stockpile Confirmation Samples and Comparisons to Ohio VAP Generic Residential Direct Contact Standards for Soil, John Mercer Property Site, Alexandria, Ohio.

Sample ID Laboratory ID Sample Date Constituents	Units	EPBSP-01 722723 11/28/01	EPBSP-02 722724 11/28/01	EPBSP-03 722725 11/28/01	EPBSP-04 722726 11/28/01	EPBSP-05 722727 11/28/01	EPBSP-06 724766 12/5/01	EPBSP-07 724767 12/5/01	EPBSP-08 724768 12/5/01	Ohio VAP Direct-Contact Residential Soil Standards [1]
VOCs - Method 8260										
Ethylbenzene	mg/kg	1.34	--	--	--	--	0.019	--	--	230
Isopropylbenzene	mg/kg	--	--	--	--	--	--	--	--	1,000
p- Ispropyltoluene	mg/kg	--	--	--	--	--	0.007	--	--	110
n- Propylbenzene	mg/kg	--	--	--	--	--	0.019	--	--	110
Toluene	mg/kg	0.017	--	--	--	--	--	0.006	--	520
1, 2, 4 Trimethylbenzene	mg/kg	0.045	--	--	--	--	2.36	0.047	--	260
1, 3, 5 Trimethylbenzene	mg/kg	0.066	--	--	--	--	0.989	0.018	--	200
Xylenes, Total	mg/kg	9.59	--	--	--	--	0.384	0.044	--	1,500
SVOCs - Method 8270										
Isophorone	mg/kg	--	--	--	--	--	1.69	--	--	4,600
PCBs - Methods 8080 & 8082	mg/kg	--	NS	--	NS	NS	--	NS	NS	1.0
Metals - Methods 6010, 7060, & 7471										
Arsenic	mg/kg	7.51	5.61	7.7	9.79	7	11.3	14.2	16.4	6.9
Barium	mg/kg	76.8	91.4	74.7	79.8	79.5	80.7	82	61.6	5,000
Chromium	mg/kg	11	7	9.2	11	8.9	15.5	10	9.7	230
Lead	mg/kg	24.6	18	19.1	22	22.4	73.1	16.6	21.7	400
Mercury	mg/kg	0.038	0.0282	0.03	0.0392	0.0312	0.0271	0.0222	0.0282	16

NS - Not Sampled.
mg/kg - Milligrams per kilogram (parts per million).
VOCs - Volatile organic compounds.
SVOCs - Semi-volatile organic compounds.
PCBs- Polychlorinated Biphenyls.
-- No constituent(s) detected above laboratory reporting limits.
VAP - Voluntary Action Program
[1] - Ohio VAP; OAC 3745-300-08 promulgated December 16, 1996.

Table 3. East Pole Barn Area Analytical Results from Soil Stockpile Confirmation Samples and Comparisons to Ohio VAP Generic Residential Direct Contact Standards for Soil, John Mercer Property Site, Alexandria, Ohio.

Sample ID Laboratory ID Sample Date Constituents	Units	EPBSP-09 724769 12/5/01	EPBSP-10 731292 1/9/02	EPBSP-11 731293 1/9/02	EPBSP-12 731294 1/9/02	EPBSP-13 734081 1/16/02	EPBSP-14 734082 1/16/02	EPBSP-15 734089 1/16/02	EPBSP-16 734083 1/16/02	EPBSP-17 734084 1/16/02	Ohio VAP Direct-Contact Residential Soil Standards [1]
VOCs - Method 8260											
Ethylbenzene	mg/kg	--	--	--	0.317	--	--	0.007	0.609	--	230
Isopropylbenzene	mg/kg	--	--	--	--	--	--	--	--	--	1,000
p- Ispropyltoluene	mg/kg	--	--	--	0.009	--	--	--	--	--	110
n- Propylbenzene	mg/kg	--	--	--	--	--	--	--	--	--	110
Toluene	mg/kg	--	--	--	--	--	--	0.007	0.039	--	520
1, 2, 4 Trimethylbenzene	mg/kg	--	--	--	1.30	--	--	0.010	0.646	--	260
1, 3, 5 Trimethylbenzene	mg/kg	--	--	--	0.501	--	--	--	0.031	--	200
Xylenes, Total	mg/kg	--	--	--	6.69	0.016	0.032	0.085	3.51	0.006	1,500
SVOCs - Method 8270											
Isophorone	mg/kg	--	--	--	--	--	--	--	--	--	4,600
PCBs Method 8080 & 8082	mg/kg	--	NS	NS	--	NS	NS	NS	NS	NS	1.0
Metals - Methods 6010, 7060, & 7471											
Arsenic	mg/kg	18.2	10.8	17.6	12.8	14.4	15.7	13.6	17.9	15.5	6.9
Barium	mg/kg	72.4	75.9	100	73.8	73.1	74.9	60.4	100	80.4	5,000
Chromium	mg/kg	7.6	10	11	8.6	9.6	10	5.6	9.1	<8.6	230
Lead	mg/kg	16.5	11	11	11.5	15.4	11.7	10	14.9	12.2	400
Mercury	mg/kg	0.0132	0.0228	0.0205	0.0244	0.027	0.0277	0.0255	0.026	0.0257	16

NS - Not Sampled.
mg/kg - Milligrams per kilogram (parts per million).
VOCs - Volatile organic compounds.
SVOCs - Semi-volatile organic compounds.
PCBs- Polychlorinated Biphenyls.
-- No constituent(s) detected above laboratory reporting limits.
VAP - Voluntary Action Program
[1] - Ohio VAP; OAC 3745-300-08 promulgated December 16, 1996.

Table 3. East Pole Barn Area Analytical Results from Soil Stockpile Confirmation Samples and Comparisons to Ohio VAP Generic Residential Direct Contact Standards for Soil, John Mercer Property Site, Alexandria, Ohio.

Sample ID Laboratory ID Sample Date Constituents	Units	EPBSP-18 734090 1/16/02	EPBSP-19 734085 1/16/02	EPBSP-20 734086 1/16/02	EPBSP-21 734091 1/16/02	EPBSP-22 734087 1/16/02	EPBSP-DUP-1 734088 1/16/02	EPBSP-23 735563 1/24/02	EPBSP-24 735564 1/24/02	Ohio VAP Direct-Contact Residential Soil Standards [1]
VOCs - Method 8260										
Ethylbenzene	mg/kg	0.063	0.053	0.042	0.37	0.125J	0.082	--	0.022	230
Isopropylbenzene	mg/kg	0.009	--	--	0.012	0.009	0.006	--	--	1,000
p- Ispropyltoluene	mg/kg	--	--	--	--	--	--	--	--	110
n- Propylbenzene	mg/kg	0.007	--	--	0.012	0.010	0.006	--	--	110
Toluene	mg/kg	--	--	--	0.109	0.052	0.038	--	--	520
1, 2, 4 Trimethylbenzene	mg/kg	0.031	0.018	0.017	0.508	0.394J	0.038J	--	0.010	260
1, 3, 5 Trimethylbenzene	mg/kg	0.012	0.009	0.008	0.028	0.024	0.019	--	0.010	200
Xylenes, Total	mg/kg	0.238	0.235	0.193	1	1.35	0.359J	--	0.120	1,500
SVOCs - Method 8270										
Isophorone	mg/kg	--	--	--	--	--	--	--	--	4,600
PCBs - Methods 8080 & 8082	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	1.0
Metals - Methods 6010, 7060, & 7471										
Arsenic	mg/kg	26.6	13.9	13.8	14.1	13.1	10.5	18.5	15.9	6.9
Barium	mg/kg	65.7	89	74.6	73.7	61.8	64.6	49.1	67.5	5,000
Chromium	mg/kg	8.4	8.9	9.6	8.7	8.2	8.9	9.5	11	230
Lead	mg/kg	15.6	14.3	13.2	11.6	14	11	9	12.1	400
Mercury	mg/kg	0.0298	0.0258	0.0269	0.0232	0.0238	0.0305	0.022	0.017	16

NS - Not Sampled.
mg/kg - Milligrams per kilogram (parts per million).
VOCs - Volatile organic compounds.
SVOCs - Semi-volatile organic compounds.
PCBs- Polychlorinated Biphenyls.
-- No constituent(s) detected above laboratory reporting limits.
VAP - Voluntary Action Program
[1] - Ohio VAP; OAC 3745-300-08 promulgated December 16, 1996.

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Table 4. Ravine Area Analytical Results from Excavation Soil Confirmation Samples and Comparisons to Ohio VAP Generic Residential Direct Contact Standards for Soil, John Mercer Property Site, Alexandria, Ohio.

Sample ID Laboratory ID Sample Date Constituent	Units	RACS-1 688402 6/25/01	RASC-2 688403 6/25/01	RACS-3 688404 6/25/01	RACS-4 697603 8/3/01	RACS-5 697604 8/3/01	RACS-6 697605 8/3/01	RACS-7 697606 8/3/01	RACS-8 697607 8/3/01	RACS-9 697609 8/3/01	RACS-10 697610 8/3/01	Ohio VAP Direct-Contact Residential Soil Standards [1]
VOCs - Method 8260												
Benzene	mg/kg	--	--	0.235J	--	--	--	--	--	--	--	8.2
Ethylbenzene	mg/kg	--	0.054	0.050J	--	--	0.259	0.022	--	34.1	--	230
Isopropylbenzene (Cumene)	mg/kg	--	--	--	--	--	--	--	--	1.96	--	1,000
p-Isopropyltoluene	mg/kg	--	--	--	--	--	--	--	--	0.448	--	110
n-Propylbenzene	mg/kg	--	--	--	--	--	--	--	--	2.91	--	110
Toluene	mg/kg	--	0.015	0.012J	--	--	--	--	--	0.088	--	520
1,2,4-Trimethylbenzene	mg/kg	--	0.036	0.025J	--	--	0.026	0.011	--	11.3	--	260
1,3,5-Trimethylbenzene	mg/kg	--	0.024	0.024J	--	--	0.020	0.010	--	3.96	--	260
Xylenes, Total	mg/kg	--	0.313	0.251J	--	--	0.069	0.089	--	122	0.009	1,500
SVOCs - Method 8270												
Bis(2-ethylhexyl)phthalate	mg/kg	--	--	--	--	--	--	1.0	--	--	--	150
2,4-Dimethylphenol	mg/kg	--	--	--	--	--	--	--	--	0.418	--	880
Metals - Methods 6010, 7060, & 7471												
Arsenic	mg/kg	12.9	12.1	6.33	0.4	15.9	20.6	15.0	14.8	17.7	14.2	6.9
Barium	mg/kg	108	69.5	46.4	90.7	82.9	142	47.9	80.1	69.1	71.9	5,000
Chromium	mg/kg	12.3	10	7.5	9	11	15	12.8	7.5	9.7	9.8	230 (Cr VI)
Lead	mg/kg	12.3	14.6	11.9	25.3	47.2	34.3	28.3	30	24.1	23.7	400
Mercury	mg/kg	0.016	0.023	0.15	--	--	--	--	--	--	--	16

mg/kg - Milligrams per kilogram (parts per million).
VOCs - Volatile organic compounds.
SVOCs - Semi-volatile organic compounds.
-- No constituent(s) detected above laboratory reporting limits.
VAP - Voluntary Action Program
[1] - Ohio VAP; OAC 3745-300-08 promulgated December 16, 1996.

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Table 4. Ravine Area Analytical Results from Excavation Soil Confirmation Samples and Comparisons to Ohio VAP Generic Residential Direct Contact Standards for Soil, John Mercer Property Site, Alexandria, Ohio.

Sample ID Laboratory ID Sample Date Constituent	Units	RACS-11 697611 8/3/01	RACS-12 697612 8/3/01	RACS-13 697613 8/3/01	RACS-14 697614 8/3/01	RACS-15 697615 8/3/01	RACS-16 697616 8/3/01	RACS-17 697608 8/3/01	RACS-18 698422 8/6/01	RACS-19 698423 8/7/01	Ohio VAP Direct-Contact Residential Soil Standards [1]
VOCs - Method 8260											
Benzene	mg/kg	--	--	--	--	--	--	--	--	--	8.20
Ethylbenzene	mg/kg	--	--	--	--	--	--	--	0.022	--	230
Isopropylbenzene (Cumene)	mg/kg	--	--	--	--	--	--	--	--	--	1,000
p-Isopropyltoluene	mg/kg	--	--	--	--	--	--	--	--	--	110
n-Propylbenzene	mg/kg	--	--	--	--	--	--	--	--	--	110
Toluene	mg/kg	--	--	--	--	--	--	--	--	--	520
1,2,4-Trimethylbenzene	mg/kg	--	--	--	--	--	--	--	0.052	--	260
1,3,5-Trimethylbenzene	mg/kg	--	--	--	--	--	--	--	0.019	--	260
Xylenes, Total	mg/kg	--	0.010	--	--	--	--	--	0.064	0.006	1,500
SVOCs - Method 8270											
Bis(2-ethylhexyl)phthalate	mg/kg	--	0.399	--	--	--	--	--	--	--	150
2,4-Dimethylphenol	mg/kg	--	--	--	--	--	--	--	--	--	880
Metals Methods 6010, 7060, & 7471											
Arsenic, GFAA	mg/kg	37.1	15.1	14	19	17.2	18.5	13	16.2	25.8	6.9
Barium, ICP	mg/kg	58.2	68.2	81.1	90.8	70.8	70	58.8	66.5	53	5,000
Chromium, ICP	mg/kg	8.2	8.7	10	13	12	8.8	11.3	11	8.94	230 (Cr VI)
Lead, ICP	mg/kg	15	16	18.6	22	21.9	18.4	17.8	42	19	400
Mercury,CVAA	mg/kg	--	--	--	--	--	--	--	--	0.119	16

mg/kg - Milligrams per kilogram (parts per million).
VOCs - Volatile organic compounds.
SVOCs - Semi-volatile organic compounds.
-- No constituent(s) detected above laboratory reporting limits.
VAP - Voluntary Action Program
[1] - Ohio VAP; OAC 3745-300-08 promulgated December 16, 1996.

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Table 5. Pole Barn Area Analytical Results from Excavation Soil Confirmation Samples and Comparisons to Ohio VAP Generic Residential Direct Contact Standards for Soil, John Mercer Property Site, Alexandria, Ohio.

Sample ID Laboratory ID Sample Date Compounds	Units	PoleBarn S1 656262/665270	PoleBarn S-2 658376/655276	PBCS-1 665271/655277 3/5/01	PBCS-2 665272/665278 3/5/01	PBCS-3 665273/665279 3/5/01	PBCS-4 665274/665280 3/5/01	PBCS-5-B(2) 665275/665281 3/21/01	PBCS-8 668714 3/21/01	Ohio VAP Direct Contact Residential Soil Standards [1]
VOCs - Method 8260										
Acetone	mg/kg	--	4.52	--	--	--	--	0.44	0.600	4,500
2-Butanone (MEK)	mg/kg	--	13.8	--	--	--	0.369	1.40	2.77	6,600
2-Hexanone	mg/kg	--	1.49	--	--	--	--	--	0.640	3,500
1,2,4-Trimethylbenzene	mg/kg	8.36	12.7	--	14.9	--	5.15	18.2	26.3	260
1,3,5-Trimethylbenzene	mg/kg	2.72	4.50	--	13.9	--	1.63	6.28	7.98	200
Ethylbenzene	mg/kg	4.62	9.38	--	26.4	6.70	7.65	25.6	12.4	230
Isopropylbenzene (Cumene)	mg/kg	0.741	1.03	--	--	--	0.177	2.31	--	1,000
p-Isopropyltoluene (Cymene)	mg/kg	--	0.635	--	--	--	0.067	0.290	0.820	110
Methylene Chloride	mg/kg	--	--	--	--	--	--	--	0.750	220
Toluene	mg/kg	1.00	1.20	--	--	--	0.287	0.290	0.770	520
n-Propyl benzene	mg/kg	1.27	2.27	--	--	--	0.259	4.26	4.17	110
sec-Butyl benzene	mg/kg	0.397	0.26	--	--	--	--	0.170	0.290	530
4-Methyl-2-pentanone (MIBK)	mg/kg	--	4.16	--	--	--	0.408	1.96	1.08	440
Naphthalene	mg/kg	--	0.847	--	--	--	0.119	0.730	0.570	1,800
Xylenes (total)	mg/kg	31.3	59.90	--	162	20.5	33.1	110	68.7	1,500
SVOCs - Method 8270										
Benzyl butyl phthalate	mg/kg	--	--	--	--	--	--	--	0.550	220
2,4-Dimethylphenol	mg/kg	1.39	--	--	--	--	--	--	--	880
Isophorone	mg/kg	--	1.75	0.942	32.9	--	0.735	1.61	4.05	4,600
Naphthalene	mg/kg	--	0.603	--	0.572	--	--	0.720	0.570	1,800
Phenol	mg/kg	--	1.74	--	--	--	--	--	--	26,000
Metals - Method 6010, 7060, & 7471										
Arsenic	mg/kg	14.6	13.2	17.2	16.5	12.6	14.4	NS	NS	6.9
Barium	mg/kg	109	38.2	94.5	104	73.7	90.4	NS	NS	5,000
Chromium	mg/kg	14.8	18.1	15.5	16.2	12.6	15.2	NS	NS	8,800
Lead	mg/kg	14.1	16.5	12.5	12.2	9.46	12.7	NS	NS	400
Mercury	mg/kg	0.019	0.033	0.028	0.034	0.020	0.04	NS	NS	16
Nickel	mg/kg	24.3	27.5	30.0	29.4	33.1	31.3	NS	NS	450
Selenium	mg/kg	2.66	3.3	4.58	2.43	2.48	3.91	NS	NS	360
Zinc	mg/kg	77.8	85.6	100	85.0	76.8	87.3	NS	NS	19,000

NS - Not sampled.
mg/kg - Milligrams per kilogram (parts per million).
VOCs - Volatile organic compounds.
SVOCs - Semi-volatile organic compounds.
-- Constituent not detected above laboratory reporting limits.
VAP - Voluntary Action Program
[1] - Ohio VAP; OAC 3745-300-08 promulgated December 16, 1996.

Table 6. Intersection Area 1 Analytical Results from Excavation Soil Confirmation Samples and Comparisons to Ohio VAP Generic Residential Direct Contact Standards for Soil, John Mercer Property Site, Alexandria, Ohio.

Constituent	Units	IACS-1 10/15/01	IACS-2 10/15/01	IACS-3 10/15/01	IACS-4 10/15/01	IACS-5 10/15/01	IACS-6 10/15/01	IACS-7 10/15/01	Ohio VAP Direct-Contact Residential Soil Standards [1]
VOCs - Method 8260									
Acetone	mg/kg	1.08	--	--	--	--	--	--	4,500
sec-Butylbenzene	mg/kg	5.36	--	--	--	--	--	--	530
2-Butanone (MEK)	mg/kg	3.86	--	--	--	--	--	--	6,600
Ethylbenzene	mg/kg	3.41	--	--	--	--	--	--	230
2-Hexanone	mg/kg	1.04	--	--	--	--	--	--	3,500
Isopropylbenzene (Cumene)	mg/kg	2.74	--	--	--	--	--	--	1,000
4-Methyl-2-pentanone (MIBK)	mg/kg	16.6	--	--	--	--	--	--	440
n-Propylbenzene	mg/kg	0.530	--	--	--	--	--	--	110
Naphthalene	mg/kg	3.39	--	--	--	--	--	--	1,800
Toluene	mg/kg	1.67	--	--	--	--	--	--	520
1,2,4-Trimethylbenzene	mg/kg	3.65	--	--	--	--	--	--	260
1,3,5-Trimethylbenzene	mg/kg	1.07	--	--	--	--	--	--	200
Xylenes, Total	mg/kg	17.8	--	--	--	--	--	--	1,500
SVOCs - Methods 8270 & 8310									
Isophorone	mg/kg	5.75	--	--	--	--	--	--	4,600
PCBs - Methods 8080 & 8082	mg/kg	--	--	--	--	--	--	--	1.0
Metals - Methods 6010, 7060, & 7471									
Arsenic	mg/kg	11.5	12.3	13.2	16	24	13.9	11.2	6.90
Barium	mg/kg	43.9	55.6	51.6	74	67.7	44.9	77.5	5,000
Chromium	mg/kg	11	10	9.6	9.6	9.7	9.9	11	8,800
Lead	mg/kg	18.6	20	12	16	15.9	43.6	13.5	400
Mercury	mg/kg	0.02	0.019	0.02	0.02	0.028	0.018	0.027	16
Selenium	mg/kg	14	--	--	--	--	--	--	360

VOCs - Volatile organic compounds.
SVOCs - Semi-volatile organic compounds.
PCBs- Polychlorinated Biphenyls.
mg/kg - Milligrams per kilogram (parts per million).
-- Constituent(s) not detected above laboratory reporting limits.
VAP - Voluntary Action Program
[1] - Ohio VAP; OAC 3745-300-08 promulgated December 16, 1996.

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Table 7. Intersection Area 2 Analytical Results from Excavation Soil Confirmation Samples and Comparisons to Ohio VAP Generic Residential Direct Contact Standards for Soil, John Mercer Property Site, Alexandria, Ohio.

Sample ID Laboratory ID Sample Date Constituents	Units	IACS-8 716591 10/30/01	IACS-9 716592 10/30/01	IACS-10 716598 10/30/01	IACS-11 716599 10/30/01	IACS-12 716593 10/30/01	IACS-13 716600 10/30/01	IACS-14 716594 10/30/01	Ohio VAP Direct-Contact Residential Soil Standards [1]
VOCs - Method 8260									
Acetone	mg/kg	--	0.199	--	--	0.778	--	--	45,000
Ethylbenzene	mg/kg	--	--	--	--	0.008	--	3.08	230
Isopropylbenzene (Cumene)	mg/kg	--	--	--	--	--	--	1.17	1,000
p-Isopropyltoluene	mg/kg	--	0.010	--	--	--	--	0.458	110
4-Methyl-2-pentanone (MIBK)	mg/kg	--	--	--	--	0.400	--	--	NA
n-Propylbenzene	mg/kg	--	--	--	--	--	--	2.37	110
Naphthalene	mg/kg	--	0.008	--	--	--	--	2.25	1,800
Toluene	mg/kg	--	0.034	--	--	0.033	--	--	520
1,2,4-Trimethylbenzene	mg/kg	--	0.007	--	--	0.006	--	41.9	260
1,3,5-Trimethylbenzene	mg/kg	--	0.104	--	--	0.012	--	31.4	200
Xylenes, Total	mg/kg	--	0.262	--	--	0.045	--	49.4	1,500
SVOCs - Method 8270									
Isophorone	mg/kg	--	2.29	--	--	9.23	2.49	3.13	4,600
Naphthalene	mg/kg	--	--	--	--	--	--	0.423	1,800
PCBs Method 8080 & 8082	mg/kg	NS	NS	--	--	NS	--	NS	1.0
Metals - Methods 6010, 7060, & 7471	mg/kg								
Arsenic	mg/kg	12.3	10.5	13.4	16.4	30.6	18.1	22.6	6.9
Barium	mg/kg	55.6	62.8	84.6	80.2	26.2	61	69.3	5,000
Chromium	mg/kg	8.8	11	12.2	8.5	9.8	10	11.6	230
Lead	mg/kg	14.4	18.7	18	15.1	19.1	15.1	23.1	400
Mercury	mg/kg	0.0163	0.0258	0.0253	0.0202	0.0272	0.0215	0.0500	16

NS - Not Sampled.
VOCs - Volatile Organic Compounds.
SVOCs - Semi-Volatile Organic Compounds
PCBs- Polychlorinated Biphynels.
mg/kg - Milligrams per kilogram (parts per million).
-- No Constituent(s) detected above laboratory reporting limits.
VAP - Voluntary Action Program
NA - No VAP residential single chemical generic direct contact standard for constituent.
[1] - Ohio VAP; OAC 3745-300-08 promulgated December 16, 1996.

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Table 8. Below the Ravine Area Analytical Results from Excavation Soil Confirmation Samples and Comparisons to Ohio VAP Generic Residential Direct Contact Standards for Soil, John Mercer Property Site, Alexandria, Ohio.

Sample ID Laboratory ID Sample Date Constituent	Units	BRCS-1 715330 10/23/01	BRCS-2 715331 10/23/01	BRCS-3 715332 10/23/01	BRCS-4 715333 10/23/01	BRCS-5 715334 10/23/01	BRCS-6 715335 10/23/01	BRCS-7 715336 10/23/01	BRCS-8 715337 10/23/01	Ohio VAP Direct-Contact Residential Soil Standards [1]
VOCs - Method 8260										
1,1-Dichloroethane	mg/kg	--	0.009	--	--	--	--	--	--	620
cis-1,2-Dichloroethene	mg/kg	--	0.016	--	--	--	--	--	--	450
Ethylbenzene	mg/kg	--	--	--	--	--	--	--	--	230
Xylenes, Total	mg/kg	--	--	--	0.007J	--	--	--	--	1,500
SVOCs - Method 8270 & 8310	mg/kg	--	--	--	--	--	--	--	--	NA
PCBs - Method 8080 & 8082	mg/kg	NS	--	NS	--	NS	--	NS	NS	1.0
Metals Methods 6010, 7060, & 7471										
Arsenic	mg/kg	16.1	12.1	19.8	16.7	15.9	10.2	9.11	17.3	6.90
Barium	mg/kg	93.2	77.1	90.4	70.7	109	51.3	87.3	18.1	5,000
Chromium	mg/kg	15.5	17	14.2	12	12	8.6	16	5.7	8,800
Lead	mg/kg	24.5	22	17.6	16.6	18.4	12	19.6	11	400
Mercury	mg/kg	0.0631	0.0561	0.0486	0.034	0.0425	0.0239	0.0387	0.0174	16

NS - Not Sampled.
VOCs - Volatile Organic Compounds.
SVOCs - Semi-Volatile Organic Compounds
PCBs- Polychlorinated Biphenyls.
mg/kg - Milligrams per kilogram (parts per million).
J - Estimated Concentration.
-- No Constituent(s) detected above laboratory reporting limits.
VAP - Voluntary Action Program
NA - No VAP residential single chemical generic direct contact standard for constituent.
[1] - Ohio VAP; OAC 3745-300-08 promulgated December 16, 1996.

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Table 9. East Pole Barn Area Analytical Results from Excavation Soil Confirmation Samples and Comparisons to Ohio VAP Generic Residential Direct Contact Standards for Soil, John Mercer Property Site, Alexandria, Ohio.

Sample ID Laboratory ID Sample Date Constituents	Units	EPBCS-01 720327 11/14/01	EPBCS-02 720328 11/14/01	EPBCS-03 720329 11/14/01	EPBCS-04 720330 11/14/01	EPBCS-05 720331 11/14/01	EPBCS-06 720332 11/14/01	EPBCS-07 720333 11/14/01	EPBCS-08 724095 12/3/01	Ohio VAP Direct-Contact Residential Soil Standards [1]
VOCs - Method 8260										
Ethylbenzene	mg/kg	14.0	--	--	0.030	2.94	1.21J	3.19	--	230
n-Hexane	mg/kg	1.00	--	--	--	--	--	--	--	110
Isopropylbenzene	mg/kg	2	--	0.008	--	0.010	0.007	0.058	--	1,000
p- Ispropyltoluene	mg/kg	--	--	--	--	--	--	0.015	--	110
n- Propylbenzene	mg/kg	1.90	--	--	--	0.009	0.008	0.075	--	110
Naphthalene	mg/kg	0.772	--	--	--	--	--	0.011	--	1,800
Toluene	mg/kg	1.19	--	--	--	0.015	0.014	0.102	--	520
1, 2, 4 Trimethylbenzene	mg/kg	10.3	0.007	0.027	0.017	1.23	0.054J	1.85	--	260
1, 3, 5 Trimethylbenzene	mg/kg	3.56	--	0.011	0.008	0.021	0.022	0.128	--	200
Xylenes, Total	mg/kg	69.0	--	5.02	0.158	15.0	6.09J	12.8	--	1,500
SVOCs - Method 8270	mg/kg	--	--	--	--	--	--	--	--	NA
Metals - Methods 6010, 7060, & 7471										
Arsenic	mg/kg	16.5	18	19.6	26.5	13	16.5	12.7	18.1	6.90
Barium	mg/kg	62	92.8	64	72.4	55.7	73	68.5	80	5,000
Chromium	mg/kg	7.5	8.7	8.6	9.6	10	11	9.3	8.3	230
Lead	mg/kg	15.6	21.9	15.2	18.5	16.2	21.5	16.6	16.2	400
Mercury	mg/kg	0.038	0.0204	0.0216	0.0308	0.0309	0.0236	0.032	0.0217	16
PCBs - Method 8082										
Aroclor 1260	mg/kg	--	0.71	--	--	--	--	--	--	1.0

NS - Not sampled
VOCs - Volatile Organic Compounds.
SVOCs - Semi-Volatile Organic Compounds
PCBs- Polychlorinated Biphenyls.
mg/kg - Milligrams per kilogram (parts per million).
J - Estimated Concentration.
-- No Constituent(s) detected above laboratory reporting limits.
VAP - Voluntary Action Program
NA - No VAP residential single chemical generic direct contact standard for constituent.
[1] - Ohio VAP; OAC 3745-300-08 promulgated December 16, 1996.

Table 9. East Pole Barn Area Analytical Results from Excavation Soil Confirmation Samples and Comparisons to Ohio VAP Generic Residential Direct Contact Standards for Soil, John Mercer Property Site, Alexandria, Ohio.

Sample ID Laboratory ID Sample Date Constituents	Units	EPBCS-09 724096 12/3/01	EPBCS-10 724097 12/3/01	EPBCS-11 724099 12/3/01	EPBCS-12 724101 12/4/01	EPBCS-13 724102 12/4/01	EPBCS-14 724103 12/4/01	EPBCS-15 724104 12/4/02	EPBCS-18 731289 1/9/02	Ohio VAP Direct-Contact Residential Soil Standards [1]
VOCs - Method 8260										
Ethylbenzene	mg/kg	--	0.008	3.17	--	--	--	--	--	230
n-Hexane	mg/kg	--	--	--	--	--	--	--	--	110
Isopropylbenzene	mg/kg	--	0.016	0.035	--	--	--	--	--	1,000
p- Ispropyltoluene	mg/kg	--	--	--	--	--	--	--	--	110
n- Propylbenzene	mg/kg	--	0.012	0.035	--	--	--	--	--	110
Naphthalene	mg/kg	--	--	--	--	--	--	--	--	1,800
Toluene	mg/kg	--	--	0.046	--	--	--	--	--	520
1, 2, 4 Trimethylbenzene	mg/kg	--	0.074	2.00	--	--	--	--	--	260
1, 3, 5 Trimethylbenzene	mg/kg	--	0.021	0.081	--	--	--	--	--	200
Xylenes, Total	mg/kg	--	15.1	25.9	--	--	--	--	0.020J	1,500
SVOCs - Method 8270	mg/kg	--	--	--	--	--	--	--	--	NA
Metals - Methods 6010, 7060, & 7471										
Arsenic	mg/kg	21.3	18.8	17	20.7	17.9	15.2	16.9	11.6	6.90
Barium	mg/kg	75.7	88.7	103	66.9	54.9	74.1	110	78.9	5,000
Chromium	mg/kg	8.8	11	11.8	10	8.7	10	9.9	10	230
Lead	mg/kg	18	17.7	19.5	13.8	18.7	18.7	15.2	13.5	400
Mercury	mg/kg	0.0205	0.0208	0.0227	0.0235	0.0208	0.2450	0.0192	0.0230	16
PCBs - Method 8082										
Aroclor 1260	mg/kg	NS	NS	--	NS	NS	NS	NS	NS	1.0

NS - Not sampled
VOCs - Volatile Organic Compounds.
SVOCs - Semi-Volatile Organic Compounds
PCBs- Polychlorinated Biphenyls.
mg/kg - Milligrams per kilogram (parts per million).
J - Estimated Concentration.
-- No Constituent(s) detected above laboratory reporting limits.
VAP - Voluntary Action Program
NA - No VAP residential single chemical generic direct contact standard for constituent.
[1] - Ohio VAP; OAC 3745-300-08 promulgated December 16, 1996.

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Table 9. East Pole Barn Area Analytical Results from Excavation Soil Confirmation Samples and Comparisons to Ohio VAP Generic Residential Direct Contact Standards for Soil, John Mercer Property Site, Alexandria, Ohio.

Sample ID Laboratory ID Sample Date Constituents	Units	EPBCS-19 731290 1/9/02	DUPEPB-01 731291 1/9/02	EPBCS-20 735557 1/24/02	EPBCS-21 735558 1/24/02	EPBCS-22 735559 1/24/02	EPBCS-23 735560 1/24/02	EPBCS-24 735561 1/24/02	EPBCS-25 735562 1/24/02	Ohio VAP Direct-Contact Residential Soil Standards [1]
VOCs - EPA Method 8260										
Ethylbenzene	mg/kg	--	--	--	0.011J	0.009	2.36	--	0.119	230
n-Hexane	mg/kg	--	--	--	--	--	--	--	--	110
Isopropylbenzene	mg/kg	--	--	--	--	--	--	--	--	1,000
p- Ispropyltoluene	mg/kg	--	--	--	--	--	--	--	--	110
n- Propylbenzene	mg/kg	--	--	--	--	--	0.007	--	--	110
Naphthalene	mg/kg	--	--	--	--	--	--	--	--	1,800
Toluene	mg/kg	--	--	--	--	--	--	--	--	520
1, 2, 4 Trimethylbenzene	mg/kg	--	--	--	--	--	0.013	--	--	260
1, 3, 5 Trimethylbenzene	mg/kg	--	--	--	--	--	0.013	--	--	200
Xylenes, Total	mg/kg	0.035	0.039J	--	0.024J	--	0	--	0.171	1,500
SVOCs - EPA Method 8270	mg/kg	--	--	--	--	--	--	--	--	NA
Metals Methods 6010, 7060, & 7471										
Arsenic	mg/kg	12.9	14.1	12.6	15.6	17	16.8	17.8	18.3	6.90
Barium	mg/kg	65.1	76.6	80.3	70.6	71.6	60.5	107	66.8	5,000
Chromium	mg/kg	8.5	10	9.1	11	11.6	9.6	9.8	7.4	230
Lead	mg/kg	11	13	13.2	12.2	14.7	11	11	10	400
Mercury	mg/kg	0.0149	0.2020	0.0220	0.0170	0.0160	0.0220	0.0210	0.0150	16
PCBs - EPA Method 8082										
Aroclor 1260	mg/kg	--	NS	NS	NS	--	NS	NS	<0.59	1.0

NS - Not sampled
VOCs - Volatile Organic Compounds.
SVOCs - Semi-Volatile Organic Compounds
PCBs- Polychlorinated Biphenyls.
mg/kg - Milligrams per kilogram (parts per million).
J - Estimated Concentration.
-- No Constituent(s) detected above laboratory reporting limits.
VAP - Voluntary Action Program
NA - No VAP residential single chemical generic direct contact standard for constituent.
[1] - Ohio VAP; OAC 3745-300-08 promulgated December 16, 1996.

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Table 10. Soil Analytical Data, Phase II Groundwater Investigation, Spring 2002, John Mercer Property Site, Alexandria, Ohio.

Soil Analytical Results Sample ID (Depth Interval) Sample Date Constituents	Units	MW-4 (6-8) 5/15/2002	MW-5D (100-102) 5/21/2002	MW-5D (100-102) RUN-2 5/21/2002	MW-5D (100-102) RUN-3 5/21/2002	MW-6D (72-74) 5/22/2002	MW-6D (72-74) Run-2 5/22/2002	Ohio VAP Direct-Contact Residential Soil Standards [1]
VOCs - Method 8260A								
Acetone	mg/kg	--	--	--	--	--	--	4500
Carbon disulfide	mg/kg	--	--	--	0.003	--	--	380
1,4-Dichlorobenzene	mg/kg	--	--	--	--	--	--	ns
n-Hexane	mg/kg	--	--	--	--	--	--	110
Methylene Chloride	mg/kg	--	--	--	--	--	--	220
Tetrachloroethene	mg/kg	--	--	0.002	0.006	--	--	94
Toluene	mg/kg	--	--	--	--	--	--	520
Trichloroethene	mg/kg	--	--	--	--	0.020	--	77
Trichlorofluoromethane	mg/kg	--	--	--	0.001	--	--	400

Sample ID (Depth Interval) Lab ID Sample Date Constituents	Units	MW-6D (72-74) Run-3 764264 5/22/2002	MW-7D (104-106) 761599 5/23/2002	MW-7D (104-106) Run-2 764265 5/23/2002	MW-7D (104-106) Run-3 764266 5/23/2002	MW-8D (100-102) 762322 5/29/2002	Ohio VAP Direct-Contact Residential Soil Standards [1]
VOCs Method 8260A							
Acetone	mg/kg	--	--	--	--	--	4500
Carbon disulfide	mg/kg	0.002	--	--	--	--	380
1,4-Dichlorobenzene	mg/kg	--	--	--	--	--	ns
n-Hexane	mg/kg	--	--	--	--	--	110
Methylene Chloride	mg/kg	--	--	--	--	0.006	220
Tetrachloroethene	mg/kg	0.003	--	--	--	--	94
Toluene	mg/kg	--	--	--	0.001	--	520
Trichloroethene	mg/kg	--	--	--	--	--	77
Trichlorofluoromethane	mg/kg	J	--	--	--	--	400

Soil analyzed using USEPA SW846 Method 8260A by TestAmerica, Inc., Dayton, Ohio.
VOCs - Volatile Organic Compounds.
mg/kg - milligram per kilogram (parts per million).
ns - Leach Based standard not provided for constituents.
-- No constituent(s) detected above laboratory reporting limits.
J- Estimated.
VAP - Voluntary Action Program
[1] - Ohio VAP; OAC 3745-300-08 promulgated December 16, 1996.

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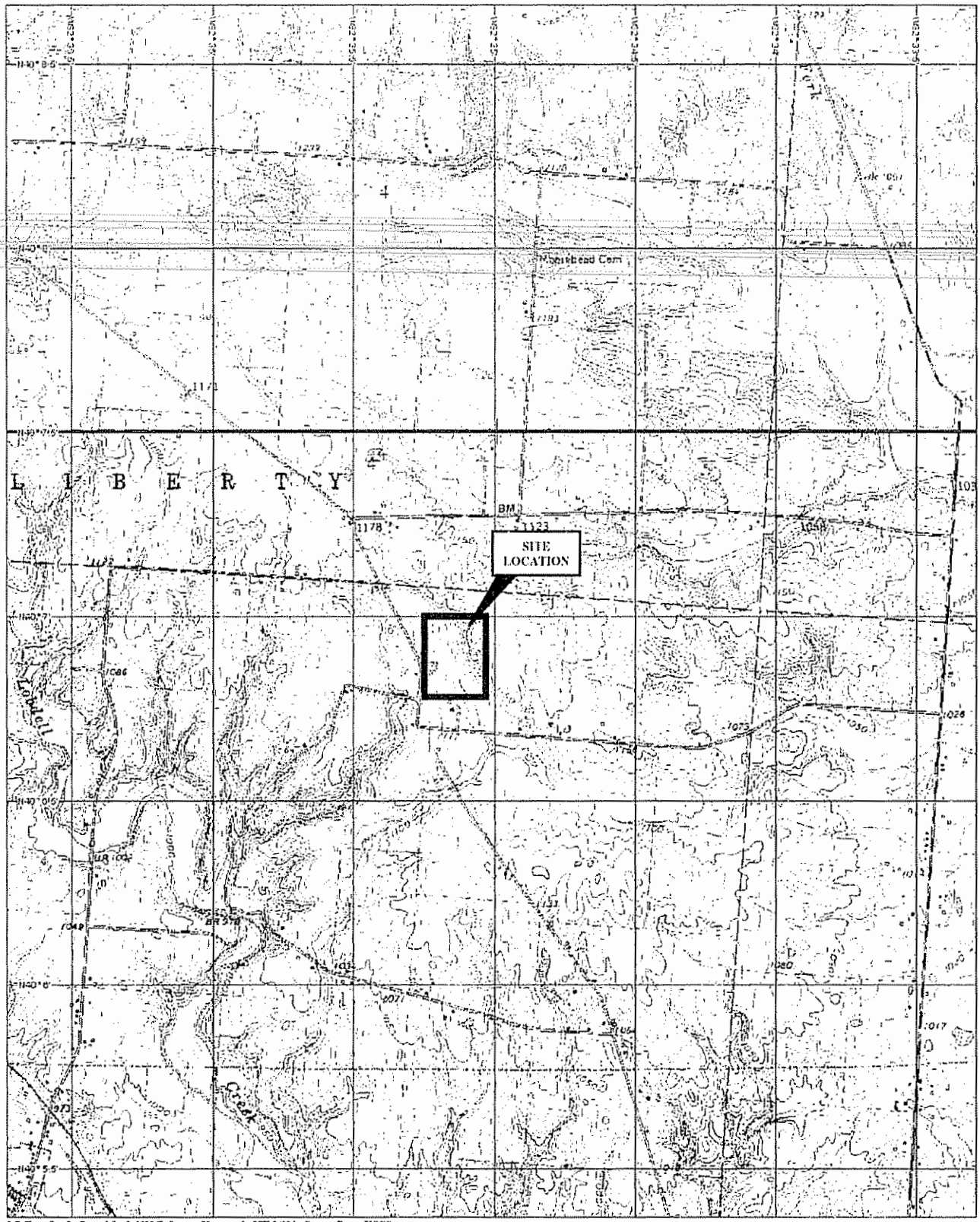
Table 11. Groundwater Analytical Data, Phase II Groundwater Investigation, Spring 2002, John Mercer Property Site, Alexandria, Ohio.

Groundwater Analytical Results										
Sample ID		MW-1	MW-2	MW-3	MW-4	MW-5D	MW-6D	MW-7D	MW-8D	Federal
Lab ID		762068	762069	762320	763038	762552	763231	762551	763036	Drinking Water
Sample Date		5/28/2002	5/28/2002	5/29/2002	6/3/2002	5/30/2002	5/29/2002	5/30/2002	6/3/2002[1]	MCLs
VOCs - Method 524.2										
Benzene	ug/L	--	--	--	0.25 J	--	--	--	--	5
Ethylbenzene	ug/L	--	--	--	0.17 J	--	--	--	--	700
Toluene	ug/L	--	--	--	1.4	--	--	--	0.28 J	1000
1,2,4-Trimethylbenzene	ug/L	--	--	--	0.16 J	--	--	--	--	ns
o-Xylene	ug/L	--	--	--	0.28 J	--	--	--	--	ns
m&p-Xylene	ug/L	--	--	--	0.6 J	--	--	--	--	ns
Total Xylenes	ug/L	--	--	--	0.9	--	--	--	--	10000
SVOCs - Method 525.2										
Benzo(a)pyrene	ug/L	--	--	--	--	--	--	--	--	0.2
Di(2-ethylhexyl)adipate	ug/L	--	--	--	--	--	--	--	--	400
Di(2-ethylhexyl)phthalate	ug/L	--	--	--	3.07 J[2]	--	--	--	--	6
Butylbenzylphthalate	ug/L	--	--	--	--	--	--	--	--	ns
Hexachlorobenzene	ug/L	--	--	--	--	--	--	--	--	1
Hexachlorocyclopentadiene	ug/L	--	--	--	--	--	--	--	--	50
PCB's Method 200 Series	ug/L	--	--	--	--	--	--	--	--	
Total Metals - Method 200 Series	ug/L									
Arsenic	ug/L	2.19	0.3	0.07 I	2.61	1.69	0.66	1.04	1.17	50
Barium	ug/L	8.64	10.5	6.13	--	8.06	9.14	5.97	16	2000
Cadmium	ug/L	0.05	0.005 J	--	0.16	--	0.01 J	--	0.02 J	5
Chromium	ug/L	0.60 J	--	0.04 J	2.97	0.18 J	0.1 J	0.3	1.71	100
Lead	ug/L	0.78	0.10 J	0.08 J	3.09	0.07 I	0.08 J	0.08 J	0.14	15
Mercury	ug/L	--	--	--	0.0037 I	--	--	--	--	2
Selenium	ug/L	.06 J	--	0.04 J	--	--	0.07 I	--	0.03 J	50
Silver	ug/L	0.0006 J	--	--	--	--	--	--	0.01 J	100
Dissolved Metals - Method 200 Series										
Arsenic	ug/L	1.21	--	--	--	1.74	0.62	0.98	0.99	50
Barium	ug/L	12.7	9.81	5.88	5.67	7.49	9.1	5.44	10.4	2000
Cadmium	ug/L	0.02 J	0.007 J	--	--	--	--	--	--	5
Chromium	ug/L	--	--	--	--	--	--	--	--	100
Lead	ug/L	0.008 J	0.02 J	0.010 J	--	0.009 J	0.01 J	0.01 J	0.003 J	15
Mercury	ug/L	--	<0.02	--	--	--	--	--	--	2
Selenium	ug/L	--	0.03 J	--	--	--	0.08 J	--	--	50
Silver	ug/L	0.001 J	--	--	--	--	0.001 J	--	0.01 J	100

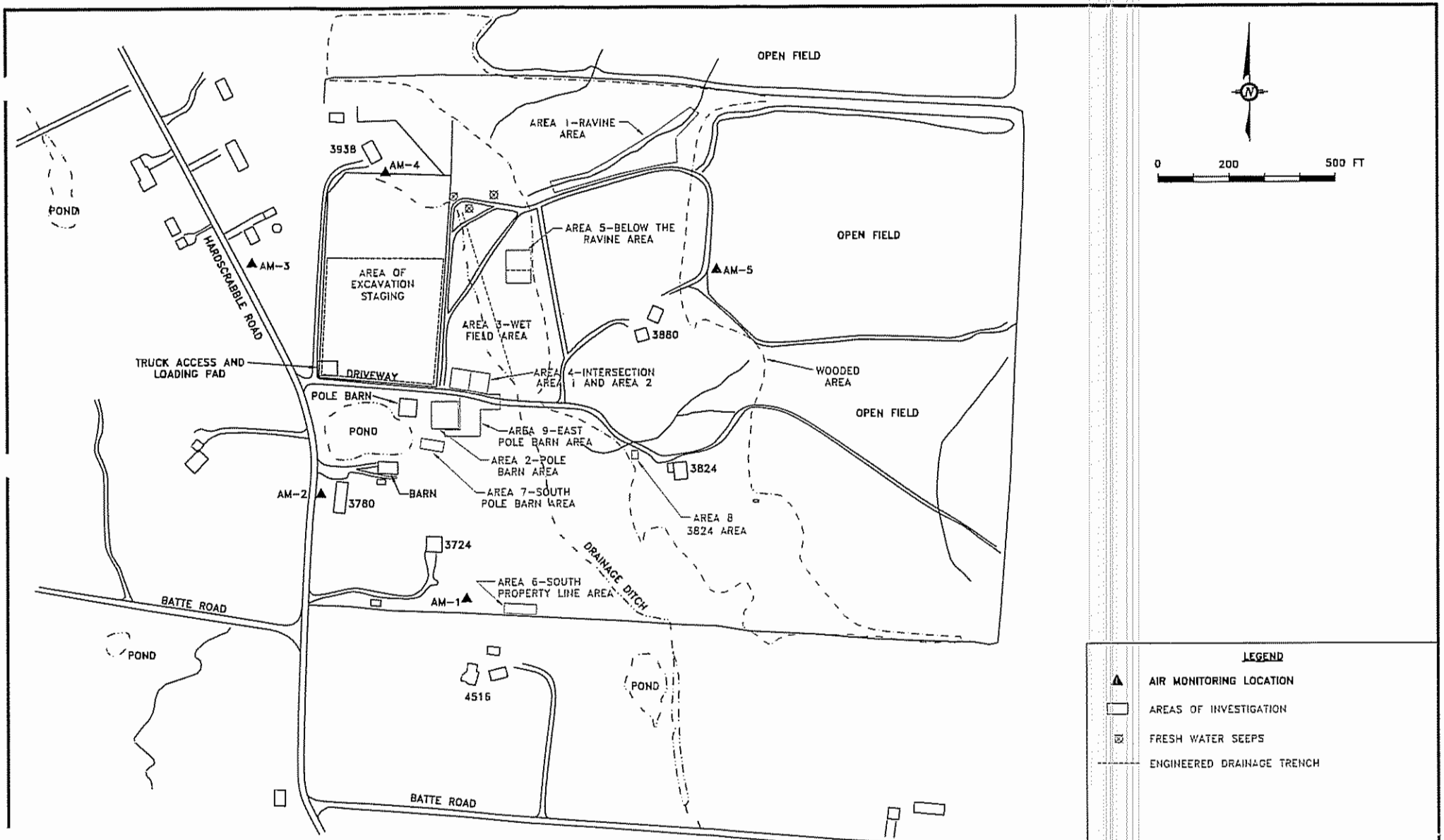
Groundwater analyzed using USEPA Drinking Water Method 524.2 for VOCs, 525.2 for SVOCs, and 200 Series for Metals by TestAmerica, Inc., Dayton, Ohio and Orlando, Florida.
VOCs - Volatile Organic Compounds.
SVOCs - Semi-Volatile Organic Compounds
PCBs- Polychlorinated Biphenyls.
MCLs - Primary Federal Drinking Water Standards Maximum Contaminant Level. MCL for silver is a secondary MCL.
ug/L - micrograms per liter (parts per billion).
-- No constituent(s) detected above laboratory reporting limits not detected.
ns - MCL standard not provided for constituents.
I- Estimated concentration, constituent detected below laboratory reporting limits.
1- SVOCS sampled 6/7/02 for MW-8D.
2- Surrogate recovery limits were exceeded.



ARCADIS

SITE LOCATION,
JOHN MERCER PROPERTY
3780 HARDSCRABBLE ROAD
ALEXANDRIA, OHIO

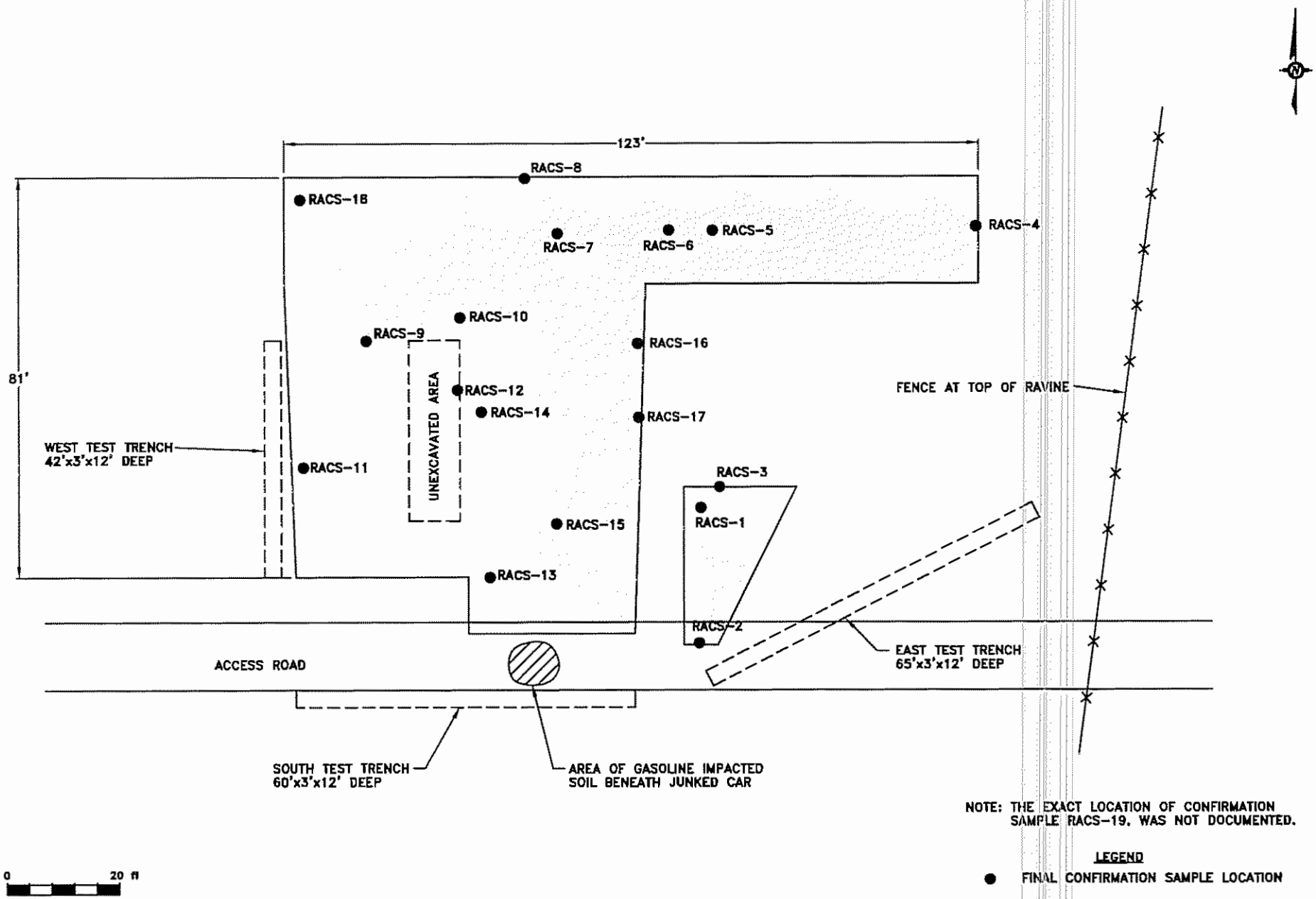
Date	Project Manager	Drawing Name
09/03/03	D. BALCER	NOBELQUAD
Drawn By	Lead Design Prof.	Checked
R. SMITH	J. REID	S. CLOUSE
Project Number		Figure Number
OH000879.0030.0002		1



ARCADIS

MAIN AREAS OF INVESTIGATION
JOHN MERCER PROPERTY SITE
ALEXANDRIA, OHIO

DRAWN	DATE	PROJECT MANAGER	DRAWING NAME
R.SMITH	11/1/2002	D. BALDER	MODEL/OH879-03
		LEAD DESIGN PROF. J. REID	CHECKED B. HOWMAN
		PROJECT NUMBER	FIGURE NUMBER
		OH000879.0030.002	2



NOTE: THE EXACT LOCATION OF CONFIRMATION SAMPLE RACS-19, WAS NOT DOCUMENTED.

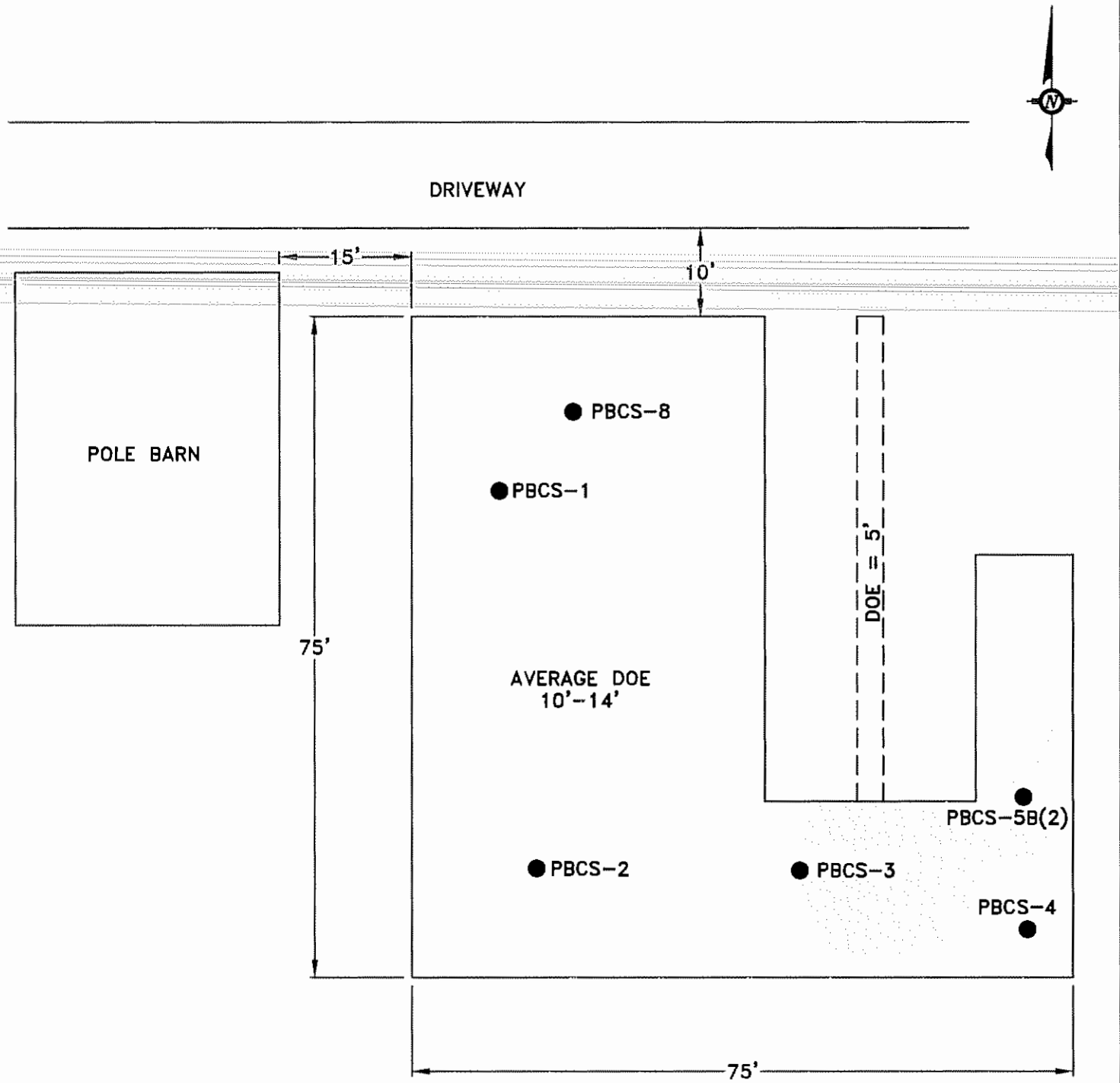
LEGEND

● FINAL CONFIRMATION SAMPLE LOCATION

ARCADIS

RAVINE AREA
JOHN MERCER PROPERTY SITE
ALEXANDRIA, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
1/29/2002	D. BALCER	NOBEL\OH879-14
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. REID	B. HOWMAN
PROJECT NUMBER		FIGURE NUMBER
0H000879.0030.0002		3



LEGEND

● FINAL CONFIRMATION SAMPLE LOCATION

DOE DEPTH OF EXCAVATION FROM PRE-EXISTING LAND SURFACE

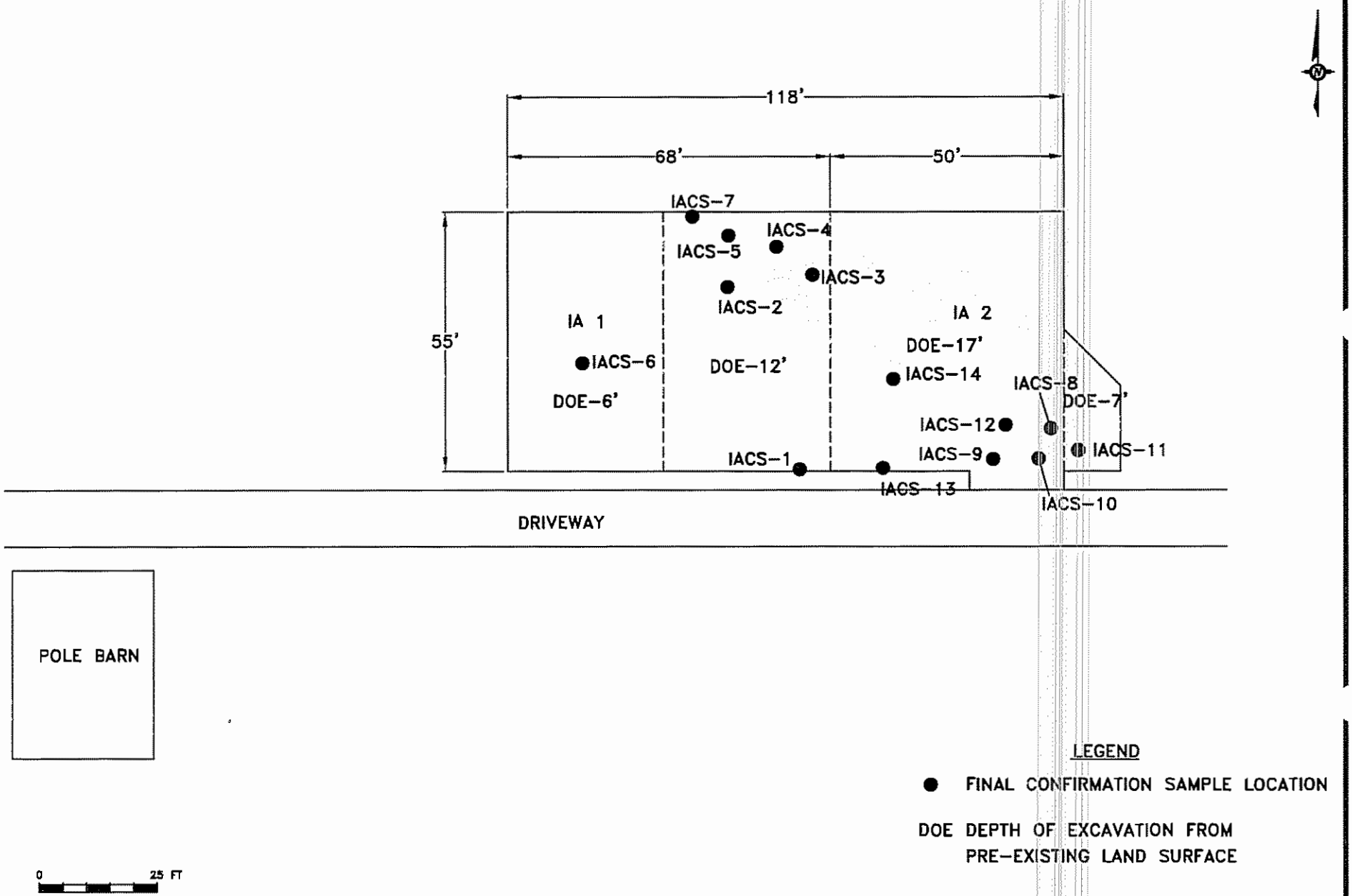
0 25 FT

ARCADIS

6367 Emerald Parkway
Suite 100, Dublin, OH 43016
Tel: 614/764-2310 Fax: 614/764-1270

POLE BARN AREA
JOHN MERCER PROPERTY SITE
ALEXANDRIA, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
1/29/2002	D. BALCER	NOBEL\OH879-15
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. REID	B. HOWMAN
PROJECT NUMBER		FIGURE NUMBER
OH000879.0030.0002		4



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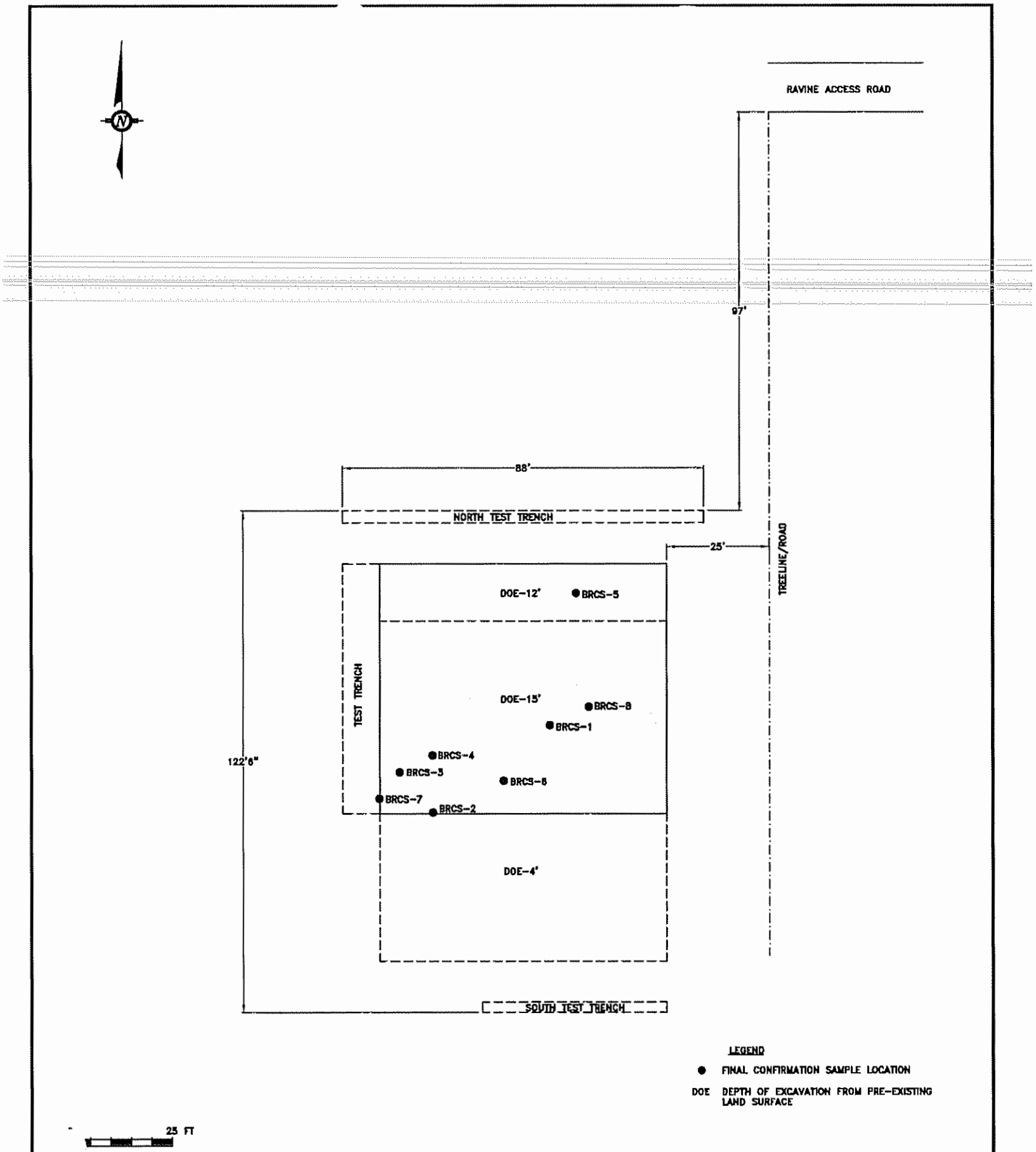
INTERSECTION AREAS 1 AND 2
JOHN MERCER PROPERTY SITE
ALEXANDRIA, OHIO

DATE 1/22/2002	PROJECT MANAGER D. BALCER	DRAWING NAME NOBEL\OH879-12
DRAWN R. SMITH	LEAD DESIGN PROF. J. REID	CHECKED B. HOWMAN
PROJECT NUMBER OH000879.0030.0002		FIGURE NUMBER 5



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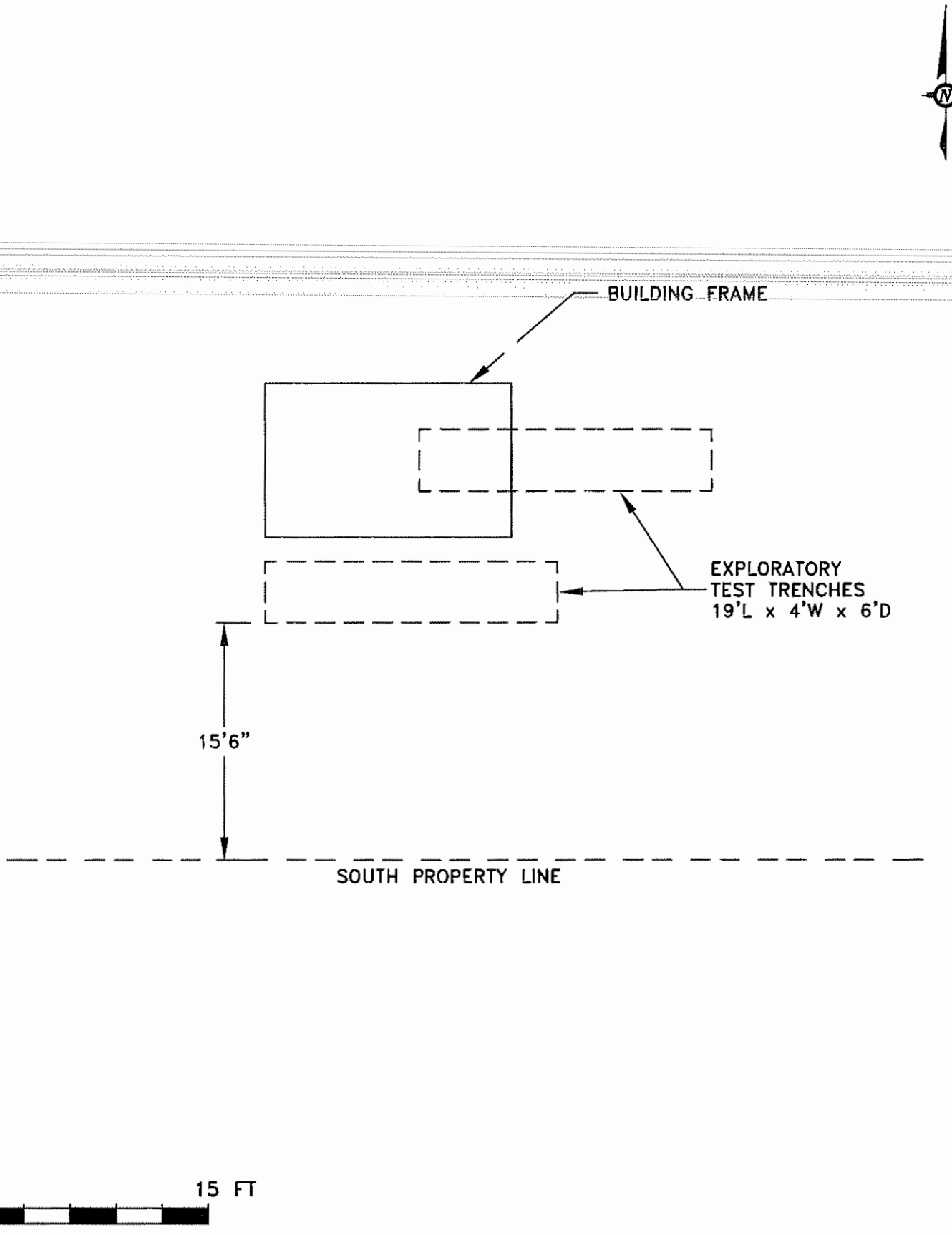
Tel: 614/764-2310 Fax: 614/764-1370

BELOW THE RAVINE AREA
JOHN MERCER PROPERTY SITE
ALEXANDRIA, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
1/21/2002	D. BALCER	MOBEL\OH579-10
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. REID	B. HOWMAN
PROJECT NUMBER		FIGURE NUMBER
0H000879.0030.0002		6



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6367 Emerald Parkway
Suite 100, Dublin, OH 43016
Tel: 614/764-2310 Fax: 614/764-1270

SOUTH PROPERTY LINE AREA
JOHN MERCER PROPERTY SITE
ALEXANDRIA, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
1/21/2002	D. BALCER	NOBEL\OH879-13
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. REID	B. HOWMAN
PROJECT NUMBER		FIGURE NUMBER
OH000879.0030.0002		7

LEGEND

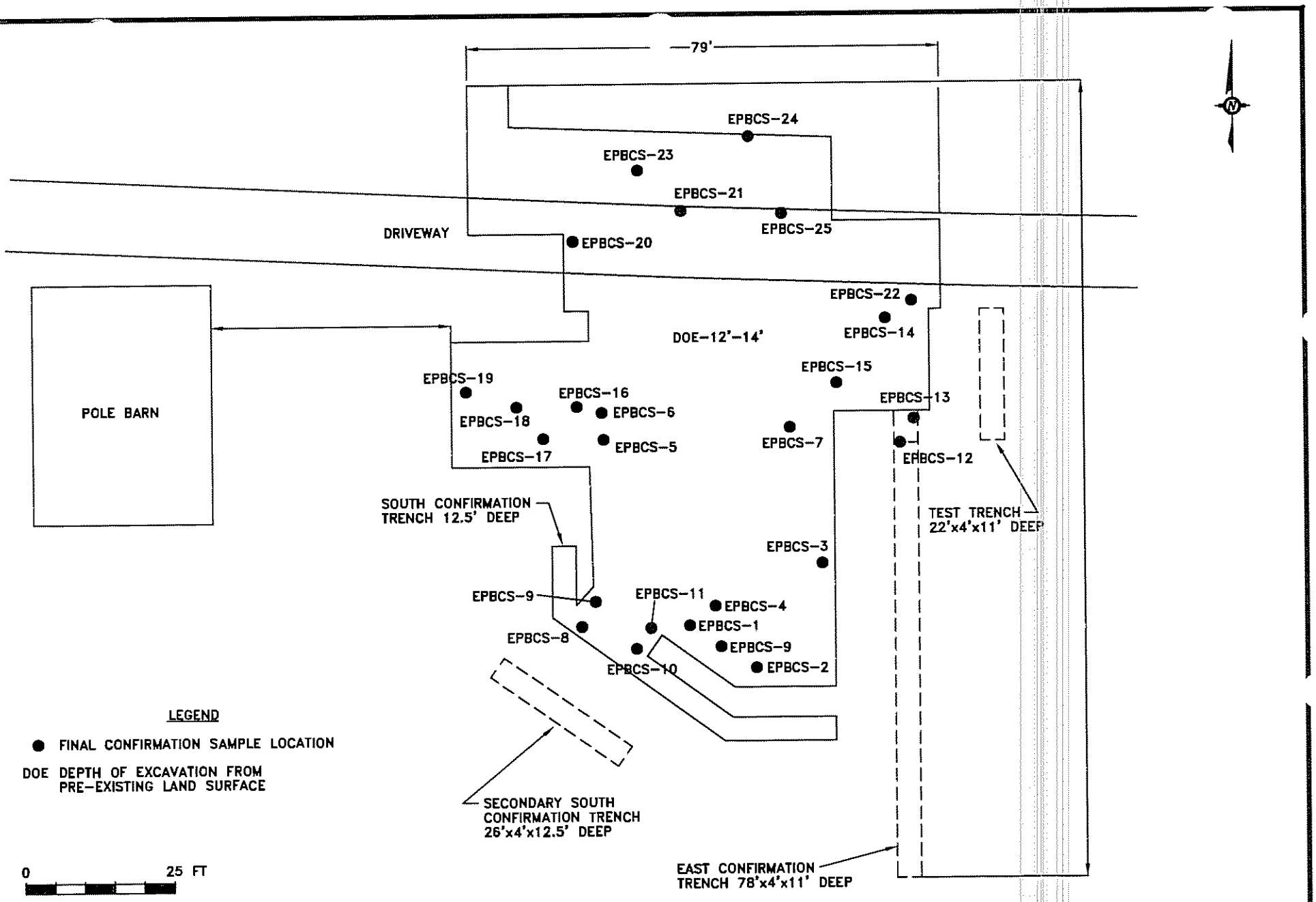
● FINAL CONFIRMATION SAMPLE LOCATION

DOE DEPTH OF EXCAVATION FROM PRE–EXISTING LAND SURFACE

ARCADIS
6367 Emerald Parkway
Suite 150, Dublin, OH 43016
Tel: 614/764-2310 Fax: 614/764-1270

3824 AREA
JOHN MERCER PROPERTY SITE
ALEXANDRIA, OHIO

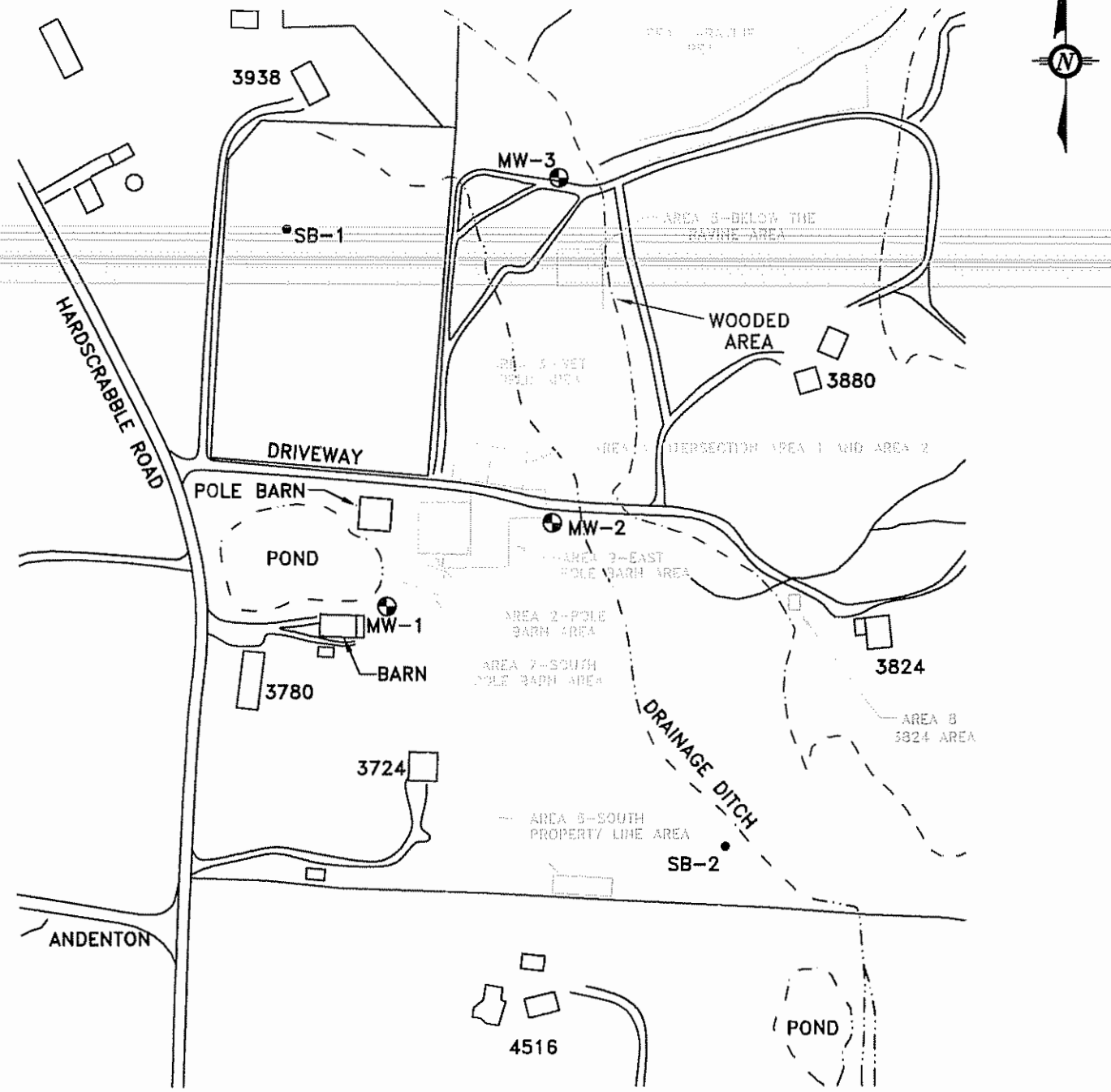
DATE	PROJECT MANAGER	DRAWING NAME
1/21/2002	D. BALCER	NOBEL\OH579-11
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. REID	B. HOWMAN
PROJECT NUMBER		FIGURE NUMBER
0H000879.0030.0002		8



ARCADIS

EAST POLE BARN AREA
JOHN MERCER PROPERTY SITE
ALEXANDRIA, OHIO

DATE 1/29/2002	PROJECT MANAGER D. BALCER	DRAWING NAME NOBEL\OH879-16
DRAWN R. SMITH	LEAD DESIGN PROF. J. REID	CHECKED B. HOWMAN
PROJECT NUMBER OH000879.0030.0002		FIGURE NUMBER 9



LEGEND

- PHASE I SHALLOW MONITOR WELL
- DEEP SOIL BORING

0 200 500 FT

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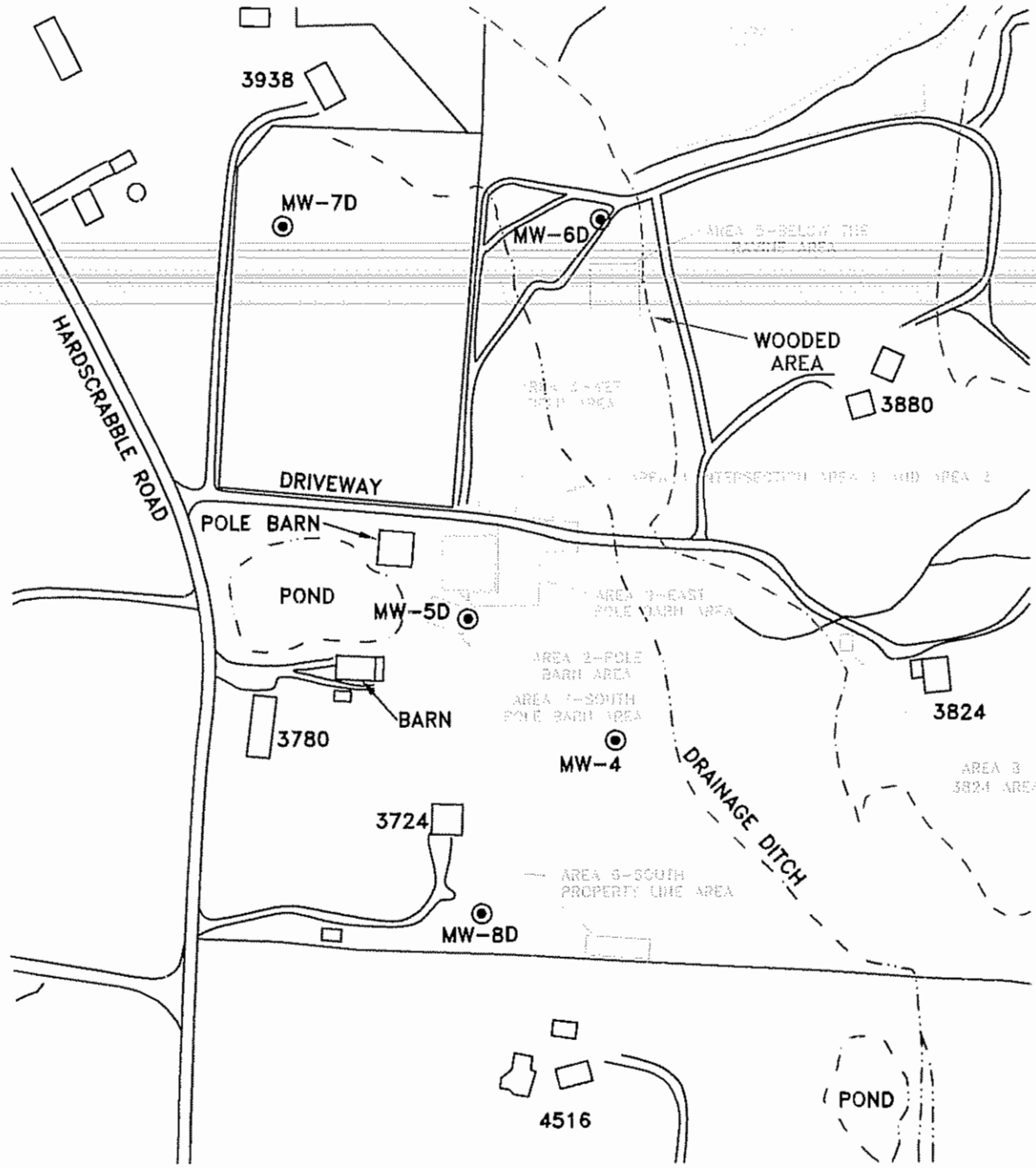
6367 Emerald Parkway
Suite 100, Dublin, OH 43016
Tel: 614/764-2310 Fax: 614/764-1370

PHASE I GROUNDWATER INVESTIGATION
JOHN MERCER PROPERTY SITE
ALEXANDRIA, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
9/19/2002	D. BAUGER	NOBEL\OH879-20
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. REID	B. HOWMAN
PROJECT NUMBER		FIGURE NUMBER
OH000879.0030.0002		10



LEGEND

⊙ PHASE II MONITOR WELL

0 200 500 FT

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6367 Emerald Parkway
Suite 100, Dublin, OH 43016
Tel: 614/764-2310 Fax: 614/764-1270

PHASE II GROUNDWATER INVESTIGATION
JOHN MERCER PROPERTY SITE
ALEXANDRIA, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
9/19/2002	D. BALCER	NGEEL\OH579-20
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. REID	B. HOWMAN
PROJECT NUMBER		FIGURE NUMBER
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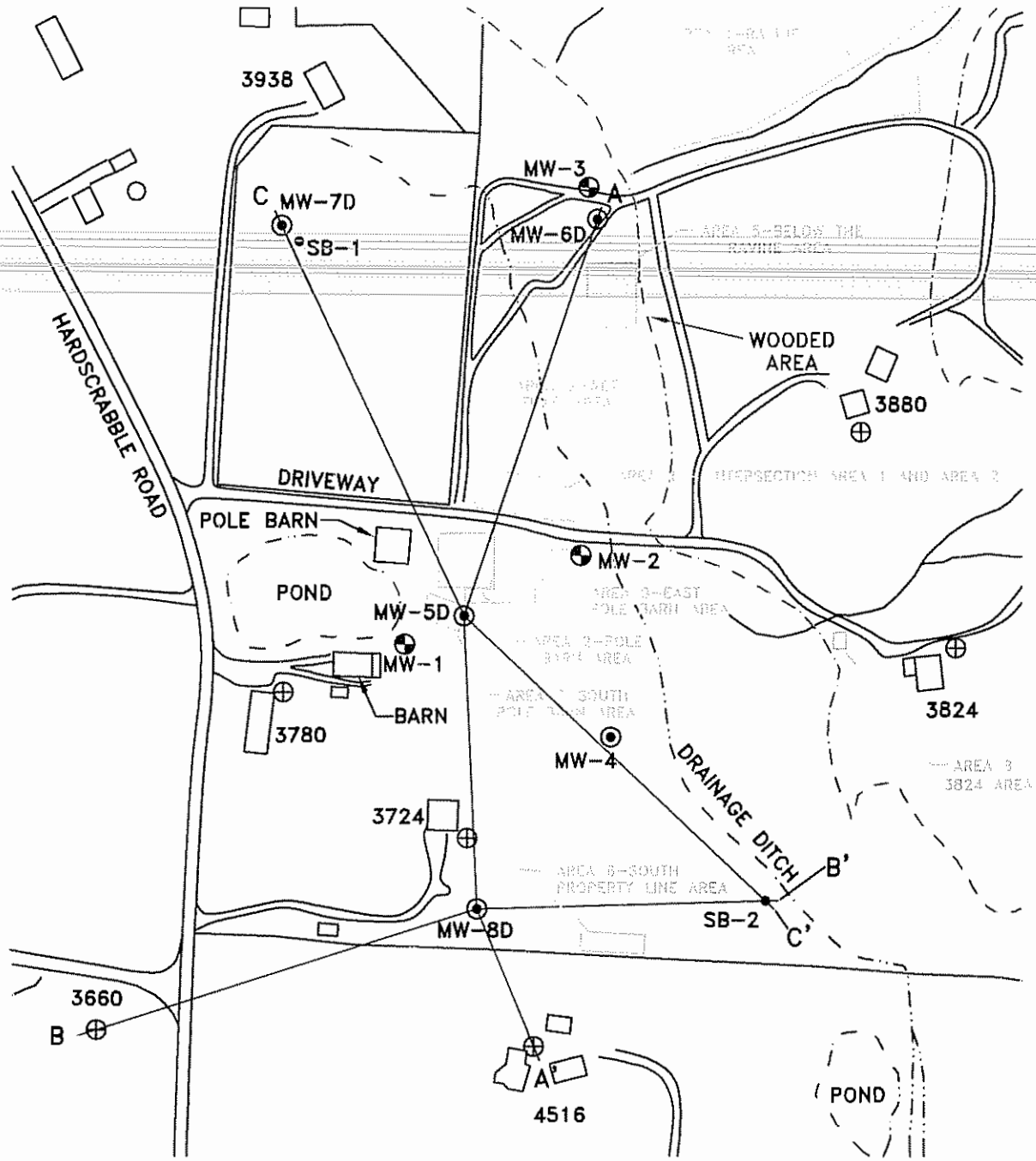

LEGEND

- PHASE I SHALLOW MONITOR WELL
- PHASE I SOIL BORING
- PHASE II MONITOR WELL
- RESIDENTIAL WELL
- A — A' LINE OF CROSS SECTION

0 200 500 FT

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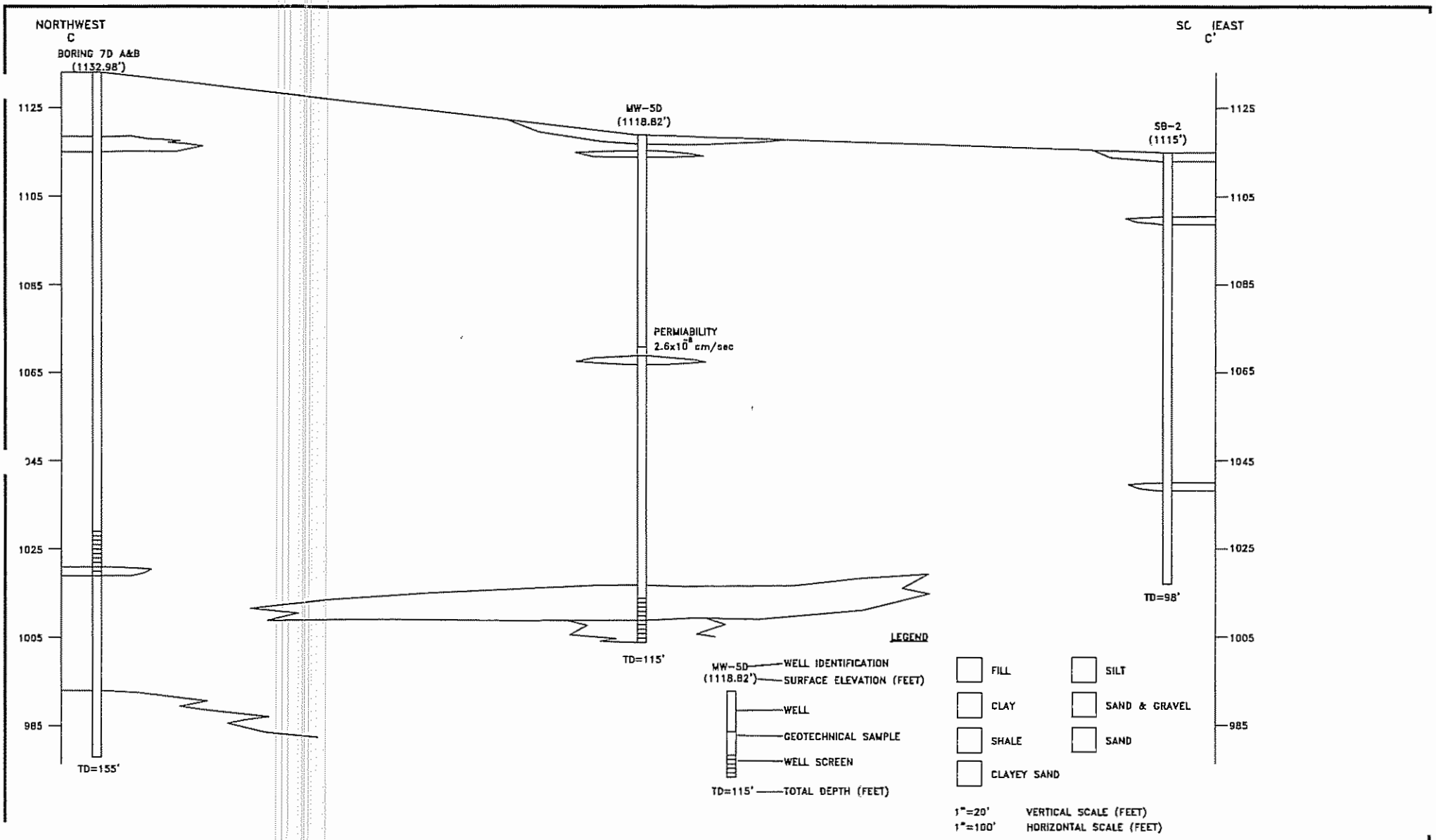
Suite 150, Dublin, OH 43016
Tel: 614/764-2310 Fax: 614/764-1370

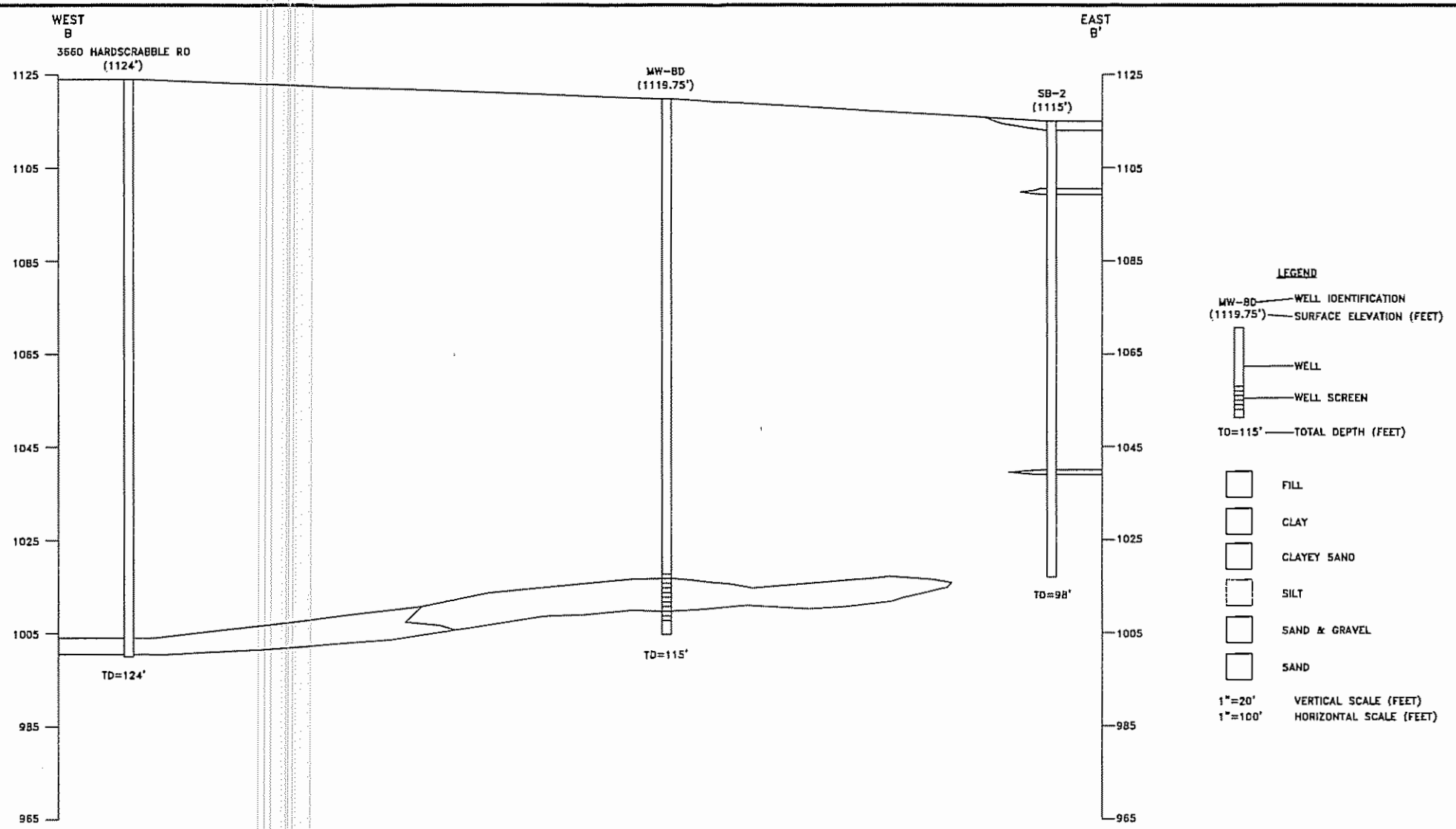
CROSS SECTION LOCATIONS A-A', B-B', AND C-C'
JOHN MERCER PROPERTY SITE
ALEXANDRIA, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
9/19/2002	D. BALCER	NOBEL\OH579-19
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. REID	B.HOWMAN
PROJECT NUMBER		FIGURE NUMBER
OH000879.0030.0002		12



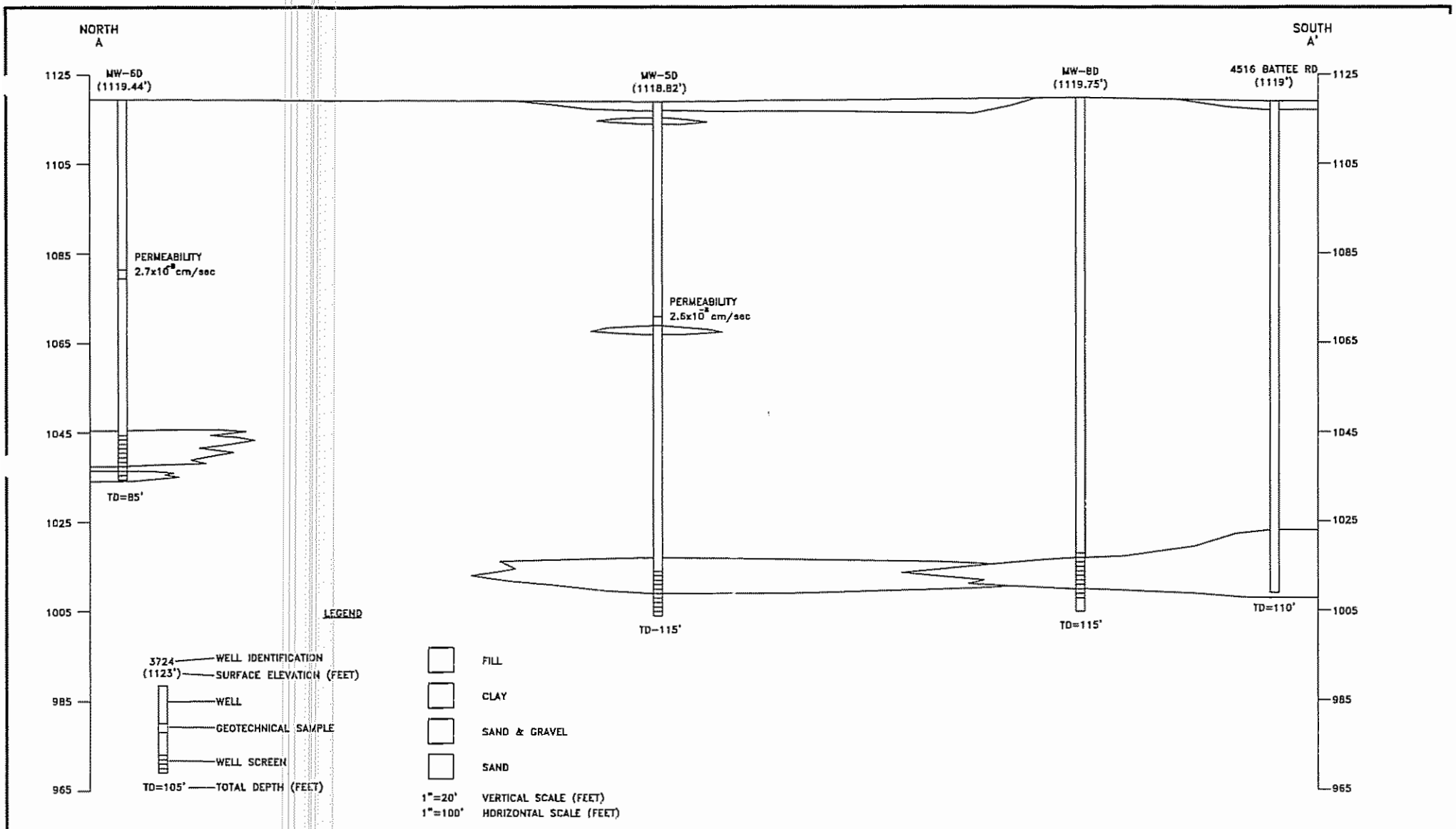
CROSS SECTION C-C'
JOHN MERCER PROPERTY SITE
ALEXANDRIA, OHIO

DRAWN	DATE	PROJECT MANAGER	DRAWING NAME
R. SMITH	9/18/2002	D. BALCER	NOBEL\CS879-03
		LEAD DESIGN PROF. J. REID	CHECKED K. ADKINS
		PROJECT NUMBER	FIGURE NUMBER
		0H000879.0030.002	15



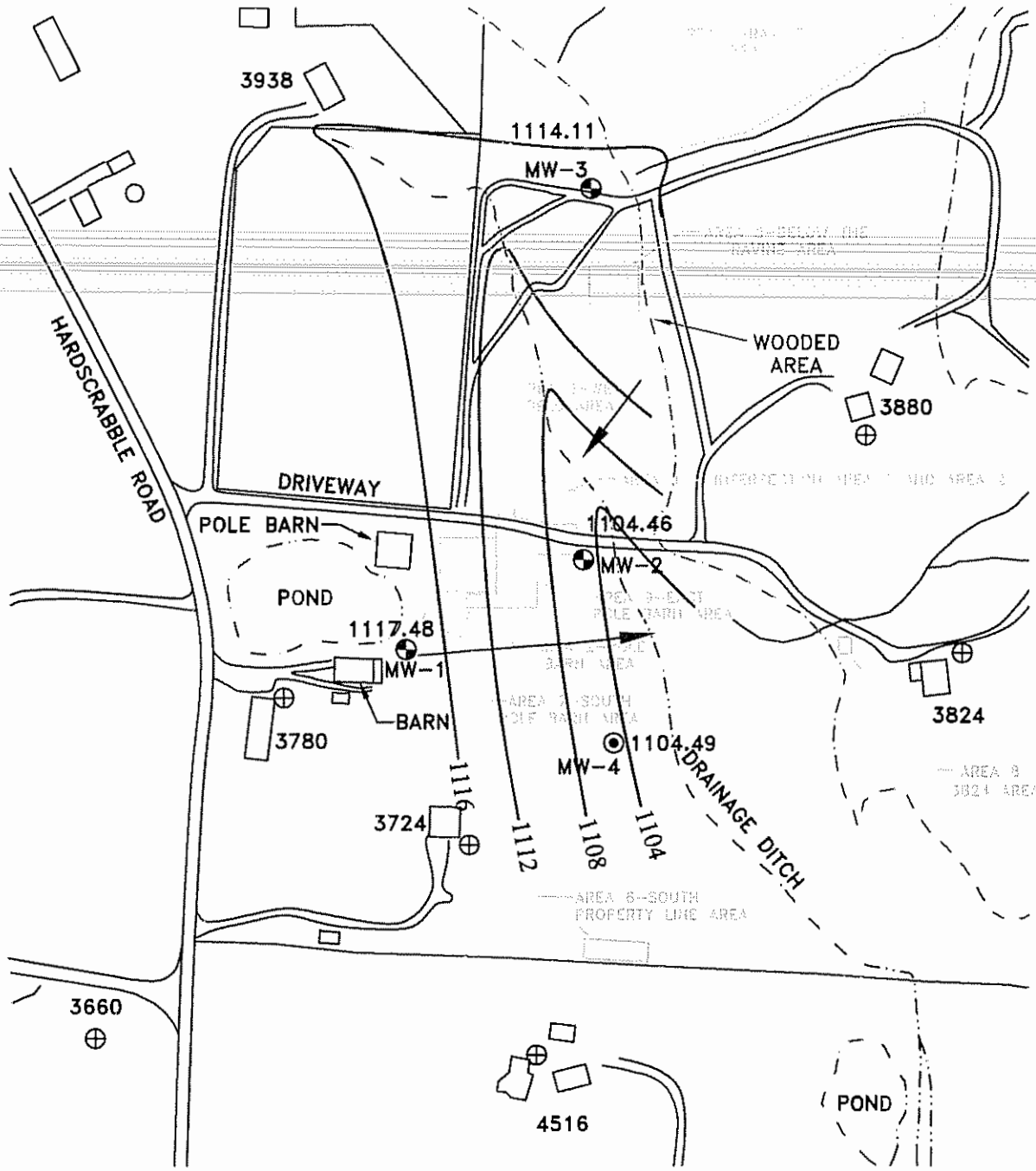
CROSS SECTION B-B'
JOHN MERCER PROPERTY SITE
ALEXANDRIA, OHIO

DRAWN	DATE	PROJECT MANAGER	DRAWING NAME
R. SMITH	9/18/2002	D. BALCER	N:\EEL\CS879-02
		LEAD DESIGN PROF.	CHECKED
		J. REID	K. ADKINS
		PROJECT NUMBER	FIGURE NUMBER
		OH000879.0030.002	14



CROSS SECTION A-A'
JOHN MERCER PROPERTY SITE
ALEXANDRIA, OHIO

DRAWN	DATE	PROJECT MANAGER	DRAWING NAME
R. SMITH	9/18/2002	D. BALCER	NOBEL\CS879-01
		LEAD DESIGN PROF.	CHECKED
		J. REID	K. ADKINS
		PROJECT NUMBER	FIGURE NUMBER
		OH000879.0030.002	13



N

LEGEND

- PHASE I SHALLOW MONITOR WELL
- PHASE II MONITOR WELL
- RESIDENTIAL WELL
- 1114.11 GROUNDWATER ELEVATION
- 1108 — GROUNDWATER CONTOUR
- DIRECTION OF GROUNDWATER FLOW

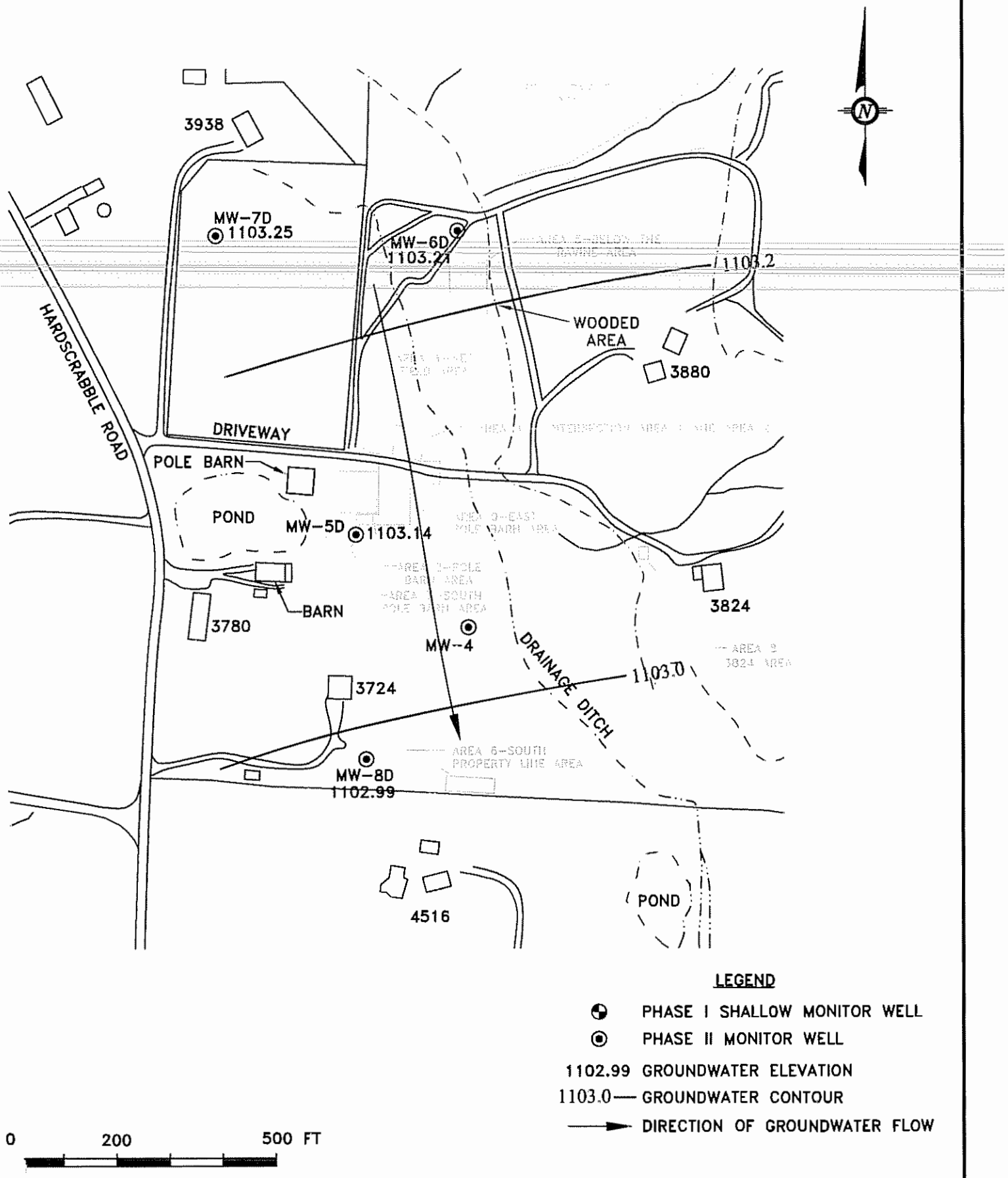
0 200 500 FT

ARCADIS

6367 Emerald Parkway
Suite 150, Dublin, OH 43016
Tel: 614/764-2210 Fax: 614/764-1270

POTENTIOMETRIC SURFACE MAP FOR SHALLOW WELLS AUGUST 5, 2002
JOHN MERCER PROPERTY SITE
ALEXANDRIA, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
9/16/2002	D. BALCER	MOBEL\0H579-21
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. REID	E.HOWMAN
PROJECT NUMBER		FIGURE NUMBER
0H000879.0030.0002		16



ARCADIS

6367 Dwerald Parkway
Suite 100, Dublin, OH 43016
Tel: 614/764-2210 Fax: 614/764-1270

POTENTIOMETRIC SURFACE MAP FOR DEEP WELLS
AUGUST 5, 2002
JOHN MERCER PROPERTY SITE, ALEXANDRIA, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
8/12/2002	D. BALCER	NOBEL\OH879-16
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. REID	B. HOWMAN
PROJECT NUMBER		FIGURE NUMBER
OH000879.0030.0002		17