

**KILGORE FARM PROPERTY  
800 TUSSIC STREET  
WESTERVILLE, OHIO**

Latitude: 40° 08' 26"N

Longitude: 82° 54' 08"W

**VOLUNTARY ACTION PROGRAM  
0AC 3745-300-06  
PHASE I PROPERTY ASSESSMENT AMENDMENT**

**CERTIFIED ENVIRONMENTAL PROFESSIONAL  
GERALD R. MYERS, C.E.P. 131**

*Prepared for:*

**Davidson Phillips, Inc.  
1152 Goodale Blvd.,  
Columbus, Ohio 43212**

*and*

**The Keethler Company  
7670 Olentangy River Rd., Suite 200  
West Worthington, Ohio 43235**

**May, 1998**

**M&E Metcalf & Eddy**

An Air & Water Technologies Company

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Columbus, Ohio 43231  
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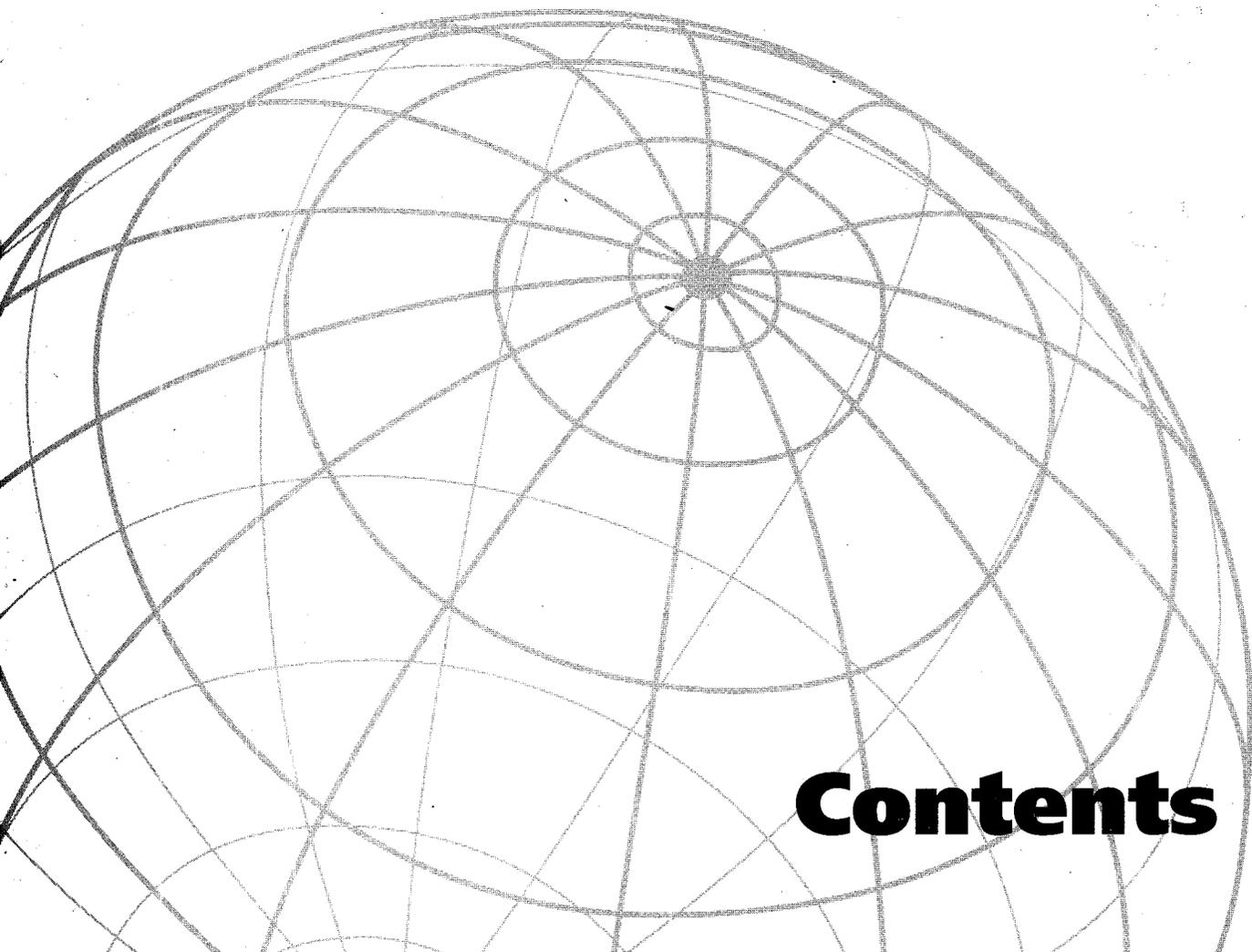
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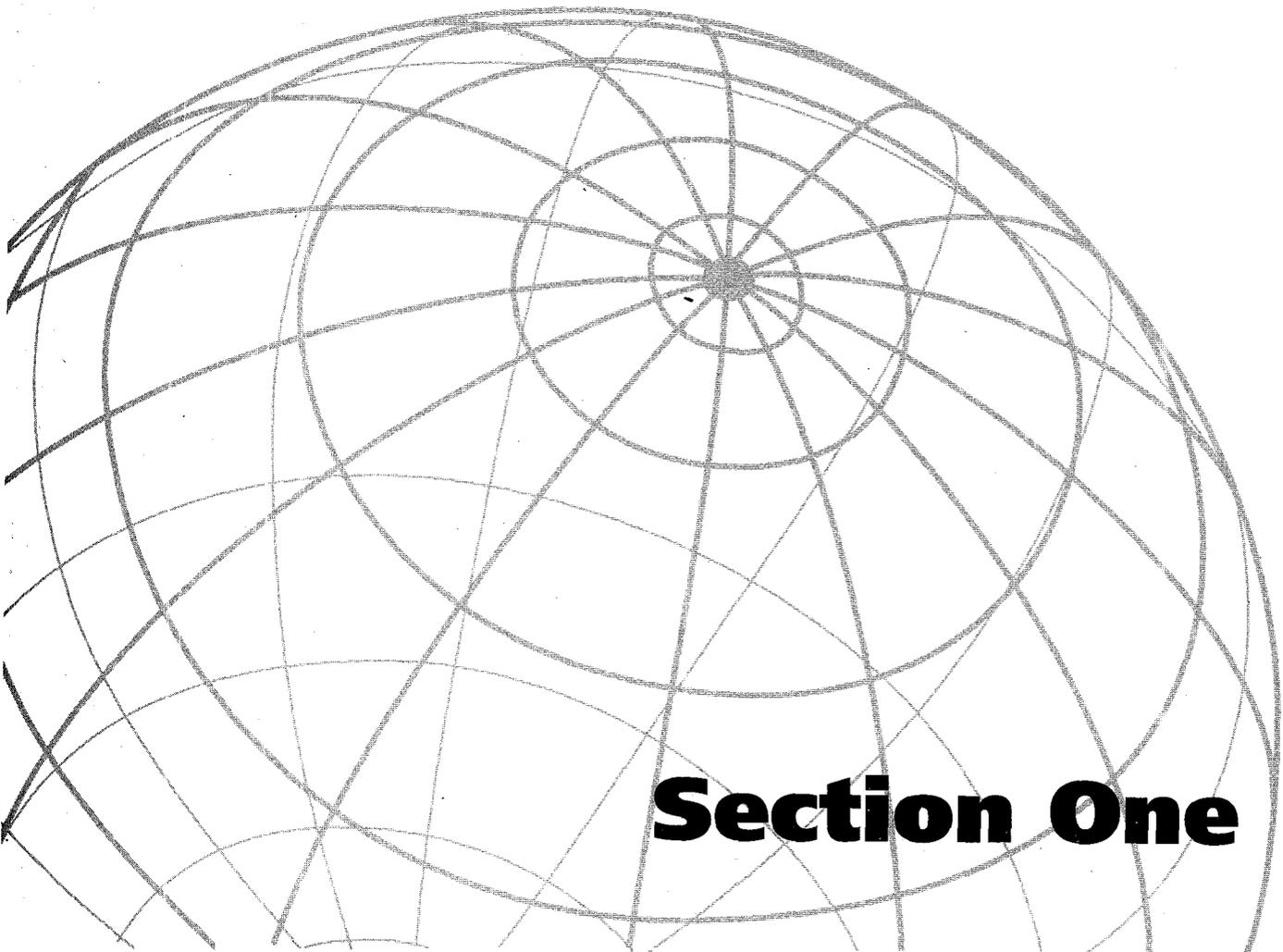
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# Section One

## **1.0 INTRODUCTION**

Metcalf & Eddy of Ohio, Inc. (M&E) was retained by Davidson Phillips to provide an amendment to the Phase I report on the Kilgore Farm Property provided to the Ohio Environmental Protection Agency (Ohio EPA) by Lawhon & Associates (L&A), in April 1997. The amendment is consistent with the Ohio Voluntary Action Program (VAP) described in the Ohio Revised Code 3745-300-06. The purpose of this amendment is to submit additional information and documentation concerning the Kilgore Farm Property for the purpose of possible participation in the VAP and to determine the necessity and scope of a Phase II Assessment.

This report describes the methodologies used, the information sources reviewed, persons interviewed, the findings, and conclusions developed during the Amendment to the Phase I Assessment.

### **1.1 ELIGIBILITY**

As described in Section 3745-300-2 of the Ohio Administrative Code, The Kilgore Farm Property owned by Otterbein University has been determined to be eligible for entry into the Ohio Voluntary Action Program. The subject property or any portion thereof is not described by Paragraph C of OAC 3745-300-02. Furthermore, manufacturing operations ended at the property prior to promulgation of any of the environmental regulations described in Paragraph C.

### **1.2 PROJECT PERSONNEL**

The personnel who have worked on this project include:

METCALF & EDDY, INC.

Gerald R. Myers, Vice President, CEP

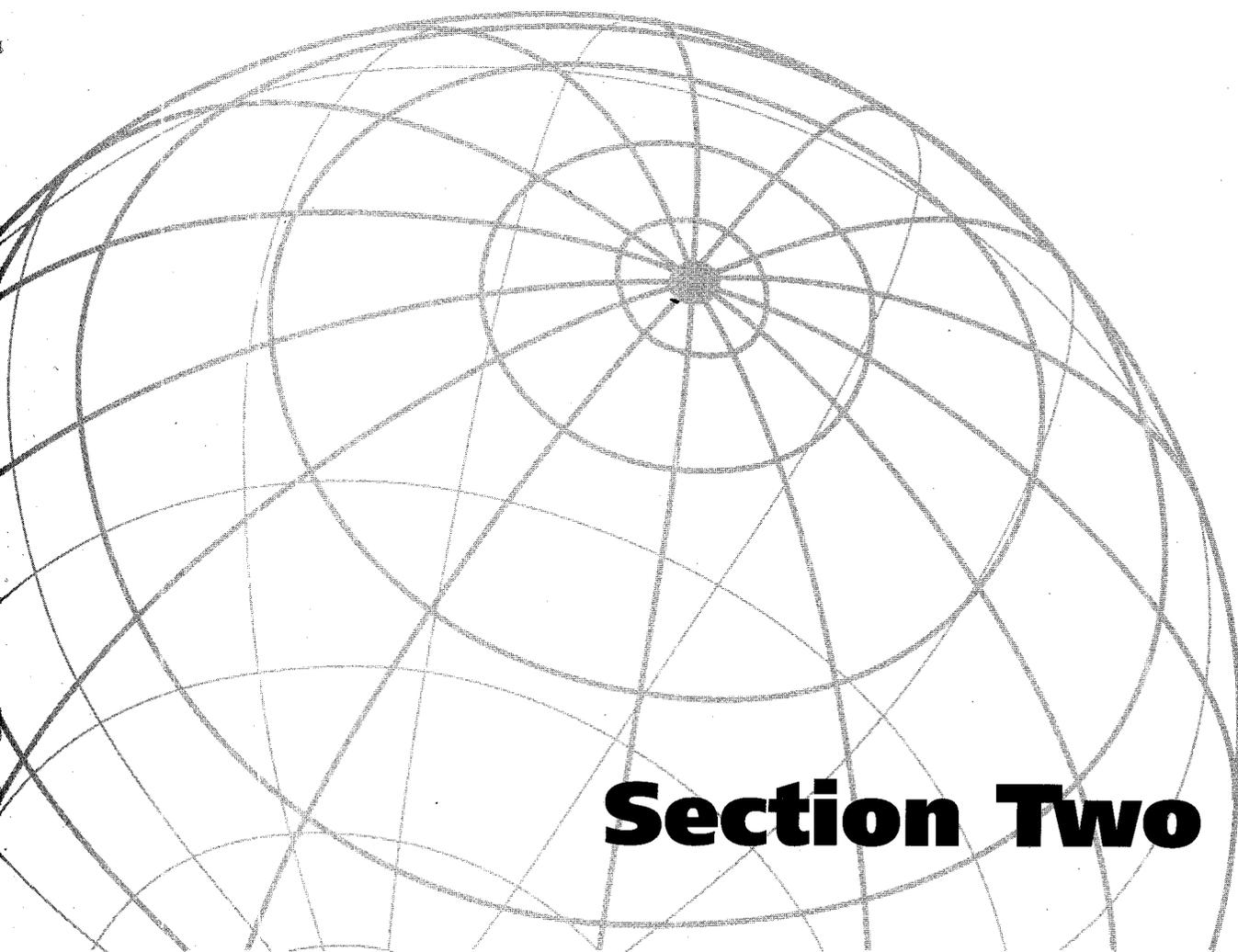
Michael S. Raimonde, Project Manager

Jeffrey D. Stevenson, Project Geologist

Todd Aebie, Staff Geologist

Alexis W. Lemmon, Jr., Chemical Engineer

A copy of each person's resume and affidavit as it relates to his efforts is located in Appendix A.



# **Section Two**

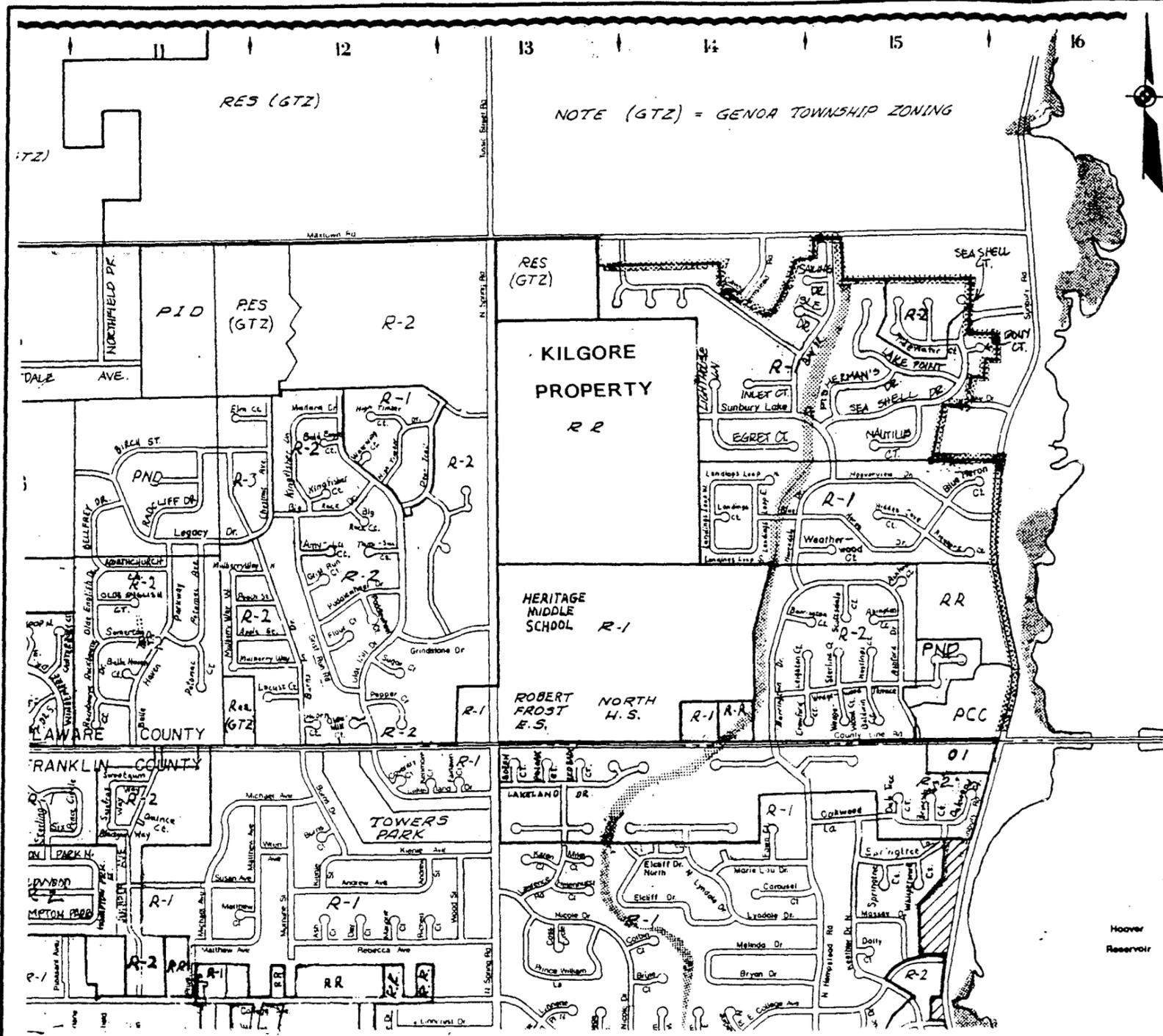
## 2.0 CURRENT AND SURROUNDING LAND USAGE

The Kilgore Farm Property is located at 800 Tussic (Spring Road) Road, in the City of Westerville, Delaware County, Ohio. The property is approximately 110 acres in area, and is now vacant. The latitude of the property is 40 degrees, 08 minutes, 26 seconds north, and the longitude of the property is 82 degrees, 54 minutes, and 08 seconds west. Gravel roads are still visible on the property. All remaining structures have been razed. A legal description of the facility is contained in Appendix B.

The Kilgore Farm Property is located in a very rapidly growing residential area of the City of Westerville, Ohio. The Property is surrounded by a mix of residential, school, and agricultural lands. The following land usage surrounds the property:

- North: The property immediately to the north is wooded, with houses within 0.5 miles north of the property along Maxtown Road.
- South: The City of Westerville Schools owns the land south of the property. Westerville North High School, Heritage Middle School and their athletic fields bound the property. Within 0.5 miles, residential neighborhoods are encountered.
- East: Residential developments, and vacant property.
- West: Agricultural, farmland and limited residential development.

Figure 1 shows the location of the Kilgore Property. Figure 2 shows the surrounding land use within ½ mile of the property.



**ZONING DISTRICTS**

	<u>STANDARD</u>	<u>PLANNED</u>
Residential:	RR Rural Residential R-1 Single Family R-2 Single Family R-3 Two-Family R-4 Multiple Family R Single Family ER Estate Residential	PND Planned Neighborhood District PRD Planned Residential District
Commercial:	CC Community Commercial UD Uptown District ARD Architectural Review District	PCC Planned Community Commercial PD Planned Development
Office & Institutional:	OI Office - Institutional	PO Planned Office
Industrial:	I Industrial	PID Planned Industrial District
Special Districts:	OS Open Space SFH Special Flood Hazard Area (Flood Plain) (SOD) Special Overlay District Unincorporated Area	

APPROXIMATE SCALE 1" = 1250'

PHOTOREPRODUCTION

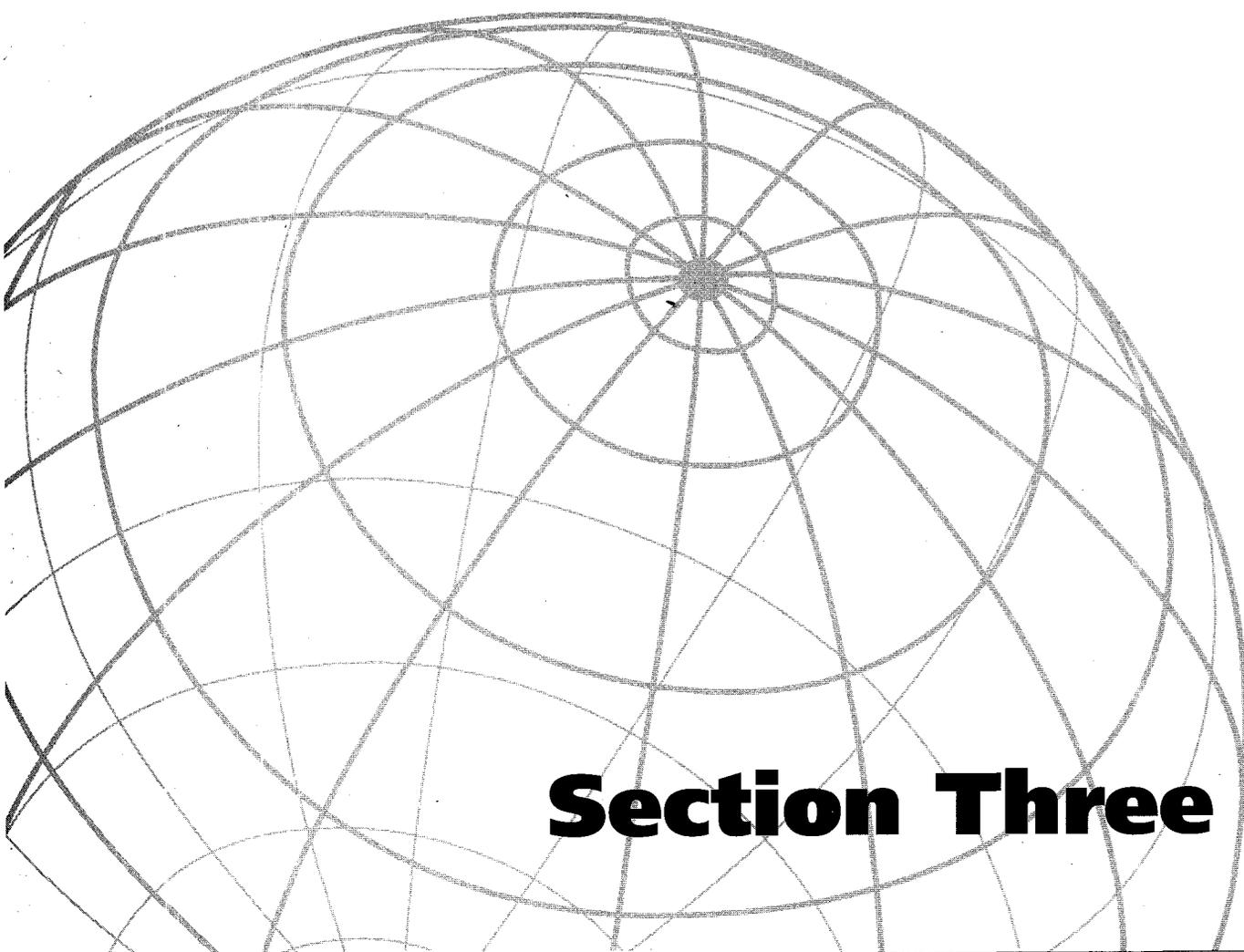
**M&E Metcalf & Eddy**

**KILGORE PROPERTY  
PROPERTY LOCATION AND SURROUNDING  
LAND USE MAP  
WESTERVILLE, OHIO**

FILE NAME	CHECKED	DRAWN	DATE	PROJECT NO.	FIGURE
	TJA	TJA	5/12/98	021796	2

MAP BASED ON CITY OF WESTERVILLE ZONING MAP APRIL, 1998

OC 015332



# Section Three

### **3.0 HISTORIC LAND USAGE**

This section describes the information obtained and reviewed to establish the historical operations of the Property. Figure 3 shows the historical layout of the Property during operations in 1950 and Figure 4 shows the historical layout of the Property in 1956.

#### **3.1 PROPERTY HISTORY ANALYSIS**

An analysis of the history of the Kilgore Farm Property and the surrounding property was conducted by M&E by reviewing the following available resources. The source and a brief summary of information obtained are listed below:

##### **3.1.1 Aerial Photographs**

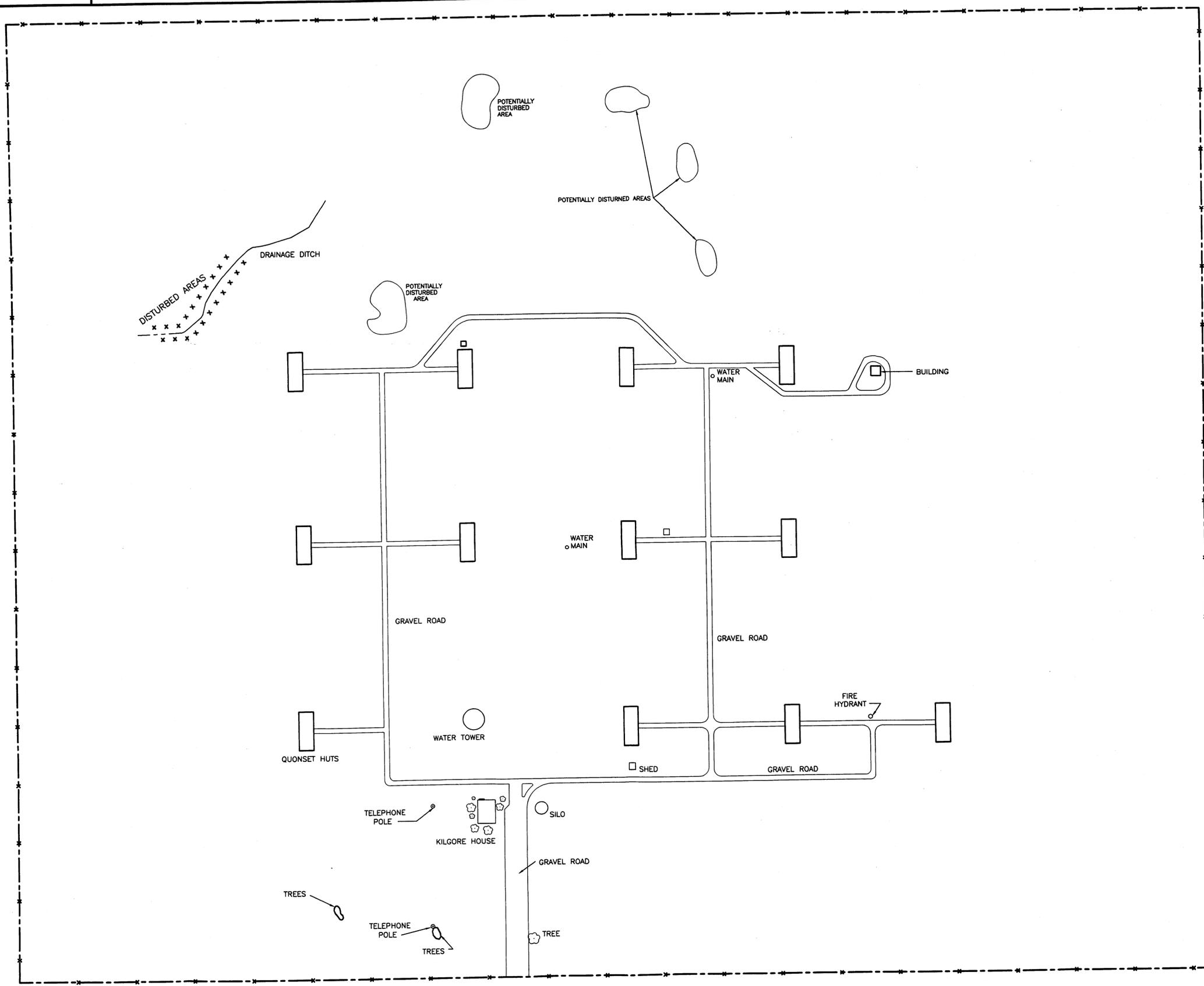
Aerial photographs were obtained from The City of Westerville, Ohio Department of Natural Resources, Delaware County Engineer, and the Franklin County Soil and Water Conservation District. The dates of the aerial photographs are 1938, 1950, 1956, 1957, 1964, 1967, and 1994. Aerial photographs were used to establish the location of roads, buildings, burial and disturbed areas and the surrounding land use. (Appendix C )

##### **3.1.2 Topographic Maps**

Topographic maps from 1955, 1964 and 1983 were used to establish surrounding land usage and topography. (Appendix D )

##### **3.1.3 Historical Records**

Historical documents and correspondence were gathered and reviewed. Information reviewed included:



**LEGEND**  
 x x x x x DISTURBED AREAS  
 - - - - - FENCE LINE

\* MAP BASED ON A 1950 AERIAL PHOTOGRAPH

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS	DESCRIPTION

DRAWN BY FGS
DEPT. CHECK
PROJ. CHECK

**M&E Metcalf & Eddy**

REG. PROF. ENGR. \_\_\_\_\_ DATE \_\_\_\_\_

SCALE: 1" = 100'

SCALE IN FEET  
0 50 100

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

PLOT DATE: 5/21/98

KILGORE PROPERTY  
 SITE LAYOUT - 1950  
 WESTERVILLE, OHIO

JOB \_\_\_\_\_ 021796-0001  
 FILE NO. \_\_\_\_\_ 021796-4  
 FIGURE \_\_\_\_\_ 3

OC 015335

1

2

3

4

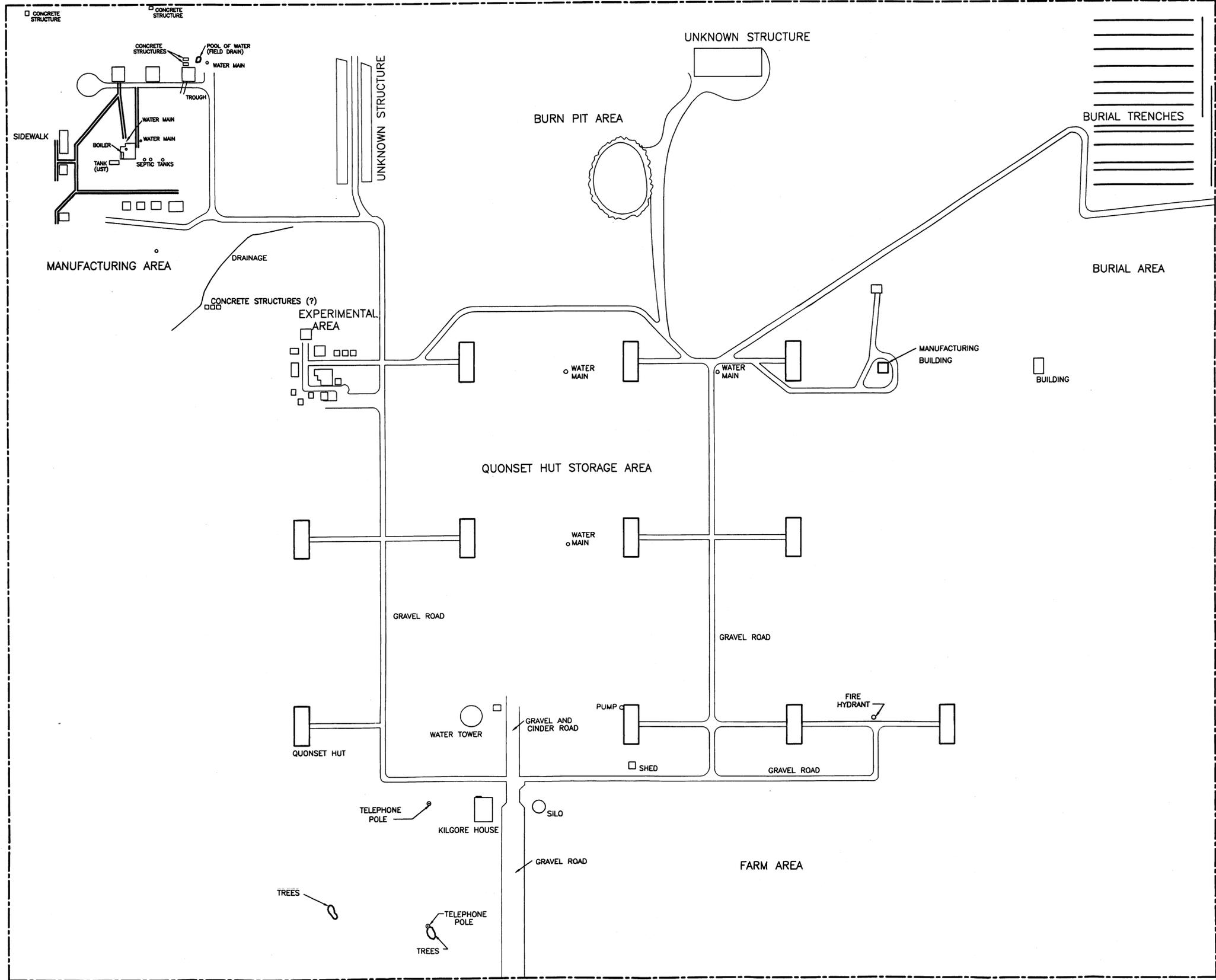
5

6



LEGEND

--- PROPERTY LINE



\* MAP BASED ON A 1957 AERIAL PHOTOGRAPH

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS	DESCRIPTION

DRAWN BY FGS
DEPT. CHECK
PRJ. CHECK

**M&E** Metcalf & Eddy

REG. PROF. ENGR. \_\_\_\_\_ DATE \_\_\_\_\_

SCALE: 1" = 100'

SCALE IN FEET  
0 50 100

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

PLOT DATE: 5/12/98

KILGORE PROPERTY  
SITE LAYOUT - 1957  
WESTERVILLE, OHIO

JOB 021796-0001  
FILE NO. 021796-5  
FIGURE 4

1

2

3

4

5

6

OC 015336

- Memo from Mr. Horace Mann, Personnel Manager at Kilgore Manufacturing Company (April 1956)
- Letter from Mr. Sanders Frye, Otterbein University to the Commander of the Joliet Ammunition Procurement and Supply Agency (April 1962)
- Letter from Mr. Sanders Frye, Otterbein University, to the Commander of the Joliet Ammunition Procurement and Supply Agency (August 1962)
- Letter from Mr. Virgil Carpenter, Technical Supervisor for the U. S. Army during clean-up, to Mr. Sanders Frye, Otterbein University (August 1962)
- Letter from Mr. Earnest Frische, Otterbein University, to United States Corps of Engineers, Mr. David Douthat (July 1986)
- Environmental Site Evaluation Report (SEA, 1988), Phase I Reports (L&A 1991, 1996), Phase II Sampling Report (L&A, 1997), and Work Plan (L&A, 1997).

Copies of the information listed above are presented in Appendix E .

#### **3.1.4 Otterbein University Files**

Files from the University Archives and Steve Storck, Otterbein College Business Manager, were reviewed. Historic correspondence between Sandy Frye and Earnest Frische were included in these files. Additionally, a 1953 map of the burial area indicating the location of some of the trenches was reviewed in the personal files of Steve Storck. Copies of the information reviewed are presented in Appendix F.

#### **3.1.5 City of Westerville Public Library**

Public records and documents relating to the history of the Kilgore Farm Property were requested from the librarian at the Westerville Public Library. Newspaper accounts regarding operation, accidents and closure of the Farm Property were reviewed. Newspaper accounts documented the closing of the facility in 1961. In addition, there were accounts of incidents of fire or explosions that occurred at the site while the facility was in operation. Accounts of

detonation of suspected ordnance in 1988 by the Wright-Patterson Air Force Base Ordnance Division were also found. No other records were found indicating that any injuries or deaths have occurred on the site during clean up activities conducted at the site since 1962. Copies of the newspaper accounts obtained from the City of Westerville Library are located in Appendix G .

### **3.1.6 Ohio Historical Society**

Public records and documents, relating to the history of the Kilgore Farm Property were requested. The only documents on file were related to the presentation of an award from the United States Army to Kilgore for excellence in war time production. No other information of historical significance was found regarding the operations, storage, or disposal of munitions at the Kilgore Farm Property.

### **3.1.7 Columbus Dispatch**

Newspaper accounts of accidents, operations, and closing of the Kilgore Farm Property were requested. Articles regarding the closure of the site in 1961 and accidents that occurred during operation of the site were reviewed. No records were found to indicate that any injuries or deaths occurred during cleanup of the site following closure. Copies of the newspaper accounts were obtained from the Columbus Metropolitan Library and are presented in Appendix G .

### **3.1.8 Interviews with Former Kilgore Employees**

Three former employees were interviewed to provide factual eyewitness accounts as to the operation and history of the Kilgore Farm Property.

Mr. and Mrs. Richard Eierman were interviewed on March 24, 1998, regarding their employment at the Kilgore Farm property. Mrs. Eierman worked as a secretary in the office

of the Westerville Facility from 1952 to 1961. Mrs. Eierman had limited knowledge of site operations at the Kilgore Farm Property.

Mr. Eierman was employed in the maintenance shop at the Kilgore Farm Property for a period of approximately one year in 1952. After leaving Kilgore, Mr. Eierman continued to work at the facility as an excavation subcontractor until the facility closed in 1961. In addition to digging plumbing and utility trenches, Mr. Eierman was also responsible for the installation of burial trenches, placement of wastes and covering of wastes after placement in the southeast corner of the property. According to Mr. Eierman, wastes from the site as well as the Facility located in Westerville were buried in the trenches located on the southeast portion of the property. Mr. Eierman recalled that approximately 20 trenches roughly 200 feet long, 3 feet wide and 5 feet deep were excavated prior to the site closure. Mr. Eierman was not aware of any other burial areas on the Kilgore Farm Property. During the time he was a subcontractor, Mr. Eierman was also a volunteer fireman for The City of Westerville.

Mr. Eldon Adams, former Manufacturing Supervisor at the Westerville Kilgore Plant, was interviewed on March 30, 1998. Mr. Adams worked for Kilgore Manufacturing from 1946 until 1961 when the Facility closed. Although, Mr. Adams was employed at the manufacturing facility in Westerville, he was also responsible for operation of the burn pit located on the Kilgore Farm Property. Mr. Adams positively identified the location of the burn pit on a 1956 aerial photograph. According to Mr. Adams, the pit was used an average of once a week to burn waste or off-specification materials. Periodically, the burn pit was excavated to remove cinders and non-flammable residual wastes. These excavated materials were subsequently buried in the trenches located on the southeast portion of the site. Interview records from the former employees are located in Appendix H.

### **3.1.9 Interview with Former Resident and Kilgore Employee**

Mr. Leonard "Skip" Day, Jr. was interviewed by M&E on April 7, 1998. Mr. Day was a resident on the Kilgore Farm Property with his parents and siblings from 1945 to 1949. Mr.

Day served in the United States Army during the Korean War from 1950 until 1952 where he worked with munitions. After receiving an honorable discharge from the Army, Mr. Day worked as a third shift supervisor in the manufacturing portion of the Facility until 1954. After leaving Kilgore, Mr. Day was employed as a Police Officer with The City of Westerville. Mr. Day's father was the head chemist for Kilgore and caretaker of the Kilgore Farm Property. Mr. Day's parents lived in the Kilgore farm house from 1945 until 1961. Mr. Day provided first hand knowledge of manufacturing, storage and disposal activities conducted at the farm. From a 1956 aerial photograph, Mr. Day identified the burial area, burn pit, manufacturing and experimental areas, farm lands, and a ditch in the northeast portion of the property where waste and off-spec materials were buried. A record of the interview with Mr. Day is located in Appendix I.

### **3.1.10 Contact with the Kilgore Manufacturing Parent Company**

Alliant Technology, successor to Kilgore, was contacted by telephone to see if any historic files or records could be obtained regarding the history of operations at the former Kilgore Farm Property. No information was provided by Alliant Technology.

### **3.1.11 Wright-Patterson Air Force Base**

Wright-Patterson Air Force Base was contacted by telephone to request historical records related to the excavation and removal of buried wastes from the Kilgore Farm Site. Historical records reviewed in the files obtained from Otterbein College indicated that the Ordnance Disposal Unit at the Base was involved with previous cleanup activities conducted at the site.

- The Base historian, Mr. Bill Elliott, was contacted to request any Air Force historical files regarding the Facility. No information was found.
- Mr. Don Smith of the Base Engineering Department was contacted to request any historical maps or plans related to the former Kilgore Farm Property. No information was found.

- First Lt. Appleby, Unit Commander of The Explosive Ordnance Disposal Unit (EOD) at Wright-Patterson Air Force Base was contacted to request files related to cleanup activities conducted at the Kilgore Farm Property. According to Lt. Appleby, records are kept for only 3 years and there was no information in his files concerning the Kilgore Farm Property.

### **3.1.12 Ohio Fire Marshal - Bureau of Underground Storage Tanks**

During a removal of wastes at the Kilgore Farm in 1988, potentially energized materials were sampled and sent to the State Fire Marshall's Bureau for testing. The Ohio Fire Marshal prepared a report on May 10, 1988. A copy of this report was reviewed and is located in Appendix L.

In addition, Mr. Bob Rhodes of the Bureau of Underground Storage Tank Regulations was contacted regarding any other historic information regarding underground storage tanks (USTs) located at the Kilgore Farm Site. Mr. Rhodes indicated that BUSTR did not any files regarding UST closures at the Kilgore Farm site. A record of the telephone conversation with Mr. Rhodes is located in Appendix L.

### **3.1.13 Joliet Ammunition and Supply Depot**

The original decontamination effort conducted at the site in 1961 was overseen by personnel from the Joliet Ammunition and Supply Depot (Joliet ASD). Ms. Pat Muzzarelli, Depot secretary, was contacted to request historic files. Ms. Muzzarelli stated that the Depot is no longer active and any or all historic files were sent to the Rock Island Arsenal or were destroyed (Appendix M). Therefore, no files were available from Joliet ASD.

### **3.1.14 Rock Island Army Depot**

The Rock Island Army Depot is now the repository of the records from the Joliet Ammunition and Supply Depot. Mr. Andy Poppen, Environmental Engineer, from Base Environmental Engineering was contacted by telephone regarding the Kilgore Farm Property (Appendix M). Mr. Poppen did not find any information in the Base files or any information concerning the decontamination performed by personnel from the Joliet ASD.

### **3.1.15 Ohio Preservation Society**

The Ohio Preservation Society was contacted by telephone to see if any historic records were available for the Kilgore Farm Property. The Kilgore Farm Property was not listed on the State of Ohio or the National Register of Historic Places (Appendix M).

### **3.1.16 Westerville Preservation Society**

Files were requested by telephone from the Westerville Preservation Society to determine if any records were available relating to the Kilgore Farm Property. The Preservation Society could not find any information regarding the subject property (Appendix M).

### **3.1.17 Columbus Metropolitan Library**

The library was contacted to obtain copies of specific newspaper accounts in the Columbus Dispatch related to the Kilgore Farm Property. Copies of newspaper accounts related to the Kilgore Site are located in Appendix G.

### **3.1.18 Ohio Department of Natural Resources**

The Delaware County Soil Survey was obtained and reviewed to determine information on soil types at the subject property. Additionally, the ODNR soil survey had historic aerial

photographs (1956, 1964 and 1994) available for review. Copies of aerial photographs reviewed are located in Appendix C.

### **3.1.19 City of Westerville Surveyor**

Mr. Charles Destefani, P.S., Surveyor for The City of Westerville was contacted regarding City of Westerville involvement in the Kilgore Farm Property. Mr. Destefani provided M&E with a 1956 aerial photograph of the property. Mr. Destefani also provided M&E with the names of Mr. and Mrs. Richard Eierman, people who he knew worked at the Facility in the past.

### **3.1.20 Franklin County Soil and Water Conservation District**

The Franklin County Soil and Water Conservation District was contacted to request aerial photographs of the Kilgore Farm site. Copies of aerial photographs from 1938, 1967, and 1994 were obtained and are located in Appendix C.

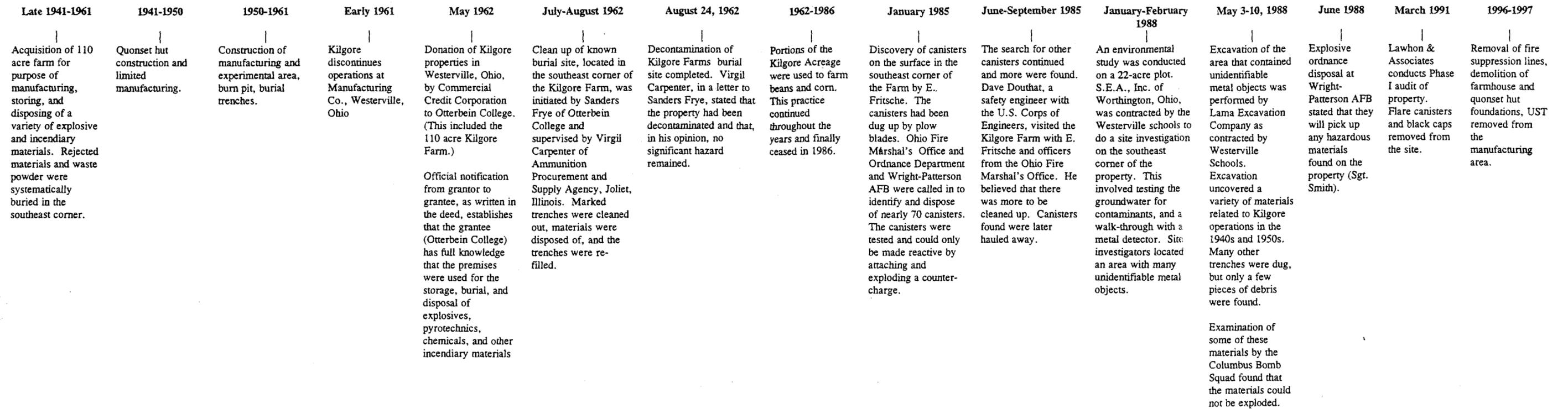
## **3.2 HISTORICAL LAND USAGE**

Using the historical information described in Section 3.1, M&E compiled a history of operations at the Kilgore Farm. Figure 5 shows a timeline and history of development operation and environmental activities conducted at the Kilgore Farm Site. Kilgore purchased the Farm Property from Joe and Eva Morris in December 1941. Prior to that date the property was used for agricultural purposes. Along with its other operations located in Westerville, the purchase of the farm property on Tussic Road allowed Kilgore to conform to the military standards of storage and manufacturing of munitions. Initial storage and production at the Kilgore Farm Site was related to manufacturing and assembly of military ordnance. Based on our review of the historical records and interviews with former employees, M&E has compiled a list of items that were reported to be manufactured or stored at the Kilgore Farm Property.

TABLE 1  
BULK CHEMICALS  
KILGORE FARMS MANUFACTURING FACILITY  
WESTERVILLE, OHIO

CHEMICAL NAME	USE
Aluminum	Photoflash Flares, Smoke Flare, Incendiary Bombs
Antimony	Colored Flares
Antimony Trisulfide	Igniter, Primer in Flame Throwers
Ammonium Chloride	Smoke Flares
Ammonium Perchlorate	Smoke Flares
Ammonium Picrate	Ignitors, Primer
Barium Nitrate	Photoflash Flare, Parachute Flares,
Barium Rhodanide	Stab Primers
Barium Sulfate	Float Flares, Underwater Flares
Black Powder	Accelerant in flares, Black Caps
Boron Phosphide	Ignitor, Primer
Calcium	Colored Flares,
Castor Oil	Binder, oxidation inhibitor for Al and Mg, and lubricant
Copper Oxide	Colored Flares
Hexachlorobenzene	Colored Flares
Hexachloroethane	Smoke Flares
Iron Oxide	Colored Flares
Laminac	Unsaturated Polyester binder
Lead Azide	Stab Primers
Lead Thiocyanate	Stab Primers
Lead Oxide	Stab Primers
Lead Scyphnate	Stab Primers
Linseed Oil	Binder in Black Powder Pelletization Process, oxidation inhibitor
Magnesium	High and medium intensity Flares, Incendiary Bombs
Mercury Fulminate	Primer
Phosphorous	Combined Light and Smoke Flares
Potassium Chlorate	Flares
Potassium Nitrate	Gun Powder Formulation, Flares
Potassium Perchlorate	Photoflash Flares, High Altitude Flash Charges, Smoke Flares
Sodium Hypophosphite	Igniter
Sodium Nitrate	Gun Powder Formulation, High Intensity Flares
Sodium Oxalate	Colored Flares
Sodium Perchlorate	High Altitude Flash Charges
Strontium Nitrate	Colored Flares
Strontium Oxalate	Slow Burning Flares, Road Flares
Sulfur	Gun Powder Formulation, Accelerants
Tetryl	Primer
Trinitrotoluene (TNT)	Shaped Charges
Zinc	Smoke Flares
Zinc Oxide	Smoke Flares
Zirconium Hydroxide	Parachute Flare, Igniter

**Figure 5**  
**Timeline History of**  
**KILGORE FARMS SITE**  
**WESTERVILLE, OHIO**



**Figure 5**  
**Timeline History of**  
**KILGORE FARMS SITE**  
**WESTERVILLE, OHIO**

Detonators	Hand Grenade Fuses; Primers
M1 Flame Throwers	Flare Pistols
Rocket Line Launchers	Explosive Caps
Battle Field Flares	Parachute Flares
Signal Flares	Landing Flares
M112 Photoflash Cartridges	3 Minute Flares
155 mm Illuminating Shells	High Altitude Rocket Flares
Trip Flares	Phosphorous Float Lights
Highway Emergency Flares	Magnesium incendiary bombs

We believe that this list represents the most accurate account of products built or stored at the farm to date.

Mr. Day stated that limited production of magnesium incendiary bombs also occurred at the site during the initial months of World War II. Furthermore, Mr. Day also stated that for a short period of time, the facility experimented with the production of shaped charges.

Previous Phase I Reports prepared in 1988 and 1991 indicated that land mines may have been produced at the site. According to Mr. Day and Mr. Adams, land mines were manufactured in Kilgore's facility located in Newark, New Jersey, and not at the Kilgore Farm Facility located in Westerville, Ohio.

After World War II, Kilgore returned to the manufacturing of toy cap guns, pyrotechnics for public use, and illuminating flares for civilian and military use. This manufacturing continued until 1961 when Kilgore Manufacturing Inc. closed the downtown Westerville and Kilgore Farm property facilities and moved its manufacturing operations to Bolivar, Tennessee.

### **3.2.1 Development and Operational History**

#### 1941 to 1950

On December 19, 1941 Kilgore Manufacturing purchased a 110-acre farm north of The City of Westerville, near the Delaware/Franklin County line from Joe and Eva Morris. During the period from 1941 to 1950, a series of 12 Quonset huts were constructed on the site. These

huts were situated in the central portion of the property and connected to one another by a series of roads. Each hut had water service supplied from a water tower located on the farm. As seen on aerial photographs, these huts appeared to be approximately 65 feet by 30 feet in size and were spaced approximately 300 feet from one another. Based on interviews of former employees (Mr. Day and Mr. Eierman) it is believed that the Quonset huts were primarily used for storage purposes. However, based on an interview with Mrs. Keethler, some manufacturing or assembly may have occurred in the Quonset huts in the 1940s. Another building, shown on the 1950 aerial photograph, is located south of the southeastern-most Quonset hut. This building may have been used for manufacturing purposes.

An aerial photograph from 1950 shows the location of the farm house, the Quonset huts, a possible manufacturing building and several roads on the site. In addition to the huts, there are several areas of ground surface along the eastern side of the property that appear to have been disturbed. The 1950 aerial photo does not show any evidence of manufacturing buildings located in the northeast portion of the site, disposal trenches or the burn pit. There is evidence of disturbed soils adjacent to the small drainage area located in the northeast section of the property. The property located along the western, northwestern and southwestern border of the property line was farmed. Portions of the farmed land extended to the Quonset huts. Mr. Day further stated that while he lived on the property from 1945 to 1949, livestock grazed over the unfarmed portions of the property.

#### 1950 - 1957

Aerial photographs taken in 1956 and 1957 show that the property underwent substantial development between 1950 and 1956. Mr. Day reported that he was employed in the manufacturing area in 1952 which indicates that it was constructed between 1950 and 1952. Mr. Eierman also recalled construction of the manufacturing facilities in 1951 or 1952. On the 1956 and 1957 aerial photographs two clusters of buildings are shown in the northeast portion of the property. The first cluster was comprised of 11 larger buildings and several smaller buildings located near the northeast border of the property. A well developed system of sidewalks and roads ran between these buildings. The central building in the cluster was

the boiler house that generated and supplied heat to the other buildings. This portion of the Kilgore Farm Property was utilized for manufacturing and product assembly according to Mr. Day and Mr. Adams. The second cluster of buildings, located east of the manufacturing areas and referred to as the experimental area by Mr. Day and Mr. Adams was where product development and experiments were conducted. Approximately ten larger buildings and several smaller buildings were located in the experimental area. The two clusters of buildings were separated by a small drainage area that is visible on the 1956 and 1957 aerial photographs. A burn pit is located on the west central area of the site and was positively identified by Mr. Adams and Mr. Day. The burn pit was approximately 50 feet in diameter and had a soil berm located around the outer edge of it. The 1957 aerial photograph also shows the location of disposal trenches in the southeast corner of the property as reported by Mr. Day, Mr. Eierman and Mr. Adams. The property north, west and south of the Quonset huts was being farmed.

Two rectangular shaped features are shown on the 1956 and 1957 aerial photographs located south of the manufacturing area. M&E has not been able to ascertain the identity or use of these features. West of the burn pit, a disturbed area is visible on the aerial photographs. Mr. Skip Day recalled that there was a building located in that area of the property where work was conducted related to the development of "shaped" charges. He recalled that an explosion occurred in the area where shaped charges were being formulated and that the building was destroyed. He believes that the area southeast of the burn pit was this area. No other areas of soil disturbance are evident on the 1956 or 1957 aerial photos. Figure 4 shows the facility layout in 1957 and identifies the items described above.

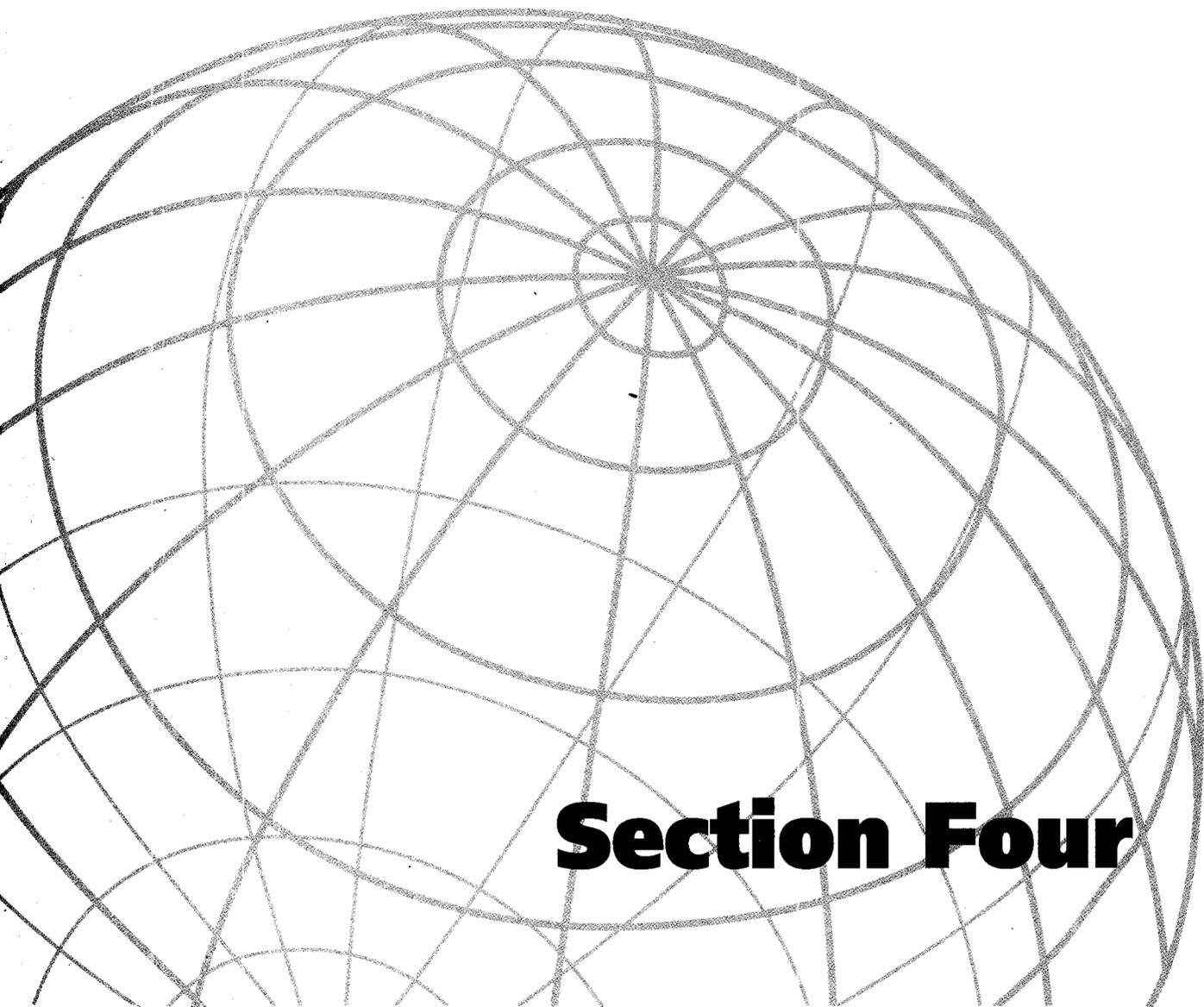
During operation of the Kilgore Property, waste and off-specification materials were reportedly managed on the property by either burning or burial. Based on historical records, interviews with former employees and aerial photographs, there were apparently three main areas in which disposal activities reportedly occurred. These areas were the burn pit, the burial trenches along the southeast corner of the property and along the drainage ditch in the northeast portion of the property. In addition, aerial photographs from 1950, 1956, and 1957 show two areas (two rectangular shaped features south of the manufacturing area and a

disturbed area located east and south of the burn pit) where waste management activities may have occurred. This usage has not been determined.

Kilgore ceased manufacturing operations at the site in 1961. Otterbein University took ownership of the property in 1962. After decontamination activities were conducted in 1962, the much of the property was farmed until 1986. Farming activities were conducted in the former Quonset hut, the burn pit area, and the farm and residence area and extended to the edges of the former burial trench area.

#### 1986 to Present

Since 1986, the property has remained vacant. The City of Westerville Jaycees reportedly utilized the farm house as a haunted house at Halloween during this period. In 1996, the remaining structures in the manufacturing and experimental areas, the Quonset hut foundations, the farm house and the water tower were razed.



# Section Four

## **4.0 SITE ENVIRONMENTAL HISTORY REVIEW**

This section describes the environmental history of the Kilgore Farm Property. To facilitate a review of the environmental history, M&E has divided the 110-acre farm site into to 5 parcels based on historical land usage as determined through interviews with past site employees and review of historical aerial photographs (see Figure 6). These parcels shall be identified hereafter as: 1) the former manufacturing area, 2) the former Quonset hut storage area, 3) the former fire pit area 4) the disposal trench area, and 5) the farm and residence area. Details of each of the areas will be described below including: a summary of historic operations, identification of areas of concern based on historical records, a brief summary of environmental activities conducted in each area to date and a listing of outstanding issues.

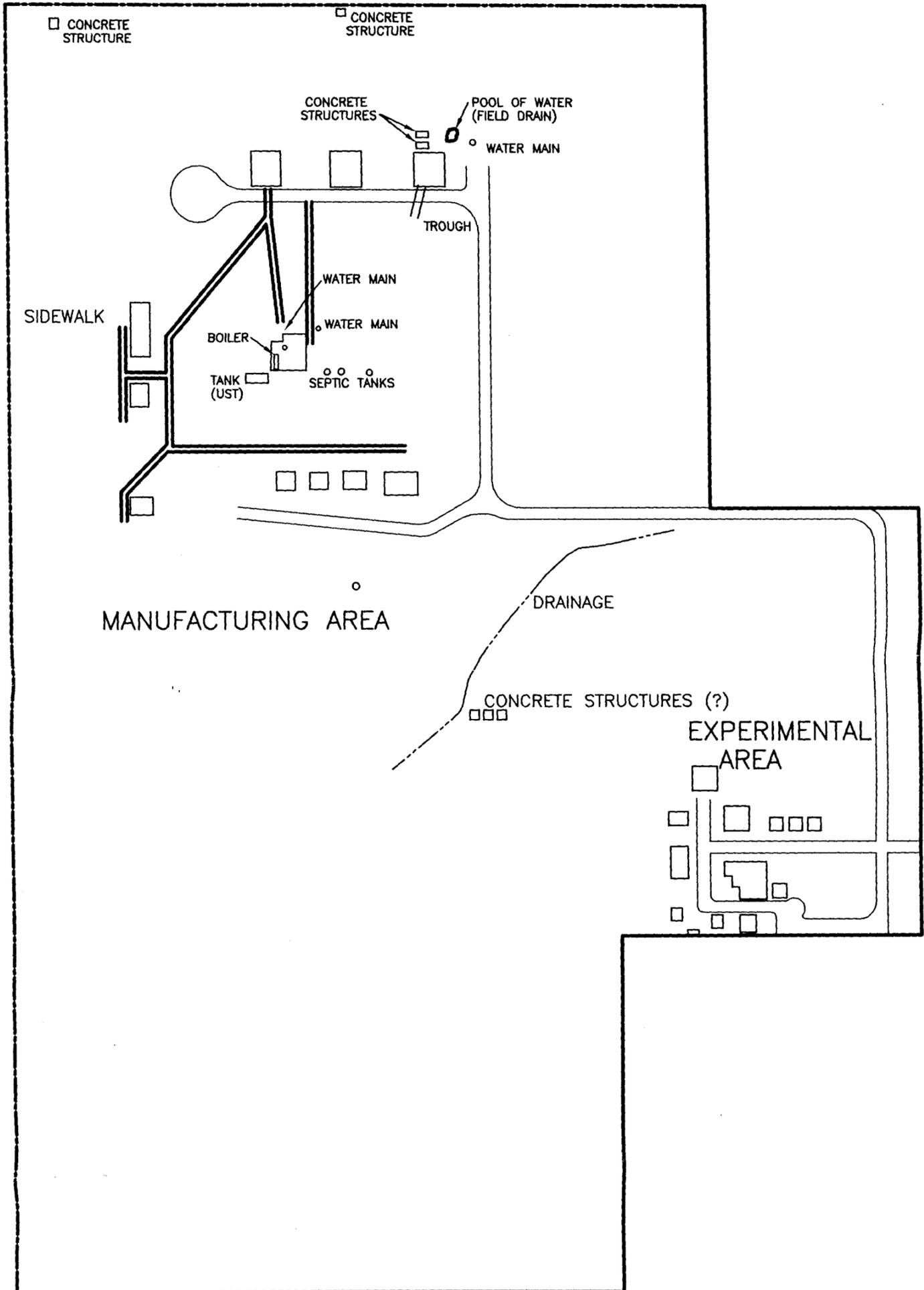
### **4.1 FORMER MANUFACTURING AREA**

The former manufacturing area is shown on Figure 6 and a detail of this area is shown on Figure 7. This area is located in the northeast portion of the property and is approximately 12.6 acres in size.

#### **4.1.1 Summary of Operations**

Based on interviews conducted with former Kilgore employees, the manufacturing area of the Kilgore Farm Property was constructed in the early 1950s. By 1956, at least 24 buildings were constructed in this area and are clearly visible on historical aerial photographs. Building activities were centered in two separate areas. The larger of the areas (located adjacent to the northeastern property line) was where manufacturing, assembly and maintenance facilities were located. The buildings were constructed in a square pattern with a large building located in the center of the other buildings. This building housed a boiler that supplied steam heat to the other buildings. The boiler was fired using diesel fuel which was stored in a 2,500-gallon underground storage tank located on the north side of the building. Major activities conducted in this area would have included assembly of products and pelletization of black powder.

Figure 6 - Subdivided Kilgore Property Map



NOTE: BASED ON 1957 AERIAL PHOTOGRAPH

SCALE IN FEET  
0 50 100

**M&E** Metcalf & Eddy

KILGORE PROPERTY  
MANUFACTURING AREA  
SITE MAP  
WESTERVILLE, OHIO

FILE NAME	DRAWN	DATE	PROJECT NO.	FIGURE
021796-3	FGS	5/8/98	021796	7

The other cluster of buildings in this area is located southwest of the manufacturing area. This area was identified by Mr. Adams and Mr. Day as the experimental area. This area was used to conduct research and testing of new products and processes.

The manufacturing and experimentation areas were heated with steam and were powered by electricity. Water was supplied to the site from an on-site well located near the farm house. Presumably, the site utilized a septic system to manage domestic waste water. Off-specification and waste materials generated in these areas were managed by either on-site burial or burning.

According to Mr. Day, there may have been some disposal activity conducted during the 1940 and 1950s in the northeast area of the Kilgore Farm along a small drainage ditch that ran between the two clusters of buildings. Aerial photographs taken in 1950, 1956 and 1957 show evidence of disturbance along this drainage area. The nature of activities conducted along the drainage area has not been well established.

#### **4.1.2 Environmental Activities Conducted in the Former Manufacturing Area**

In 1997, Lawhon and Associates removed a 2,500-gallon heating oil UST located adjacent to the former boiler house building. Because the UST contained fuel oil used for heating purposes the tank was unregulated by the Bureau of Underground Storage Tank Regulations. The tank was approximately 47 years old based on the I.D. tag plate (C-213198).

The tank removal activities began on February 24, 1997, by uncovering the tank and stockpiling the soils on plastic. On February 26, 1997, the residual product (3,500 gallons of residual product and water) was pumped from the tank and disposed of as petroleum contaminated liquids. The tank was removed and visually observed to contain numerous holes. Visibly contaminated soils were excavated and stockpiled on plastic. Verification soil samples were collected from the tank cavity. On June 25, 1997, the remaining impacted soils were removed, the tank cavity was sampled and backfilled with clean gravel. During removal of the UST, a total of 104 cubic yards of impacted soils were excavated. Using the BUSTR

Site Features Scoring System, the Kilgore Farm Property was scored as a Category 3 site. The residual concentrations of petroleum constituents in soils were below the Category 3 action levels and below the VAP Generic Numeric Cleanup Standards.

From 1996 to 1997, Lawhon and Associates conducted demolition of remaining concrete structures in the Manufacturing and Experimental Areas. During that time, concrete pads and foundations were broken up, and water/steam lines were removed and hauled from the site.

#### **4.1.3 Former Manufacturing Area - Unresolved Features**

During a site visit and interview conducted on April 7, 1998, Mr. Day identified a drainage ditch, located in the northeast corner of the site west of the former manufacturing area, where he recalled that waste materials were buried by Kilgore in the past. Mr. Day indicated that while his family lived in the farmhouse in the 1940s, he and his siblings were not allowed to play in the area of the drainage ditch due to materials being placed there. Mr. Day believed that flares and off-specification materials were buried within 8 to 10 feet of either side of the ditch. An aerial photo taken in 1950 shows evidence of some disturbance along the ditch and there appears to be a road or path that extended to the northern end of the drainage ditch. Aerial photographs taken in 1956 and 1957 also show evidence of disturbance along the ditch that may be related to waste disposal activities. No investigation or removal activities have been conducted in the area of the drainage ditch.

#### **4.2 FORMER QUONSET HUT STORAGE AREA**

In the central portion of the Kilgore Farm Property, a series of 12 Quonset huts were constructed and used for storage (see Figure 6). This Quonset hut storage area is approximately 31 acres in size.

#### **4.2.1 Summary of Operations**

Historically, this area was used to store assembled munitions/flares, cardboard packing crates, and raw materials used in the manufacturing process. A total of twelve storage huts were located in this area, and were spaced approximately three hundred feet apart. The storage huts were made of metal with a concrete floor and foundation. Aerial photographs show that there were also several small structures located in between the Quonset huts. According to Mr. Adams and Mr. Day, these small buildings were used to store fire fighting equipment for emergency situations. The storage huts and fire huts were serviced by a water line for fire suppression. The waterline was fed from the water tower located at the northwest portion of this area. The waterline ran from the northern road south, extending to all of the storage huts. The storage huts were heated with steam provided from a boiler located in the basement of the farm house.

During the operation of the Kilgore Farm Facility, portions of the Quonset hut storage area were also farmed or used to graze cattle. Aerial photographs of the site document that the area around the Quonset huts was either grasslands or was used for agricultural purposes. Based on interviews with former resident and Kilgore employee, Mr. Day, and aerial photographs, there is no historical evidence to suggest that any wastes were buried in this area.

The Quonset huts were used, as stated previously, to store manufactured flares, pyrotechnics, and munitions. Additionally, raw materials, packing crates, and empty munitions canisters were stored in the storage bunkers. It is possible that any chemicals or materials used in the manufacturing process were stored in bulk form.

#### **4.2.2 Environmental Activities Conducted in the Former Quonset Hut Storage Area**

During clean-up activities conducted in the burial trench area of the site conducted in 1988, empty flare canisters and black caps were moved to the Quonset hut area and staged on the ground surface near the farm house prior to disposal. Most of these materials were

subsequently removed from the site in 1962 or by Lawhon and Associates in 1996. A few empty flare casings and black caps remain on the surface, possibly the result of incomplete removal or littering by trespassers in the past.

Waterlines and steam lines in the Quonset hut storage area were excavated and removed by Lawhon and Associates in 1996. During excavation, no evidence of buried wastes was observed. While the waterline was being removed, the foundations for the storage buildings were demolished and removed from the site.

#### **4.2.3 Former Quonset Hut Storage Area - Unresolved Features**

Although there is no evidence based on the historical records and interviews, it is possible that some spillage of bulk materials of finished products occurred around the Quonset huts. No investigations have occurred in these areas to date.

In 1962 during removal of buried wastes in the trench area located in the southeast portion of the property, some wastes were staged on the ground near two Quonset huts located near the farm house. Most of these materials have been subsequently removed. However, some empty flare canisters and black caps are visible on the ground surface at the former location of the two Quonset huts located nearest to the farm house. No investigations have been conducted in this area.

#### **4.3 FORMER BURN PIT AREA**

In the tract of property located south of the former manufacturing area and east of the Quonset storage huts, a burn pit historically operated to destroy off-specification materials. This tract of land, approximately 18 acres in area, which includes the former burn pit shall be referred to hereafter as the "Burn Pit Area". The exact location of the Burn Pit Area is shown on the 1956 and 1957 aerial photographs and was positively identified by Mr. Adams (See Figure 6).

#### 4.3.1 Summary of Operations

From 1951 to 1961, a burn pit was operated on the tract of land located east of the Quonset hut storage area. The burn pit, approximately 10 - 12 feet deep, approximately 40 - 50 feet in diameter, was bermed with dirt to prevent the spread of fires. Mr. Adams and Mr. Day, former Kilgore employees, stated during interviews, that the burn pit was used to destroy flares, caps, and other off-specification materials at a frequency of approximately once a week. According to Mr. Adams, some wastes from the Kilgore Facility located near downtown Westerville were also destroyed in the burn pit. Both Mr. Day and Mr. Adams stated that extreme care was taken to ensure that all materials placed in the burn pit were completely destroyed during each burning event. This was necessary to prevent accidents from occurring during the next burn event. Mr. Day stated that the ashes in the burn pit were occasionally excavated and he believed that they were placed in the burial trench area.

Review of the aerial photograph from 1950, several areas where the ground surface is disturbed are noted. These five unknown areas are irregular in shape. The use of these unknown features was not able to be determined through employee interviews or historical records.

During review of aerial photographs taken of the site in 1956 and 1957, two additional areas of unknown use were identified in the Burn Pit Area. The first area consists of two rectangular shaped features that are located immediately south of the former manufacturing area. A road extending from the manufacturing area and running between the two features is clearly visible. The use of this area was not able to be determined through employee interviews or historical records.

The other unknown area is located along the eastern property line just south of the burn pit. According to Mr. Day, there used to be a building at that location where experimental work was conducted with "shaped" charges. Mr. Day recalled that two men were killed while working with the shaped charges at a building previously located there. The building was

heavily damaged during the explosion and was subsequently razed. Mr. Day believed that the feature visible on the aerial photograph represents the remnants of the razed building.

The remainder of the Burn Pit Area was never developed. According to Mr. Day, he was not aware of any other disposal activities being conducted in this area.

#### **4.3.2 Environmental Activities - Former Burn Pit Area**

No environmental investigations related to the burn pit, or the unknown features noted on the aerial photographs have been conducted to date. A wetlands survey and delineation has been conducted by Lawhon and Associates south of the manufacturing area in the general area where the two rectangular features were previously located.

#### **4.3.3 Former Burn Pit Area - Unresolved Features**

Environmental investigations have not been conducted in the vicinity of the burn pit or in the two areas of unknown use noted on the 1956 and 1957 aerial photographs. Investigations of these areas will be necessary to determine if environmental impacts are present.

### **4.4 FORMER TRENCH DISPOSAL AREA**

During operations at Kilgore, waste and off-specification materials were generated. From 1951 to 1961, these materials were disposed in trenches excavated in a 4-acre area located in the southeast corner of the Kilgore Farm Property (see Figure 6).

#### **4.4.1 Summary of Operations**

Based on aerial photographs, trenching operations in the southeast portion of the property began after 1950 and likely coincided with the construction and operation of the manufacturing areas in 1951 and 1952. By 1957, a well developed system of burial trenches are clearly

visible on an aerial photograph. The burial area was used for the disposal of off-specification materials and other wastes generated during the operation of the Kilgore manufacturing facilities. In addition, Mr. Adams stated that some wastes from the Kilgore facility located in downtown Westerville were also disposed of in the trenches.

According to Mr. Richard Eierman, a former excavation subcontractor employed by Kilgore, the burial trenches were installed starting in the southeast corner of the property and extending to the west. Trenching operations were predominantly oriented north to south and covered an area approximately 400 feet by 400 feet in area. Trenches were installed using a trackhoe and were approximately 200 feet long, 5 feet deep, and 3 feet wide with a typical spacing of 5 to 10 feet. Mr. Eierman recalled installing 15 to 20 trenches at the Kilgore Farm from 1952 to 1961. A previous subcontractor installed 1 or 2 trenches in 1951 prior to Mr. Eierman beginning work at the Kilgore facility. As new trenches were dug, excavated soil from the new trench was used to cover up the last trench. Mr. Adams and Mr. Eierman stated that the trenches were filled with 2 to 3 feet of waste before being backfilled.

Waste materials were packaged in wet cans (30" long by 15" in diameter) for disposal in the trenches. These cans were then laid in open trenches and covered with earth. Various rejected materials such as pyrotechnic devices, primary explosives, such as scrap powder primer, detonators, and liquid flares, were also placed in the open trenches and covered with earth. Based on the list of materials manufactured at the property in the past, the following wastes could have been placed in the burial trenches: red phosphorous, aluminum flitter, sodium hypophosphite, ammonium and potassium picrates, lead azide, black powder, powdered aluminum/magnesium, boron phosphide, antimony trisulfide, sulfur, sodium nitrate, permanganate, barium rhodanide, and potassium perchlorate. A historical record of wastes buried in 1951 to 1953 and a map showing the locations and dimensions of some of the trenches is located in Appendix J.

#### 4.4.2 Environmental Activities - Former Burial Trench Area

Investigation and removal of buried wastes has occurred in the former burial trench area since Kilgore ceased operations at the facility in 1961. A summary of the activities conducted follows:

- In 1961, Mr. Sanders Frye, Business Manager for Otterbein University, initiated actions to begin a clean-up of the burial site at the Kilgore Farm Property. On April 5, 1962, Mr. Frye contacted the Joliet Ammunition and Supply Procurement Agency located in Joliet, Illinois, and retained Mr. Virgil Carpenter, Supervising Safety Engineer for Ammunition Procurement and Supply Agency in Joliet, Illinois, to supervise the decontamination at the site. The clean-up began on July 8, 1962, and was completed on August 24, 1962. George Igel and Company, Inc. were hired to perform the clean-up under the supervision and direction of the Ammunition Procurement and Supply Agency. The clean-up began with the marking of the trench locations and removal of the earthen cover. Some of the buried materials were destroyed on the property by burning and/or detonation. The remaining materials were relocated to an area near the easternmost Quonset Hut and staged prior to shipment from the site.

After the trenches were dug and the wastes were removed, the empty trenches were backfilled. In a letter dated August 24, 1962, Mr. Virgil Carpenter stated that "the contaminated area has been decontaminated in accordance with current Ordnance Corps procedure and in the opinion of the undersigned, no significant hazard remains which will prevent the use of this area for any purpose or endanger the lives of individuals or the public." In a written letter to Col. E. W. Grubbs, Ordnance Commander, Ammunition Procurement Supply Agency in Joliet, Illinois, dated August 30, 1962, Mr. Sanders Frye of Otterbein College stated that during decontamination 120 tons of explosives and flares as well as some 3500 boosters, and 200,000 fuses were dug up and disposed. In addition there was cap mix, black powder, magnesium flares and numerous other odds and ends.

The total time to dig up this material was six weeks "...without a single lost time accident or the slightest damage to the earth moving equipment."

- In June of 1985, Mr. Earnest Fritsche, who was a board member and business manager for Otterbein University, and a World War II explosives expert, was asked to look into the sale of the Kilgore Farm property. Mr. Fritsche visited the site on June 15 and 16, 1985, and discovered approximately seventy flare canisters in the southeast portion of the property. The flare canisters had apparently been dug up by the farming activities conducted in the southeast portion of the site in or near the former burial area after Kilgore ceased operations at the site. Mr. Fritsche buried the canisters at the location they were discovered and marked the area

Mr. Fritsche called the Ohio Fire Marshall's Office (OFMO) and the Ordnance Department at Wright-Patterson Air Force Base and requested that they identify the canisters and determine whether or not they were hazardous. Mr. Fritsche stated in a summary letter that the results from the OFMO and Ordnance Department indicated that the canisters could only be made reactive by attaching a counter-charge and detonating the material. However, on the following day, dry pieces of the exploded canisters and contents (presumed to be phosphorous) burst into flame. On September 5, 1985, a team from the Hazardous Materials Division of the OFMO collected the canisters found by Mr. Fritsche and delivered them to the Ordnance Department at Wright-Patterson Air Force Base for disposal. Copies of this correspondence are contained in Appendix F.

- Mr. Fritsche returned to the Kilgore Farm in March and in mid-June, 1986, and found thirty-four flare canisters in the area of the former trench burial site. The area was marked and arrangements were made for later pick-up. Officers from the OFMO and Ordnance at Wright-Patterson Air Force Base visited the property in May, 1986, and Sergeant Smith from Ordnance recommended that the entire 110 acres be swept with mine detectors. Records to do not indicate that sweeping was conducted at the site.

On July 7, 1986, Mr. David Douthat, a safety engineer with the U.S. Corps of Engineers, visited the Kilgore Property with Mr. Fritsche. Approximately fifty canisters were found in the area of the former trench burial area during their visit. These canisters, plus the canisters found earlier in the year by Mr. Fritsche, were removed from the property by the Ordnance Department from Wright-Patterson Air Force Base.

- In 1987, Westerville Schools contacted Otterbein College and expressed interest in purchasing twenty-two acres of the Kilgore Farm north of, and adjacent to, the Westerville North High School grounds. In January, 1988, Westerville Schools contracted S.E.A., Inc. of Worthington, Ohio, to conduct an environmental study of the desired portion of the property, which included the six-to-eight-acre former burial site. S.E.A., Inc. performed a detailed site investigation of the acreage in question. This investigation involved installing monitor wells and testing the ground water for contaminants. A walk-through with a metal detector located one area that produced many small unidentifiable metal objects. This report indicates that "...there does not appear to be any large metal structures beneath the top two feet of the surface on the property..." and "...the groundwater did not contain any volatile aromatic or chlorinated hydrocarbons above detectable limits..." The report further concludes that "...there was no contamination of the groundwater with PCBs above detectable limits," and, furthermore, "...although metals were detected in the groundwater, they were below the EP toxicity limits." Additionally, the report states that "...the concentration of nitrates in the groundwater is below the Safe Drinking Water Act..." A copy of this report is included in Appendix K.
- Westerville Schools contracted with Lama Excavation Company in May, 1988, to excavate the area in the southeast portion of the property containing the metal objects identified by S.E.A. On May 3, 1988, excavation uncovered a variety of materials related to Kilgore operations from the 1940s and 1950s, including parachute flares (dated 1954); black plastic caps; cylinders containing gray, blue and purple granular substances; and many filled aluminum canisters. It was then decided to dig a series of trenches throughout the former trench burial site. Excavation uncovered only a few pieces of debris. A total of 15

trenches were dug throughout the former burial area. Each trench was approximately 3 feet wide by 6 feet deep and varied in length. The total amount of linear footage excavated was approximately 3,330 feet. In addition, a pit measuring 30' x 40' x 5' deep was excavated. Excavated materials moved from the trench burial area and staged near the old farmhouse prior to removal. The trenches were not filled in by Lama excavating at that time.

- In June, 1988, in an attempt to test the reactivity of materials found during the excavation process, the Columbus Bomb Squad placed blasting caps on all items. When detonated, the caps exploded but the materials did not. Given the age of the materials and the conditions of burial, it was determined by Chief Morrison of the Columbus Bomb Squad, after receiving the OFMO report on the materials sampled, that the canisters and other materials were not explosive in their current state, but could be dangerous and advised removal and disposal of the materials (Appendix L).
- In 1996, Lawhon and Associates conducted additional trenching throughout the former trench burial area. Trenches were dug to a depth of approximately 10 feet or until native soils were observed. A total of six drums of miscellaneous materials were placed in drums. Representatives of the Wright-Patterson explosive Ordnance Division thoroughly examined the contents of all six drums and separated a five-gallon bucket of materials that were thought to be potentially energized. The EOD personnel detonated the material in the five-gallon bucket on site using plastic explosives. EOD personnel identified the following excavated materials: Empty M112 photoflash casings, M56 projectile fuses, various pyrotechnic debris, and 2 55-gallon drums of a reddish material assumed to be red phosphorous. Immediately following trenching activities, Lawhon and Associates installed three monitoring wells in the former burial trench area (wells installed by S.E.A had been previously abandoned). The samples were analyzed for VOCs, SVOCs, and the eight RCRA metals. VOCs and SVOCs were not detected above the method detection limit of 1  $\mu\text{g}/\text{l}$ . Low concentrations of barium, cadmium, and selenium were detected but were at concentrations suspected to represent natural conditions. Soil samples were collected

during drilling of the monitoring wells and submitted to testing of VOCs, SVOCs and metals. Metals were detected at concentrations similar to concentrations reported for Ohio Farm Soils. A copy of Lawhon's report is located in Appendix E.

#### **4.4.3 Unresolved Issues**

Based on field measurements, nearly 5,000 linear feet of exploratory trenches have been installed and over 125 tons of suspect materials have been removed and disposed of from the former burial area. However, investigations conducted in the past have not thoroughly characterized the nature of the wastes excavated from the trenches. Furthermore, residual wastes continue to be observed locally in the burial area. Additional testing and waste characterization will be necessary in the area to determine the types of wastes present and if they present any threat to human health or the environment.

#### **4.5 FORMER FARM AND RESIDENCE AREA**

From the time Kilgore purchased the property in 1941, an area of approximately 36 acres located west of the farm house, and north and south of the Quonset huts was continually farmed. The farmed portions of the site, are identified on Figure 6.

##### **4.5.1 Summary of Operations**

During operation of the facility by Kilgore, portions of the property were still actively farmed and Kilgore employees resided in the house. Farming was conducted west of the farm house and north and south of the Quonset huts. According to Mr. Day, former resident of the Kilgore farm, crops grown on the site included: beans, corn and wheat. Aerial photographs taken in 1950, 1956 and 1957 substantiate Mr. Day's recollection of the areas farmed. No evidence of disturbed areas is visible in the farming area.

Structures in this area included: a farm house, silo, and water tower. The house had a septic system and water was provided by a well. In the basement of the house, there was a coal-fired boiler that heated the house and supplied heat to the Quonset huts.

Based on interviews and historical aerial photographs, there is no evidence that any wastes generated from the Kilgore manufacturing process have ever been placed on the farmed portions of the property. According to the Delaware County Agricultural Extension Agency the use of pesticides in the 1940s and 1950s in Delaware County was uncommon, especially for small private farms. The use of herbicides was more commonplace. According to Dr. William Lawhon, it is unlikely that any residual herbicides would remain on the site.

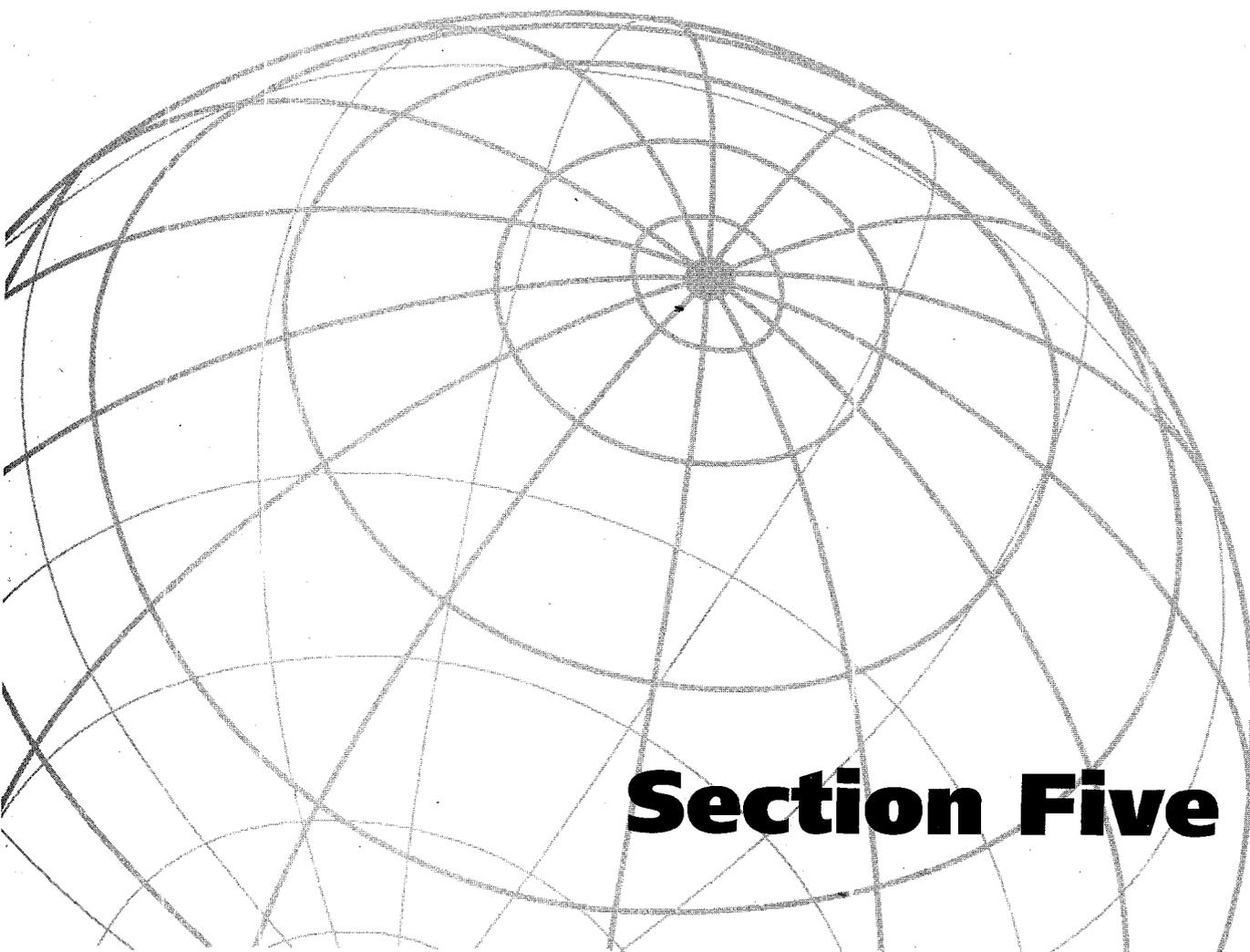
#### **4.5.2 Environmental Activities - Farm and Residence Area**

In the southwest corner of the property, a 2.31-acre parcel of the property which is located in the Farm and residence area was investigated separately and a No Further Action letter was submitted to the Ohio Voluntary Action Program. A Phase I Assessment was conducted, and limited exploratory test trenches were installed at the request of Ohio EPA. A Covenant Not To Sue was granted by the Ohio EPA on May 27, 1997.

In 1991, asbestos-containing materials were identified in the building materials of the farm house. In 1997, Lawhon and Associates arranged for the demolition of the house and the water tower. The asbestos-containing materials were removed prior to demolition of the site. The remaining demolition debris was removed from the site.

#### **4.5.3 Unresolved Areas**

Based on former employee interviews, and review of aerial photographs, there are no unresolved areas in the former farm and residence area.



# Section Five

## **5.0 IDENTIFICATION OF CHEMICALS OF CONCERN**

During the manufacturing operations at the facility, a variety of chemical compounds were used. The following sections list the chemicals suspected to have been used or disposed of at the site and briefly evaluate their environmental stability.

### **5.1 BULK CHEMICALS AND MATERIALS**

Table 1 presents a list of chemicals used in manufacturing at the Kilgore Farm property during its operational history. This list is based on information ascertained through review of historical manufacturing records that describe the products manufactured, employee interviews, disposal records, and based on literature regarding the manufacturing of military ordnance.

### **5.2 ENVIRONMENTAL EVALUATION OF CHEMICALS**

In this report section, various chemical compounds which have been reported to have been used or present on the Kilgore Farm Site along with common chemicals known to be used in the pyrotechnics industry are evaluated in terms of their probable persistence or degradation in the natural environment. Because no specific written documentation of the disposal of any specific component at this site exists, the term "postulated" is used to describe a possible use or disposal. The use of this term does not mean that use or disposal has been documented; only that use existed at other typical sites and within the industry.

Criteria used in this evaluation include: estimated persistence when exposed to natural environmental conditions, hazards potentially due to rapid decomposition in a degraded state, and the potential for human toxicity of these materials in their predictable present state.

**TABLE 1**  
**BULK CHEMICALS**  
**KILGORE FARMS MANUFACTURING FACILITY**  
**WESTERVILLE, OHIO**

CHEMICAL NAME	USE
Aluminum	Photoflash Flares, Smoke Flare, Incendiary Bombs
Antimony	Colored Flares
Antimony Trisulfide	Igniter, Primer in Flame Throwers
Ammonium Chloride	Smoke Flares
Ammonium Perchlorate	Smoke Flares
Ammonium Picrate	Ignitors, Primer
Barium Nitrate	Photoflash Flare, Parachute Flares,
Barium Rhodanide	Stab Primers
Barium Sulfate	Float Flares, Underwater Flares
Black Powder	Accelerant in flares, Black Caps
Boron Phosphide	Ignitor, Primer
Calcium	Colored Flares,
Castor Oil	Binder, oxidation inhibitor for Al and Mg, and lubricant
Copper Oxide	Colored Flares
Hexachlorobenzene	Colored Flares
Hexachloroethane	Smoke Flares
Iron Oxide	Colored Flares
Laminac	Unsaturated Polyester binder
Lead Azide	Stab Primers
Lead Thiocyanate	Stab Primers
Lead Oxide	Stab Primers
Lead Styphnate	Stab Primers
Linseed Oil	Binder in Black Powder Pelletization Process, oxidation inhibitor
Magnesium	High and medium intensity Flares, Incendiary Bombs
Mercury Fulminate	Primer
Phosphorous	Combined Light and Smoke Flares
Potassium Chlorate	Flares
Potassium Nitrate	Gun Powder Formulation, Flares
Potassium Perchlorate	Photoflash Flares, High Altitude Flash Charges, Smoke Flares
Sodium Hypophosphite	Igniter
Sodium Nitrate	Gun Powder Formulation, High Intensity Flares
Sodium Oxalate	Colored Flares
Sodium Perchlorate	High Altitude Flash Charges
Strontium Nitrate	Colored Flares
Strontium Oxalate	Slow Burning Flares, Road Flares
Sulfur	Gun Powder Formulation, Accelerants
Tetryl	Primer
Trinitrotoluene (TNT)	Shaped Charges
Zinc	Smoke Flares
Zinc Oxide	Smoke Flares
Zirconium Hydroxide	Parachute Flare, Igniter

An initial basis for this evaluation has been that all of these materials have been disposed by being buried, without containment, in the soils. The presumption here is that any contained materials, in intact containers, will have been removed in a prior operation.

The principal reference for this evaluation has been *The Merck Index* (Merck, 1993). (Note that a number in parentheses after a compound is the Merck Index reference number.) References for phosphorus have been Burns *et al* (Burns, 1981), Bailar *et al* (Bailar, 1973), and Grogson *et al* (Grogson, 1985).

***Base Metals and Oxides.*** Base metals and oxides are postulated as having been used in manufacturing at the Kilgore Farm Site. These include aluminum, magnesium, antimony, calcium, zinc, copper oxide, zinc oxide, and iron oxide. (Lead oxide is discussed separately.) the base metals and oxides are generally non-reactive at normal temperatures. But when dispersed in the natural environment the base metals will oxidize and form oxides. All of these oxides are considered to be non-hazardous and essentially nontoxic.

***Chlorates and Perchlorates*** Chlorates and perchlorates, postulated as having been used at the Kilgore Farm Site, include potassium chlorate (7494), potassium perchlorate (7535), sodium perchlorate (8493), and ammonium perchlorate (559). All of these compounds are strong oxidizers. When dispersed in the natural environment these compounds will oxidize organic material and metals in the soils. These compounds are soluble in water and will be rapidly dispersed. In their degraded state none of these compounds are considered to be hazardous or toxic.

***Picrate Salts.*** At the Kilgore Farm Site ammonium (566) and potassium picrate (7545) are postulated as having been used during manufacturing operations. These compounds are salts of trinitrophenol. Because of the presence of the trinitro groups in the compound as manufactured, these materials are very sensitive and are intended to explode. But, these materials are very soluble in water and will not persist in the soils when dispersed in the

natural environment. Because of their solubility, the ammonium nitrate and potassium nitrate would be expected to be assimilated by soil bacteria and plants.

*Nitrates.* Nitrates are postulated as having been used at the Kilgore Farm Site. These include barium nitrate (983), potassium nitrate (7528), sodium nitrate (8485), and strontium nitrate (8712). These nitrate salts are highly soluble in water, so that, if dispersed in the natural environment, these materials will dissolve and it is considered that much of the nitrate will be utilized by soil bacteria and plants. There may be some potential human sensitivity to the strontium salt, but this should not be a persistent situation because of its water solubility.

*Sulfates.* Barium sulfate (994) is postulated as having been used in the manufacture of float flares at the Kilgore Farm Site. This material is not hazardous and is practically insoluble. According to the *Merck Index* (Merck, 1993), it is not reactive or toxic so that it would be expected to remain in an inert state when dispersed in the natural environment. Barium sulfate is radiopaque and as such is used internally as a human diagnostic aid.

*Oxylates.* Strontium (8713) and sodium (8489) oxylates are postulated as having been used to produce colored flares at the Kilgore Farm Site. Sodium oxylate is soluble in water but strontium oxylate is only sparingly soluble. Thus, they both may be somewhat dispersed in the natural environment. Toxicity by ingestion is reported by the *Merck Index* (Merck, 1993).

*Lead Azide.* Lead azide (5232) was reportedly used at the Kilgore Farm Site in the production of primers. This material is shock sensitive. This material is slightly soluble in water and more soluble in dilute acids. Therefore, when disposed in the natural environment over a long period of time it would be dispersed. Human toxicity exists because of the lead content.

*Antimony Trisulfide.* Antimony trisulfide (738) is postulated as having been used for the production of striking surface in primers and as pigments in flares. It is not hazardous and is substantially nontoxic. Because this material is relatively insoluble in water, it may remain as an inert material when dispersed in the natural environment.

***Hexachlorobenzene and Hexachloroethane.*** Hexachlorobenzene (4573) and hexachloroethane (4574) may have been used in the manufacture of smoke and colored flares at the Kilgore Farm Site. One of the uses of hexachlorobenzene is as a fungicide. Both of these compounds are insoluble but sublime slowly. Hexachlorobenzene may be moderately irritating to skin and mucous membranes. When dispersed in the natural environment over a long period of time both of these materials would probably sublime and not be present.

***Ammonium Chloride.*** Ammonium chloride (522) was reportedly used in the production of smoke flares at the Kilgore Farm Site. It is a component of pharmaceuticals. This compound is soluble in water and when dispersed in the natural environment would solubilize and be assimilated by soil bacteria and plants.

***Tetryl.*** Interviews with Kilgore employees suggest that tetryl (6416) may have been used at the site in the production of primers. This material is shock sensitive because of the presence of four NO<sub>2</sub> groups in the compound. When heated to 180-190° C tetryl will explode. It is insoluble in water and irritating to skin and mucous membranes.

***Mercury Fulminate.*** Mercury fulminate was a common primer material used historically and is postulated as having been used at the Kilgore Farm Site. It is shock sensitive and will explode when heated. It is slightly soluble in water and, when dispersed in the natural environment for a long period of time, would become inert and nonhazardous because of its solubility. Mercury, however, potentially could be a slight toxicity problem for humans.

***Thiocyanates.*** Lead thiocyanate (5268) and barium thiocyanate (998) (also known as barium rhodanide) were used in the production of primers historically and are postulated as having been used at the Kilgore Farm Site. These thiocyanate salts are soluble in water and when dispersed in the natural environment would dissolve and be deactivated. Both compounds, however, in the concentrated states are listed as being poisonous.

**Lead Styphnate.** Lead styphnate is a salt of styphnic acid (8730). This is another shock-sensitive compound used historically in the production of primers. It is postulated that this compound may have been used in the production of primers at the Kilgore Farm Site. This is an unstable compound which deflagrates upon heating. However, because of its solubility when dispersed in the natural environment, it will likely be utilized by soil bacteria and plants and therefore will not be present except as nontoxic, nonhazardous residues.

**Sulfur.** Elemental sulfur is a common material used in the formulation of gunpowder and the manufacture of flares. It is a naturally occurring material that is safe to handle. It is commonly used in agricultural and home garden applications. Although it will be slowly oxidized, some may persist at the Kilgore Farm Site.

**Lead Oxide.** The “brown oxide” or lead dioxide (5241),  $PbO_2$ , and the “yellow oxide” or lead monoxide (5251),  $PbO$ , are materials used historically and are postulated as being used at the Kilgore Farm Site. The “yellow oxide”, although so named by chemists, has a red to reddish-yellow color according to the *Merck Index* (Merck, 1993). thus, this “yellow oxide” is called “red lead”. It also is known commonly as “litharge” and when combined with glycerol is used by plumbers and others as a cement in joining metallic parts. Other forms of lead oxide probably were never present because of their instability at ambient temperatures. Both the dioxide and the monoxide are classed as poisons and both are insoluble in water. These compounds might persist when disposed in the natural environment but would represent a threat to human health only if ingested or inhaled. They are not explosives.

**TNT.** Trinitrotoluene (9534), also known as TNT, is a compound that contains three nitrate radicals. It is highly explosive but must be detonated by a high velocity initiator. TNT vapors are toxic and may be absorbed through the skin to cause toxic reactions. Because it is sparingly soluble in water, TNT over time would become inert through solution and utilization of nitrate by soil bacteria and plants.

**Phosphorus.** It is postulated that two forms of elemental phosphorus (7231), white and red, may have been used at the Kilgore Farm Site. White phosphorus is readily oxidized in air and will ignite at temperatures as low as 34°C. Even without ignition, oxidation is fairly rapid. Red phosphorus reacts more slowly than the white; with water vapor and oxygen of the air, red phosphorus is reported to produce phosphine and phosphorus oxy acids at ambient temperatures. Phosphine ( $\text{PH}_3$ )(7224) is a gas and, though toxic, will dissipate rapidly. The oxides formed by both white and red phosphorus react readily with water to form water-soluble acids. Disposal in the natural environment will result in the conversion of both forms of phosphorus into these water-soluble acids. The phosphoric acid thus formed would be expected to be utilized by soil bacteria and plants in their biologic processes.



# Section Six

**6.0 ENVIRONMENTAL COMPLIANCE HISTORY OF THE SITE  
AND THE SURROUNDING AREA**

In accordance with the Ohio VAP, Lawhon & Associates conducted a comprehensive environmental database search using ERIIS to assess the known environmental issues on the property and the surrounding properties. The target property, Kilgore Farm, is reported as a hazardous waste site on the State of Ohio Master Sites List in the ERIIS database. The site has not been prioritized by Ohio EPA. The Kilgore Farm site is not listed in any of the other databases. Within 1/2 mile of the property the ERIIS databases identify a RCRA Small Quantity Generator, a registered underground storage tank, and a leaking underground storage tank. None of these sites is located adjacent to the subject property or is unlikely to pose any environmental threat. A copy of the environmental database search is provided in Appendix M. The databases searched and distances from the Kilgore Farm Property are summarized below:

Database	Radius (miles)	Property to 1/4 mile	1/4 to 1/2 mile	1/2 to 1 mile
NPL	2.0	0	0	0
CERCLIS	2.0	0	0	0
RCRIS_TS	2.0	0	0	0
RECRIS_LG	2.0	0	0	0
RECRIS_SG	2.0	0	0	1
ERNS	2.0	0	0	0
LRST	2.0	0	1	0
RST	2.0	0	0	1
SWF	2.0	0	0	0
HWS	2.0	1	0	0
NFRAP	2.0	0	0	0
Open dump	NR			
TRI	2.0	0	0	0
Spills	2.0	0	1	1
<b>Totals</b>		<b>1</b>	<b>2</b>	<b>3</b>

NR = Not Reported

Additional records and data bases checked included:

- City of Westerville Fire Department

The local fire department has no records of incidents regarding the Kilgore site with the exception of numerous telephone calls related to the detonation of suspect materials by the Wright-Patterson Explosive Ordinance Division in 1996.

- The Ohio EPA Central District Office

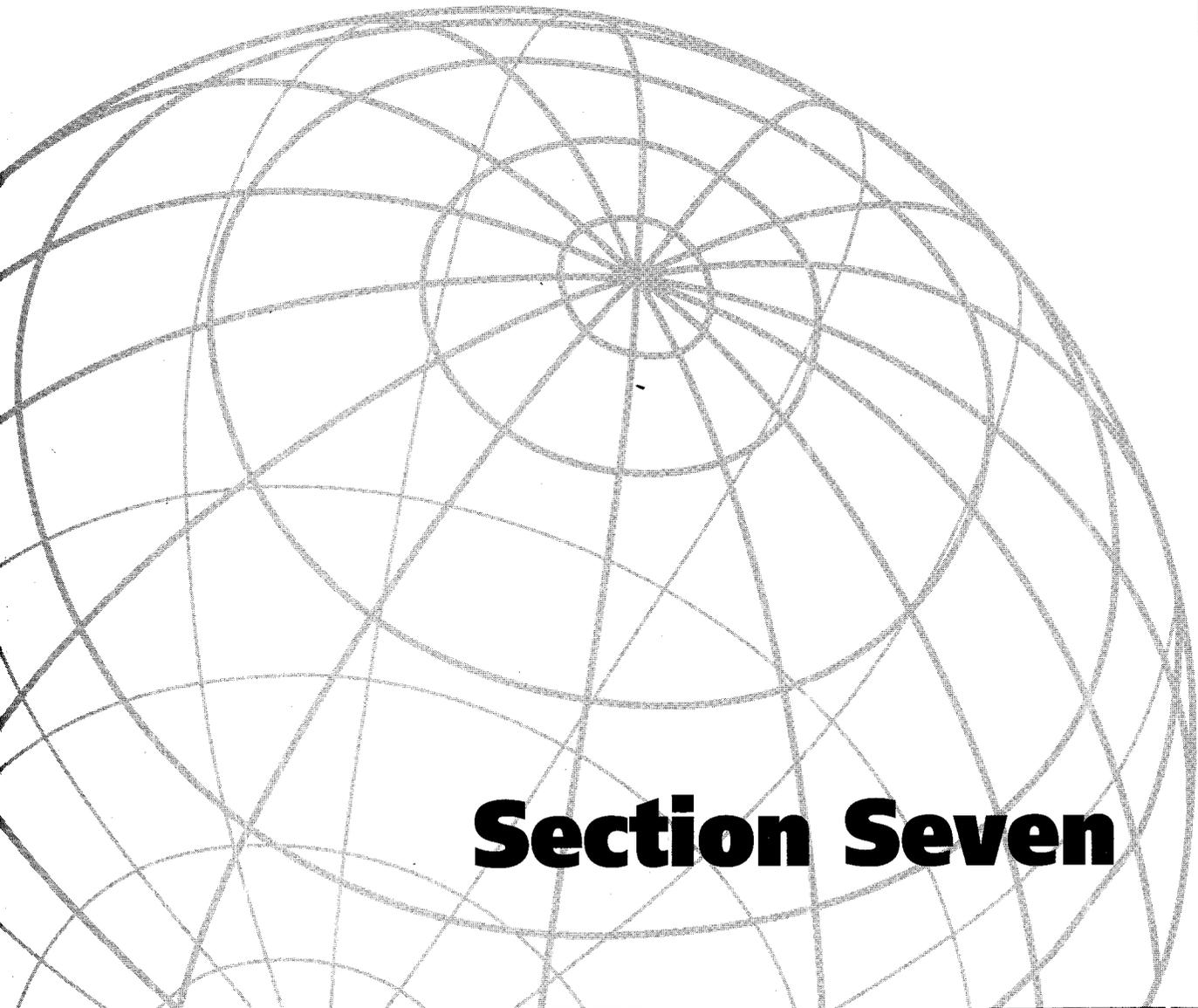
The Ohio Division of Emergency Remedial Response (DERR) visited the site in 1988 and 1992 and prepared a Preliminary Assessment Report. A copy of this Report is located in Appendix M. In this report, Ohio EPA recommended a low priority ranking for the site.

- Delaware County Health Department

Lawhon & Associates contacted the local Health Department, no information regarding the Kilgore Property was on file.

- The Ohio Department of Natural Resources, Oil and Gas Division

According to ODNR there are no oil or gas wells located on the property.



# Section Seven

## 7.0 PROPERTY INSPECTIONS

Phase I Audits were conducted by S.E.A and Lawhon & Associates in 1986 and 1991, respectively. In April 1998, Metcalf & Eddy, Inc. conducted a property inspection to update the information described in the previous Phase I Assessment.

### 7.1 LAWHON PHASE I SUMMARY

Lawhon & Associates performed a Phase I Environmental Audit on the Kilgore Farm Property from January 23 to February 6, 1991. Figure 8 shows the items identified during the property inspection conducted by Lawhon & Associates. In this audit, dated March 1, 1991, Lawhon & Associates recommended the following actions be undertaken at the facility.

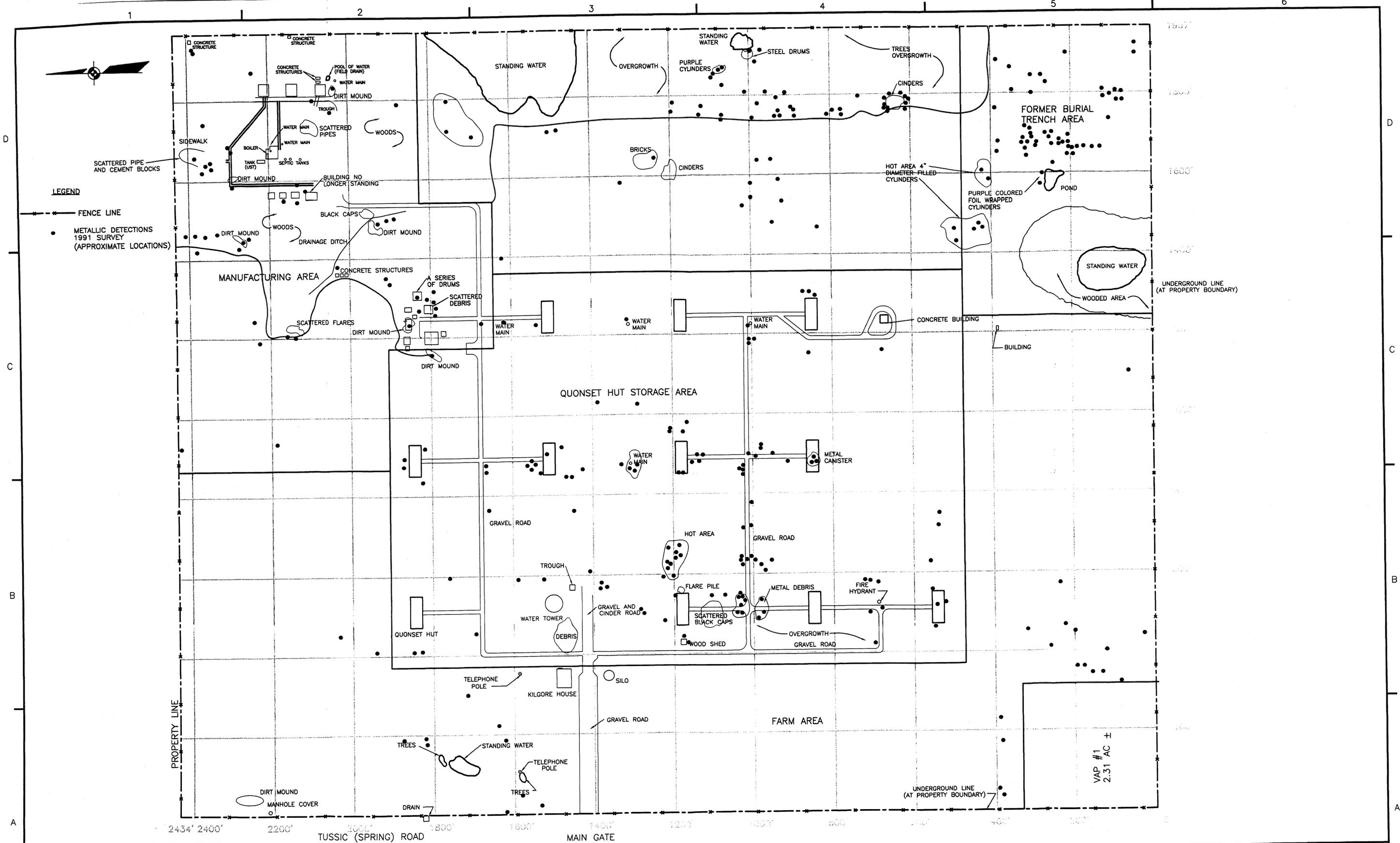
1. Removal of the flares, caps, primers and other metallic objects.
2. Demolition of the remaining buildings and foundations.
3. Removal of the underground storage tank.
4. Removal of the septic tanks.
5. Removal of the asbestos materials from the existing house.
6. Wetland mitigation investigation.

In addition, the Lawhon & Associates audit concluded:

1. Based on the review of the data, groundwater contamination was deemed unlikely.
2. Pyrotechnic materials found at the site posed little threat to the site soil conditions.

Following the audit conducted in 1991, several of the items listed above were further investigated or remediated. Actions conducted at the site by Lawhon and Associates since 1991 include:

Foundations and the remaining building structures were demolished and removed in 1996.



\*REVISED FROM LAWHON AND ASSOCIATES FIELD MAP 1991

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS	DESCRIPTION

DRAWN BY	FGS
DEPT. CHECK	
PROJ. CHECK	

**M&E Metcalf & Eddy**

REG. PROF. ENGR. \_\_\_\_\_ DATE \_\_\_\_\_

SCALE: 1" = 100'

SCALE IN FEET  
0 50 100

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

PLOT DATE: 5/21/98

KILGORE PROPERTY

1991 SITE INSPECTION MAP

WESTERVILLE, OHIO

JOB 021796-0001

FILE NO. 021796-8

FIGURE 8

OC 015380

- Piles of empty flare canisters, caps, and other metallic objects located on the surface of the site and identified as “hot spots” on the investigation map prepared in 1991 have been removed.
- The underground fuel oil storage tank was removed and soil contamination was removed to concentrations below the BUSTR Category 3 Action Levels.
- Asbestos-containing materials were removed and the house was demolished.
- Groundwater monitoring wells were installed in the area of the burial trenches and samples were collected. The chemical analytical results indicated that there is no impact to the groundwater from the burial area.

## **7.2 METCALF & EDDY, INC. SITE INSPECTION UPDATE**

On April 7, 1998, Gerry Myers, CEP; Mike Raimonde, Project Manager; Jeff Stevenson, Project Geologist; and Todd Aebie, Geologist; conducted a site inspection of the entire Kilgore Farm facility to ascertain the current site conditions. A summary of M&E observations is presented on Table 2. Figure 9 shows the location of key items observed during the site inspection and a photographic log is located in Appendix N.

### **7.2.1 Former Manufacturing Area**

During the site inspection of the former manufacturing area, several items of interest were noted.

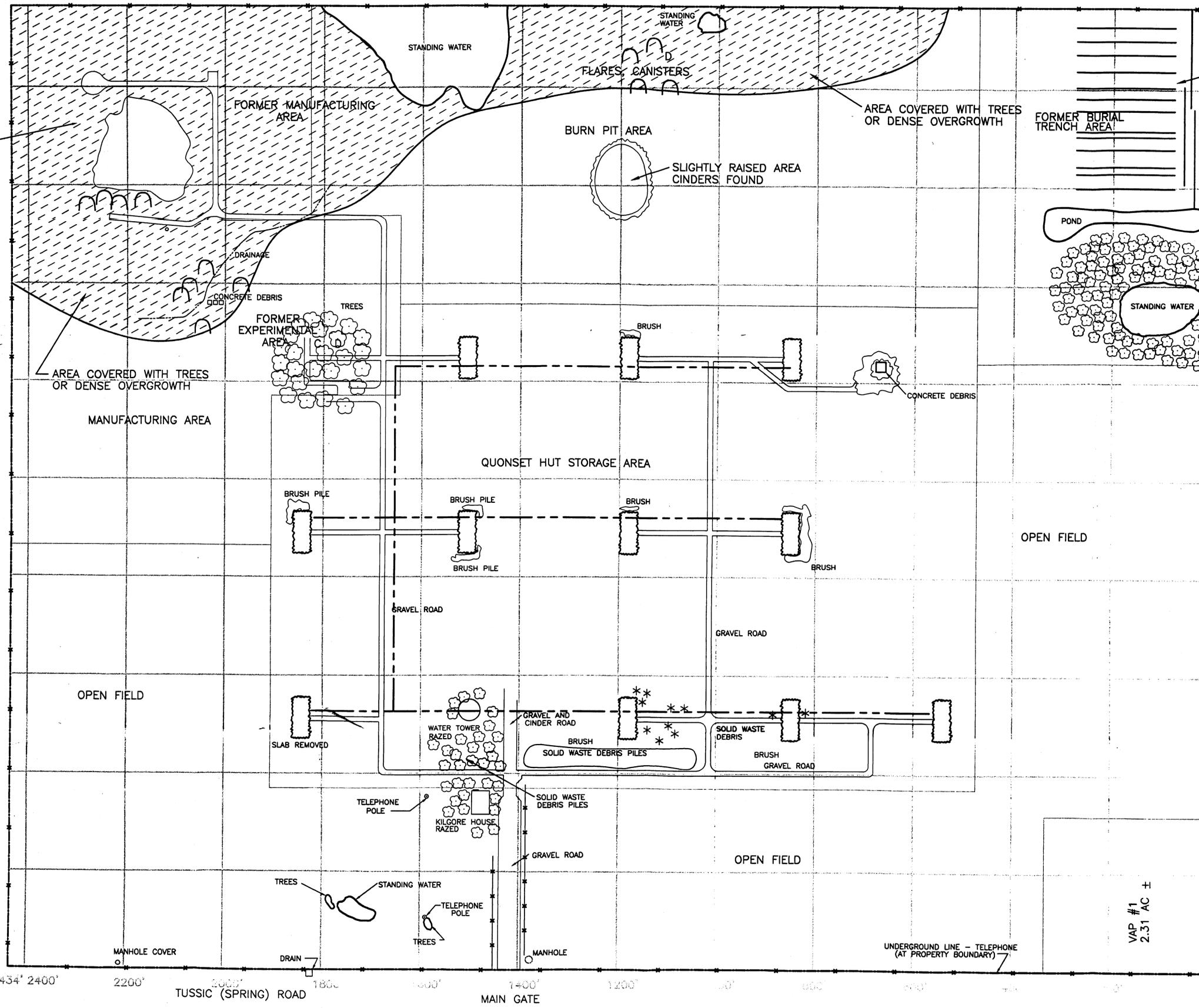
Near the former experimental area six drums were noted. Two of the drums were found to have lids in place. In the immediate vicinity of the drums, numerous 1- to 5-gallon cans, and buckets were observed. Along with these items, piles of demolition debris, such as miscellaneous metal, wood, and plastic, were also observed. The majority of the debris was found immediately adjacent to the old facility roadways and former buildings.

**Metcalf & Eddy, Inc. Site Walk Inspection Checklist**  
**Kilgore Farms Site, Westerville, Ohio**

Site Inspection Items	Areas of Concern As Identified Through Historical References				
	Manufacturing Area	Storage Area	Fire Pit Area	Disposal Area	Farm / Residence Area
Geologic Conditions	yes	yes	yes	yes	yes
Structures	no	no	no	no	no
Roads	yes	yes	yes	yes	yes
Potable Water	no	no	no	no	no
Sewage Disposal	no	no	no	no	no
Hazardous Substances	unk	unk	unk	unk	unk
Petroleum Products	unk	unk	unk	unk	unk
Storage Tanks	no	no	no	no	no
Odors	no	no	no	no	no
Pools of Liquid	no	no	no	no	no
Drums	yes	no	yes	no	no
Hazardous Substances and Petroleum Containers	yes	no	no	no	no
Unidentified Containers	yes	no	no	no	no
PCBs	no	no	no	no	no
Heating / Cooling	NA	NA	NA	NA	NA
Stains or Corrosion	no	no	no	no	no
Drains and Sumps	no	no	no	no	no
Pits, Ponds, Lagoons	no	no	no	yes	no
Stained Soils	no	no	yes	yes	no
Solid Waste	yes	yes	yes	no	yes
Waste Water	no	no	no	no	no
Wells	no	no	no	no	no
Septic Systems	no	no	no	no	no
NA = not applicable to the site		no = not observed			
unk = unknown, but suspect materials observed		yes = observed			



NOTE:  
FOUNDATIONS REMOVED  
SOLID WASTE DEBRIS  
PILES THROUGHOUT



EXPLORATION TRENCHES  
STILL VISIBLE

AREA COVERED WITH TREES  
OR DENSE OVERGROWTH

MANUFACTURING AREA

QUONSET HUT STORAGE AREA

OPEN FIELD

OPEN FIELD

OPEN FIELD

**LEGEND**

- \* FLARES, BLACK CAPS FOUND
- D DRUMS
- C CONTAINERS, BUCKETS, PAILS
- ☺ HUMMOCKY TERRAIN
- WATERLINE REMOVAL
- PROPERTY LINE
- ☼ TREES
- ☐ QUONSET STORAGE HUTS FOUNDATIONS REMOVED
- FENCELINE

2434' 2400' 2200' 2000' 1800' 1600' 1400' 1200' 1000' 800' 600' 400' 200'

TUSSIC (SPRING) ROAD MAIN GATE

MANHOLE COVER DRAIN TELEPHONE POLE TELEPHONE POLE MANHOLE

UNDERGROUND LINE - TELEPHONE (AT PROPERTY BOUNDARY)

VAP #1 2.31 AC ±

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS	DESCRIPTION
1					
2					

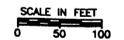
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PROJ. CHECK

**M&E Metcalf & Eddy**

SCALE: 1" = 100'



UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

PLOT DATE: 5/ 19/98

KILGORE PROPERTY  
**SITE INSPECTION MAP, 1998**  
WESTERVILLE, OHIO

JOB 021796-0001  
FILE NO. 021796-7  
FIGURE 9

OC 015383

In the vicinity of the former manufacturing area hummocky piles of earth and piles of miscellaneous debris (metal, wood and plastic) were observed. The majority of the debris was found along the old facility roadways and at the locations of the former buildings.

M&E inspected the drainage ditch that ran between the former manufacturing area and experimental area during the site inspection. The banks of the ditch are hummocky in appearance and a few flare canisters were found. In addition, miscellaneous debris consisting mostly of concrete was observed along the ditch. This area was heavily vegetated.

### **7.2.2 Former Quonset Hut Area**

All of the former Quonset hut locations were inspected during M&E's site visit. The concrete pads and the huts have been removed from the site. Some demolition debris consisting of concrete and brush piles was present around most of the former Quonset hut locations.

In the area around two Quonset huts, located southeast of the former farm house, several empty flare canisters and black caps were observed scattered on the ground surface. This was the area where excavated flares and caps removed from the burial trench area in 1988 were staged prior to disposal. In addition, small brush piles and miscellaneous wood and metal debris were also observed in this area.

With the exception of the small area located near the former farm house, the areas located between most of the Quonset huts was free of debris and there was no evidence of disturbed soils or distressed vegetation.

### **7.2.3 Former Burn Pit Area**

The eastern portion of the property, the former Burn Pit Area, was inspected during the site visit. The approximate area where the burn pit is located on the 1956 and 1957 aerial photographs was noted. A limited amount of cinders and ash-like materials were observed on

the ground surface in the area of the former Burn Pit Area. In addition, the area is slightly elevated as compared to the surrounding ground surface.

In the wooded portion along the eastern edge of the Burn Pit Area, several (approximately 8) rusted, empty drums were noted. In addition, a few empty flare canisters were also observed on the ground surface in the vicinity of the empty drums. None of the flare canisters appeared to contain any materials.

M&E tried to locate the two rectangular features south of the former manufacturing area and the disturbed area along the eastern property line south of the former Burn Pit Area. No evidence of either structure was observed during the site inspection.

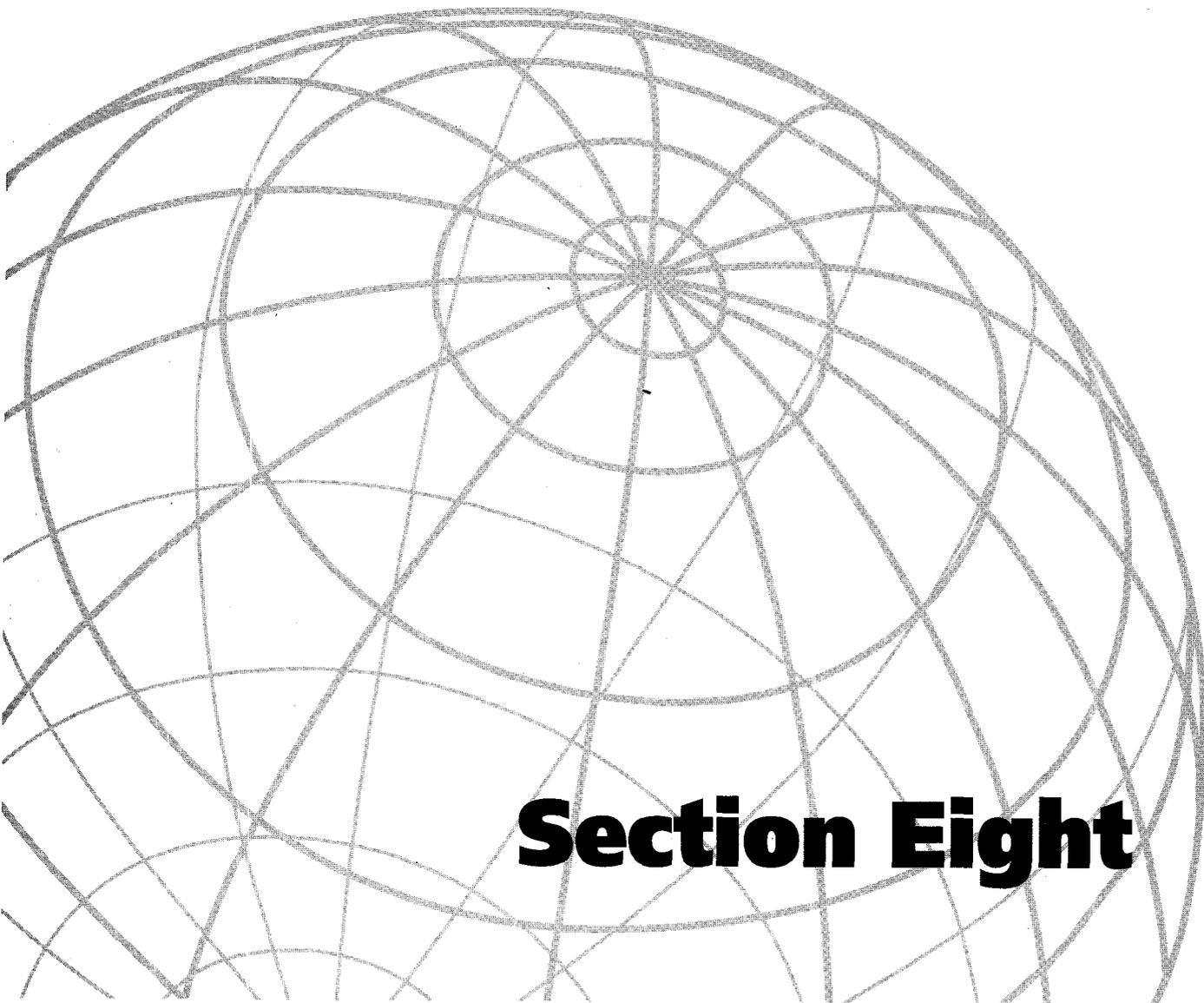
#### **7.2.4 Former Burial Trench Disposal Area**

M&E inspected the former burial trench disposal area. The site is highly disturbed. Evidence of exploratory trenches installed in 1997 was readily apparent. Traces of several of the trenches were still clearly visible. During the inspection of this area, a few flares, containing a purple colored, granular material, were observed and a few empty flare canisters were observed. No discolored soils or evidence of past wastes were observed.

Three monitoring wells were also observed during M&E's inspection of the former burial trench disposal area. These wells were installed by Lawhon & Associates in 1996 to evaluate any potential impact to the groundwater from the burial area.

#### **7.2.5 Farm and Residence Area**

The farm and residence area were inspected during M&E's site visit. The area where the Kilgore farm house and water tower used to stand was observed. The basement of the farm house has been backfilled with stone and soils. The remainder of the area around the house is covered by trees and brush. Brush piles and various metal, wood and plastic debris were



# **Section Eight**

## **8.0 ENVIRONMENTAL SETTING**

The Kilgore Farm Property is located within Delaware County in central Ohio. The majority of the land in the County was previously used for farming or not developed until recently. Over the past 10 to 15 years, the City of Westerville has experienced tremendous growth northward into Delaware County. The Kilgore Farm property is located in an area where residential growth is currently occurring.

### **8.1 REGIONAL GEOLOGY, HYDROGEOLOGY, PHYSIOGRAPHY**

The area lies within the Till Plains Section of the Central Lowlands Physiographic Province. Within the Till Plains, the preglacial features are covered by extensive glacial deposits. The topography of the area is characteristically considered to be of low relief with greater relief present near major streams and river valleys.

The bedrock underlying the site consists of the Devonian age, Ohio Shale, Devonian (408 to 360 million years before present). This shale is typically dark gray to black in color, carbonaceous, with very thin laminae to massively bedded. The Ohio Shale in the area can range up to 400 to 500 feet thick. Outcrops in the area are common due to the valleys created during previous continental glaciation.

The regional flow of groundwater in the area is to the east - southeast. Groundwater wells completed in the shale usually have typical yields of less than 5 gallons per minute. Most wells in the area are completed in the overlying glacial overburden, where sand and gravel lenses may locally produce yields sufficient for single residential use.

### **8.2 KILGORE FARM PROPERTY GEOLOGY AND HYDROGEOLOGY**

Ground surface elevations range from approximately 898 to 890 feet above mean sea level (msl) from west to east across the site. According to the Drift Thickness Map of Delaware

County (Vormelker, 1982) there is approximately 50 feet of glacial drift above the bedrock. The shale bedrock is at an elevation of 840 to 850 feet msl (Bedrock Topography Map of Delaware County, Vormelker, 1982). The overlying unconsolidated sediments encountered at the site consist of glacial deposits composed of thin lenses of silty to clayey sand, ranging from less than 0.5 to 2.0 inches thick. These sands are interbedded with thick clay-rich till deposits. Wells in the area of the site are generally completed in the sand and gravel lenses found in the glacial till.

Surface soils at the site consist of brown weathered silty clay, with varying amounts of sand and trace amounts of gravel and shale fragments. The weathered soil horizon extends from the surface to approximately ten feet below the ground surface. Beneath the weathered soils, the unweathered soils are of the same composition but are gray in color.

Four monitoring wells were installed in the southern portion of the site by a previous consultant to determine if the groundwater was being impacted from the past burial activities. The well logs are provided in Appendix N. Attempts were made to construct a potentiometric map across the site from the groundwater elevations gathered from these wells. Because the wells were screened in discontinuous sand seams, a meaningful potentiometric map could not be drawn. The discontinuous sand lenses produce limited yields of water and can be purged dry rather quickly.

### **8.3 CLIMATE**

Delaware County is cold in the winter and warm to hot in the summer. The average winter temperature is 31 degrees Fahrenheit while the average summer temperature is 72 degrees F. The prevailing wind is from the south-southwest with an average wind speed of 11 miles per hour.

The total annual precipitation for Delaware County is approximately 38 inches. Of the total amount of precipitation, 22 inches, or 60 percent, usually falls in the period of April through

September, which is the growing season for most crops. The average annual snowfall is 28 inches, which occurs from late November until early March.

#### **8.4 SURFACE WATER**

There are no permanently flowing rivers or streams on the Kilgore Farm Property. There is a drainage ditch on the northern portion of the property which has some surface water flow in times of precipitation. The flow in the ditch is from the northwest to the southeast. Additionally, ponded surface water occurs on the southern portion of the property. Aerial photographs prior to 1964 do not show the ponded water bodies. It is surmised that low areas may have been created during closure of the site or during decontamination activities.

Small wetland areas have been identified and delineated on two portions of the Kilgore Farm Property. One of the areas (1.3 acres in size) is located along the southern property line just west of the former burial trench area. The other area (approximately 4.0 acres) is located along the northeast property line just south of the former manufacturing area

Hoover Reservoir, located approximately 2,000 feet east of the site, is the nearest surface water body to the Kilgore Farm site. There are no direct drainage ways that connect Kilgore Farm to the Reservoir.

# Section Nine

## **9.0 POTENTIAL MIGRATION PATHWAYS**

There is limited potential for contaminant migration at the Kilgore Farm Property. The clay rich nature of thick glacial overburden present at the site would retard the vertical movement of any potential contaminants and ground water occurs only in discontinuous, thin sand seams at the site. Furthermore, the types of potential contaminants that would be associated with the past operations of the site consist of inorganic compounds that would typically oxidize and become immobile.

However, there were some subsurface utilities present at the site in past and there are currently subsurface utilities located along the western property boundary.

### **9.1 POTENTIAL MIGRATION PATHWAYS PRESENT DURING KILGORE OPERATIONS**

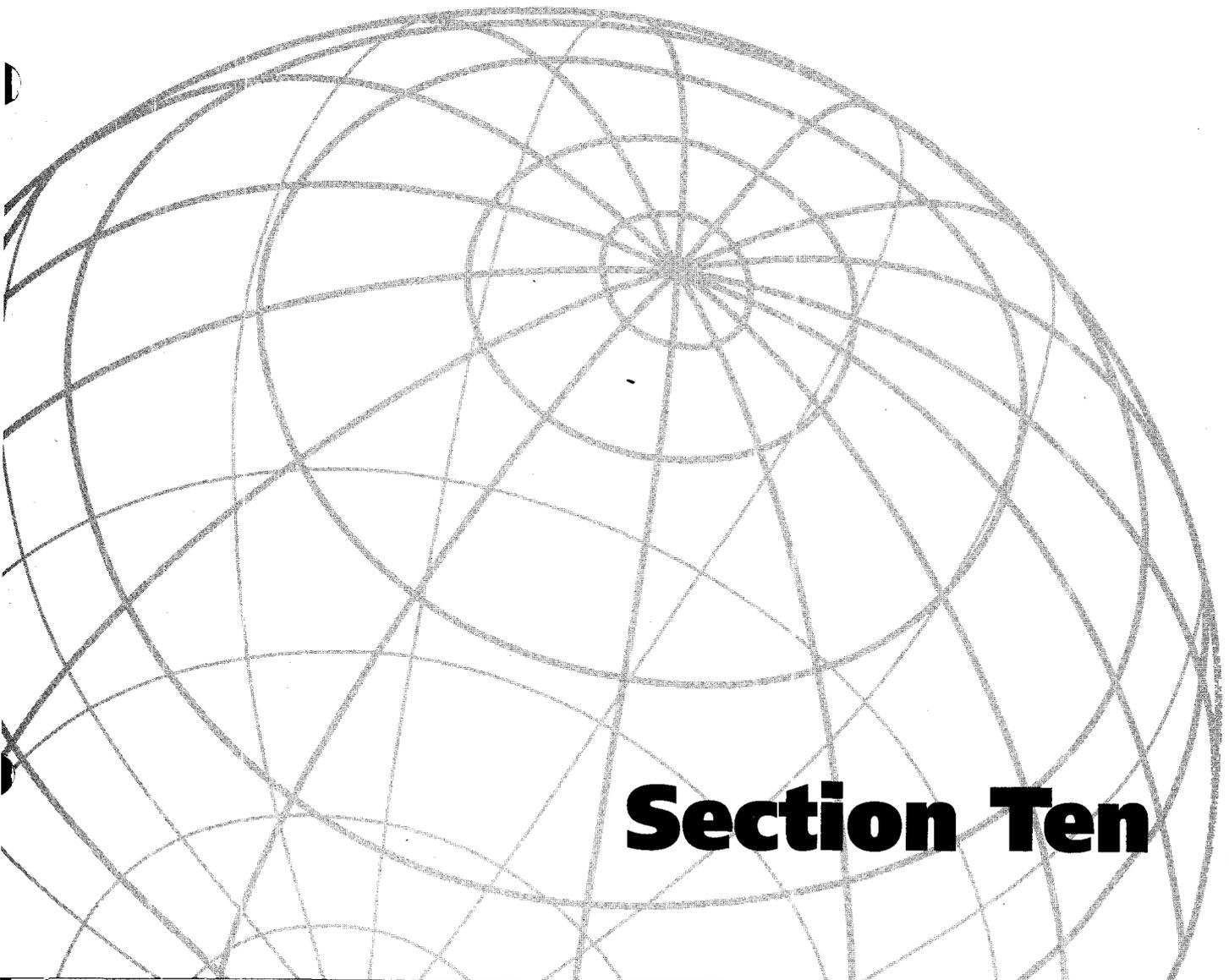
During operations at the Kilgore Site, from 1941 until 1961, water and possible steam lines were located underground at the site. The water lines ran from the water tower to each of the Quonset storage huts. The waterline ran north to south, east along the northern access road and branched off to run south to the Quonset storage huts. The waterline provided the huts with fire suppression and potable water. In addition to the waterlines, Mr. Day stated that steam or heating lines ran to each of the Quonset storage huts from the farm house. These lines may also have acted as a conduit for migration of contaminants. These lines were excavated and removed in 1996 by Lawhon and Associates. No evidence of contamination was reported by Lawhon and Associates (Appendix P).

Within the manufacturing area, there may have been underground steam heating lines from the boiler building to the other buildings. In addition, a small septic system may have been used in that area of the facility. These lines have been removed by Lawhon and no evidence of contamination was reported by Lawhon (Appendix P).

Electric and telephone at the Kilgore Farm Property were brought in by overhead wires.

## **9.2 CURRENT POTENTIAL MIGRATION PATHWAYS**

Since decommissioning of the Kilgore Farm site in 1961, substantial development has occurred in southern Delaware County. To keep up with development, the County and the City of Westerville have provided utilities to newly developed areas. Along Spring Street, waterlines, sewer lines, and telephone lines have been installed below the ground surface. These utilities run parallel to the portions of the property that were continually farmed during operations at the Kilgore site. Therefore, there is no migration potential for contaminants present at the Kilgore Site to migrate along these lines.



# **Section Ten**

## 10.0 IDENTIFICATION OF AREAS OF CONCERN

Based on the review of historical operations, aerial photographs, previous environmental investigations, and interviews with former Kilgore employees, 14 potential areas of concern (AOCs) have been identified at the former Kilgore Farm property. The AOCs identified, the chemicals of concern, the media of concern, and recommended actions are listed on Table 3.

T 3  
 AREAS OF CONCERN  
 KILGORE FARM, WESTERVILLE, OHIO

KILGORE AREA	IDENTIFIED AREA	CHEMICALS OF CONCERN	MEDIA OF CONCERN	REQUIRED ACTIONS	RECOMMENDED ACTIONS
MANUFACTURING AREA	Underground Storage Tank and Manufacturing Area	VOCs (UST) Perchlorate/Chlorate Nitrate/Nitrite PAHs (UST) Metals	Soil Groundwater	Yes Yes	Shallow Soil Borings (7) Monitoring Well Installation and Sampling(1 Well)
MANUFACTURING AREA	Drainage Ditch	Metals Nitrate/Nitrite Sulfide/Sulfate Perchlorate/Chlorates Thiocyanate Ignitability	Soil Groundwater	Yes Yes	Exploratory Trenching (2 @ 300 feet each) 5 samples from each Trench Monitoring Well Installation and Sampling(1 well)
MANUFACTURING AREA	Discarded Drums and Cans and Experimental Area	VOCs/SVOCs Chlorides Metals Ignitability	Soil Groundwater Drums	Yes No Yes	Soil Borings (7 shallow borings) Testing and Off Site Disposal
MANUFACTURING AREA	Round Feature (West of Manufacturing Area)	VOCs/SVOCs Chlorides Metals Ignitability	Soil Groundwater	Yes No	Soil Borings ( 2 shallow borings, 1 deep boring)
FORMER BURN PIT AREA	Burn Pit Area	Metals Nitrate/Nitrite Sulfide/Sulfate Perchlorate/Chlorate Thiocyanate Ignitability	Soil Groundwater	Yes Yes	Soil Borings (4 borings to 25 feet) Monitoring Well Installation and Sampling (1 well)
FORMER BURN PIT AREA	Disturbed Area South of Main Area	Metals Nitrate/Nitrite Sulfide/Sulfate Perchlorates/Chlorates Thiocyanate Ignitability	Soil Groundwater	Yes No	Soil Borings ( 2 Shallow borings)
FORMER BURN PIT	Cinder Area	Metals Nitrate/Nitrite Sulfide/Sulfate Chloride Ignitability	Soil Groundwater	Yes No	Soil Borings ( 2 Shallow borings)
FORMER BURN PIT	Rectangular Features (South of Manuf. Area)	Metals Nitrate/Nitrite Sulfide/Sulfate Perchlorates/Chlorates Thiocyanate Ignitability	Soil Groundwater	Yes Yes	Exploratory Trenching (3@100 feet each) 2 Samples from each trench Monitoring Well Installation and Sampling (1 well)

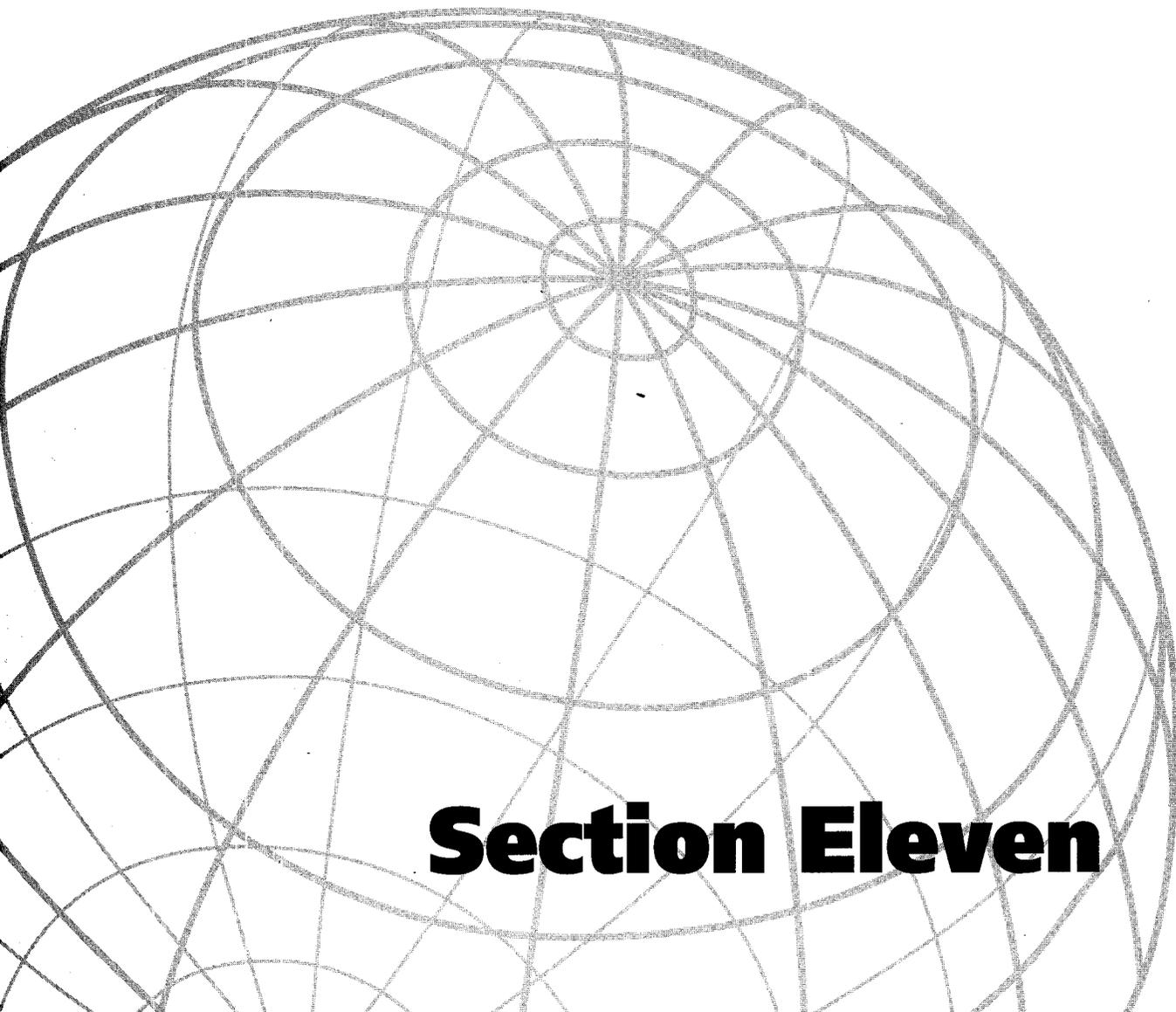
TABLE 3 (Continued)

OC 015395

AREAS OF CONCERN  
KILGORE FARM STERVILLE, OHIO

KILGORE AREA	IDENTIFIED AREA	CHEMICALS OF CONCERN	MEDIA OF CONCERN	REQUIRED ACTIONS	RECOMMENDED ACTIONS
FORMER BURN PIT AREA	Disturbed Area (South East of Burn Pit)	Metals Nitrate/Nitrite Sulfide/Sulfate Perchlorates/Chlorates Thiocyanates Ignitability	Soil Groundwater	Yes Yes	Exploratory Trenching (2@ 100 feet each) Soil Sampling 2 per trench Monitoring Well Installation and Sampling (1 well)
FORMER BURN PIT AREA	Discarded Drums and Cans	VOCs SVOCs Metals Chlorides	Soil Groundwater Drums	Yes No Yes	Soil Borings (7 shallow borings) Testing and Off Site Disposal
QUONSET HUT AREA	Huts	Metals Nitrate/Nitrite Sulfide/Sulfate Chloride	Soil	Yes	Shallow Soil Borings - 2 at each
QUONSET HUT AREA	Scattered Flares on Surface	Metals Nitrate/Nitrite Sulfide/Sulfide Perchlorates/Chlorates	Soil	Yes	Pick up and dispose of empty flare casings and black caps. Hand auger samples (4)
FARM AREA	None	Herbicides Pesticide Metals Chlorides	Soil	Yes	Hand Auger Sampling (6)
BURIAL TRENCH AREA	Burial Trench Area	Metals + Hg Nitrate/Nitrite Sulfide/Sulfate Perchlorates/Chlorates Thiocyanates	Soil Groundwater	Yes Yes	Waste Characterization Sample 3 existing wells

OC 015396



# Section Eleven

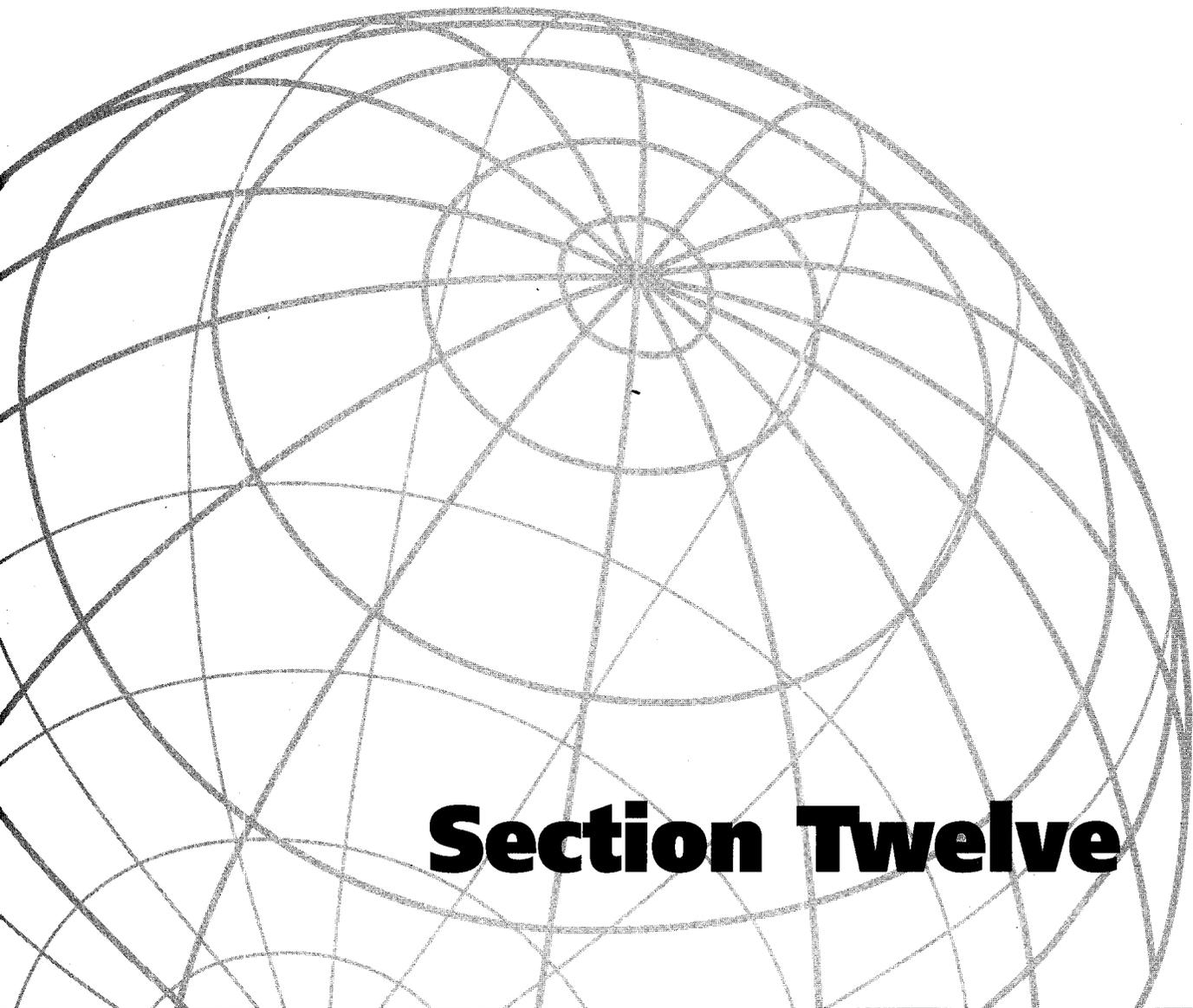
## 11.0 STATEMENT OF LIMITATIONS

The data present and the opinions expressed in the report are qualified as follows:

1. The sole purpose of the investigation and of this report is to assess the physical characteristics of the Site with respect to the presence or absence in the environment of oil or hazardous materials substances, as defined in the applicable state and federal environmental laws and regulations, and to gather information regarding current and past environmental conditions at the Site.
2. Metcalf & Eddy, Inc. (M&E) derived the data in the report primarily from visual inspections and examination of records in the public domain, and interviews with individuals with information about the Site. The passage of time, manifestation of latent conditions or occurrence of future events may require further exploration at the site, analysis of the data, and re-evaluation of the findings, observations and conclusions expressed in the report.
3. In preparing the report, M&E has relied upon and presumed accurate certain information (or the absence thereof) about the Site and adjacent properties provided by governmental officials and agencies, the Client, and others identified herein. M&E has not attempted to verify the accuracy or completeness of any such information.
4. The data reported and the findings, observations and conclusions expressed in the report are limited by the Scope of Services.
5. Because of the limitations stated above, the findings, observations and conclusions expressed by M&E in the report are not, and should not be considered an opinion concerning the compliance of any past or present owner or operator of the Site with any federal, state or local law or regulation. No warranty or guarantee, whether express or implied, is made with respect to the data reported or findings, observations and

conclusions expressed in the report. Further, such data, findings, observations and conclusions are based solely upon Site conditions in existence at the time of investigation.

6. The report has been prepared on behalf of and for the exclusive use of the Client, and is subject to and issued in connection with the Agreement and the provisions thereof.



# **Section Twelve**

## 12.0 FINDINGS AND CONCLUSIONS

Based on literature reviewed related to the manufacturing and formulation of pyrotechnics and interviews with past employees of Kilgore, the primary chemicals of concern identified at the Site are predominately inorganic compounds, most of which are readily degraded when exposed to the environment.

However, upon the review of historical operations, aerial photographs, previous environmental investigations, and interviews with former Kilgore employees, there is sufficient evidence of potential environmental impacts and on site disposal to warrant a Phase II Investigation at the former Kilgore Farm Property.

## 13.0 BIBLIOGRAPHY

- Additional Phase II Sampling Report, Kilgore Farm Property, Lawhon and Associates, 1997.
- City of Westerville Street Guide, City of Westerville Ohio, January 1996.
- Columbus Dispatch, Newspaper Articles and Photographs, May 10, 1962.
- Environmental Audit, 800 Tussic Street Road, Westerville, Ohio, Lawhon and Associates, 1991.
- ERIIS Environmental Database Search, August 1997.
- *Fireworks: Principles and Practice*, Lancaster, Ronald, Chemical Publishing Company, New York, 1972.
- Galena Quadrangle Topographic Map, Ohio Department of Natural Resources, Division of Geological Survey, 1955, 1964, 1983.
- *Military and Civilian Pyrotechnics*, Ellern, Herbert, Dr., Chemical Publishing Company, New York, 1968.
- Phase I Environmental Site Assessment Report, Kilgore Farm Property, Lawhon and Associates, 1996.
- Phase I Property Assessment Report, Kilgore Farm Property, Lawhon and Associates, 1997.
- Phase II Subsurface Investigation, Kilgore Farm, Lawhon and Associates, 1997.
- Site Assessment Report, S.E.A., for Westerville City Schools, 1988.
- *Soil Survey of Delaware County*, United States Department of Agriculture, Soil Conservation Service, 1969.
- Zoning Map, City of Westerville, Ohio, April 16, 1998.



# **Appendix A**

**APPENDIX A**  
**M&E Personnel Resumes**

## **GERALD R. MYERS, VICE PRESIDENT**

### **EDUCATION**

Graduate Studies in Environmental Toxicology, Ohio State University, 1980-82  
M.S., Biology, Kent State University, 1977  
B.S., Conservation of Natural Resources, Kent State University, 1974

### **CERTIFICATION**

Ohio Voluntary Action Program - CEP #131

### **EMPLOYMENT HISTORY**

1986 - Present	Metcalf & Eddy, Inc., Columbus, Ohio
1978 - 1986	Ohio EPA, Columbus, Ohio

### **PROFESSIONAL MEMBERSHIPS**

Air & Waste Management Association  
Society of American Military Engineers  
American Academy of Science  
American Chemical Society  
Ohio Academy of Science - Senior Academy Council  
Ground Water Protection Council

### **BACKGROUND**

Mr. Myers is Vice President and Principal of the Industrial and Hazardous Waste Division in Metcalf & Eddy's Central Region with offices in Kansas City, Missouri; Detroit, Michigan; Chicago, Illinois and Cleveland and Columbus, Ohio. The Division includes approximately 125 technical and administrative staff, and generates approximately \$24 million per year in revenues. Mr. Myers has 19 years of experience in all phases of environmental management, including hazardous and toxic waste management, water pollution control, groundwater resource management, environmental quality, and air pollution control. Mr. Myers has an in-depth understanding of federal and local environmental regulations and has had extensive experience facilitating negotiations between clients and the regulatory agencies.

In his current position Mr. Myers directs regional resources involved with site investigations, remedial planning and design, remedial construction, and operations. Mr. Myers is actively involved with technical implementation and project management, business development, and client services. Mr. Myers also serves as Chairman of M&E's Technical Advisory Team for projects performed in the Central Region and throughout the United States.

M&E has launched several new technologies for the remediation of hazardous materials in soil, groundwater and sediments. Mr. Myers is responsible for the commercial deployment of these technologies throughout the Central U.S.

**RELEVANT EXPERIENCE: METCALF & EDDY, INC.**

- Principal-in-Charge and Coordinator of the Granville Solvents Superfund Site. Mr. Myers represents the Potentially Responsible Party Group (PRPs) for project design, construction, and operation of remedial systems for soil and groundwater impacted by halogenated and other organic compounds at this NPL site in Granville, Ohio.
- Principal-in-Charge of a RI/FS investigation, Remedial Actions, Human Health Risk Assessment and Feasibility Study for the State of Ohio Department of Administrative Services. This is a major "brownfields" project involving the Coit Road industrial site in Cleveland, Ohio. Mr. Myers provides direction to M&E staff and serves as a primary liaison between M&E, the Ohio Department of Administrative Services, the Ohio Attorney General and the Ohio EPA.
- Principal-in-Charge and Project Manager for the Harrison Enterprises Facility RCRA Closure for remediation of soils and groundwater at this former circuit board manufacturer in Columbus, Ohio.
- Principal-in-Charge for a site investigation and remedial design and construction for removal of PCB contaminated river sediments in the River Raisin in Monroe, Michigan.
- Principal-in-Charge of an Interim Remedial Action for a manufacturing facility in Heath, Ohio, involving the installation of petroleum product recovery wells, design of a free product recovery and treatment system and the first full scale deployment of an in-situ bioremediation process in Ohio.
- Principal-in-Charge for a remedial investigation at a former manufacturing facility in Copley, Ohio. The site investigation involved characterization of on-site soils, sediments, surface water, and groundwater on the 194 acre site. A risk assessment was conducted. Plans for remediation of chromium contaminated soils, sediments, and sludges were developed. A groundwater containment system was developed and installed.
- Principal-in-Charge for a RCRA closure plan at a drum yard storage area for a manufacturing storage facility in Newark, Ohio.
- Principal-in-Charge of a litigation support project for the owners of a small former industrial site in Columbus, Ohio. The project involved conducting Phase I and II Site Assessments, identifying remedial alternatives and assessing potential risks. In addition to directing the project, Mr. Myers provided expert testimony in deposition.
- M&E Project Manager for the U.S. EPA Office of Underground Injection Control (UIC) Program consulting services contract. Work assignments under this contract include Class V well inspections, enforcement sampling, hydrogeologic studies, reconnaissance inspections, vadose zone monitoring training, ground water contamination studies, and preparing an UIC Inspector Training Manual for U.S. EPA.

- M&E Project Manager for numerous environmental assessments for redeveloped industrial properties including: former steel mills in Ohio, Florida, and Texas; former DOD munition facilities in Missouri; former missile launch facilities throughout the U.S.; and former metal plating and miscellaneous manufacturing facilities in Ohio.
- M&E Project Manager for the U.S. EPA Technical Support contract for field oversight of all RI/FS activities at an NPL site in Ashtabula, Ohio.
- M&E Project Manager of all RI/FS and emergency removal (site containment) activities at an NPL PCB/dioxin-contaminated site located in Crawfordsville, Indiana (U.S. EPA, Region V, Technical Support contract).
- M&E Project Manager for all document review, compliance monitoring, and field oversight of all RI/FS phases during RFI/CMS activities for a RCRA closure at a chemical manufacturing site in Cincinnati, Ohio (U.S. EPA, Region V, Technical Support contract).
- M&E Project Manager for all RI/FS activities at an NPL site located in Gnadenhutten, Ohio (U.S. EPA, Region V, Technical Support contract).
- M&E Project Manager for a RCRA facility assessment and field sampling of hazardous media at an active RCRA TSD facility in Plain City, Ohio.
- M&E Project Manager for strategic support and conducting RI/FS activities at a lead-contaminated site in Vincennes, Indiana (U.S. EPA, Region V, Technical Support contract).
- M&E Project Manager for field oversight of RI/FS activities during a RCRA RFI/CMS at an active manufacturing facility in Coshocton, Ohio (U.S. EPA, Region V, Technical Support contract).
- M&E Project Manager for negotiation support and field oversight during a RCRA RFI/CMS at a manufacturing facility in Massillon, Ohio (U.S. EPA, Region V, Technical Support contract).
- M&E Project Manager for document review and preparation of the Hazard Ranking System Package for a federal research facility located at Brookhaven, Long Island, New York (U.S. EPA, Region II, Technical Support contract).
- M&E Project Manager for all RI/FS activities at a NPL site located in St. Clairsville, Ohio (U.S. EPA, Region V, Technical Support contract).
- M&E Project Manager for document review and RI/FS activities at a NPL sanitary landfill site located in Dayton, Ohio (U.S. EPA, Region V, Technical Support contract).
- M&E Project Manager for a variety of explosive-waste task orders under an Army Corps of Engineers contract which included conducting contaminant confirmation studies at five Atlas Missile sites in Kansas; developing a generic Atlas Missile facility contamination confirmation study work plan; conducting a hazardous waste confirmation study at a former Burlington, New Jersey, Army Ammunition Plant; developing a feasibility study and implementation of remedial design for closure of four hazardous waste lagoons at Lake City Army Ammunition Plant,

Missouri; and managing a hazardous waste confirmation study at the former Tyson Valley Powder Farm in Missouri. All work was completed under the Department of Defense Installation Restoration Program.

M&E Project Manager for two contracts with the Ohio Department of Transportation providing environmental assessment assistance, negotiations for the Administrative Consent Order, expert witness testimony, and project oversight during the development and implementation of the work. Projects include: ground water contamination investigations, landfill closure investigations, and ecological assessments.

M&E Project Manager for remedial investigation activities at a former aerospace manufacturing facility including developing remedial actions for contaminated soil, ground water contamination, and air pollution; best available technology evaluation in support of air permit actions; and evaluation of air emissions from a tire manufacturing facility.

**RELEVANT EXPERIENCE: OHIO ENVIRONMENTAL PROTECTION AGENCY**

During his tenure with Ohio EPA, Mr. Myers played an integral role in the development of the Agency's solid and hazardous waste programs, including: principle author of Ohio's first solid waste management plan under Subtitle D of RCRA; development of permits in conjunction with the Hazardous Waste Facility Approval Board; Technical Enforcement Coordinator in the Unregulated Sites program; and primary author of Ohio's UIC program regulations.

Managed Ohio EPA's Class I and Class V Underground Injection Control (UIC) program from 1985 through 1986. In that position, Mr. Myers was responsible for evaluating existing State Class I injection wells, permitting of proposed wells, enforcement of state and federal regulations, and coordination of UIC programs with other regulatory programs (most notably, RCRA). Coordinated the program to evaluate the potential for enhanced seismic activity resulting from the underground injection of fluids (results of a 1986 earthquake in the vicinity of a Class I injection well in northern Ohio). Mr. Myers negotiated new operating parameters for facilities and worked directly with the U.S. EPA to develop new rules for the UIC program in Ohio.

While with the Ohio EPA, Mr. Myers provided technical oversight of a remedial action project at an NPL site which included soil flushing with treated ground water. A ground water pumping system was installed to reverse the hydraulic gradient of the aquifer. After pumping, the ground water was treated to remove a variety of organic and inorganic compounds, then used to flood the on-site soils. Management responsibilities include oversight of activities as well as writing the underground injection control permit.

## **MICHAEL S. RAIMONDE**

### **EDUCATION**

B.S., Geology, The Ohio State University, 1984  
Graduate Course Work in Hydrogeology, Aqueous Geochemistry, Geophysics, (New Mexico State University) Contaminant Hydrogeology, and Groundwater Flow and Contaminant Transport Modeling

### **GENERAL BACKGROUND**

Mr. Raimonde is a Project Manager/Hydrogeologist who specializes in remediation system design for industrial clients. He has managed the design of soil, groundwater and free product recovery systems for industrial clients. He has designed and installed groundwater monitoring systems, sampled groundwater, and interpreted the results for industrial and governmental clients under RCRA, CERCLA, SACM, and other State and Federal Programs. Mr. Raimonde has analyzed aquifer tests and has constructed groundwater flow models and contaminant transport models. He has managed Removal Actions under CERCLA and corrective measures under RCRA and has employed SACM guidance to expedite soil and groundwater remediation. Mr. Raimonde led technical teams that established remedial objectives for the restoration of contaminated soil and groundwater. As a geologist for Metcalf & Eddy, he has evaluated local and regional hydrogeology, structural geology, and stratigraphy for purposes ranging from locating an appropriate site for a dioxin incinerator and to evaluating groundwater monitoring networks. Mr. Raimonde has served as Lead and Assistant Instructor for training Federal and State Regulatory Personnel in Comprehensive Groundwater Monitoring Evaluations (CME). Mr. Raimonde has managed individual project budgets of \$3 million and has been responsible for subcontractors in excess of \$2.2 million. He has served as project manager for RI/FS activities at DOD facilities and industrial sites.

### **EXPERIENCE**

- Managed the implementation of a Response Action at a former solvent recycling facility. Presumptive "remedies" under SACM were tested for implementation, including soil vapor removal tests for impacted material in the unsaturated zone. Groundwater containment has been employed to arrest further migration in the groundwater. Soil remediation is ongoing.
- Managed, developed, and implemented, the Removal Action for a Group of PRPs. The Removal Action involved the rapid determination of the nature, horizontal, and vertical extent of impacted soil and groundwater encroaching to within 300 feet of a municipal water supply well. A groundwater extraction and treatment system was designed and employed to protect the well field.
- Managed and investigated the Site Assessment and Remedial Action for a diesel fuel release in excess of 100,000 gallons at a public transit authority. The Assessment included reconnaissance techniques to rapidly determine the relative extent of media impact and strategically place free-phase diesel extraction wells for rapid removal and mitigation of the spread. The remedial action included design of a vacuum enhanced recovery system to recover free-phase diesel and vapor. The system was designed to enhance biodegradation of residual petroleum products in the soils and dewatered zone.
- Evaluated the current and past operation of the Air Force Plant Number 44 extraction and injection system for the Air Force. The purpose was to help identify operational changes that

**Michael Raimonde**

**Page 2**

would reduce annual operating costs and reduce the life cycle of the system. Total cost savings to the client was estimated to be nearly \$500,000 annually.

- Provided litigation support to a plaintiff to protect subrogation rights of a publicly funded compensation board for UST releases.
- Prepared the Preliminary Design and the Corrective Action Plan for a ground water pump and treat and soil vapor extraction (SVE) system for a gasoline station operated by Emro Marketing Company. The ground water treatment system consists of a 50-gpm stripping tower and carbon polisher to remove BTEX to below drinking water standards. Manipulated pumping rates to remain below the 15-ppd air emissions restrictions while still maintaining hydraulic control of the plume.
- Assisted in the designs of the recovery systems for the Goodyear-Loral and River Street Tank Farm projects. Responsible for preparing specifications for equipment procurement; on-site construction services; and monthly operation, maintenance, and monitoring.
- Managed and designed a groundwater monitoring program for an industrial client to determine if solvent contaminated groundwater was migrating off site. The installation of monitoring wells showed that the industrial client was not responsible for ground-water contamination of the neighboring property. Judicious use of resources kept costs to a minimum.
- Managed the team that established remedial objectives for two industrial clients for the restoration of contaminated groundwater. These objectives established realistic cleanup levels for the aquifers as well as the waste streams from the treatment systems.
- Developed the basic geologic model used to construct a hydraulic model intended to aid in the remediation of solvent contaminated groundwater for an industrial client.
- Constructed a MODFLOW groundwater flow model for an industrial client at a site with groundwater contaminated with process chemicals. Aquifer pumping tests were interpreted.
- Designed a groundwater and free product recovery system tied to a pretreatment system for an industrial client. A permit to install was written and successfully negotiated with the state regulatory agency on the installation.
- Conducted and interpreted soil gas surveys for industrial and governmental clients aimed at placement of compliance monitoring wells and reconnaissance of potentially contaminated groundwater.
- Designed, installed, developed, and sampled groundwater monitoring wells for industrial, governmental, and private clients. Has sampled surface water, soil, and lagoon sludge as well. Routinely evaluated groundwater data to determine aquifer characteristics and extent of contamination.
- Conducted environmental audits for the transfer of property for industrial clients.

**Michael Raimonde**

**Page 3**

- Managed the excavation of over 700 cubic yards of solvent and waste oil contaminated soil at an underground storage tank site for an industrial client and provided field services for the excavation of cyanide contaminated soil and tank at an industrial site. Field screening reduced the amount of soil required to be removed at both sites, resulting in a significant saving to the client.
- Managed and conducted contamination evaluations for U.S. Corps of Engineers' sites in Kansas. Was responsible for project budgets in excess of \$400K and subcontractor budgets of \$150K.
- Evaluated the structural geologic setting, regional geology, and hydrogeology for the temporary site of a dioxin incineration facility for the U.S. Corps of Engineers.
- Managed a soil boring program for an industrial client during a RCRA closure to determine the integrity, engineering properties, physical characteristics, and permeabilities of the lagoon dike material around nine aeration lagoons.
- Managed a soil boring program for a municipal client to determine the lateral and vertical extent of contaminated soil in the critical path of construction of a 125 million dollar construction project. The project included over 40 soil borings. Field screening substantially reduced laboratory analysis costs and provided vital data for the field decisions.
- Provided support in planning the placement, design, and construction of groundwater and free product recovery systems at underground storage tank sites for an industrial client.
- Conducted the preliminary evaluation of primary gas migration routes at a county landfill for an explosive gas monitoring plan.
- Managed a project intended to provide technical support to a governmental client responsible for a total project budget in excess of \$140K. Developed an Endangerment Assessment and Feasibility Study.
- Provided oversight and geological support to numerous projects under an oversight program intended to provide technical support.
- Acquired expertise in basin analysis, tectonics and sedimentation, and low temperature geochemistry.

**PUBLICATIONS**

Raimonde, M.S., 1987, Laramide Basement-Cored Uplifts and Basins in South-Central New Mexico, Geological Society of America Abstracts with Programs, Vol. 19, no. 7.

Seager, W.R., G.H., Mack; M.S., Raimonde; R.G., Ryan; 1986, Laramide Basement-Cored Uplifts and Basins in South-Central New Mexico, New Mexico Geologic Society Fall Field Conference Guidebook, p. 123-130.

## **JEFFREY STEVENSON, P.G.**

### **EDUCATION**

M.S., Geology, Bowling Green State University, Ohio, 1987  
B.S., Geology, University of Nebraska at Lincoln, 1985  
NWWA Principles of Ground Water Short Course, December 1990  
NGWA Design and Analysis of Aquifer Tests, September 1992  
NGWA IBM PC Applications Short Course, January 1994

### **PROFESSIONAL MEMBERSHIPS**

National Ground Water Well Association  
Geologic Society of America  
Sigma Gamma Epsilon, Geologic Honor Fraternity

### **CERTIFICATIONS**

Professional Geologist - Pennsylvania - #PG-000938-G  
Professional Geologist - Kentucky - #1870  
Professional Geologist - Tennessee - #TN2663  
Certified Underground Storage Tank Installer - State of Ohio  
Certified Asbestos Building Inspector and Management Planner, University of Cincinnati  
Certified Asbestos Hazard Evaluation Specialist - State of Ohio

### **GENERAL BACKGROUND**

Mr. Stevenson is a Project Geologist with over eight years of experience in conducting and managing a variety of environmental projects including: Phase I and Phase II site assessments associated with property transfers; underground storage tank removals, investigation and remediation; Remedial Investigations (RI); and investigation of PCB-contaminated sites. Mr. Stevenson has extensive experience in field investigation protocols, drilling techniques, field screening methods, sample collection and handling protocols, cost estimating and report preparation.

### **EXPERIENCE**

#### *UST and AGST Closure and Remediation Experience:*

- Managed and conducted the removals of numerous USTs and associated contaminated soils at various retail and industrial properties located in Ohio, Georgia, Pennsylvania, Maryland, and Virginia. Coordinated excavation, transportation, and disposal of associated petroleum-contaminated soils. Responsible for management of budgets, and preparation of reports and recommendations.
- Conducted site checks and site assessments of underground storage tanks at 16 retail gas stations and automotive dealership facilities for Emro Marketing, Marathon Oil Company, Ford Motor Company, and Goodyear Tire & Rubber Company. Responsible for implementing field work, collecting samples, and preparation of reports that were submitted to the regulatory agencies.

**Jeffrey Stevenson**  
**Page 2**

- Prepared spill prevention control and countermeasure plans for Emro Marketing Company, Goodyear Tire & Rubber Company, and TRW, Inc. industrial facilities in Ohio. Identified potential spill locations, detailed emergency response procedures for spill notification and reporting requirements, and recommended measures to prevent spills and for cleanup procedures. Also identified spill countermeasures and containment measures.
- Managed the removal of a 20,000 gallon underground storage tank for a United Technologies Automotive facility located in Thompson, Georgia. Responsible for the preparation of the proposal and cost estimate, implementation and scheduling of the removal, preparation of the Closure Report and overall project management. Project Budget - \$23,000.
- Managed the removal of a 10,000 gallon underground storage tank for Dennison Hydraulics located in Marysville, Ohio. Responsible for the implementation and scheduling of the removal, collection of confirmatory samples and preparation of the Closure Report. A No Further Action Letter was received from the Bureau of Underground Storage Tank Regulations. Project Budget -\$23,000.
- Managed the investigation of free phase hydrocarbons on groundwater released from an above ground storage tank for automotive interiors manufacturing facility located in Holland, Michigan. Responsible for the preparation of the proposal and cost estimate, implementation and scheduling of the investigation, preparation of the report and overall project management. Directed the preparation of a Remedial Action Plan and managed the installation of free phase oil recovery and bioventing system to remediate groundwater. Project Budget - \$122,000.
- Provided litigation support to a major oil company at a site located in West Point, Indiana. Prepared proposals for field work, served as a point of contact between the client and the attorney, and prepared and provided cost estimates for the delineation and remediation of LNAPLs, which contaminated several residential wells, and installation of an alternative public water supply system. Project cost - \$50,000.
- Assisted in preparation of cost estimates for site investigations, reporting and remediation activities related to hydrocarbon contamination at 17 individual ELF asphalt sites through out the Midwest as part of a property transfer. Also responsible for scheduling, implementation, and coordination of soil boring and monitor well installations at all 17 sites.
- Assisted in the installation of two ground water pump and treat systems used for the recovery of diesel oil released from several USTs for Vulcan Materials Detinning facility in Baltimore, Maryland. Responsible for operation and maintenance of the remediation systems from 1989 to 1996. Managed groundwater sampling and abandonment of six monitoring wells located at the site, and a subsurface lithologic assessment at the facility to determine the nature and extent of free product in soils. Attended meetings and prepared a presentation for the Maryland Department of the Environment to negotiate closure of the site.
- Conducted repairs on 10 groundwater free product pulse pumps used to remediate toluene contamination from an UST release at a Goodyear plant in Lincoln, Nebraska.
- Managed and conducted the initial abatement and closure assessment of four former UST excavations at a Ford Motor Company automotive dealership in Virginia. Activities conducted

include: soil boring program, evaluation of remediation options, excavation of over 100 c.y. of contaminated soils, installation of five bedrock monitoring wells, interpretation of subsurface geology and analytical results, and preparation of initial abatement and closure assessment reports. Obtained notice of no further action closure using risk-based calculations at the site. Conducted field screening for TPH using a modified 418.1 field method and directed excavation of nine hydraulic lifts at the facility. Removed and disposed of approximately 300 cubic yards of petroleum affected soils. Project budget - \$200,000.

*Phase I And Phase II Assessments:*

- Managed and conducted numerous preliminary environmental assessments of numerous Ford Motor Company automobile dealerships, American Aggregates quarries, Goodyear Tire & Rubber Company retail tire facilities, lending, commercial, retail, and industrial properties in accordance with ASTM 1527. Responsible for managing budgets, conducting site visits, collection of asbestos samples, and preparation of reports, recommendations, and cost estimates for remediation.
- Conducted a Phase I and Phase II Environmental Assessment of a Parking Garage Facility located in Cincinnati under the Ohio Voluntary Action Program. Exposure Pathway Analysis was used as a basis for requesting a No Further Action Letter for the site. Responsibilities included conducting the Assessment and subsurface investigation, preparation of reports and a No Further Action Letter, coordination with the Certified Environmental Professional, and attendance at meetings with the Ohio Environmental Protection Agency.
- Managed and conducted a Phase I and Phase II Environmental Assessment for an automotive steering wheel manufacturing facility in the United Kingdom as part of a property sale. An Exposure Pathway Assessment was conducted as part of the project to evaluate the risks associated with impacts identified in soils and groundwater at the site. Responsibilities included: preparation of the proposal and cost estimate, scheduling, directing and conducting field activities, coordination of the exposure pathway assessment, preparation of reports, and management of budgets. Project Budget - \$90,000
- Conducted Phase I Environmental Assessments of a steering wheel manufacturing facility and supporting machine shop for United Technologies Automotive in Grabill and Harlan, Indiana. Responsible for conducting the Assessments per ASTM 1527 and preparing reports. Project Budget - \$3,500.
- Conducted a soil and groundwater investigation at part of a property transaction at a molded fiberglass/plastic plant located in Indiana. Prepared the proposal and conducted field investigation for installation of 42 geoprobe/temporary well points. Presented findings and represented the client at negotiation meetings. Subsequently, managed and directed the investigation and delineation of chlorinated compounds discovered in the soils at the site. Provide notification of soil impacts to IDEM on the clients behalf. Project Budget - \$90,000.
- Site manager for a Phase II environmental assessment conducted at a polyester chemical plant in West Virginia for a confidential client. Project period of performance was 12 weeks with a proposed level of effort of \$650,000. Responsible for providing costing, planning, implementation, and coordination of field activities. Managed 20 field personnel and directed the activities of two drill rigs and a cone penetrometer rig during the installation of 29 monitoring

wells, 31 cone penetrometer test soundings, ground water, soil, and sludge sampling. Managed and directed the preparation of the Phase II soil and ground water investigation report. Completed all tasks associated with the project on time and under budget.

- Managed and conducted a Phase II Environmental Assessment at a lead battery recycling facility in Columbus, Ohio, in 1990 for the Handwell Company. Responsible for the installation of three shallow monitoring wells; soil borings; sample collection; and the reporting of analytical results. In 1994, conducted site investigation (SI) consistent with NCP protocols. Data was generated for the plaintiff and was used as part of a third party cost recovery case under CERCLA. Provided litigation support and was deposed as an expert witness. In 1997 prepared an Engineering Evaluation and Cost Analysis in accordance with NCP guidelines for the demolition of building on site. Project Budget - \$65,000.

*PCB Related Experience:*

- Managed and conducted the excavation and removal of PCB contaminated soils from under a railroad track at a Polyester Manufacturing facility located in West Virginia. Responsible for the coordination of subcontractors, removal and disposal of over 400 tons of PCB contaminated soils and railroad track, backfilling and compaction, transportation and disposal of the waste, rebuilding of the railroad track and preparation of the report. Project Budget - \$300,000.
- Managed and provided on-site coordination for the excavation and disposal of over 2,500 tons of PCB-contaminated soils from a polyester manufacturing facility over a three year period. Project responsibilities included: preparation of cost estimates and proposals, scheduling of personnel and equipment, implementation of work, subcontractor management, coordination of transportation and disposal by railcar and truck, directing excavation and backfilling activities, on-site testing of PCBs, and preparation of reports. Upon completion of the project, a Summary Report was prepared for presentation to USEPA Region III. Project Budget - \$3,500,000.

*Closure and Remediation Experience:*

- Provided technical support during the installation and operation of an insitu thermal destruction soil remediation technology to treat chlorinated volatile organic compounds at a Premix/EMS facility located in Portland, Indiana. Responsible for preparation of work plan, quality assurance project plan, health and safety plan, community relations plan, installation of thermal well borings, confirmatory sampling and report preparation. Project Budget - \$300,000.
- Conducted the closure of a demolition/debris landfill located at an industrial facility in Indiana. Responsible for conducting and managing the preparation of costs and proposals, implementation and coordination for removal and disposal of debris including asbestos containing materials, capping, grading and providing cover over the area. Prepared a Closure Report and provided notification to IDEM on the client's behalf. Project Cost - \$80,000.
- Managed and conducted the closure of a detinning mud lagoon at an industrial site in Maryland. Responsible for proposal preparation and costing, coordination of liquid removal, verification of removal of detinning mud residue, directing backfilling and compaction of the cleaned out lagoon and prepared a Lagoon Closure Report. Prepared an environmental certification that the project was conducted in accordance a sales agreement prepared for the site. Project Budget - \$45,000.

- Conducted oversight of a lead stabilization and soil neutralization remediation project at a Detinning facility located in Pittsburgh, PA for the purposes of providing environmental certification for a client. Project Budget - \$36,000.
- Project geologist and site manager for field activities related to RCRA closure of hazardous waste storage pads at Ranco industrial facilities in Plain City and Delaware, Ohio. Responsible for the preparation of work and sampling plans; managing field activities; and preparation of draft closure plans. Field activities included: soil gas survey, soil sampling, monitoring well installation, and ground water sampling.

*RI/FS and RFA Experience:*

- Site Manager for Remedial Investigations (RI) and Confirmatory Sampling (CS) for a USATHAMA project conducted over a six-month period at Ft. Campbell Army Base located in Tennessee. Responsible for implementation and coordination of daily drilling activities, soil and soil and ground water sampling, and reporting.
- Site manager and project geologist for a Remedial Investigation (RI) conducted at the Allied Signal chemical waste landfill in Buffalo, New York. Responsible for the implementation and coordination of site sampling activities and preparation of the RI report. Attended meetings with NYSDEC.
- Project geologist for a Remedial Investigation (RI) at the Fina Oil Company Superfund site in Kansas. Responsible for the implementation of the field schedule consisting of the installation of two deep and three shallow monitoring wells; analysis of pumping test; interpretation and correlation of lithologic and gamma ray logs; and ground water sample collection. Assisted in the preparation of the RI report.
- Project geologist for a Remedial Investigation (RI) conducted at a HAZWRAP site in Syracuse, New York. Responsible for overseeing the installation, sampling, construction, and development of nine monitoring wells. Installed and sampled 18 soil borings
- Conducted soil boring and monitor well installations, radon testing, and PCB wipe testing during a Remedial Investigation (RI) conducted at a HAZWRAP facility located in Pontiac, Michigan.
- Assisted in the subsurface investigation of the NPL site in Marietta, Ohio. Conducted lithological logging of cuttings and constructed a deep monitoring well using air rotary drilling; monitored rock coring activities; and assisted in report preparation.
- Provided OEPA with subsurface geologic and hydrogeologic interpretation of data collected at the Hilton Davis NPL site located in Cincinnati, Ohio, as part of the TES X contract.

**PUBLICATIONS**

- Stevenson, J., Mancuso, J., Frizado, J., et al., 1990 Solid Pyrobitumen in Veins, Panel Mine, Elliot Lake Mining District, Ontario: Canadian Mineralogist, Vol. 28, pp. 161-169.
- Stevenson, J., Mancuso, J., Frizado, J., et al., 1987 Solid Pyrobitumen in Veins, Panel Mine, Elliot Lake Mining District, Ontario: Institute on Lake Superior Geology Proceedings and Abstracts, V. 33, Part 1 pp. 68-69.

## **TODD J. AEBIE**

### **EDUCATION**

B.S., Geology and Mineralogy, The Ohio State University, 1989  
NWGA Short Course: Introduction to Ground Water Geochemistry: 1994

### **PROFESSIONAL MEMBERSHIPS/REGISTRATIONS**

Geological Society of America  
National Ground Water Association  
Professional Geologist in State of Tennessee

### **GENERAL BACKGROUND**

Mr. Aebie is a Geologist with over nine years experience in conducting and managing a variety of environmental projects in addition to sampling and analysis, geochemistry, geophysics, and glaciology. He has performed numerous work assignments which involve a thorough understanding of RCRA, CERCLA, and other pertinent environmental regulations. His field experience includes a variety of sampling techniques and analysis of all types of environmental media and their related chain-of-custody procedures. Mr. Aebie also routinely participates in the installation, sampling, and monitoring of ground water monitoring wells at many municipal solid waste landfills.

### **EXPERIENCE**

- Conducted detailed field investigations as part of a corrective measures study for the closure of a RCRA-TSCA-regulated hazardous waste landfill. Investigation activities included environmental media sampling in soil, sediment, and water for the detection of heavy metals and volatile organic compounds.
- Conducted Visual Site Inspections (VSIs) for numerous RCRA facility assessments (RFA). Assessed current manufacturing operations, equipment and vehicle maintenance, and cleaning operations; wastewater treatment systems (sanitary sewers, septic systems, and stormwater runoff associated with storage areas; materials storage (above/underground tanks and pipelines), storage areas, waste products and disposal methods; and well locations and associated uses.
- Conducted site investigation activities following RCRA guidance procedures for Hazardous Waste Remedial Action Program (HAZWRAP) at Air National Guard installations in Ohio and Indiana covering spill areas, leaking underground storage tanks, and waste disposal areas. Supervised extensive drilling operations, well installations, and environmental media sampling.
- Conducting a Phase I Environmental Site Investigation for a former munitions manufacturer. The Phase I and upcoming Phase II investigative work are being conducted under the Ohio Voluntary Action Program (VAP) guidance and directives.
- Field Operations Leader for a CERCLA site at Wright-Patterson Air Force Base in Ohio. Field activities for the \$5.5 million RI/FS included: soil gas survey, Level B landfill trenching and drilling, roto-sonic drilling, groundwater and leachate sampling, leachate gas sampling, surface water and sediment sampling, aquifer slug testing and inspection, and geotechnical evaluation of

an existing landfill cap. Coordinated efforts of up to 20 persons in relation to drilling, sampling, and other various activities on a day to day basis.

- Assisted in the RI/FS for Schatz Federal Bearing New York State Superfund site in Poughkeepsie, New York, where PCBs, pesticides, heavy metals, and volatile organic compounds were the major contaminants of concern. Provided oversight of rock NXW wire line coring activities and installation of five bedrock and ten overburden wells.
- Assisted in remediation of PCB-contaminated soil at an active chemical plant. Responsibilities included the coordination and disposal by railroads of over 2,000 tons of material. Additional duties included coordination of excavation activities, daily reporting and scheduling of excavation activities.
- Conducted Level B trenching through abandoned landfills as part of an RFI/CMS for the base closure of a U.S. Army Depot in Kentucky for USATHAMA. Over 3000 samples from 400 locations were taken from the landfills and storage areas, and analyzed and entered into the USATHAMA Installation Restoration Data Management System (IRDMIS).
- Conducted and supervised up to 20 persons daily during extensive drilling operations including well installations and sampling as part of an RFI/CMS for a U.S. Army Post in Kentucky/Tennessee for USATHAMA. Over 70 wells, 150 soil borings, and 5,000 samples were collected during the six-month field investigation.
- Prepared a Landfill Gas Monitoring System for an inactive municipal solid waste landfill located within city limits, complying with OEPA directives. Coordinated records search and collection of facility information related to past operations and construction-related data. Implemented the gas monitoring system and quarterly monitoring along with the final certification report to the regulatory agencies. Coordinates and manages the weekly and quarterly gas monitoring required by the EPA at the facility for the previous three years.
- Provided oversight and monitoring of a 1+ million gallon/day dewatering project, allowing construction of final wastewater clarifiers at a city sewage treatment plant.
- Contractor Project Manager (CPM) for the TES X program at an inactive hazardous waste landfill. Responsibilities include project management, costing, review of RFI, risk assessments, and Corrective Measures Study (CMS) along with project meetings and other technical and field oversight support on behalf of the USEPA.
- Conducted numerous Geoprobe™ soil boring sampling of soils and groundwater during Phase I and II investigations for an industrial client at facilities located in Indiana and Michigan.
- Coordinated and conducted over 25 Phase I Environmental Site Assessments for a major cellular phone corporation. The site assessments were conducted over a large two state area.
- Health and Safety officer for the cleaning, abandonment, and removal of over 5 miles of underground jet fuel pipeline at the Rickenbacker Air National Guard Base. Responsibilities included coordination of activities with the Air National Guard and Civilian Air Traffic

**Todd J. Aebie**

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Controllers, obtaining permits, and healthy and safety monitoring of up to 15 workers while abandoning the pipeline.

- Participated in geologic, glaciologic, and geophysics research in the Antarctic which was sponsored by The National Science Foundation.
- Health and Safety (H&S) officer on numerous RCRA, CERCLA, industrial and governmental field jobs.
- Constructed geologic maps based on field interpretations, utilizing various conventional field equipment.
- Ongoing groundwater sampling and reporting for several large sanitary landfills per Ohio EPA Solid Waste Regulations (1994).
- Provided oversight and collection of split-spoon samples of soil, sediment, and ground water for CLP analysis for the CRL. Responsibilities included sampling, packaging, and providing data review and chain-of-custody for RFI/CMS oversight at a hazardous waste landfill.
- Provided long-term oversight on behalf of the U.S. EPA at a PCB soil removal and cleanup site in Indiana. Oversight consisted of review of waste manifests, air monitoring results, along with review of analytical data.
- Review RCRA facilities Part B permits for the U.S. EPA.
- Prepared and reviewed work plans prior to contract implementation for various governmental agencies along with private companies.
- Conducted Level B oversight at a Superfund site in Michigan on behalf of the U.S. EPA.
- Assisted in a Phase I environmental audit conducted at a municipality's trash shredder station and trash burning power plant. Provided the audit results and recommendations, and cost for additional work to be performed at the facilities.

## **SARA R. CRENSHAW**

### **EDUCATION**

BS, Chemistry, Mississippi State University, 1979.  
MS, Chemistry, Mississippi State University, 1987.

### **PROFESSIONAL MEMBERSHIPS**

American Chemical Society  
American Association for the Advancement of Science  
Sigma Xi Research Society  
Association of Official Analytical Chemists  
Mu Sigma Xi Chemistry Honor Society

### **GENERAL BACKGROUND**

Sara R. Crenshaw is a Senior Scientist with Metcalf and Eddy. She has five years of laboratory experience in performing analysis in accordance with various EPA protocols for target analytes. She has developed methodology for non-regulated analytes using HPLC and wet chemistry. Since coming to Metcalf & Eddy four years ago, she has served as Project Chemist for several industrial, municipal, state and federal projects. As Project Chemist, she has been responsible for communications with laboratories to ensure that the analytical services provided will meet project-specific data quality objectives. She has also been responsible for preparation of quality assurance project plans, validation of analytical data in accordance with the EPA Functional Guidelines for Data Review, recommending appropriate analytical methodology, preparation of sampling protocols, development of and validation of field screening methods, and laboratory selection for specific projects.

### **EXPERIENCE**

- Performed data quality review and evaluation and served as Project Chemist for the Remedial Investigation Feasibility Study at the Rockwell facility in Heath, Ohio.
- Prepared Quality Assurance Project Plan (QAPP) and served as Project Chemist for a U.S. EPA Region 5 Superfund site.
- Developed field methodology use to visually determine Non-aqueous Phase Liquids (NAPLs) for a U.S. EPA Region 5 Superfund site.
- Performed laboratory management and data review for groundwater monitoring at Erie County Sanitary Landfill, Mt. Eaton Sanitary Landfill, Crawford County Landfill, and Preble County Landfill and several industrial landfills.
- Project Chemist and primary data validator for Phase II of ODAS Project #501-94-270, Coit Road Interim Action and Remedial Investigation.
- Performed laboratory audits for M&E subcontractor laboratories, including M&E national laboratories.

**Sara R. Crenshaw**

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- Validated data for several sites for U.S. EPA Region 6 Compliance Evaluation Inspection Enforcement Sampling for determination of toxic characteristic violations at ten sites under RCRA.
- Data validation/data quality assessment for Shell, KDI, Ford, BP, Libby-Owens-Ford and Kuhlman Electric.
- Manage regular monthly, quarterly, and semiannual laboratory coordination for several TRW and Goodyear facilities.
- Prepared sampling protocol for several Kraft sites, managed laboratory services and reviewed analytical data for analyses of priority pollutants for Great Lakes Initiative (GLI).
- Reviewed QAPPs and Sampling and Analysis Plans (SAPs) for U.S. EPA, USAEC, and AFCEE and provided comments and suggestions regarding analytical methodology, sample collection and handling procedures, and data validation.
- Analysis of water and soils using EPA methodology including SW-846, CLP-SOW, and EPA 600.
- Analysis of manufactured polymer products and materials using FT-IR to determine process completeness and reliability.
- Development of liquid and ion chromatography methods for several unregulated parameters such as glycols, aldehydes, organic acids, urea, soaps and detergents, and pharmaceuticals for the Space Station Freedom Project.
- Supervision of chemists and technicians in wet chemistry, metals, and liquid/ion chromatography areas for the water and air reclamation systems on the Space Station Freedom Project.

## **PUBLICATIONS**

- "High Resolution Spectra of Some Silicon Compounds," V.F. Kalasinsky and S.E. Rodgers (aka Crenshaw), presented at the Int. Conf. of Fourier Transform Infrared Spectroscopy, USC, Columbia, SC, June 8, 1981.
- "Vibrational Spectra, Normal Coordinate Analysis and Torsional Barrier of Vinylsilane," V.F. Kalasinsky, S.E. Rodgers (aka Crenshaw), and J.A.S. Smith, presented at the 39th Conf. on Molecular Spectroscopy, Ohio State, University, Columbus, OH, June 11-15, 1984.
- "Vibrational Spectra, Normal Coordinate Analysis, and Torsional Barrier of Vinylsilane," V.F. Kalasinsky, S.E. Rodgers (aka Crenshaw), and J.A.S. Smith, *Spectrochimica Acta*, 41A, 155 (1985).
- "Substituent Effects in the Nitrobenzene and Copper (II) Oxidations of Some Hydroxystilbene Lignin Model Compounds," S.M. Dersham, T.H. Fisher, S. Johnson (aka Crenshaw), T.P. Shultz, *Holzforchung*, 42, No. 3, 163 (1988).

**Sara R. Crenshaw**

**Page 3**

- "Analysis of Sprint Propellant," by J. Allen, S. Johnson (aka Crenshaw), and J. Carver, Letter Report RD-RP-89-52, Propulsion Dir., Redstone Arsenal, AL (July, 1989).
- "Analysis of Dragon Tow Flight Motor Propellant," by S. Johnson (aka Crenshaw), S. Oehrle, and J. Carver, Letter Report RD-PR-90-04, Propulsion Dir., Redstone Arsenal, AL (Oct. 1989).
- "Characterization of Organic Contaminants during the Development of the Space Station Water Reclamation and Management System," H.E. Cole, M. Habercom, M. Crenshaw, S. Johnson (aka Crenshaw), S. Manual, W. Martindale, G. Whitman, Boeing Missiles and Space Div., Huntsville, AL, and M. Traweck, NASA, Redstone Arsenal, AL. Presented at the 21st Int. Conf. on Environmental Systems (ICES), sponsored by the SAE, San Francisco, CA (July 15-18, 1991). SAE Technical Paper Series 911376 from Space Station ECLSS and Thermal Control (SP-875).

**ALEXIS W. LEMMON, JR., P.E.**

**EDUCATION**

B.Ch.E., Chemical Engineering, Ohio State University, 1943

**REGISTERED PROFESSIONAL ENGINEER - Ohio #E - 024559**

**PROFESSIONAL MEMBERSHIPS**

American Institute of Chemical Engineers

**GENERAL BACKGROUND**

Mr. Lemmon is a Senior Project Manager with Metcalf & Eddy, Inc. He has over 40 years of experience in research concerned with chemical engineering and chemical processing. He has led projects designed to develop operations and physical systems to assure compliance by industrial facilities with RCRA permit application regulations and other environmental regulations and directed the cleanup of hazardous wastes through their treatment, destruction, and/or disposal. He has implemented projects to improve processes leading to waste reduction, recycle of process materials, reagent recovery, and synergistic utilization of waste streams for more efficient treatment. He has reviewed the design and performance characteristics of solid waste disposal facilities, both landfills and incinerators to determine regulatory compliance. For municipal incinerators, he has been concerned with the control of air pollutants (particulates, hydrochloric acid, and dioxin). Because of his ability, experience, and senior position, Mr. Lemmon also serves as technical reviewer and quality assurance officer on numerous environmental projects.

**EXPERIENCE**

- Served as Project Engineer for the implementation of a pump-and-treat facility at Granville, Ohio, for a group of PRPs. Groundwater contamination, primarily chlorinated solvents originating from an abandoned solvent recycling operation, was moving in the direction of municipal supply wells. Pumping has been initiated to modify the groundwater gradients and treated water is being discharged to a nearby stream. Mr. Lemmon successfully modified the design of the air stripping treatment system, managed its procurement and construction, and supervised its startup to meet a very stringent schedule.
- Performed "trouble shooting" functions for the processing/treatment facility portion of the large-scale, pump-and-treat system at McClellan Air Force Base, Sacramento, California. After determining the cause of premature failures of heat exchangers in the system, Mr. Lemmon devised process changes and materials substitutions to solve these problems.
- Served as Project Manager for Phase 1 and Phase 2 Environmental Assessments at 44 separate manufacturing sites in 13 states. After the Phase 1 assessments were completed, recommendations for Phase 2 work were implemented; the Phase 2 work consisted of sampling, and analyzing soil and ground water. Based on the Phase 1 and 2 information, needs for environmental studies and cleanup costs were estimated. The draft final report on these two phases was delivered 55 days after project initiation.

Subsequently, site investigations were conducted at half of these sites. All phases of this project, costing approximately \$1.3 million, were completed on schedule and within budget.

- Served as advisor and expert witness for the City of Sealy, Texas, in an action against the owners of a small, local waste-to-energy incinerator. On the basis of technical advice and testimony presented by Mr. Lemmon in the U.S. Bankruptcy Court for Southern Texas (Houston), the City was successful in terminating agreements and permits and in having the facility liquidated.
- Managed the technical issues and personnel for the on-site incineration of dioxin-contaminated wastes at Fort A.P. Hill, Virginia under a contract from USATHAMA. M&E conceptualized the operation, selected and designed the site, selected and developed equipment placement and relationships, and prepared a detailed operating plan. M&E defined the required sampling and analysis, quality assurance, and health and safety requirements. Once defined, M&E prepared detailed plans for meeting these requirements. One-hundred and ninety tons of dioxin-contaminated waste was incinerated successfully. The incineration generated an ash that was free of dioxins and other organic compounds.
- From 1990 to 1992, Mr. Lemmon was the responsible Technical Manager for M&E's oversight assignment from Region VI, U.S. EPA, at the MOTCO Superfund Remediation Site in LaMarque, Texas. In this capacity, he reviewed and advised Region VI on the site management and technical and regulatory performance of the PRPs and their subcontractors. During this period, site remediation began, two incinerators were constructed, and two Trial Burns were attempted.
- Project Manager for M&E's contract to provide engineering assistance for a PCB incinerator at the K-25 facility in Oak Ridge. Wastes being fed include CERCLA, RCRA, and mixed wastes. Developed a system performance test plan, equipment testing, and determined optimum system operating conditions. Assisted with regulations relevant to nuclear contamination of waste materials and regulatory requirement for treatment, storage, and disposal.
- In the course of evaluating acceptable NPDES permit conditions and preparing the permit, developed process modifications which resulted in a 90% reduction in use of a eutectic salt, a comparable reduction in waste discharged, and a \$300,000 annual saving. This saving exceeded the previous annual profit of this small company.
- Managed a project for the recovery and recycle of phenol values from a scrubber water recycle stream. Savings resulted not only from the value of the recovered phenol but also from decreasing the use of fresh water and a reduction in the required capacity for waste effluent treatment.
- Developed a plan for the synergistic utilization of municipal and industrial waste water effluents discharging into the Cuyahoga River to remove iron and phosphate values down to acceptable discharge levels. No other reagents other than constituents of the waste streams would be required.
- Performed experiments to prove the concept for removing high concentrations of H<sub>2</sub>S from a ground water discharge and recovering the sulfur values. Protection of the environment and economic recovery of sulfur were both shown to be achievable.

- Project Manager and Chief Investigator for preparation of the Candidate Environmental Statement for the Lincoln Experimental Satellites Program at Kirkland, AFB. Studied potential consequences of the release of plutonium-238 as a result of accidents, aborts, or malfunctions. As a result, a part of the safety analysis performed was designed to assess the public risk. Steps in this process included: (1) identifying types of accidents; (2) analyzing the dispersion and disposition of any released material; and (3) determining as a function of geographical areas the number of people affected, their range of exposures, and the end result of such exposures.
- Directed projects concerned with facilities siting, resource recovery, design and performance of solid waste disposal facilities, and evaluation of the ultimate risks and the physical phenomena associated with potential nuclear reactor accidents and with molten aluminum-water explosions.
- As Project Manager, formulated the concepts and preliminary designs and operational procedures for a new RCRA/TSCA commercial facility to be located in the southeastern United States. This was done as part of the Federal permit application for this facility.
- Directed the preparation of RCRA Part B applications for several industrial clients. Regularly participated in the review of these applications as the senior reviewer or as the quality assurance reviewer on recent U.S. EPA programs.
- Responsible for system review to assure compliance with environmental safeguards for U.S. Army project to develop an incinerator facility for the destruction of BZ and BZ-pyrotechnic mixtures.
- Responsible for the formulation, planning, and overall direction of projects for the development of procedures for and the conduct of broad environmental audit projects as well as more narrowly defined air, water, or solid or hazardous waste audit projects. Conducted audits, risk assessments, treatability investigations, and other studies to assist industry in complying with government's environmental and hazardous waste regulations, in siting facilities, and in evaluating disposal/recycling/waste reduction technologies.
- Participated through guidance and review in the program for the U.S. EPA to prepare the handbook: "Guide for Decontaminating Buildings, Structures, and Equipment at Superfund Sites", EPA 600/0-85-165.
- Program Manager for program to assess impacts of converting existing power plants from oil and natural gas to alternative fuels for Department of Energy.
- Deputy Project Manager and engineering advisor for the preparation of an EIS for the Cross Steam Plant at Santee-Cooper, (FERC) Project No. 199, South Carolina.
- Served as Process Expert and Deputy Project Manager on EPA environmental assessments of proposed coal gasification facilities for producing substitute natural gas.
- Official U.S. delegate, a member of a subgroup which met with U.S.S.R. engineers and scientists to discuss combined cycle power generation as a means of mitigating environmental

pollution. This subgroup visited generating facilities and laboratories in many parts of the Soviet Union.

- Studied the use of carbon adsorption techniques for the control of phenolic effluents, and the development of a synergistic treatment system using combined industrial and municipal effluents for the control of phosphates.
- Participated in studies directed at developing, for a state electric utility group, operational procedures which would permit simultaneously satisfying demands for electricity and regulations for sulfur emissions.
- Served as Assistant Professor of Chemical Engineering and Adjunct Associate Professor at The Ohio State University.
- Managed U.S. EPA program for Environmental Assessment of Coal Cleaning Processes which included a significant field data collection component and concomitant Quality Assurance effort.
- Project Manager for the preparation of an Environmental Impact Statement for the Juniper/Cross Mountain Hydroelectric Project planned for the Yampa River in northwestern Colorado, to be licensed by the Federal Energy Regulatory Commission. Headed a diverse multidisciplinary team of co-workers, subcontractors, and consultants in this evaluation where major physical, ecological, recreational, and socioeconomic changes would be expected if the project were completed as planned.



**AFFIDAVIT**

STATE OF OHIO                    )  
  ) SS  
COUNTY OF FRANKLIN         )

Before me, a Notary Public in and for said state, personally appeared Alexis W. Lemmon, Jr., who being by me duly sworn (or affirmed) deposes and says that:

1. I am Alexis W. Lemmon, Jr., Senior Project Manager with Metcalf & Eddy, Inc.;
2. I am over 18 years of age and am competent to testify;
3. I have never owned property in Delaware County located at 800 Tussic Road, nor have I been employed by, affiliated with, or related to Otterbein University or the Keethler Company, for which I have helped prepare the Phase I Site Assessment for the Kilgore Property;
4. I am a professional engineer with over 40 years of experience;
5. I have experience in planning for the remediation and cleanup of sites containing explosive materials and military ordnance;
6. I am familiar with the properties of chemicals used in the production of propellants, explosives and military ordnance; and
7. The chemical information I provided for the Phase I Report related to the fate and stability of materials used or postulated to have been used at the Kilgore Farm Site, is true to the best of my knowledge.

Affiant further sayeth naught.

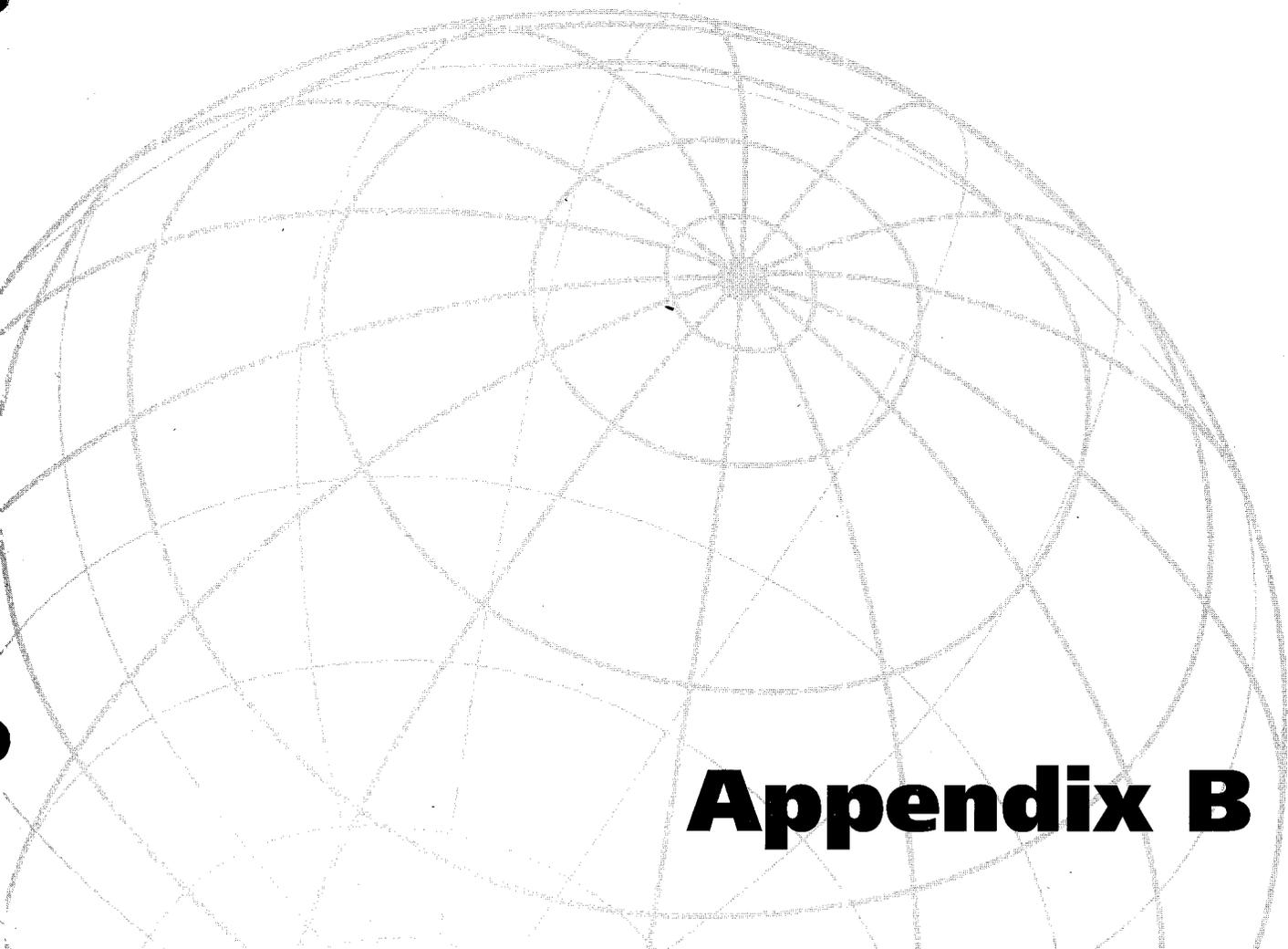
Affiant

Sworn to (or affirmed) before me and signed in my presence this 20 day of May, 1998.

Notary Public

**RUTH E. MICHALEK**  
Notary Public, State of Ohio  
~~My Commission Expires April 9, 2001~~

My Commission Expires \_\_\_\_\_



# **Appendix B**

**APPENDIX B**  
**Legal Description**

**CHAIN OF TITLE**  
**PARCEL: #18-002600**

December 18, 1941  
December 19, 1941  
July 2, 1952  
May 24, 1962  
October 12, 1990

Joe Morris and Eva M. Morris  
Kilgore Manufacturing Company  
Kilgore, Inc.  
Otterbein College  
Emmett M. Wickham, et al



**Bird + Bull**

consulting  
engineers  
surveyors

Rev: October 7, 1996  
September 26, 1996

DESCRIPTION OF 2.313 ACRE TRACT  
ON NORTH SPRING ROAD NORTH OF COUNTY LINE ROAD  
WESTERVILLE, OHIO

Situated in the State of Ohio, County of Delaware, City of Westerville, in Lot 9, Quarter Township 4, Township 3 North, Range 17 West, United States Military Lands and being 2.313 acres of land out of a 110 acre tract of land conveyed to Otterbein College by deed of record in Deed Book 299, Page 439 Recorder's Office, Delaware County, Ohio and bounded and described as follows:

Bird + Bull Inc

1 West Dublin-Grenville Rd  
Columbington, Ohio 43235  
761 1661 fax 614 761.1328

Beginning at a 1" solid iron pin found at the southwest corner of said 110 acre tract, at the northwest corner of a 99.164 acre tract of land conveyed to The Board of Education of The Westerville City School District by deed of record in Deed Book 378, Page 417, Recorder's Office, Delaware County, Ohio, at the southwest corner of said Lot 9, at the northwest corner of Lot 12 and in the centerline of North Spring Road (60 feet in width), said iron pin being, N 4° 11' 27" E a distance of 1,782.10 feet from Franklin County Monument Box No. 3318 found at the centerline intersection of North Spring Road with County Line Road;

thence N 4° 11' 27" E along a portion of the west line of said 110 acre tract and along the centerline of North Spring Road a distance of 310.00 feet to a railroad spike set;

thence S 85° 51' 11" E crossing a portion of said 110 acre tract parallel with and 310.00 feet northerly by perpendicular measurement from the south line of said 110 acre tract and a north line of said 99.164 acre tract a distance of 325.00 feet to a 3/4" I.D. iron pipe set (passing a point in the existing east right-of-way line of North Spring Road at 30.00 feet and passing a 3/4" I.D. iron pipe set in the proposed east right-of-way line of North Spring Road at 40.00 feet);

thence S 4° 11' 27" W crossing a portion of said 110 acre tract parallel with and 325.00 feet easterly by perpendicular measurement from the west line of said 110 acre tract and the centerline of North Spring Road a distance of 310.00 to a 3/4" I.D. iron pipe set in the south line of said 110 acre tract and in a north line of said 99.164 acre tract;

Charles F. Bird PE PS  
Charman Emeritus  
Richard J. Bull PE PS  
President  
Jerry L. Turner PE  
Vice President  
Charles J. Coghlan PE  
Surveyor  
David M. Bray PE  
Ted L. Robinson PS

Rev: October 7, 1996  
September 26, 1996

thence N 85° 51' 11" W along a portion of the south line of said 110 acre tract and along a portion of a north line of said 99.164 acre tract a distance of 325.00 feet to the place of beginning (passing a 3/4" I.D. iron pipe set in the proposed east right-of-way line of North Spring Road at 285.00 feet and passing a point in the existing east right-of-way line of North Spring Road at 295.00 feet);

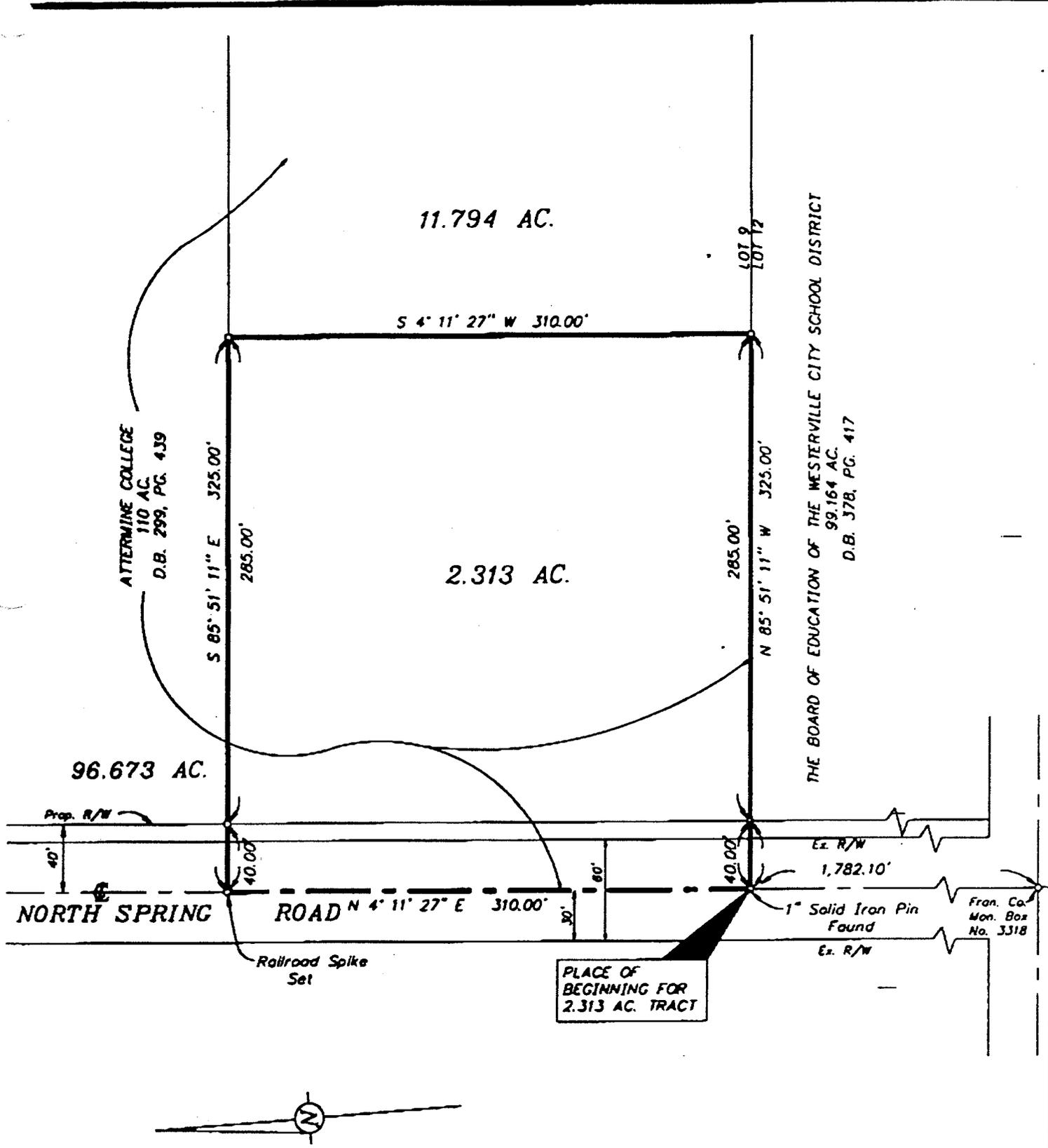
containing 2.313 acres of land more or less and being subject to all easements, right-of-ways and restrictions of record.

The above description was prepared by Kevin L. Baxter, Ohio Surveyor No. 7697, of C.F. Bird & R.J. Bull, Inc., Consulting Engineers & Surveyors, Columbus, Ohio, from an actual field survey performed under his supervision in September, 1996. Basis of bearings is the centerline of Spring Road, being N 4° 11' 27" E, as shown of record in Deed Book 378, Page 417, Recorder's Office, Delaware County, Ohio.

*Kevin L. Baxter*

Kevin L. Baxter  
Ohio Surveyor # 7697





BASIS OF BEARINGS: THE CENTERLINE OF NORTH SPRING ROAD,  
 BEING N 4° 11' 27" E, AS SHOWN OF RECORD  
 IN DEED BOOK 378, PG. 417,  
 RECORDER'S OFFICE, DELAWARE COUNTY, OHIO.

SURVEY OF 2 313 ACRF TRACT

OC 015433

IN LOT NO. 9, QTR. TWP. 4, T. 3 N., R. 17 W., U.S.M.L.  
DELAWARE COUNTY, WESTERVILLE, OHIO  
OTTERBEIN COLLEGE (D.B. 299, PG. 439)

— 3/4" I.D. Iron Pipe Set Unless  
Otherwise Shown

SCALE: 1" = 80'

C.F. Bird & R.J. Bull, Inc.  
2875 W. Dublin-Granville Rd.  
Columbus, Ohio 43235



REV. OCTOBER 7, 1996  
SEPTEMBER 26, 1996

By Kevin L. Baxter  
Kevin L. Baxter ~ Ohio Surveyor No. 7697



**Bird + Bull**

consulting  
engineers  
surveyors

Rev: October 7, 1996  
September 26, 1996

**DESCRIPTION OF 11.794 ACRE TRACT  
ON NORTH SPRING ROAD NORTH OF COUNTY LINE ROAD  
WESTERVILLE, OHIO**

Situated in the State of Ohio, County of Delaware, City of Westerville, in Lot 9, Quarter Township 4, Township 3 North, Range 17 West, United States Military Lands and being 11.794 acres of land out of a 110 acre tract of land conveyed to Otterbein College by deed of record in Deed Book 299, Page 439, Recorder's Office, Delaware County, Ohio and bounded and described as follows:

Bird + Bull Inc

West Dublin-Gramville Rd  
Westerville, Ohio 43235  
614.761.1661 fax 614.761.1328

Beginning, for reference, at a 1" solid iron pin found at the southwest corner of said 110 acre tract, at the northwest corner of a 99.164 acre tract of land conveyed to The Board of Education of The Westerville City School District by deed of record in Deed Book 378, Page 417, Recorder's Office, Delaware County, Ohio, at the southwest corner of said Lot 9, at the northwest corner of Lot 12 and in the centerline of North Spring Road (60 feet in width), said iron pin being N 4° 11' 27" E a distance of 1,782.10 feet from Franklin County Monument Box No. 3318 found at the centerline intersection of North Spring Road with County Line Road;

thence S 85° 51' 11" E along a portion of the south line of said 110 acre tract and along a portion of a north line of said 99.164 acre tract a distance of 325.00 feet to a 3/4" I.D. iron pipe set at the true place of beginning of the tract herein intended to be described;

thence N 4° 11' 27" E crossing a portion of said 110 acre tract parallel with and 325.00 feet easterly by perpendicular measurement from the west line of said 110 acre tract and the centerline of North Spring Road a distance of 310.00 feet to a 3/4" I.D. iron pipe set;

thence S 85° 51' 11" E crossing a portion of said 110 acre tract parallel with and 310.00 feet northerly by perpendicular measurement from the south line of said 110 acre tract and a north line of said 99.164 acre tract a distance of 1,656.95 feet to a 3/4" I.D. iron pipe set in the east line of said 110 acre tract and in the west line of Lot Number Sixteen (16) in The Landings at Hoover Phase 1, as shown of record in Plat Book 23, Pages 14 & 15, Recorder's Office, Delaware County, Ohio;

Charles F. Bird PE PS  
Chairman / Partner  
Richard J. Bull PE PS  
President  
Jerry L. Turner PE  
Vice President  
Charles J. Coghlan PE  
Surveyor  
David M. Bray PE  
Surveyor

Rev: October 7, 1996  
September 26, 1996

Thence S 4° 05' 50" W along a portion of the east line of said 110 acre tract, along a portion of the west line of said Lot No. 16 and along the west lines of Lots Numbers Fifteen (15) and Fourteen (14) in The Landings at Hoover Phase I, a distance of 310.00 feet to the southeast corner of said 110 acre tract, the southwest corner of said Lot No. 14 and in a north line of said 99.164 acre tract;

thence N 85° 51' 11" W along a portion of the south line of said 110 acre tract and along a portion of a north line of said 99.164 acre tract a distance of 1,657.46 feet to the true place of beginning;

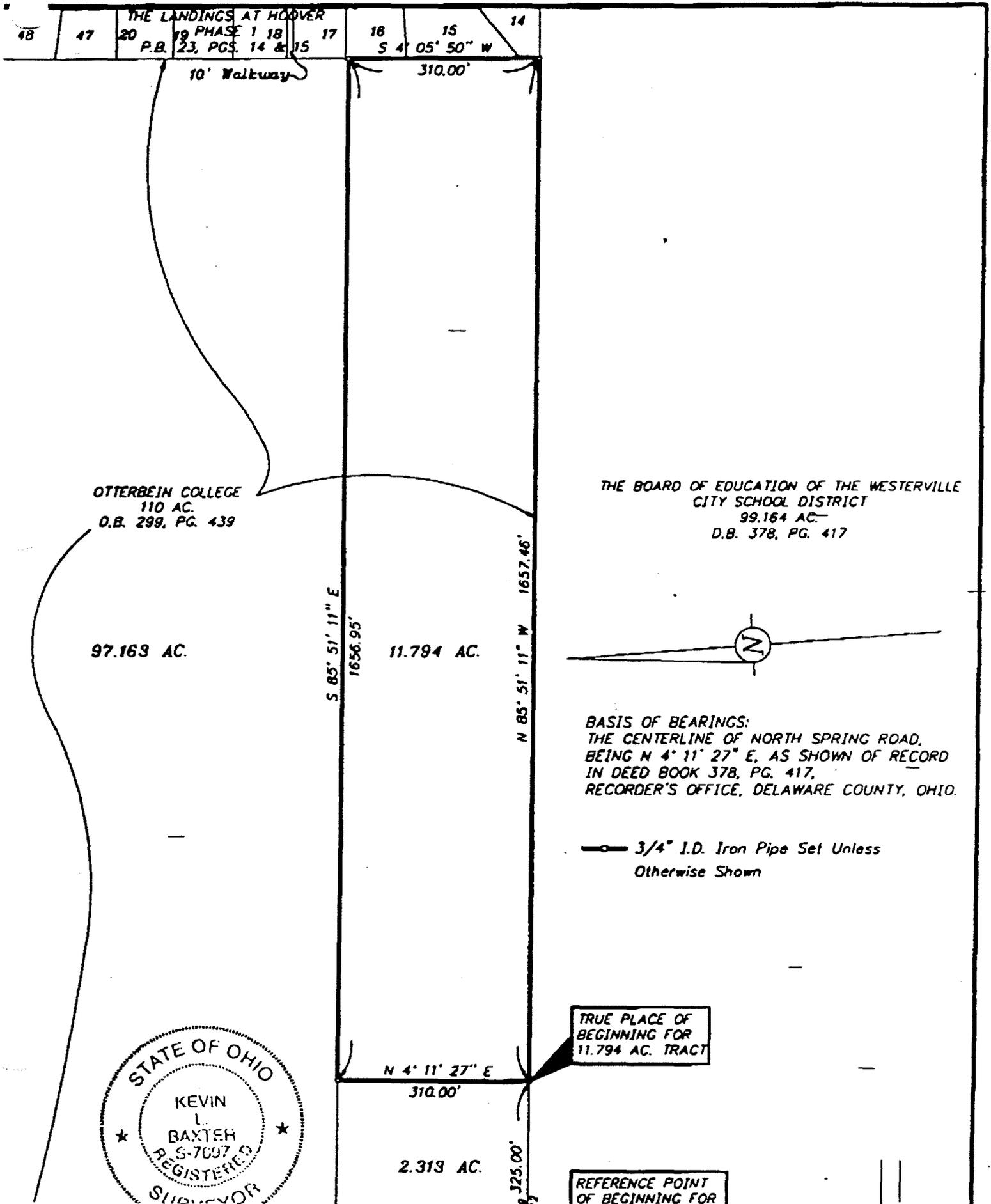
containing 11.794 acres of land more or less and being subject to all easements and restrictions of record.

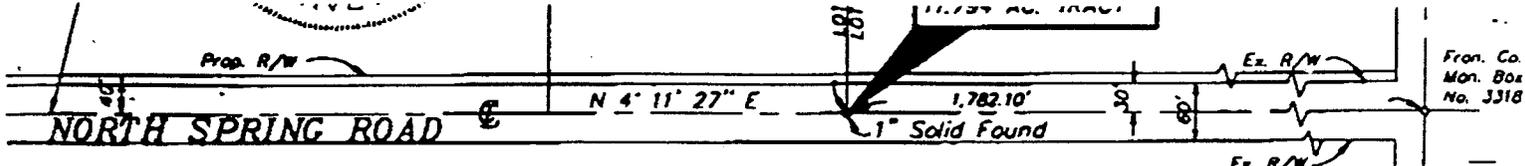
The above description was prepared by Kevin L. Baxter, Ohio Surveyor No. 7697, of C.F. Bird & R.J. Bull, Inc., Consulting Engineers & Surveyors, Columbus, Ohio, from an actual field survey performed under his supervision in September, 1996. Basis of bearings is the centerline of North Spring Road, being N 4° 11' 27" E, as shown of record in Deed Book 378, Page 417, Recorder's Office, Delaware County, Ohio.

*Kevin L. Baxter*

Kevin L. Baxter  
Ohio Surveyor # 7697







SURVEY OF 11.794 ACRE TRACT  
 IN LOT NO. 9, QTR. TWP. 4, T. 3 N., R. 17 W., U.S.M.L.  
 DELAWARE COUNTY, WESTERVILLE, OHIO  
 OTTERBEIN COLLEGE (D.B. 299, PG. 439)

SCALE: 1" = 200'

C.F. Bird & R.J. Bull, Inc.  
 2875 W. Dublin-Gronville Rd.  
 Columbus, Ohio 43235

REV: OCTOBER 7, 1996  
 SEPTEMBER 26, 1996

By Kevin L. Baxter  
 Kevin L. Baxter - Ohio Surveyor No. 7697



**Bird + Bull**

consulting  
engineers  
surveyors

Rev: October 7, 1996  
September 26, 1996

**DESCRIPTION OF 97.163 ACRE TRACT  
ON NORTH SPRING ROAD NORTH OF COUNTY LINE ROAD  
WESTERVILLE, OHIO**

Situated in the State of Ohio, County of Delaware, City of Westerville, in Lot 9, Quarter Township 4, Township 3 North, Range 17 West, United States Military Lands and being 97.163 acres of land out of a 110 acre tract of land conveyed to Otterbein College by deed of record in Deed Book 299, Page 439, Recorder's Office, Delaware County, Ohio and bounded and described as follows:

Beginning, for reference, at a 1" solid iron pin found at the southwest corner of said 110 acre tract, at the northwest corner of a 99.164 acre tract of land conveyed to The Board of Education of The Westerville City School District by deed of record in Deed Book 378, Page 417, Recorder's Office, Delaware County, Ohio, at the southwest west corner of said Lot 9, at the northwest corner of Lot 12 and in the centerline of North Spring Road (60 feet in width), said iron pin being, N 4° 11' 27" E a distance of 1,782.10 feet from Franklin County Monument Box No. 3318 found at the centerline intersection of North Spring Road with County Line Road;;

thence N 4° 11' 27" E along a portion of the west line of said 110 acre tract and along the centerline of North Spring Road a distance of 310.00 feet to a railroad spike set at the true place of beginning of the tract herein intended to be described;

thence continuing N 4° 11' 27" E along a portion of the west line of said 110 acre tract and along the centerline of North Spring Road a distance of 2,138.20 feet to a railroad spike found at the northwest corner of said 110 acre tract and at the southwest corner of a 17 acre tract of land conveyed to Mae L. & William R. Jr. McCorkle by deed of record in Deed Book 603, Page 98, Recorder's Office, Delaware County, Ohio;

thence S 85° 49' 56" E along the north line of said 110 acre tract, along the south line of said 17 acre tract and along a south line of an original 126.651 acre tract of land conveyed to Crystal, Ltd., by deed of record in Deed Book 501, Page 724, Recorder's Office, Delaware County, Ohio a distance of 1,977.13 feet to a #5 rebar found at the northeast corner of said 110 acre tract and at a corner of said original 126.651 acre tract (passing a point in the existing east right-of-way line of North Spring Road at 30.00 feet and passing a 3/4" I.D. iron pipe set in the proposed east right-of-way line of North Spring Road at 40.00 feet);

Charles F. Bird PE PS

Chairman Emeritus

Richard J. Bull PE PS

President

Jerry L. Turner PE

vice President

Charles J. Coghlan PE

Secretary

David M. Bray PE

Ted L. Robinson PS

Rev: October 7, 1996  
September 26, 1996

thence S 4° 02' 42" W along the east line of said 110 acre tract, along a west line of said original 126.651 acre tract and along the west end of Sunbury Lake Drive (50 feet in width), the west lines of Lots Numbers Fifty-One (51), Fifty (50) and Forty-Nine (49), as shown on the plat of Mariners Cove Section 1, in Plat Cabinet 1, Slides 220 through 226, Recorder's Office, Delaware County, Ohio a distance of 1,464.34 feet to a #5 rebar found in the east line of said 110 acre tract, at the southwest corner of said Lot No. 49 and at the northwest corner of Lot Number Forty-Eight (48) as shown on the plat of The Landings at Hoover Phase 2 Part 1, in Plat Book 24, Pages 65 & 66, Recorder's Office, Delaware County, Ohio

thence S 4° 05' 50" W along the east line of said 110 acre tract, along the west line of said Lot No. 48, along the west line of Lot Number Forty-Seven (47) in The Landing at Hoover Phase 2 Part 1 and along the west lines of Lots Numbers Twenty (20), Nineteen (19), Eighteen (18), along the west end of a 10' Walkway, along the west line of Lot Number Seventeen (17) and along a portion of the west line of Lot Number Sixteen (16), as shown of record on the plat of The Landings at Hoover Phase 1 in Plat Book 23, Pages 14 & 15, Recorder's Office, Delaware County, Ohio a distance of 673.15 feet to a 3/4" I.D. iron pipe set;

thence N 85° 51' 11" W crossing a portion of said 110 acre tract parallel with and 310.00 feet northerly by perpendicular measurement from the south line of said 110 acre tract a distance of 1,981.95 feet to the true place of beginning (passing a 3/4" I.D. iron pipe set in the proposed east right-of-way line of North Spring Road at 1,941.95 feet and passing a point in the existing east right-of-way line of North Spring Road at 1,951.95 feet);

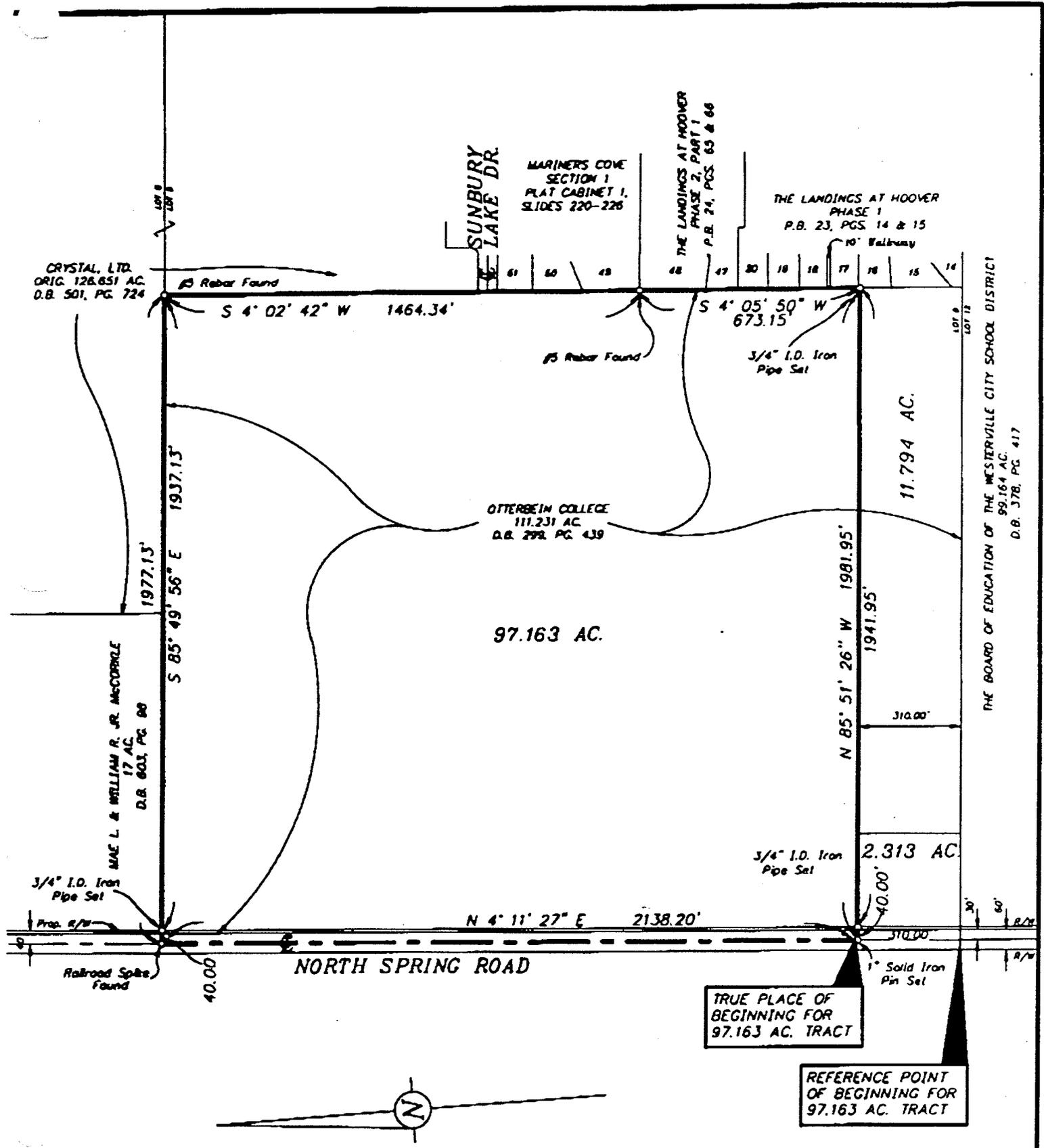
containing 97.163 acres of land more or less and being subject to all easements, right-of-ways and restrictions of record.

The above description was prepared by Kevin L. Baxter, Ohio Surveyor No. 7697, of C.F. Bird & R.J. Bull, Inc., Consulting Engineers & Surveyors, Columbus, Ohio, from an actual field survey performed under his supervision in September, 1996. Basis of bearings is the centerline of North Spring Road, being N 4° 11' 27" E, as shown of record in Deed Book 378, Page 417, Recorder's Office, Delaware County, Ohio.

*Kevin L. Baxter*

Kevin L. Baxter  
Ohio Surveyor # 7697





TRUE PLACE OF BEGINNING FOR 97.163 AC. TRACT

REFERENCE POINT OF BEGINNING FOR 97.163 AC. TRACT

BASIS OF BEARINGS: THE CENTERLINE OF NORTH SPRING ROAD, BEING N 4° 11' 27" E, AS SHOWN OF RECORD IN DEED BOOK 378, PG. 417, RECORDER'S OFFICE, DELAWARE COUNTY, OHIO.

SURVEY OF 97.163 ACRE TRACT  
IN LOT NO. 9, QTR. TWP. 4, T. 3 N., R. 17 W., U.S.M.L.  
DELAWARE COUNTY, WESTERVILLE, OHIO  
OTTERBEIN COLLEGE (D.B. 299, PG. 439)

SCALE: 1" = 400'

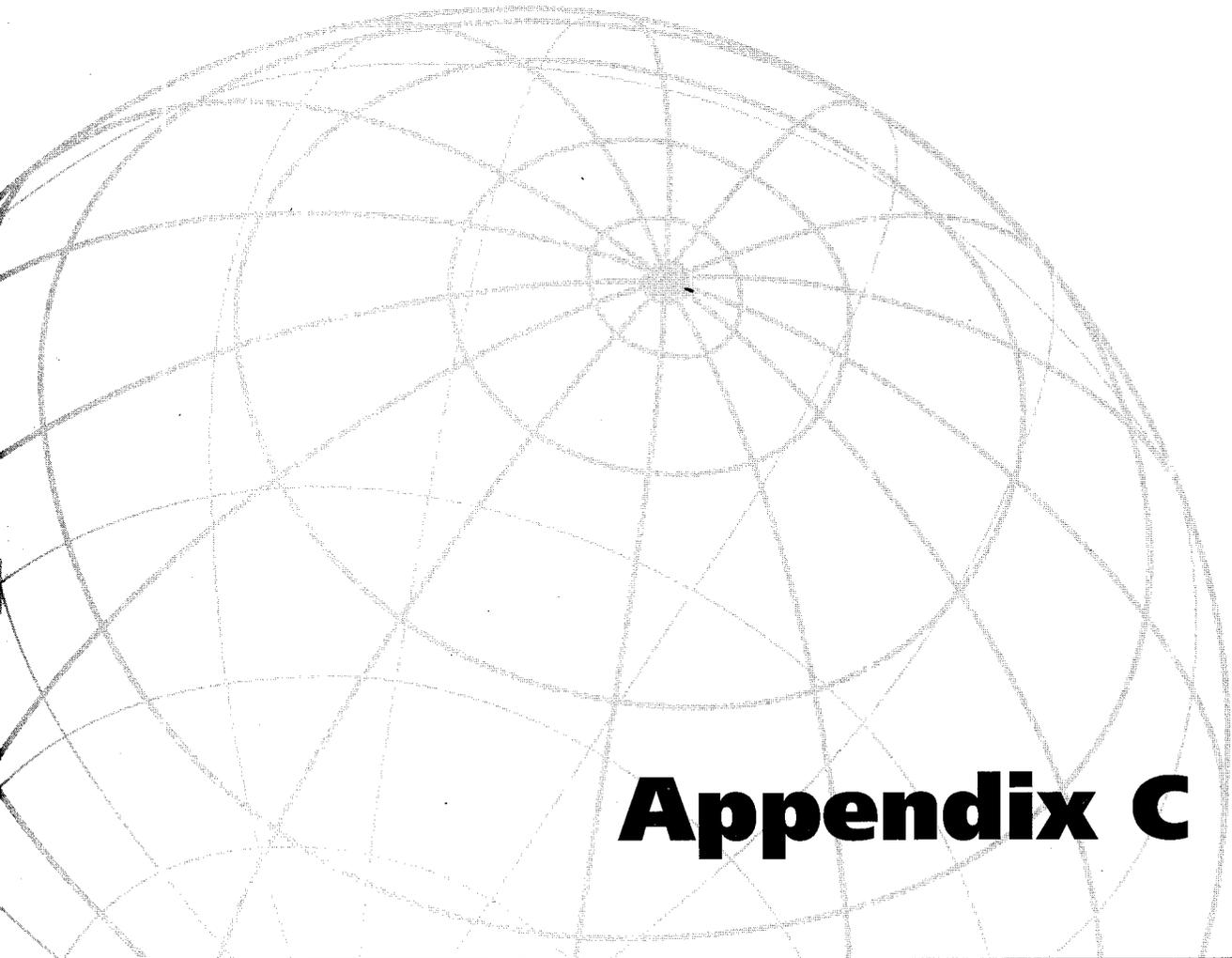
C.F. Bird & R.J. Bull, Inc.  
2875 W. Dublin-Granville Rd.  
Columbus, Ohio 43235



REV: OCTOBER 7, 1996  
SEPTEMBER 26, 1996

By Kevin L. Baxter  
Kevin L. Baxter - Ohio Surveyor No. 7697



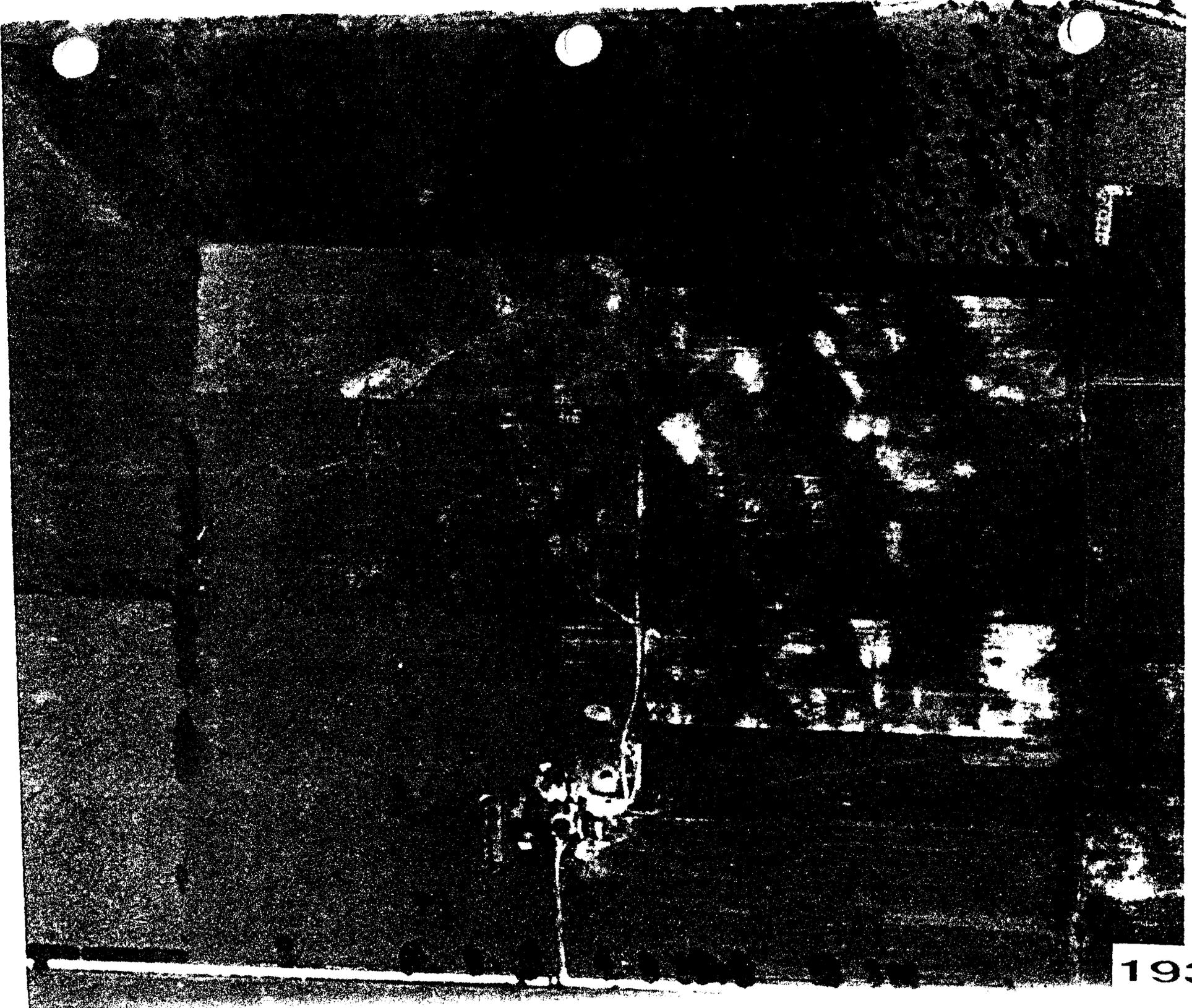


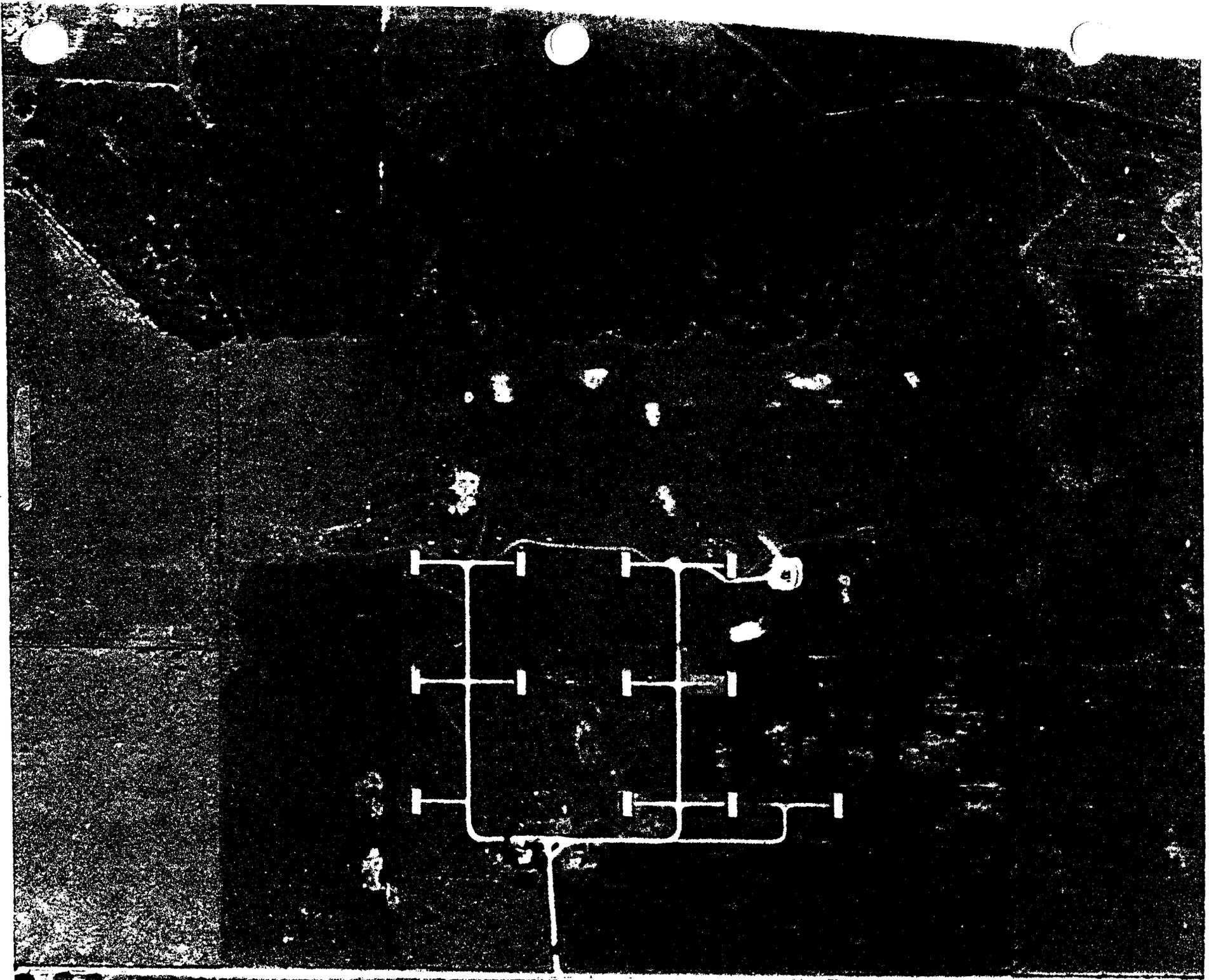
**Appendix C**

**APPENDIX C**  
**Aerial Photographs**

1938

OC 015446



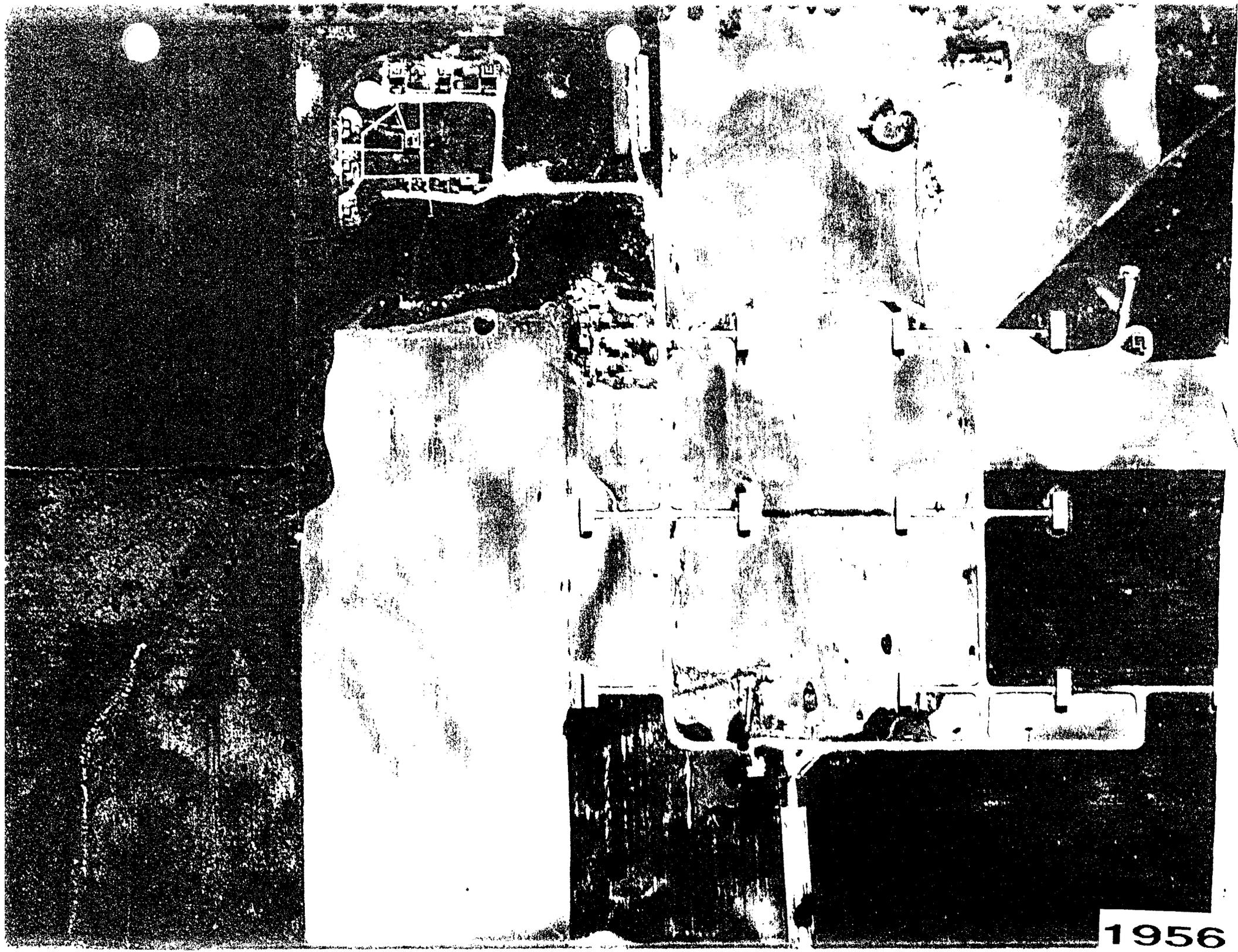


1950

OC 015447

1956

OC 015448





1957

OC 015449



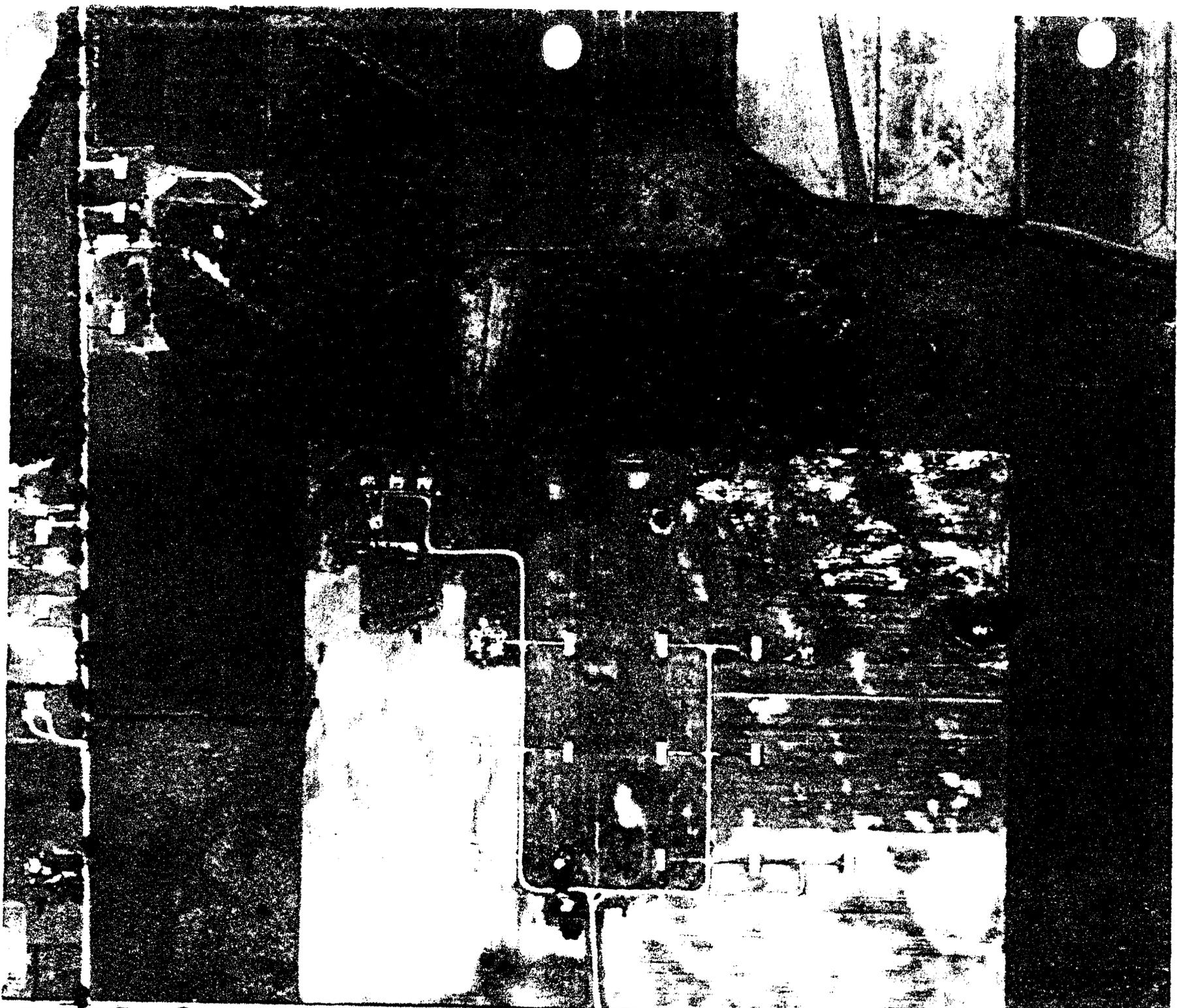
OC 015450

1962



APRIL 1964

OC 015451



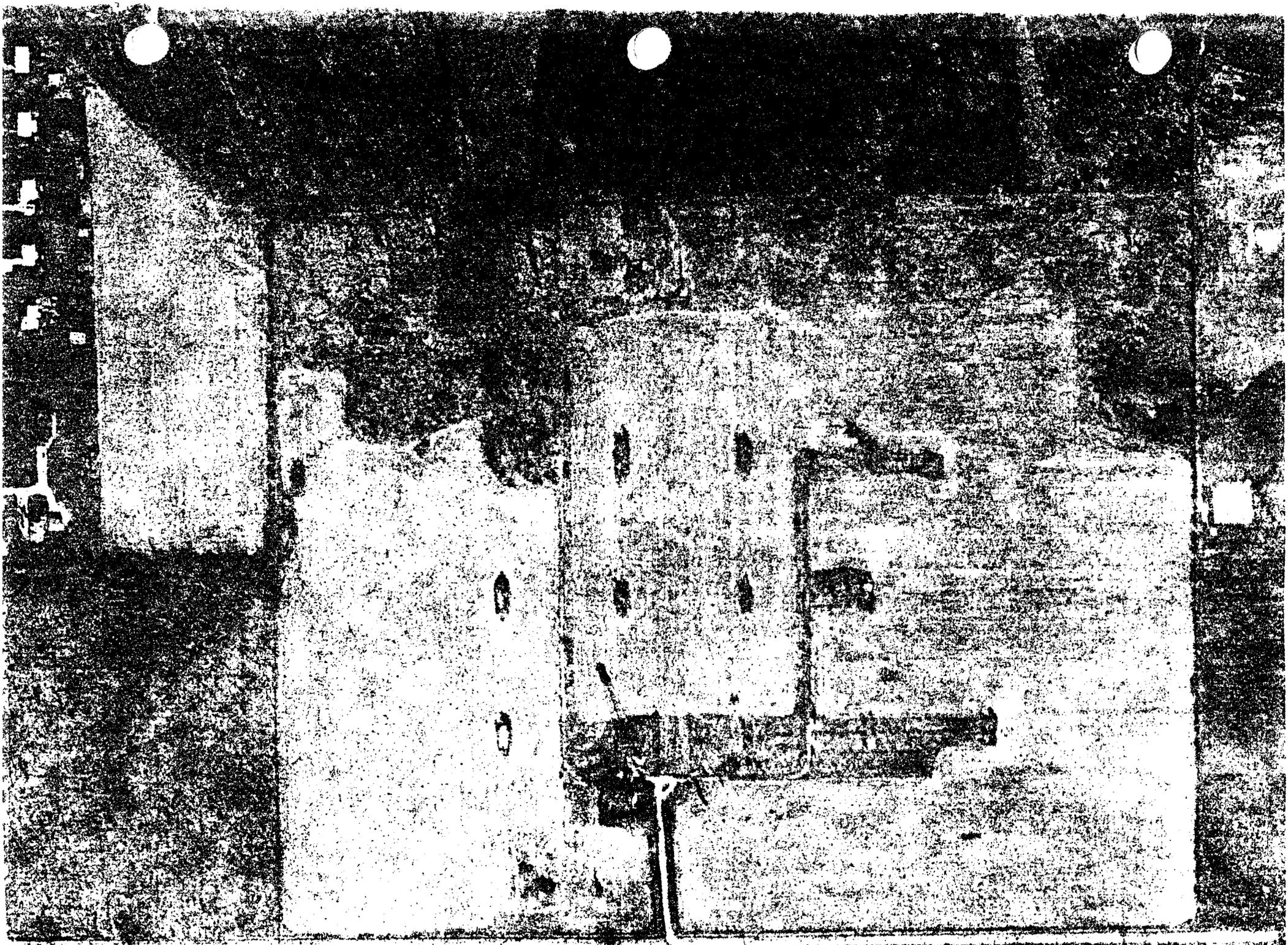
JUNE 1964

OC 015452



OC 015453

1967



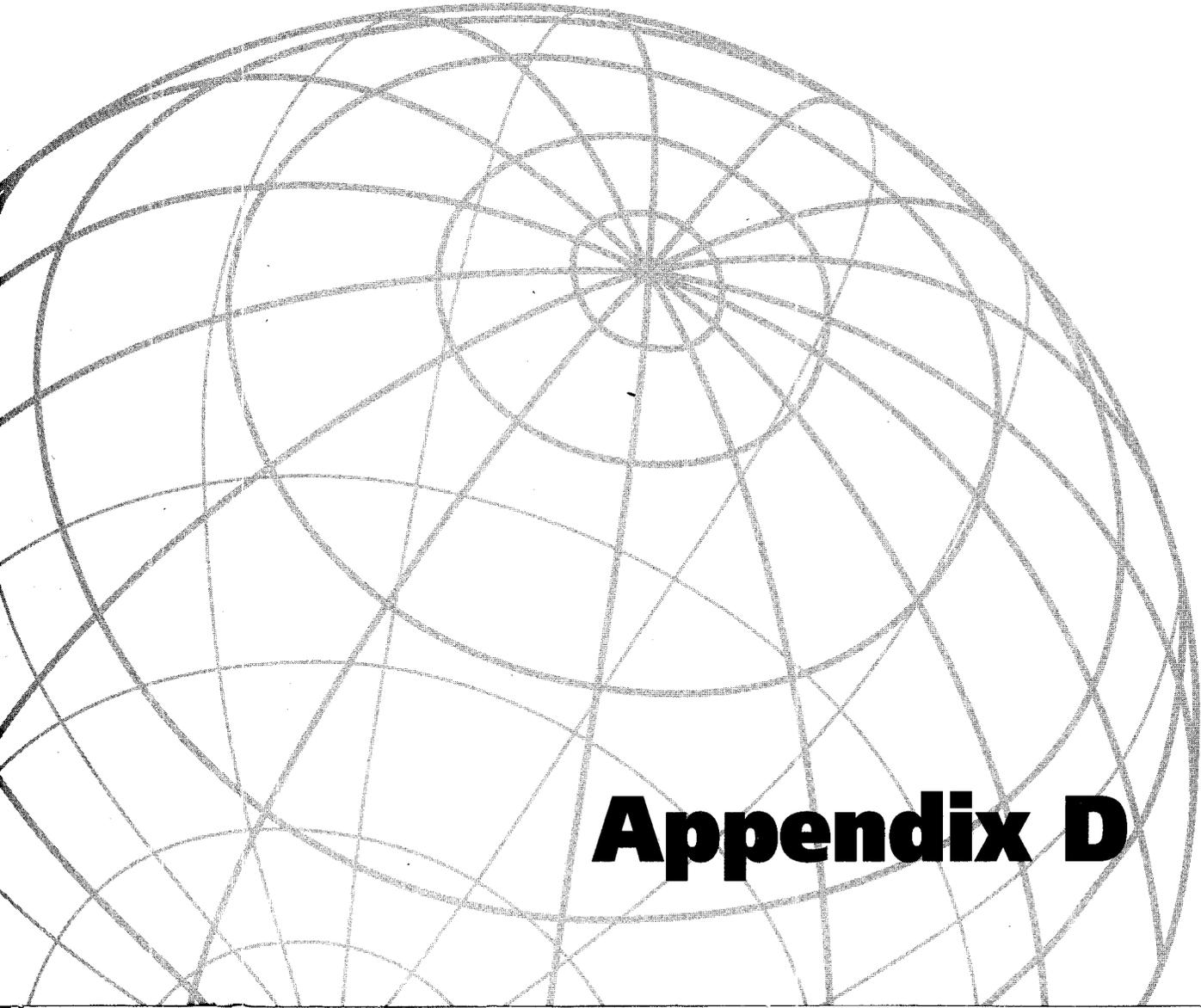
OC 015454

1970



1994

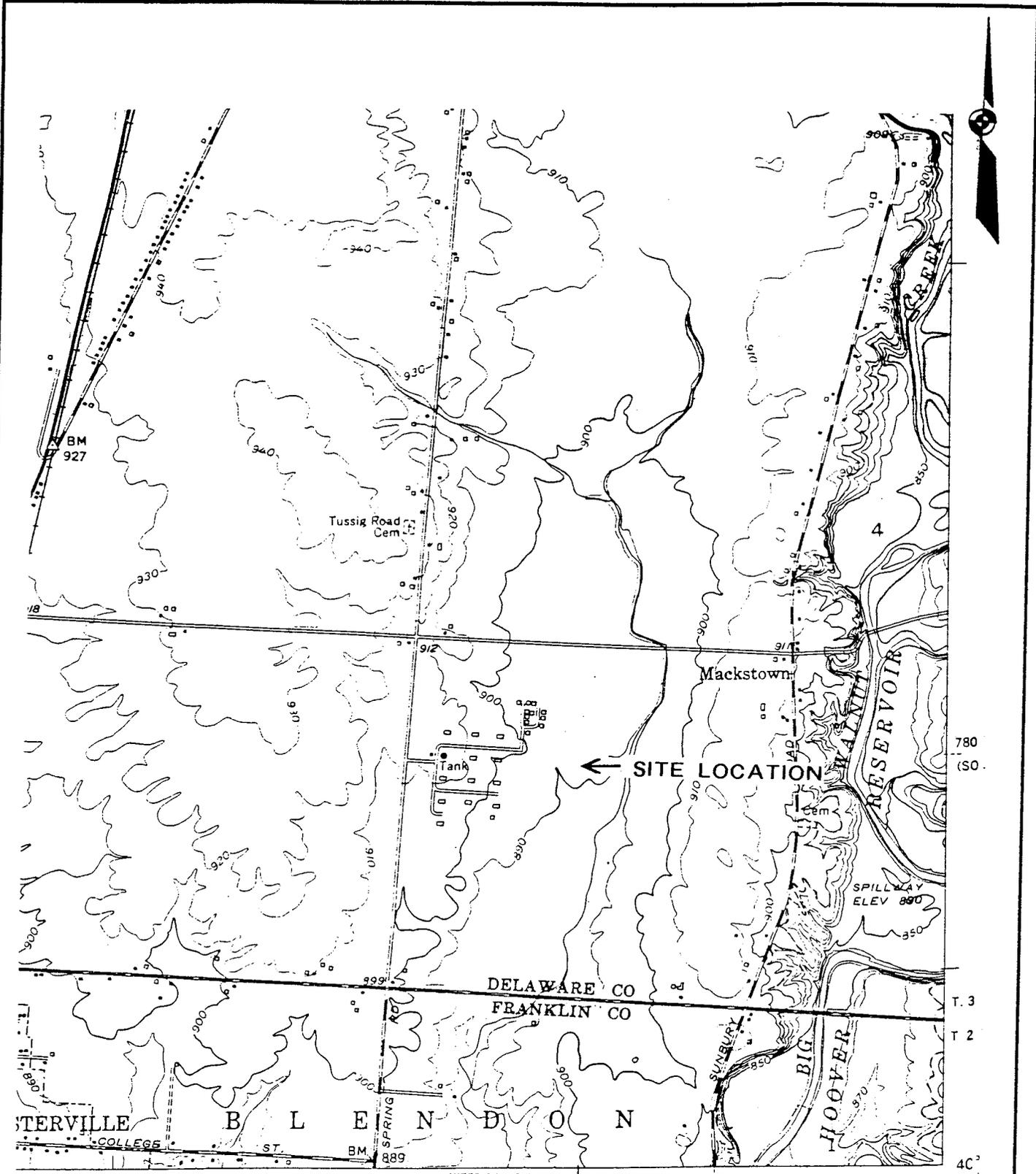
OC 015455



# Appendix D

Appendix D

**APPENDIX D**  
**Topographic Maps**



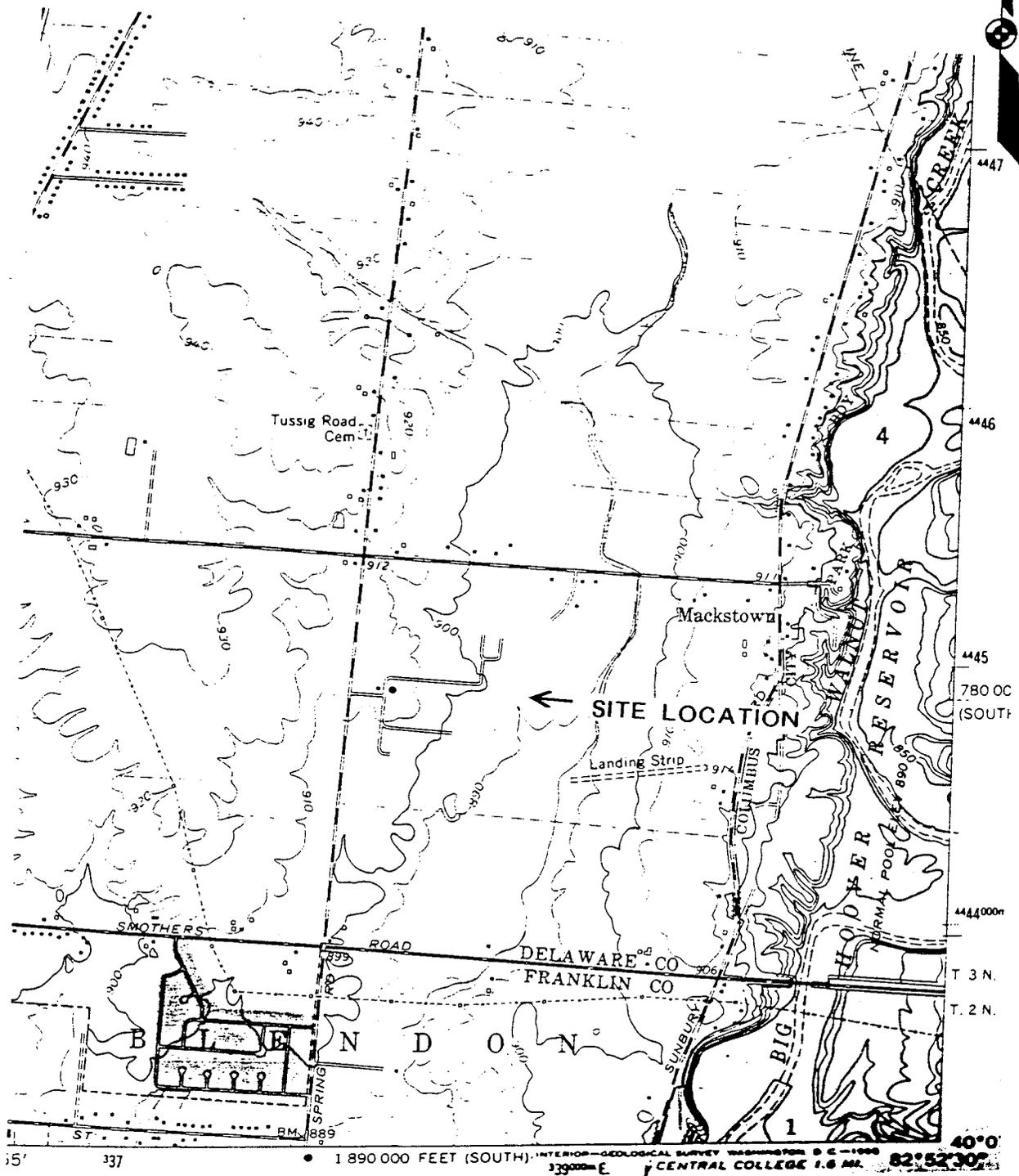
← SITE LOCATION

SOURCE: USGS 7.5 MINUTE QUADRANGLE - GALENA, OHIO (1955)



KILGORE FARM PROPERTY  
**SITE LOCATION MAP**  
 WESTERVILLE, OHIO

Project Number  
 021796  
 Figure  
 1



SOURCE: USGS 7.5 MINUTE QUADRANGLE - GALENA, OHIO (1964)



	<p>KILGORE FARM PROPERTY SITE LOCATION MAP</p>	<p>Project Number 021796</p>
	<p>WESTERVILLE, OHIO</p>	<p>Figure 1</p>



4447  
4446  
4445  
780.00 (SOUT)  
4444000  
13N  
T 2N

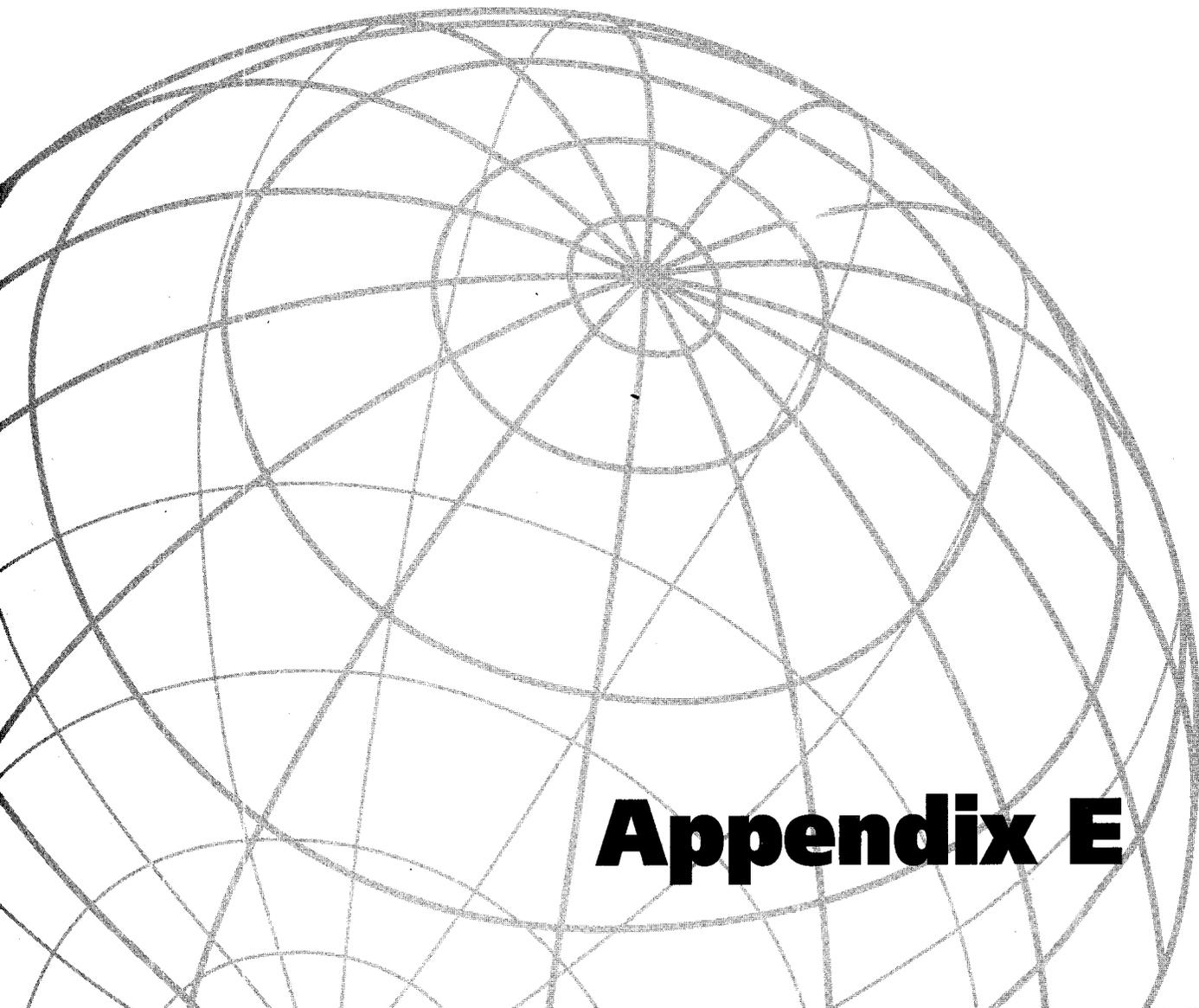


SOURCE: USGS 7.5 MINUTE QUADRANGLE - GALENA, OHIO (1983)



KILGORE FARM PROPERTY  
SITE LOCATION MAP  
WESTERVILLE, OHIO

Project Number  
021796  
Figure  
1



**Appendix E**

**APPENDIX E**  
**Environmental Reports and Historical Correspondence**

***PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT:***

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***The Kilgore Farm  
800 Tussic Street Road  
Westerville, Ohio 43085***

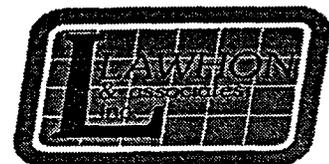
***Prepared for:***

***Mr. William W. Keethler  
The Keethler Companies  
7870 Olentangey River Road  
Suite 200  
West Worthington, Ohio 43235***

***Prepared by:***

***Lawhon & Associates, Inc.  
6300 Proprietors Road  
Worthington, Ohio 43085***

***October 15, 1996***



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- 2.2 Introduction**
  - 2.2.1 Purpose
  - 2.2.2 Special Terms and Conditions
  - 2.2.3 Limitations and Exceptions of Assessment
  - 2.2.4 Limiting Conditions and Methodology Used
- 2.3 Site Description**
  - 2.3.1 Location and Legal Description
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- 2.8 Qualifications of Environmental Professionals Participating in Phase I Environmental Site Assessment**
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  - 2.9.1 Maps, Figures and Photographs
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  - 2.9.3 Ownership/Historical Documentation
  - 2.9.4 Interview Documentation
  - 2.9.5 Contract Between User and Environmental Professional
  - 2.9.6 Qualifications

**Environmental Assessment Report**  
**The Kilgore Farm, 800 Tussic Street Road**  
**Westerville, Ohio 43085**

**2.1 Summary**

We have performed a Phase I Environmental Site Assessment (ESA) in conformance with the scope and limitations of The American Society for Testing and Materials (ASTM) Designation: E 1527, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, of The Kilgore Farm, 800 Tussic Street Road, Westerville, Ohio, the target property. This assessment has revealed no evidence of recognized environmental conditions in connection with the property except for the following:

1. In our opinion, several areas of the subject property exhibits all three characteristics required to establish the presence of a jurisdictional wetland. A formal wetlands delineation is currently being completed for the target property. It should be noted that the U.S. Army Corp of Engineers has the final authority regarding what constitutes a wetland.
2. A previously performed ESA (dated March 1, 1991) identifies the following asbestos-containing materials (ACMs) associated with the abandoned house: pipe insulation and roofing material. These materials must be removed from the structure prior to demolition. Asbestos removal activities should only be performed by properly trained and certified personnel.

It should be noted that these materials will be removed from the structure by a licensed asbestos abatement contractor prior to demolition.

3. An underground storage tank (UST) is located in the northeast portion of the property. Due to the proximity to the former boiler house and boiler, it is our opinion that this UST was used to store heating oil. L&A can offer no opinion as to the condition of the subsurface soil and groundwater in the vicinity of this UST.

It should be noted that this UST will be removed from the site and disposed of off-site. Any contaminated soils will be excavated from the site and properly disposed of off-site. Sampling will be conducted in order to document that all contaminated soils have been removed from the excavation.

4. The subject property appears on the Ohio EPA's Master Sites List (MSL). Kilgore Manufacturing, the target property, is listed as being located on North Spring Road in Westerville, Ohio. A preliminary investigation was conducted at the site on September 14, 1988, and a priority of zero was assigned. Zero priority sites are "sites where there is evidence or it is suspected that hazardous waste has been managed but there is no potential for the release of hazardous waste." The listed potential problem for the site is soil contamination due to explosives.

It should be noted that an investigation is currently underway on the target property to determine whether or not there is a contamination issue due to explosives. Any and all potentially hazardous and/or explosive materials encountered will be properly sampled and documented, and disposed of off-site (if necessary).

5. Several empty drums and miscellaneous debris were observed throughout the property. No visual evidence of stained soils were observed near these items. While the presence of these items do not necessarily constitute an immediate environmental hazard, L&A recommends proper disposal off-site in order to prevent the potential for future impact to the property.

It should be noted that these items will be disposed of as part of the Phase II Environmental Study.

## **2.2 Introduction**

### **2.2.1 Purpose**

L&A's objective was to identify, to the extent feasible pursuant to the process prescribed in ASTM Designation: E 1527-94, recognized environmental conditions in connection The Kilgore Farm, 800 Tussic Street Road, Westerville, Ohio (the target property). A recognized environmental condition is defined as the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include *de minimis* conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the target of an enforcement action if brought to the attention of appropriate governmental agencies. L&A performed a records review, a site reconnaissance, interviews, and a review of previously performed ESAs, asbestos sampling documentation and miscellaneous historic documentation in order to achieve this objective.

### **2.2.2 Special Terms and Conditions**

Special terms and conditions are outlined in the proposal dated September 25, 1996 (signed September 27, 1996), and attached *General Conditions*. Copies of the executed proposal for services and *General Conditions* are included in Appendix 2.9.5.

### **2.2.3 Limitations and Exceptions of Assessment**

As indicated in ASTM Designation: E 1527-94, no environmental site assessment (ESA) can wholly eliminate uncertainty regarding the potential for recognized environmental conditions in connection with a property. This practice is intended to reduce, but not eliminate, uncertainty regarding the potential for recognized environmental conditions in connection with a property, and this practice recognizes reasonable limits of time and cost.

The conclusions presented in this report are professional opinions based on data contained in the report. They are intended for the purpose, site location and project indicated. This report is not a definitive study of contamination at the site and should not be interpreted as such. An evaluation of subsurface soil and groundwater conditions was not performed as part of this ESA. No sampling or chemical analyses were completed as part of this study; however, they have been completed in conjunction with previous studies.

It should be noted that portions of this report are based on unverified information supplied to L&A by third-party sources. While efforts have been made to substantiate third-party information, L&A cannot guarantee its completeness or accuracy.

## **2.2.4 Limiting Conditions and Methodology Used**

The findings, observations and conclusions expressed in the report are limited by the procedures prescribed by ASTM Designation: E 1527-94. The methodology used to perform this ESA is outlined in ASTM Designation: E 1527-94.

This practice does not address specific requirements of state or local laws, or federal laws other than the appropriate inquiry provisions of Comprehensive Environmental Response, Compensation and Liability Act's (CERCLA's) innocent landowner defense. It should be noted that federal, state, and local laws may impose environmental assessment obligations that are beyond the scope of this practice. It should also be noted that there are likely to be other legal obligations with regard to hazardous substances or petroleum products discovered on property that are not addressed in this practice and that may pose risks of civil and/or criminal sanctions for non-compliance.

## **2.3 Site Description**

### **2.3.1 Location and Legal Description**

The target property is located east of Tussic Street Road (also known as North Spring Road) and south of Maxtown Road (formerly known as 800 Tussic Street Road), Westerville, Ohio, consisting of the following:

#### Description of 97.163 Acre Tract

Situated in the State of Ohio, County of Delaware, City of Westerville, in Lot 9, Quarter Township 4, Township 3 North, Range 17 West, United States Military Lands and being 97.163 acres of land out of a 110 acre tract of land conveyed to Otterbein College by deed of record in Deed Book 299, Page 439, Recorder's Office, Delaware County, Ohio, and bounded and described as follows:

Beginning, for reference, at a 1" solid iron pin found at the southwest corner of said 110 acre tract, at the northwest corner of a 99.164 acre tract conveyed to The Board of Education of The Westerville City School District by deed of record in Deed Book 378, Page 417, Recorder's Office, Delaware County, Ohio, at the southwest corner of said Lot 9, at the northwest corner of Lot 12 and in the centerline of North Spring Road (60 feet in width), said iron pin being, N 4° 11' 27" E a distance of 1,782.10 feet from Franklin County Monument Box No. 3318, found at the centerline of North Spring Road with County Line Road;

thence N 4° 11' 27" E along a portion of the west line of said 110 acre tract and along the centerline of North Spring Road a distance of 310.00 feet to a railroad spike set at the true place of beginning of the tract herein intended to be described;

thence continuing N 4° 11' 27" E along a portion of the west line of said 110 acre tract and along the centerline of North Spring Road a distance of 2,138.20 feet to a railroad spike found at the northwest corner of said 110 acre tract and at the southwest corner of a 17 acre tract of land conveyed to Mae L. & William R. Jr.

McCorkle by deed of record in Deed Book 603, Page 98, Recorder's Office, Delaware County, Ohio;

thence S 85° 51' 11" E along the north line of said 110 acre tract, along the south line of said 17 acre tract and along a south line of an original 126.651 acre tract of land conveyed to Crystal, Ltd., by deed of record in Deed Book 501, Page 724, Recorder's Office, Delaware County, Ohio, a distance of 1,977.13 feet to a #5 rebar found at the northeast corner of said 110 acre tract and at a corner of said original 126.651 acre tract (passing a point in the existing east right-of-way line of North Spring Road at 30.00 feet and passing a 3/4" I.D. iron pipe set in the proposed east right-of-way line of North Spring Road at 40.00 feet);

thence S 4° 02' 42" W along the east line of said 110 acre tract, along a west line of said original 126.651 acre tract and along the west end of Sunbury Lake Drive (50 feet in width), the west lines of Lots Numbers Fifty-One (51), Fifty (50) and Forty-Nine (49), as shown on the plat of Mariners Cove Section 1, In Plat Cabinet 1, Slides 220 through 226, Recorder's Office, Delaware County, Ohio, a distance of 1,464.34 feet to a #5 rebar found in the east line of said 110 acre tract, the southwest corner of said Lot No. 49 and at the northwest corner of Lot Number Forty-Eight (48) as shown on the plat of The Landings at Hoover Phase 2 Part 1, in Plat Book 24, Pages 65 & 66, Recorder's Office, Delaware County, Ohio;

thence S 4° 05' 50" W along the east line of said 110 acre tract, along the west line of said Lot No. 48, along the west line of Lot Number Forty-Seven (47) in The Landing at Hoover Phase 2 Part 1 and along the west lines of Lot Numbers Twenty (20), Nineteen (19), Eighteen (18), along the west end of a 10' Walkway, along the west line of Lot Number Seventeen (17) and along a portion of the west line of Lot Number Sixteen (16), as shown of record on the plat of The Landings at Hoover Phase 1 in Plat Book 23, Pages 14 & 15, Recorder's Office, Delaware County, Ohio, a distance of 673.15 feet to a 3/4" I.D. iron pipe set;

thence N 85° 51' 11" W crossing a portion of said 110 acre tract parallel with and 310.00 feet northerly by perpendicular measurement from the south line of said 110 acre tract a distance of 1,981.95 feet to the true place of beginning (passing a 3/4" I.D. iron pipe set in the proposed east right-of-way line of North Spring Road at 1,941.95 feet and passing a point in the existing east right-of-way line of North Spring Road at 1,951.95 feet);

containing 97.163 acres of land more or less and being subject to all easements, right-of-ways and restrictions of record.

The above description was prepared by Kevin L. Baxter, Ohio Surveyor No. 7697, of C.F. Bird & R.J. Bull, Inc., Consulting Engineers & Surveyors, Columbus, Ohio, from an actual field survey performed under his supervision in September, 1996. Basis of bearings is the centerline of Spring Road, being N 4° 11' 27" E, as shown of record in Deed Book 378, Page 417, Recorder's Office, Delaware County, Ohio.

#### Description of 2.313 Acre Tract

Situated in the State of Ohio, County of Delaware, City of Westerville, in Lot 9, Quarter Township 4, Township 3 North, Range 17 West, United States Military Lands and being 2.313 acres of land out of a 110 acre tract of land conveyed to Otterbein College by deed of record in Deed Book 299, Page 439 Recorder's Office, Delaware County, Ohio, and bounded and described as follows:

Beginning at a 1" solid iron pin found at the southwest corner of said 110 acre tract, at the northwest corner or a 99.164 acre tract conveyed to The Board of Education of The Westerville City School District by deed of record in Deed Book 378, Page 417, Recorder's Office, Delaware County, Ohio, at the southwest corner of said Lot 9, at the northwest corner of Lot 12 and in the centerline of North Spring Road (60 feet in width), said iron pin being, N 4° 11' 27" E a distance of 1,782.10 feet from Franklin County Monument Box No. 3318 found at the centerline of North Spring Road with County Line Road;

thence 4° 11' 27" E along a portion of the west line of said 110 acre tract and along the centerline of North Spring Road a distance of 310.00 feet to a railroad spike set;

thence S 85° 51' 11" E crossing a portion of said 110 acre tract parallel with and 310.00 feet northerly by perpendicular measurement from the south line of said 110 acre tract and a north line of said 99.164 acre tract a distance of 325.00 feet to a 3/4" I.D. iron pipe set (passing a point in the existing east right-of-way line of North Spring Road at 30.00 feet and passing a 3/4" I.D. iron pipe set in the proposed east right-of-way of North Spring Road at 40.00 feet);

thence S 4° 11' 27" W crossing a portion of said 110 acre tract parallel with and 325.00 feet easterly by perpendicular measurement from the west line of said 110 acre tract and the centerline of North Spring Road a distance of 310.00 feet to a 3/4" I.D. iron pipe set in the south line of said 110 acre tract and in a north line of said 99.164 acre tract;

thence N 85° 51' 11" W along a portion of the south line of said 110 acre tract and along a portion of a north line of said 99.164 acre tract a distance of 325.00 feet to the place of beginning (passing a 3/4" I.D. iron pipe set in the proposed east right-of-way line of North Spring Road at 285.00 feet and passing a point in the existing east right-of-way line of North Spring Road at 295.00 feet);

containing 2.313 acres of land more or less and being subject to all easements, right-of-ways and restrictions of record.

The above description was prepared by Kevin L. Baxter, Ohio Surveyor No. 7697, of C.F. Bird & R.J. Bull, Inc., Consulting Engineers & Surveyors, Columbus, Ohio, from an actual field survey performed under his supervision in September, 1996. Basis of bearings is the centerline of Spring Road, being N 4° 11' 27" E, as shown of record in Deed Book 378, Page 417, Recorder's Office, Delaware County, Ohio.

#### Description of 11.794 Acre Tract

Situated in the State of Ohio, County of Delaware, City of Westerville, in Lot 9, Quarter Township 4, Township 3 North, Range 17 West, United States Military Lands and being 11.794 acres of land out of a 110 acre tract of land conveyed to Otterbein College by deed of record in Deed Book 299, Page 439 Recorder's Office, Delaware County, Ohio, and bounded and described as follows:

Beginning, for reference, at a 1" solid iron pin found at the southwest corner of said 110 acre tract, at the northwest corner or a 99.164 acre tract conveyed to The Board of Education of The Westerville City School District by deed of record in Deed Book 378, Page 417, recorder's Office, Delaware County, Ohio, at the southwest corner of said Lot 9, at the northwest corner of Lot 12 and in the centerline of North Spring Road (60 feet in width), said iron pin being, N 4° 11' 27" E a distance of

1,782.10 feet from Franklin County Monument Box No. 3318 found at the centerline of North Spring Road with County Line Road;

thence S 85° 51' 11" E along a portion of the south line of said 110 acre tract and along a portion of a north line of said 99.164 acre tract a distance of 325.00 feet to a 3/4" I.D. iron pipe set at the true place of beginning of the tract herein intended to be described;

thence N 4° 11' 27" E crossing a portion of said 110 acre tract parallel with and 325.00 feet easterly by perpendicular measurement from the west line of said 110 acre tract and the centerline of North Spring Road a distance of 310.00 feet to a 3/4" I.D. iron pipe set;

thence S 85° 51' 11" E crossing a portion of said 110 acre tract parallel with and 310.00 feet northerly by perpendicular measurement from the south line of said 110 acre tract and a north line of said 99.164 acre tract a distance of 1,656.95 feet to a 3/4" I.D. iron pipe set in the east line of said 110 acre tract and in the west line of Lot Number Sixteen (16) in The Landings at Hoover Phase 1, as shown of record in Plat Book 23, Pages 14 & 15, Recorder's Office, Delaware County, Ohio;

thence S 4° 05' 50" W along a portion of the east line of said 110 acre tract, along a portion of the west line of said Lot No. 16 and along the west lines of Lots Numbers Fifteen (15) and Fourteen (14) in The Landings at Hoover Phase 1, a distance of 310.00 feet to the southeast corner of said 110 acre tract, the southwest corner of said Lot No. 14 and in a north line of said 99.164 acre tract;

thence N 85° 51' 11" W along a portion of the south line of said 110 acre tract and along a portion of a north line of said 99.164 acre tract a distance of 1,657.46 feet to the true place of beginning;

containing 11.794 acres of land more or less and being subject to all easements and restrictions of record.

The above description was prepared by Kevin L. Baxter, Ohio Surveyor No. 7697, of C.F. Bird & R.J. Bull, Inc., Consulting Engineers & Surveyors, Columbus, Ohio, from an actual field survey performed under his supervision in September, 1996. Basis of bearings is the centerline of Spring Road, being N 4° 11' 27" E, as shown of record in Deed Book 378, Page 417, Recorder's Office, Delaware County, Ohio.

### **2.3.2 Site and Vicinity Characteristics**

The target property is located in an area consisting primarily of residential and agricultural property. The property is bordered by residential property to the north, Westerville City Schools to the south, Tussic Street Road to the west, and residential property to the east. Farmland is located across Tussic Street Road to the west.

### **2.3.3 Descriptions of Structures, Roads, Other Improvements on the Site**

The property consists of approximately 110 acres of farmland, with vacant building structures and foundations scattered throughout the site. With the exception of small wooded regions and areas where buildings, foundations and old roads are mixed with trees and brush, the property is primarily open fields which were previously farmed. Additionally, there is an abandoned farmhouse which is used by the local Jaycees once each year as a "haunted house". The farm land is nearly level with a gentle slope towards the east.

L&A observed no lagoons, overhead high tension power lines, or gas or oil wells on the subject property.

### **2.3.4 Information Reported by User Regarding Environmental Liens or Specialized Knowledge or Experience**

The user has reported the following specialized knowledge and/or experience about previous ownership or uses of the property that may be material to identifying recognized environmental conditions. The following synopsis is based on information contained in documentation provided to L&A by Otterbein College.

#### History of Kilgore Farm

Prior to 1941, the Kilgore Manufacturing Company, which was located in Westerville, Ohio, produced toys, such as cap guns, and pyrotechnics used primarily for public celebrations. During the early stages of World War II, Kilgore converted to the production of explosives and incendiary materials and devices, such as flares, fuses, hand grenades, land mines and flame throwers. In order to meet the military standards necessary for the manufacturing and storage safety of these materials, Kilgore acquired a 110 acre farm northeast of Westerville near the Delaware/Franklin County line. A network of small magazines and concrete buildings (including a boiler house) were constructed, as was a 75,000 gallon water tower that furnished water to all of the structures. Materials storage was not the sole activity at the Kilgore Farm. Other on-site activities included experimental work, manufacturing of some explosives and incendiary items, and burial of wastes and those items not meeting military standards.

A burial site measuring approximately six to eight acres, located in the southeast corner of the property, was allocated for the disposition of produced waste and rejected materials. Waste materials are generally from settling sumps, and include mixtures of various chemicals used in the manufacturing process. Waste materials were packaged in wet cans (30" long x 15" in diameter). These cans were then laid in open trenches and covered with earth. Rejected materials, such as pyrotechnical devices, primary explosives, scrap powder, primers, detonators and liquid flares, were also placed in open trenches and covered with earth.

Records concerning disposition of waste and rejected materials is available from the time period of January, 1951 through May, 1953. According to an ex-employee at Kilgore, no map was kept nor is there any accurate record of what was buried after 1953. He stated that, except for cap waste (red phosphorous material), burying was discontinued in 1957. There is an account of the disposal of waste powder by burning. An open pit 50' in diameter and 8' deep was located in the southeastern corner of the property and was used for this purpose.

#### History of Decontamination

In early 1961, the Kilgore Manufacturing Company suspended operations in Westerville and merged with its sister plant in Bolivar, Tennessee, creating the Harvell-Kilgore Corporation. Commercial Credit Corporation, who owned Kilgore at the time, decided to donate the Westerville properties, including the 110 acre farm, to Otterbein College. An agreement was struck and the college was granted complete ownership of the properties under full knowledge that the Kilgore Farm was used for storage, burial and disposal of material that had explosive and incendiary characteristics.

Mr. Sanders Frye, former business manager for Otterbein College, initiated a clean-up of the official burial site at Kilgore Farm during the summer of 1962. Mr. Frye contacted the Ammunition and Supply Procurement Agency in Joliet, Illinois, and Mr. Virgil Carpenter was commissioned to supervise the decontamination of the site. After the known trench sites were marked, the earth was removed and the buried materials were excavated and destroyed on the property. The dug trenches were then refilled. In all, over 120 tons of explosives and flares were removed and destroyed, including 3,500 boosters; 200,000 fuses; cap mix; black powder; magnesium flares; and miscellaneous materials. The decontamination project took six weeks to complete.

On August 24, 1962, Mr. Carpenter, in a letter sent to Sanders Frye, stated that the Kilgore property had been decontaminated "...in accordance with current Ordnance Corps procedures," and in his opinion no significant hazard remained which would prevent the usage of the land for any purpose or endanger the lives of individuals or the public. Based on other information contained in this synopsis, this letter appears to be accurate only for the decontamination work completed on known trenches, which had been plotted on a map and labeled for content.

The property was then used to farm beans and corn, the practice of which continued over the years.

In 1985, Mr. Ernest Fritsche, who was a board member at Otterbein College and a World War II explosives expert, was asked to look into the sale of the Kilgore Farm. Mr. Fritsche visited the property on June 15 and June 26, 1985, and discovered nearly seventy flare canisters. The canisters were found in the southeast corner of the property and had apparently been dug up by plow blades. Mr. Fritsche buried the canisters and marked the area.

Mr. Fritsche called representatives at the Ohio Fire Marshall's Office (OFMO) and the Ordnance Department at Wright-Patterson Air Force Base and asked them to identify the canisters and determine whether or not they were hazardous. The canisters, identified as having characteristics of U.S. Ordnance, could only be made reactive by attaching a counter-charge and detonating the material. However, on the following day, when dry, pieces of the exploded canisters and contents (phosphorous) burst into flame. On September 5, 1985, a team from the Hazardous Materials Division of the OFMO collected the canisters found by Mr. Fritsche and delivered them to the Ordnance Department at Wright-Patterson Air Force Base for disposal.

Mr. Fritsche returned to the Kilgore Farm in March and in mid-June, 1986, and found thirty-four flare canisters in the southeast corner. The area was marked and arrangements were made for later pick-up. Officers from the OFMO and Ordnance at Wright-Patterson Air Force Base visited the property in May, 1986, and Sergeant Smith from Ordnance recommended that the entire 110 acres be swept with mine detectors.

On July 7, 1986, Mr. David Douthat, a safety engineer with the U.S. Corps of Engineers, visited the Kilgore Property with Mr. Fritsche. Approximately fifty canisters were found during their visit. These canisters, plus the canisters found earlier in the year by Mr. Fritsche, were removed from the property by the Ordnance Department from Wright-Patterson Air Force Base. Given the situation at the Kilgore property, Dr. Douthat believed that more clean-up was needed.

In 1987, Westerville Schools contacted Otterbein College and expressed interest in purchasing twenty-two acres of the Kilgore Farm north of, and adjacent to, the Westerville North High School grounds. In January, 1988, Westerville Schools contracted S.E.A., Inc. of Worthington, Ohio, to conduct an environmental study of the desired portion of the property, which included the six to eight acre burial site. S.E.A., Inc. performed a detailed site investigation of the acreage in question in the southeast corner of the property. This investigation involved installing monitor wells and testing the ground water for contaminants. A walk-through with a metal detector located one area that produced many small unidentifiable metal objects.

Westerville Schools contracted with Luna Excavation Company in May, 1988, to excavate the area containing the metal objects. On May 3, 1988, excavation uncovered a variety of materials related to Kilgore operations from the 1940's and 1950's, including parachute flares (dated 1954); black plastic caps; cylinders composed of gray, blue and purple granular substance; and many filled aluminum canisters. It was then decided to dig a series of trenches throughout the burial site. Excavation uncovered only a few pieces of debris. Excavated materials were piled near the old farmhouse and were to be removed. The trenches were not filled in at this time.

In June, 1988, in an attempt to test the reactivity of materials found during the excavation process, the Columbus Bomb Squad placed blasting caps on all items. When detonated, the caps exploded but the materials did not. Given the age of the materials and the conditions of burial, it was determined by Chief Morrison of the Columbus Bomb Squad that they were not explosive in their current state, but could be dangerous and advised removal and disposal of the materials. He also advised more trenching, followed by sifting through the excavated earth. (See Table 1 for history of events)

#### List of Manufactured Materials

Kilgore Manufacturing Company is believed to have produced the following items at one time or another:

- Primary explosives; hand grenades
- Primers
- Detonators (old style)
- Hand grenade fuses; general igniters
- Land mines
- M1 flame throwers; flare pistols, rocket line launchers
- Explosive caps
- Numerous types of illuminating materials, including the following:
  - battlefield flares
  - landing flares
  - 3 minute flares
  - high altitude rocket flares
  - phosphorous float lights for emergency flares and the navy
  - parachute flares- signal flares
  - M112 photoflash cartridges
  - 155 mm illuminating shells
  - trip flares

#### Chemicals used include:

- red phosphorous
- aluminum flitter
- sodium hypophosphite
- potassium chlorate gum
- antimony trisulphide
- sulfur

- ammonium and potassium picrate
- black powder
- powdered aluminum/magnesium
- boron phosphide
- sodium nitrate
- permanganite
- barium rhodanid
- potassium perchlorate

#### List of Excavated Materials

- 1962 Cap Mix (red phosphorous, potassium chlorate gum and antimony trisulphide), phosphorous sweepings, ammonium and potassium picrate, caps and primers, black powder, M1 flame-throwers, M112 photoflash cartridges, land flares, 66 waste, 155 mm illuminating shells, 3 minute flares and M6, MK5 and M501-type materials
- 1985-1986 Flare canisters
- 1988 Parachute flares (1954), black plastic caps, gray-white layered solid granular substance, short sections of a gray/blue/purple cylindrical-shaped material, aluminum flitter/sodium nitrate and sulfur

The user has reported to L&A no knowledge of any environmental liens encumbering the property.

#### **2.3.5 Current Uses of the Property**

There is an abandoned farmhouse located on the target property which is used by the local Jaycees once each year as a "haunted house," and the remainder is currently vacant.

#### **2.3.6 Past Uses of the Property**

L&A reviewed available Polk's Suburban Directories at the Columbus Metropolitan Library and the Delaware County Library in an attempt to determine previous occupants of the target property. There is no coverage for the area in which the target property is situated.

L&A attempted to obtain Sanborn Fire Insurance mapping in an effort to determine site specific information for the target property. After a review of available mapping, L&A was informed that there is no coverage available for the area.

#### **2.3.7 Current and Past Uses of Adjoining Properties**

The target property is bordered by Maxtown Road to the north, Westerville City Schools to the south, Tussic Street Road to the west, and residential property to the east. Residential property is located across Maxtown Road to the north, and farmland is located across Tussic Street Road to the west.

L&A reviewed available Polk's Suburban Directories at the Columbus Metropolitan Library and the Delaware County Library in an attempt to determine whether or not any previous occupants of the surrounding area that would suggest a potential for environmental impact. There is no coverage provided for the area in which the target property is located.

L&A attempted to obtain Sanborn Fire Insurance mapping in an effort to determine specific information for the properties adjoining the target property. After a review

of available mapping, L&A was informed that there is no coverage available for the area.

### **2.3.8 Site Rendering, Map, or Site Plan**

A site location map is included in Appendix 2.9.1.

## **2.4 Records Review**

The purpose of the records review is to obtain and review records that will help identify recognized environmental conditions in connection with the target property.

### **2.4.1 Standard Environmental Record Sources, Federal and State**

L&A contracted with Environmental Risk Information & Imaging Services (ERIIS) to assemble an ASTM Radius Report for the target property and surrounding area. Appendix 2.9.2 includes the Radius Report along with database printouts.

The Radius Report does not identify any Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLA) or National Priorities List (NPL) sites within one mile of the target property; however, the target property is listed on the Ohio Master Sites List (MSL).

Kilgore Manufacturing, the target property, is listed as being located on North Spring Road in Westerville, Ohio. A preliminary investigation was conducted at the site on September 14, 1988, and a priority of zero was assigned. Zero priority sites are "sites where there is evidence or it is suspected that hazardous waste has been managed but there is no potential for the release of hazardous waste." The listed potential problem for the site is soil contamination due to explosives.

The Radius Report does not identify any Resource Conservation and Recovery Information System (RCRIS) large quantity or small quantity generators located within 0.25 mile of the subject property. Additionally, the Radius Report does not identify any RCRIS treatment, storage or disposal (TSD) facilities within one mile of the target property.

The Ohio EPA Open Dump List was reviewed. An "open dump" is a non-permitted disposal area for waste. There are no listed open dumps located within one mile of the target property and there are no open dumps identified in the Radius Report.

A review of the State Fire Marshal's Bureau of Underground Storage Tank Regulations (BUSTR) list of registered underground storage tanks (USTs) is included in the Radius Report. According to the Radius Report, there are no registered USTs on the target property or on any of the adjacent properties.

A review of BUSTR's list of sites with reported closed or leaking UST systems (LUST List) is also included in the Radius Report, and identifies one (1) listed incident within 0.5 mile of the target property: Fruehauf Corporation.

Fruehauf Corporation is listed as being located 0.457 mile northeast of the subject property at 111 East Maxtown Road. This incident is listed as having a tracking

status of "no further action," indicating that "a release was confirmed and initial and/or long-term corrective actions have been conducted. BUSTR/Ohio EPA has determined that further corrective actions are not necessary for this incident." Given the lack of proximity and the fact that BUSTR has determined that no further corrective actions are required, it is L&A's opinion that it is unlikely that the target property has been adversely affected by UST activity at this site.

The ERNS was reviewed as part of the Radius Report. No record of any spill or release associated with the target property was identified by the Radius Report.

The Radius Report does not identify any solid waste facilities located within 0.5 mile of the target property.

L&A reviewed the Ohio EPA's Licensed Solid Waste Disposal Facilities list. There are no such listed facilities which are located within 0.5 mile of the target property. Given the lack of proximity, it is unlikely the target property has been adversely affected by activity at any of these sites.

L&A reviewed the Ohio EPA's list of Closed Solid Waste Landfills. There are no such listed facilities located within 0.5 mile of the target property. Given the lack of proximity, it is unlikely the target property has been adversely affected by activity at any of these sites.

#### **2.4.2 Physical Setting Sources**

The U.S.G.S. Galena, Ohio 7.5' Series Quadrangle Topographic Map was obtained and reviewed. No structures appear on the property on this map. The target property is located in Quarter Township 4, Township 3 North, Range 17 West, at an elevation of approximately 906 feet above mean sea level. The land surface in the vicinity of the target property is generally flat with the regional topographic slope and inferred surface drainage to the east. A copy of this map is presented in Appendix 2.9.1.

A general soil profile of the target property and surrounding area was obtained from the current Delaware County soil survey. The soil series is of the Bennington, Pewamo and Cardington Association. The Bennington series consists of somewhat poorly drained, very poorly drained and moderately well drained soils. The soils are steep to nearly level on an undulating low-lime glacial till plain. Copies of the soil map and legend are included in Appendix 2.9.1.

#### **2.4.3 Historical Use Information**

A review of deed records was conducted at the Delaware County Recorder's Office to verify the chain-of-title provided in a previously performed ESA. The original chain-of-title review was performed by Celtic Title Agency in 1990. The target property consists of parcel #18-002600. The earliest available record of ownership indicates that the target property was owned by Joe and Eva M. Morris in 1941. A chain-of-title is presented in Appendix 2.9.3.

Historical aerial photographs of the site and surrounding areas were obtained from the Franklin County Soil and Water Conservation Office. These photographs were examined to assist in determining past land use. The available photographs are dated 1967 and 1986 (Appendix 2.9.3). This review indicates that the area has been primarily farmland since 1967.

L&A reviewed available Polk's Suburban Directories at the Columbus Metropolitan Library and the Delaware County Library in an attempt to determine previous occupants of the target property and surrounding area. There is no coverage available for the area in which the target property is located.

L&A attempted to obtain Sanborn Fire Insurance mapping in an effort to determine site specific information for the target property and surrounding area. After a review of available mapping, L&A was informed that there is no coverage for the target property or surrounding area. A copy of the "no coverage" response is included in Appendix 2.9.3.

#### 2.4.4 Additional Record Sources

In addition to the outlined record sources L&A obtained and reviewed documents relating to the target property from Otterbein College.

### 2.5 Information from Site Reconnaissance and Interviews

A site reconnaissance of the subject property was conducted on October 8, 1996, for the purpose of this practice. Much of the information discussed in the following sections was obtained from documents provided to L&A by Otterbein College.

#### 2.5.1 Hazardous Substances in Conjunction with Identified Uses

Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) mandates that the public shall be provided access to facility specific chemical inventories. These records are to be made available at a location selected by the Local Emergency Planning Committee (LEPC). L&A contacted the Delaware County Chemical Emergency Preparedness Advisory Council (CEPAC), regarding the storage of hazardous materials at the target site. This response is pending. A copy of our request for information is included in Appendix 2.9.4.

L&A believes that the Chemicals used include:

- |                                  |                          |
|----------------------------------|--------------------------|
| • red phosphorous                | • potassium chlorate gum |
| • aluminum flitter               | • antimony trisulphide   |
| • sodium hypophosphite           | • sulfur                 |
| • ammonium and potassium picrate | • sodium nitrate         |
| • black powder                   | • permanganite           |
| • powdered aluminum/magnesium    | • barium rhodanid        |
| • boron phosphide                | • potassium perchlorate  |

#### Materials Excavated from the Site

1962 Cap Mix (red phosphorous, potassium chlorate gum and antimony trisulphide), phosphorous sweepings, ammonium and potassium picrate, caps and primers, black powder, M1 flame-throwers, M112 photoflash cartridges, land flares, 66 waste, 155 mm illuminating shells, 3 minute flares and M6, MK5 and M501-type materials

1985-1986 Flare canisters

1988 Parachute flares (1954), black plastic caps, gray-white layered solid granular substance, short sections of a gray/blue/purple cylindrical-shaped material, aluminum flitter/sodium nitrate and sulfur

### **2.5.2 Hazardous Substance Containers and Unidentified Substance Containers**

No known hazardous substance containers or unidentified substance containers were visually or physically observed during this practice; however, based on historic information, there is a possibility that additional containers are located beneath the surface. Additionally, several unmarked empty drums and other containers were observed throughout the property.

### **2.5.3 Storage Tanks**

An underground storage tank (UST) was observed in the northeast portion of the property. Due to its proximity to the former boiler house, it is our belief that this UST held heating oil.

L&A contacted the Westerville Fire Department regarding USTs located on the target property, as well as any spills, releases or remediation projects in the vicinity of the target property. This response is pending. A copy of our request for information is included in Appendix 2.9.4

### **2.5.4 Indications of PCBs**

One transformer is located on the target property. This unit is owned and maintained by American Electric Power (AEP), formerly Columbus Southern Power (CSP). CSP has informed L&A that all untested transformers are to be assumed to be PCB-contaminated (containing between 50-499 parts per million PCBs), rather than PCB-containing (over 500 ppm PCBs), and thus are not target to EPA regulation as PCB-containing equipment. In our opinion, AEP would be responsible for any issues relating to these units. A visual inspection of the transformer revealed no evidence of leaks or spills.

### **2.5.5 Indications of Solid Waste Disposal**

No solid waste is currently generated at the site.

### **2.5.6 Physical Setting Analysis**

While general groundwater flow for the area in which the target property is situated is assumed to flow from west to east, upgradient to downgradient, respectively. Actual local groundwater flow may vary and can be influenced by factors such as surface topography, underground structures, seasonal fluctuations, soil and bedrock geology, and production wells.

### **2.5.7 Any Other Conditions of Concern**

L&A has been informed the target property was placed on the Ohio EPA's Master Sites List (MSL), with a priority of zero. Zero priority sites are "sites where there is evidence or it is suspected that hazardous waste has been managed but there is no potential for the release of hazardous waste." The listed potential problem for the site is soil contamination due to explosives.

L&A has not been informed of, and is currently unaware of: (1) any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the property; (2) any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on or from the property; and (3) any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products.

L&A contacted the Franklin County Health Department regarding the documentation of any health problems associated with the target property. This response is pending. The Ohio EPA Division of Emergency and Remedial Response was contacted regarding spills of hazardous materials at or near the target property. This response is also pending. Copies of our requests for information are included in Appendix 2.9.4.

The ESA dated March 1, 1991, identifies the following materials as asbestos-containing: pipe insulation and roofing material. These materials are located in the abandoned house. These materials need to be removed prior to demolition of the structure.

The target property was visually inspected for the presence of wetland indicators (hydric soils, hydrophytic vegetation and wetland hydrology). The Delaware County Soil and Water Conservation District Office's Soil Survey of Delaware County, Ohio was reviewed to determine if any hydric soils are mapped on the target property. Pewamo silty clay loam is present on the target property and is listed in the U.S. Department of Agriculture - Soil Conservation Service's Hydric Soils of the United States (Ohio, 1987). The subject property was inspected for the presence of hydrophytic vegetation. There are areas on the target property which appear to be dominated by hydrophytic vegetation. The subject property was inspected for evidence of wetland hydrology. L&A observed several areas of inundation, saturated soils, and oxidized root channels. In our opinion, the subject property exhibits all three characteristics required to establish the presence of a jurisdictional wetland. It should be noted that the U.S. Army Corp of Engineers has the final authority regarding what constitutes a wetland. A formal wetlands delineation is currently being completed for the target property.

#### **2.5.8 Site Plan (if available)**

A site plan is included as Figure 1 and is presented in Appendix 2.9.1.

### **2.6 Findings and Conclusions**

We have performed a Phase I Environmental Site Assessment (ESA) in conformance with the scope and limitations of The American Society for Testing and Materials (ASTM) Designation: E 1527, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, of The Kilgore Farm, 800 Tussic Street Road, Westerville, Ohio, the target property. This assessment has revealed no evidence of recognized environmental conditions in connection with the property except for the following:

1. In our opinion, the subject property exhibits all three characteristics required to establish the presence of a jurisdictional wetland. A formal wetlands

delineation is currently being completed for the target property. It should be noted that the U.S. Army Corp of Engineers has the final authority regarding what constitutes a wetland.

2. A previously performed ESA (dated March 1, 1991) identifies the following asbestos-containing materials (ACMs) associated with the abandoned house: pipe insulation and roofing material. These materials must be removed from the structure prior to demolition. Asbestos removal activities should only be completed by properly trained and certified personnel.

It should be noted that these materials will be removed from the structure by a licensed asbestos abatement contractor prior to demolition.

3. An underground storage tank (UST) is located in the northeast portion of the property. Due to the proximity to the former boiler house and the boiler, it is our opinion that this UST was used to store heating oil. L&A can offer no opinion as to the condition to the condition of the subsurface soil and groundwater in the vicinity of this UST. The presence or absence of contamination can be determined through sampling.

It should be noted that this UST will be removed from the ground and disposed of off-site. Any contaminated soils will be excavated from the site and properly disposed of off-site. Sampling will be conducted in order to document that all contaminated soils have been removed from the excavation.

4. The subject property appears on the Ohio EPA's Master Sites List (MSL), with a zero priority rating. Kilgore Manufacturing, the target property, is listed as being located on North Spring Road in Westerville, Ohio. A preliminary investigation was conducted at the site on September 14, 1988, and a priority of zero was assigned. Zero priority sites are "sites where there is evidence or it is suspected that hazardous waste has been managed but there is no potential for the release of hazardous waste." The listed potential problem for the site is soil contamination due to explosives.

It should be noted that an investigation is currently underway on the target property to determine whether or not this is an issue. Any and all potentially hazardous and/or explosive materials encountered will be properly sampled and documented, and disposed of off-site (if necessary).

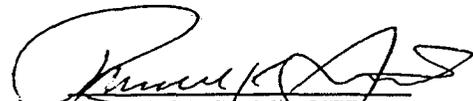
5. Several empty drums and miscellaneous debris were observed throughout the property. No visual evidence of stained soils were observed near these items. While the presence of these items do not necessarily constitute an immediate environmental hazard, L&A recommends proper disposal off-site in order to prevent the potential for future impact to the property.

## **2.7 Signatures of Environmental Professionals**

The conclusions and recommendations contained in this report are based upon professional opinions with regard to the subject matter. This practice was

performed in accordance with ASTM Designation: E 1527-94. This report was prepared and reviewed by L&A.

  
William T. Lawhon, Jr.  
President

  
Russell K. Smith, CIH, PE  
Certified Professional

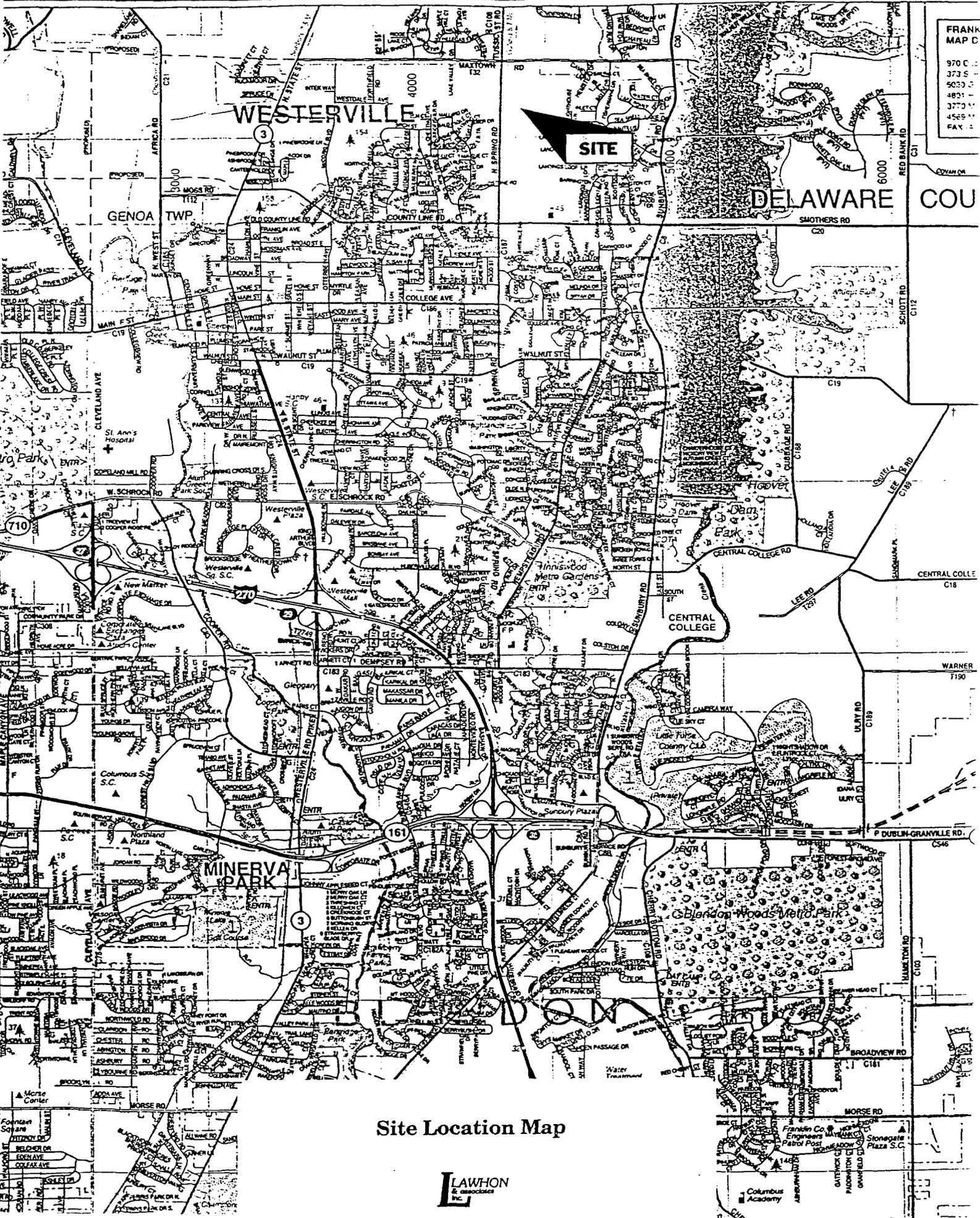
## 2.8 Qualifications of Environmental Professionals Participating in Phase I ESA

On-site technical specialists assigned to this project were Mr. Chuck Wilson, and Mr. Rob Milligan. The compiling of historic, government agency and database records was performed by Masseurs. Wilson and Milligan. Dr. William T. Lawhon, Jr. and Mr. Russell K. Smith, Certified Professional, reviewed pertinent information and provided a summary of environmental standing and recommendations. Individual profiles and certifications are shown in Appendix 2.9.6.

WTL:caw:6177006.003

**APPENDIX 2.9.1**

**MAPS, FIGURES AND PHOTOGRAPHS**

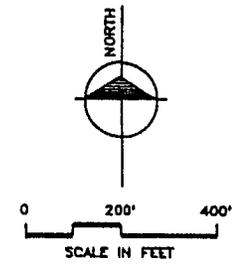
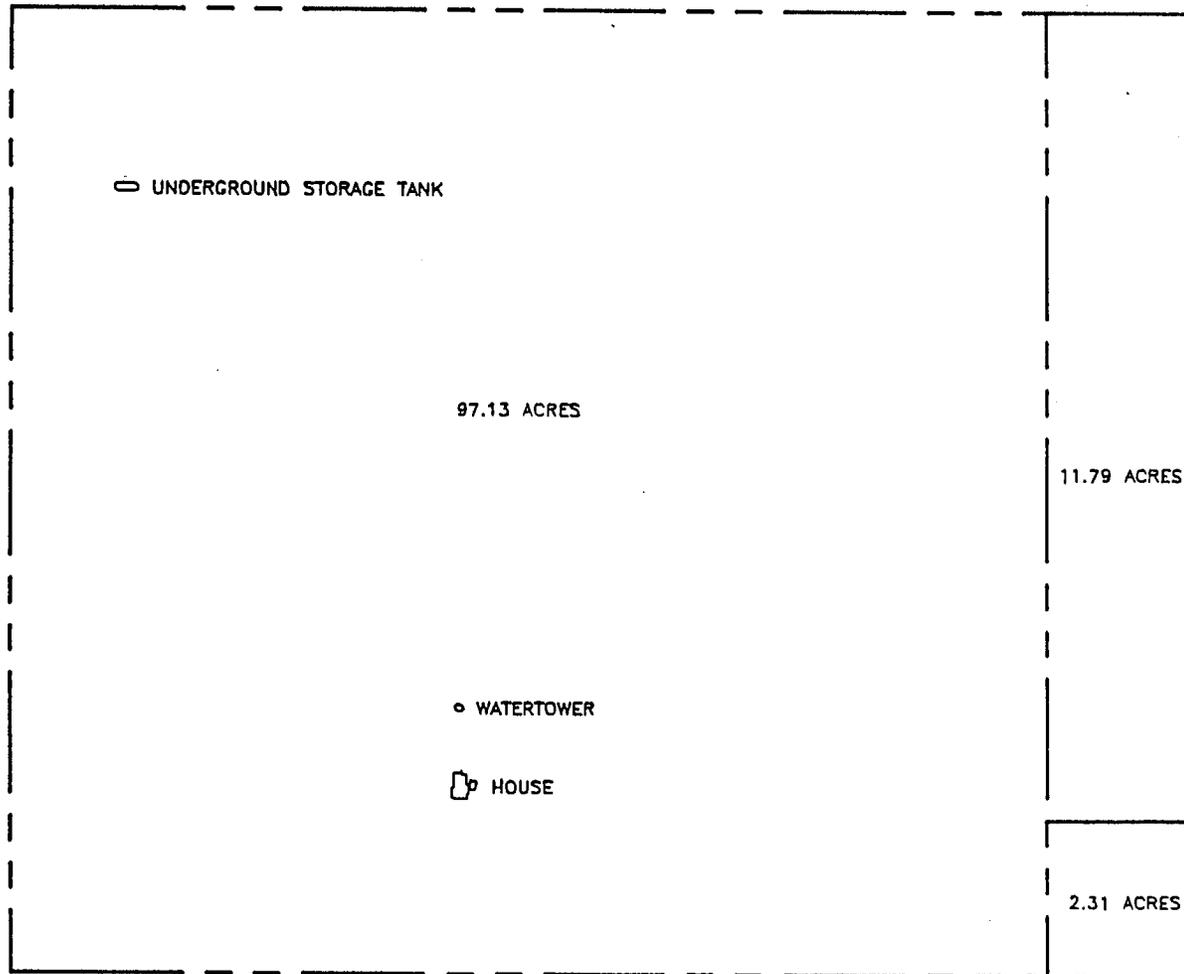


FRANK  
MAP CO.  
970 C...  
373 S...  
9033 S...  
4821 -...  
3773 N...  
4565 N...  
FAX 2...

**SITE**

Site Location Map

**LAWSON**  
& associates  
INC.

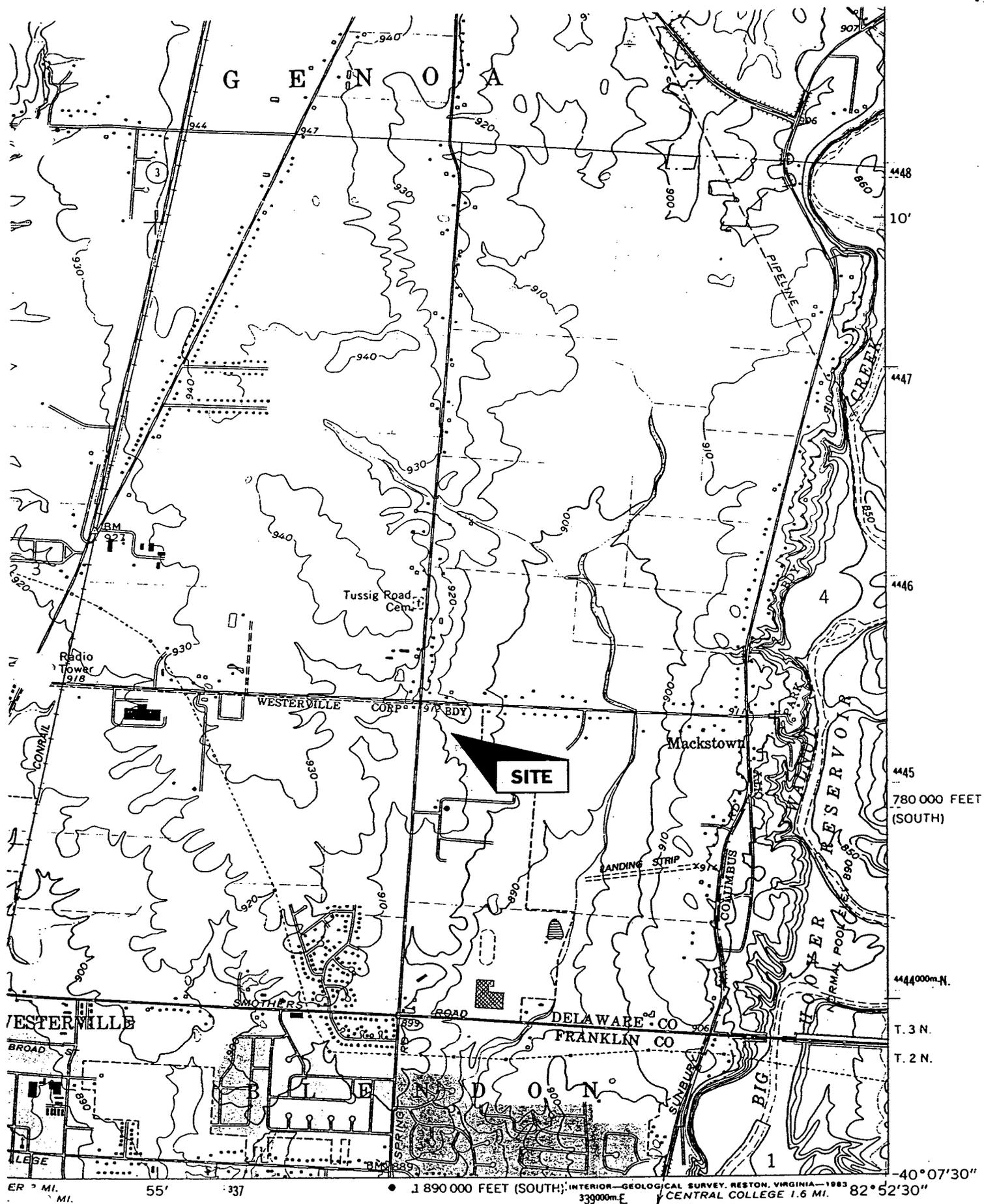


1:1  
FIG2  
DLH101596

<h2>SITE DIAGRAM</h2> <p>OTTERBEIN COLLEGE</p>	
OCTOBER 1996	6177006.003
REVISED:	CHECK BY:



OC 015485



1 890 000 FEET (SOUTH); INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1983  
 339000m.E CENTRAL COLLEGE 1.6 MI. 82°52'30"



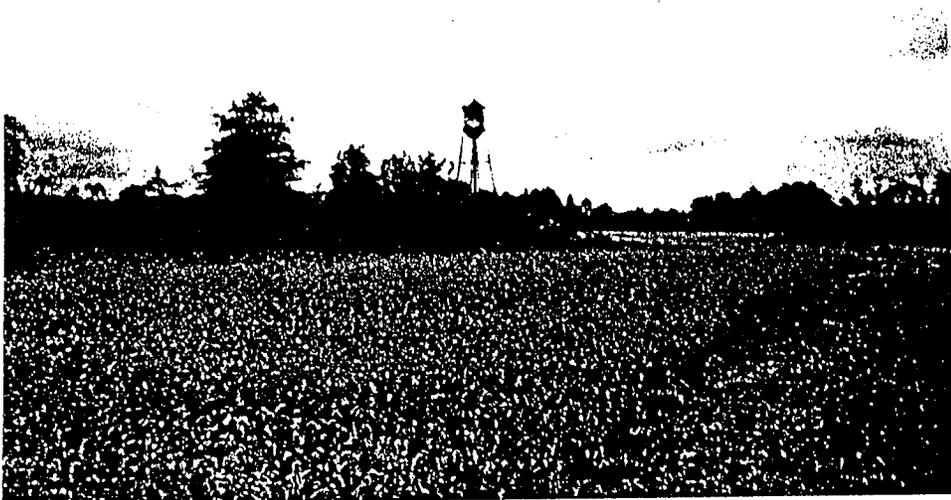
**7.5" U.S.G.S. Topo Map**



- N
- y
- red dirt -----
- State Route

(NEW ALBANY)  
2,464 III SE





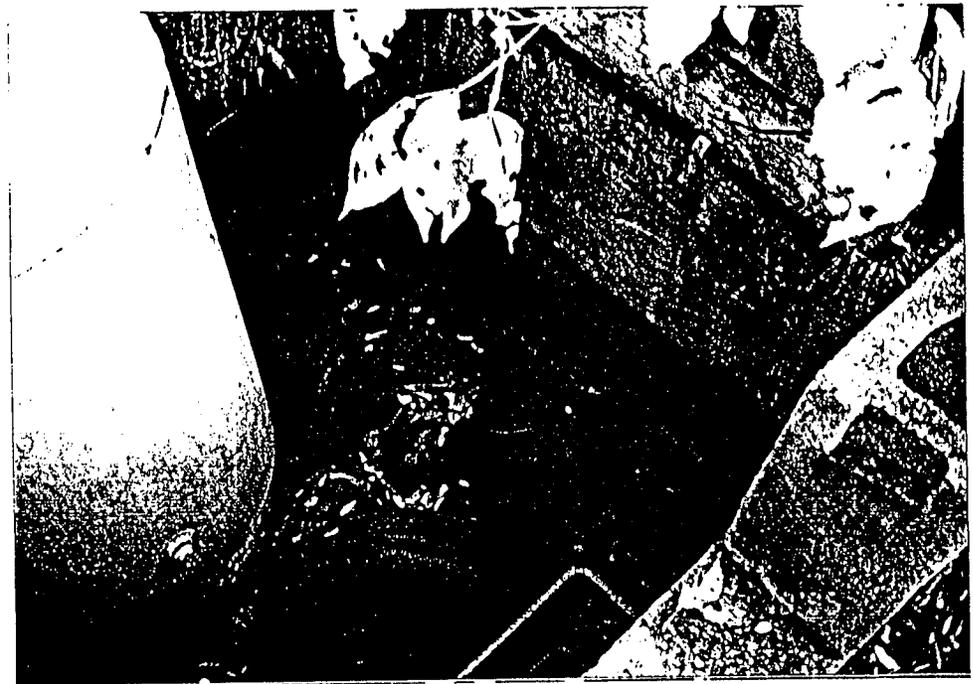
Water tower viewed from the southeast



Brush pile and miscellaneous debris located south of the house



Typical view of open areas of the property



Empty drum and water tank located near base of water tower

**APPENDIX 2.9.2**

**ENVIRONMENTAL RECORD/RADIUS REPORT**

ERIIS Custom Detail Radius Report

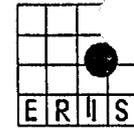
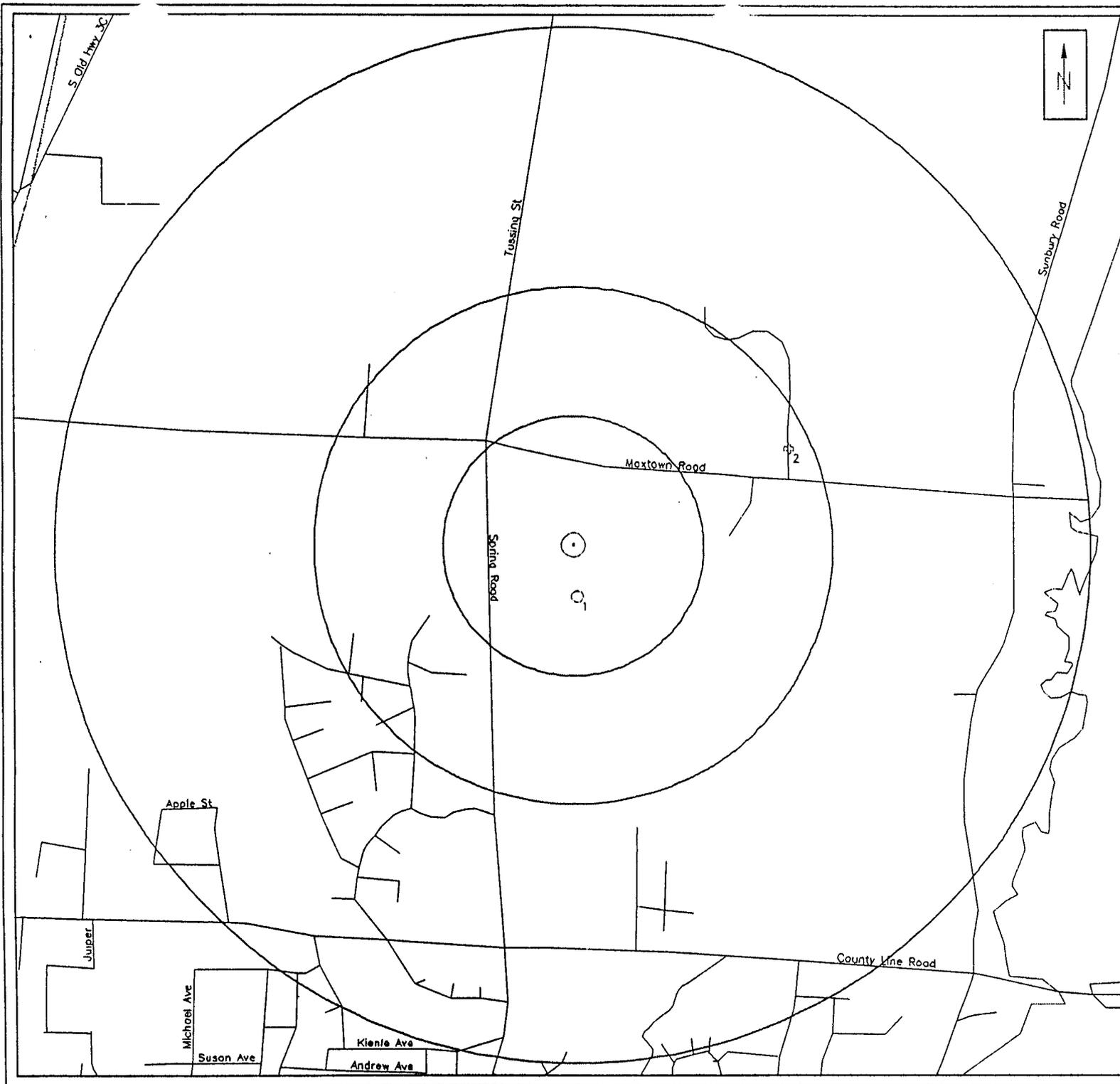
SUBJECT PROPERTY: 6177006.003  
Kilgore Property-Tussic Street Road  
Westerville, OH 43085

ORDERED BY: LAWH02

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OC 015490



505 Huntmar Park Dr, Suite 200  
 Herndon, VA 22070  
 (703)834-0600 (800)989-0402  
 FAX: (703)834-0606

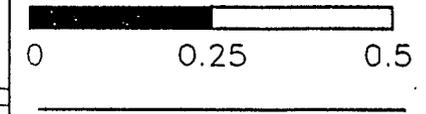
**SITE INFORMATION**

6177006.003  
 Kilgore Property-tussic Street Road  
 Westerville, OH  
 Delaware County  
 Job Number: 115517A  
 Map Plotted: Oct 3, 1996

**MAP LEGEND**

- Site
- Radii .25, .5, 1.000 Mi
- Hydrography
- Railroads
- Roads
- ★ NPL 0 Sites
- RCRIS\_TS 0 Sites
- CERCLIS 0 Sites
- NFRAP 0 Sites
- RCRIS\_LG 0 Sites
- RCRIS\_SG 0 Sites
- ☆ ERNS 0 Sites
- HWS 1 Site
- ⊕ LRST 1 Site
- △ SWF 0 Sites
- ◇ RST 0 Sites

Miles



The information on this map is subject  
 to the ERIS Disclaimer  
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OC 015491

ENVIRONMENTAL RISK INFORMATION & IMAGING SERVICES  
DATABASE REFERENCE GUIDE

**N**  
Date of Data: 05/01/96  
Release Date: 05/13/96  
US Environmental Protection Agency  
Office of Solid Waste and Emergency Response  
703/603-8881

National Priorities List

The NPL Report, also known as the Superfund List, is an EPA listing of uncontrolled or abandoned hazardous waste sites. The list is primarily based upon a score which the site receives from the EPA's Hazardous Ranking System. These sites are targeted for possible long-term remedial action under the Superfund Act of 1980.

**CERCLIS**  
Date of Data: 05/01/96  
Release Date: 05/13/96  
US Environmental Protection Agency  
Office of Solid Waste and Emergency Response  
703/603-8730

Comprehensive Environmental Response, Compensation, and Liability Information System

The CERCLIS Database is a comprehensive listing of known or suspected uncontrolled or abandoned hazardous waste sites. These sites have either been investigated, or are currently under investigation by the U.S. EPA for the release, or threatened release of hazardous substances. Once a site is placed in CERCLIS, it may be subjected to several levels of review and evaluation, and ultimately placed on the National Priorities List (NPL). As of February 1995, CERCLIS sites designated "No Further Remedial Action Planned" (NFRAP) have been removed from the CERCLIS Database.

**RCRIS\_TS**  
Date of Data: 05/10/96  
Release Date: 06/10/96  
US Environmental Protection Agency  
Office of Solid Waste and Emergency Response  
202/260-4610

Resource Conservation and Recovery Information System - Treatment, Storage, And Disposal Facilities

The RCRIS\_TS Report contains information pertaining to facilities which either treat, store, or dispose of EPA regulated hazardous waste. The following information is also included in the RCRIS\_TS Report:

- Information pertaining to the status of facilities tracked by the RCRA Administrative Action Tracking System (RAATS)
- Inspections & evaluations conducted by federal and state agencies
- All reported facility violations, the environmental statute(s) violated, and any proposed & actual penalties
- Information pertaining to corrective actions undertaken by the facility or EPA
- A complete listing of EPA regulated hazardous wastes which are generated or stored on-site

**RCRIS\_LG**  
Date of Data: 05/10/96  
Release Date: 06/10/96  
US Environmental Protection Agency  
Office of Solid Waste and Emergency Response  
202/260-4610

Resource Conservation and Recovery Information System - Large Quantity Generators

The RCRIS\_LG Report contains information pertaining to facilities which either generate more than 1000kg of EPA regulated hazardous waste per month, or meet other applicable requirements of the Resource Conservation And Recovery Act. The following information is also included in the RCRIS\_LG Report:

- Information pertaining to the status of facilities tracked by the RCRA Administrative Action Tracking System (RAATS)
- Inspections & evaluations conducted by federal and state agencies
- All reported facility violations, the environmental statute(s) violated, and any proposed & actual penalties
- Information pertaining to corrective actions undertaken by the facility or EPA
- A complete listing of EPA regulated hazardous wastes which are generated or stored on-site

ERIIS Custom Detail Radius Statistical Profile

Report #115517A

Oct 3, 1996

6177006.003  
 Kilgore Property-Tussic Street Road  
 Westerville, OH 43085

Latitude: 40.143067  
 Longitude: -82.900140

Co: OH

DATABASE	RADIUS (MI)	PROPERTY AREA**	PROPERTY-1/4	1/4-1/2	1/2-1	>1	TOTAL
NPL	1.00		0	0	0		0
CERCLIS	1.00		0	0	0		0
RCRIS_TS	1.00		0	0	0		0
RCRIS_LG	0.25		0				0
RCRIS_SG	0.25		0				0
ERNS	0.25		0				0
LRST	0.50		0	1			1
RST	0.25		0				0
SWF	1.00		0	0	0		0
HWS	1.00		1	0	0		1
NFRAP	0.50		0	0			0
			1	1	0	0	2

Radon Zone Level: NOT REPORTED

A Radon Zone should not be used to determine if individual homes need to be tested for radon. The EPA's Office of Radiation and Indoor Air (202/233-9320) recommends that all homes be tested for radon, regardless of geographic location or the zone designation in which the property is located.

Property is defined as a .05 mile buffer around the site's latitude and longitude.  
 A blank radius count indicates that the database was not searched by this radius per client instructions.  
 NR in a radius count indicates that the database cannot be reported by this search criteria due to insufficient and/or inaccurate addresses reported by a federal/state agency.

ENVIRONMENTAL RISK INFORMATION & IMAGING SERVICES  
DATABASE REFERENCE GUIDE

**i\_SG**

Date of Data: 05/10/96  
Release Date: 06/10/96  
US Environmental Protection Agency  
Office of Solid Waste and Emergency Response  
202/260-4610

Resource Conservation and Recovery Information System - Small  
Quantity Generators

The RCRIS\_SG Report contains information pertaining to facilities which either generate between 100kg and 1000kg of EPA regulated hazardous waste per month, or meet other applicable requirements of the Resource Conservation And Recovery Act. On advice of the U.S. EPA, ERIIS does not report so-called "RCRA Protective Filers." Protective Filers, commonly called Conditionally Exempt Small Quantity Generators (CESQG's), are facilities that have completed RCRA notification paperwork, but are not, in fact, subject to RCRA regulation. The determination of CESQG status is made by the U.S. EPA. The following information is also included in the RCRIS\_SG Report:

- Information pertaining to the status of facilities tracked by the RCRA Administrative Action Tracking System (RAATS)
- Inspections & evaluations conducted by federal and state agencies
- All reported facility violations, the environmental statute(s) violated, and any proposed & actual penalties
- Information pertaining to corrective actions undertaken by the facility or EPA
- A complete listing of EPA regulated hazardous wastes which are generated or stored on-site

**ERNS**

Date of Data: 12/31/95  
Release Date: 03/18/96  
US Environmental Protection Agency  
Office of Solid Waste and Emergency Response  
202/260-2342

Emergency Response Notification System - 1995

ERNS is a national computer database system that is used to store information concerning the sudden and/or accidental release of hazardous substances, including petroleum, into the environment. The ERNS Reporting System contains preliminary information on specific releases, including the spill location, the substance released, and the responsible party. Please note that the information in the ERNS Report pertains only to those releases that occurred between January 1, 1995 and December 31, 1995.

**LRST**

Date of Data: 05/20/96  
Release Date: 05/23/96  
OH Office of the State Fire Marshal  
Bureau of Underground Storage Tanks  
614/752-7938

Ohio Leaking Underground Storage Tank Report

The Ohio Leaking Underground Storage Tank Report (formerly The Petroleum Underground Storage Tank Release Incident Report, or PUSTR) is a comprehensive listing of all reported active and inactive leaking underground storage tanks located within the State of Ohio.

**RST**

Date of Data: 07/16/96  
Release Date: 07/22/96  
OH Office of the State Fire Marshal  
Bureau of Underground Storage Tanks  
614/752-8200

Ohio Underground Storage Tank Report

The Ohio Underground Storage Tank Report is a comprehensive listing of all registered active and inactive underground storage tanks located within the State of Ohio.

**SWF**

Date of Data: 08/08/96  
Release Date: 08/15/96  
OH Environmental Protection Agency  
Division of Solid Waste Management  
614/644-3135

Ohio Solid Waste Facility List

The Ohio Solid Waste Facility List contains information pertaining to all active and inactive permitted solid waste landfills and processing facilities within the State of Ohio.

ENVIRONMENTAL RISK INFORMATION & IMAGING SERVICES  
DATABASE REFERENCE GUIDE

Ohio Master Sites List

Date of Data: 12/31/95  
Release Date: 07/18/96  
OH Environmental Protection Agency  
Emergency and Remedial Response Division  
614/644-2924

The Ohio Master Sites List tracks sites in Ohio where hazardous waste has been found or where there are any known, suspected, or likely release of such wastes from a facility.

NFRAP

Date of Data: 05/01/96  
Release Date: 05/13/96  
US Environmental Protection Agency  
Office of Solid Waste and Emergency Response  
703/603-8881

No Further Remedial Action Planned Sites

The No Further Remedial Action Planned Report (NFRAP), also known as the CERCLIS Archive, contains information pertaining to sites which have been removed from the U.S. EPA's CERCLIS Database. NFRAP sites may be sites where, following an initial investigation, either no contamination was found, contamination was removed quickly without need for the site to be placed on the NPL, or the contamination was not serious enough to require federal Superfund action or NPL consideration.

If a selected database does not appear on this list, it is not available for the subject property's state.







## Summary of Unplottable sites

RIIS Report #115517A

Oct 3, 1996

S ID. BASE	FACILITY ADDRESS COMMENTS	SELECTED BY
39005018687 LRST	Shell 6190 Sawmill Rd Columbus, OH 43085 County: Franklin	ZIP code
39008001771 RCRIS_SG	Ruhl Dick Ford Sales Inc Sawmill Rd Columbus, OH 43085 County: Franklin	ZIP code
39010006166 RST	Mobil Oil Corp. Linworth Rd & St Rt 161 Linworth, OH 43085 County: Franklin	ZIP code
39008005854 RCRIS_SG	Richardson Smith Inc 10350 Olentangy River Rd Worthington, OH 43085 County: Franklin	ZIP code
39008003259 RCRIS_SG	Nissan Training Ctr 150 Wilson Bridge Rd Worthington, OH 43085 County: Franklin	ZIP code
39005018148 LRST	Ohio Lottery Commission 300 Wilson Bridge Rd Worthington, OH 43085 County: Franklin	ZIP code
39005019210 J	Unknown Frt 2204 W Dublin Granville Rd Worthington, OH 43085 County: Franklin	ZIP code
39005016388 LRST	City Of Worthington Linworth & W Dublin Granv Worthington, OH 43085 County: Franklin	ZIP code
39010019426 RST	Bp Oil Co. #02742 7525 Sancus Blvd Worthington, OH 43085-4737 County: Franklin	ZIP code

OC 015499

ERIS ENVIRONMENTAL DATA REPORT  
 RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM  
 RCRIS\_SG - UNPLOTTABLE SITES

ERIS Report #115517A

Oct 3, 1996

ID	FACILITY	ADDRESS
19008001771 DHD040818601	Ruhl Dick Ford Sales Inc	Sawmill Rd Columbus, OH 43085 County: Franklin

Facility Is Not Reported In Raats

HAZARDOUS WASTES:

1.	WASTE CODE:	D001	AMOUNT OF WASTE:	.00000
	SOURCE OF INFO:	Notification		
2.	WASTE CODE:	F003	AMOUNT OF WASTE:	.00000
	SOURCE OF INFO:	Notification		

19008003259 DHD095018925	Nissan Training Ctr	150 Wilson Bridge Rd Worthington, OH 43085 County: Franklin
-----------------------------	---------------------	---

Facility Is Not Reported In Raats

HAZARDOUS WASTES:

1.	WASTE CODE:	D000	AMOUNT OF WASTE:	.00000
	SOURCE OF INFO:	Notification		
2.	WASTE CODE:	D001	AMOUNT OF WASTE:	.00000
	SOURCE OF INFO:	Notification		

005854 D. 2651093	Richardson Smith Inc	10350 Olentangy River Rd Worthington, OH 43085 County: Franklin
----------------------	----------------------	---

Facility Is Not Reported In Raats

HAZARDOUS WASTES:

1.	WASTE CODE:	D000	AMOUNT OF WASTE:	.00000
	SOURCE OF INFO:	Notification		
2.	WASTE CODE:	D001	AMOUNT OF WASTE:	.00000
	SOURCE OF INFO:	Notification		
3.	WASTE CODE:	F003	AMOUNT OF WASTE:	.00000
	SOURCE OF INFO:	Notification		
4.	WASTE CODE:	F005	AMOUNT OF WASTE:	.00000
	SOURCE OF INFO:	Notification		

OC 015500

ERIIS ENVIRONMENTAL DATA REPORT  
OHIO LEAKING UNDERGROUND STORAGE TANKS  
LRST - UNPLOTTABLE SITES

RIIS Report #115517A

Oct 3, 1996

---

RIIS ID	FACILITY	ADDRESS
9005016388	City Of Worthington	Linworth & W Dublin Granv Worthington, OH 43085 COUNTY: Franklin
INCIDENT NO: 253202100 STATUS: Reported LUST TRUST FUND (LTF) ELIGIBILITY: Closure Of An Underground Storage Tank.		
9005018148	Ohio Lottery Commission	300 Wilson Bridge Rd Worthington, OH 43085 COUNTY: Franklin
INCIDENT NO: 252193700 STATUS: No Further Action LUST TRUST FUND (LTF) ELIGIBILITY: Closure Of An Underground Storage Tank.		
9005018687	Shell	6190 Sawmill Rd Columbus, OH 43085 COUNTY: Franklin
INCIDENT NO: 25925400 STATUS: No Further Action LUST TRUST FUND (LTF) ELIGIBILITY: Eligible For Ltf Oversight And/or Spending - Suspected Or Confirmed For Release Of Petroleum From A Regulated Ust.		
9005019210	Unknown	Frt 2204 W Dublin Granville Rd Worthington, OH 43085 COUNTY: Franklin
INCIDENT NO: 250038100 STATUS: Reported LUST TRUST FUND (LTF) ELIGIBILITY: Eligible For Ltf Oversight And/or Spending - Suspected Or Confirmed For Release Of Petroleum From A Regulated Ust.		

---

OC 015501

ERIIS ENVIRONMENTAL DATA REPORT  
OHIO UNDERGROUND STORAGE TANKS  
RST - UNPLOTTABLE SITES

RIIS Report #115517A

Oct 3, 1996

REF ID  
TY ID FACILITY ADDRESS

9010006166 Mobil Oil Corp. Linworth Rd & St Rt 161  
-252246 Linworth, OH 43085  
COUNTY: Franklin

OWNER: Ralph P. & Pauline Erwin MANAGER: Not Reported  
161 & Linworth  
Linworth, OH 43085

TANK ID	STATUS	SUBSTANCE	CAPACITY	AGE	CONSTRUCTION
1	Removed	Gasoline	4,000	Unk	Bare Steel
2	Removed	Gasoline	4,000	Unk	Bare Steel
3	Removed	Gasoline	4,000	Unk	Bare Steel
4	Removed	Gasoline	4,000	Unk	Bare Steel
5	Removed	Gasoline	1,000	Unk	Bare Steel
6	Removed	Unk	1,000	Unk	Bare Steel
7	Removed	Used Oil	550	Unk	Bare Steel

9010019426 Bp Oil Co. #02742 7525 Sancus Blvd  
-252107 Worthington, OH 43085-4737  
COUNTY: Franklin

OWNER: Bp Oil Co. MANAGER: Rick Turner  
200 Public Sq (216) 586-5798  
Cleveland, OH 44114

TANK ID	STATUS	SUBSTANCE	CAPACITY	AGE	CONSTRUCTION
1	Currently In Use	Gasoline	8,000	Unk	Fiberglass
2	Currently In Use	Gasoline	15,000	Unk	Fiberglass

OC 015502

**APPENDIX 2.9.3**

**OWNERSHIP/HISTORICAL DOCUMENTATION**

**CHAIN OF TITLE**  
**PARCEL: #18-002600**

December 18, 1941

December 19, 1941

July 2, 1952

May 24, 1962

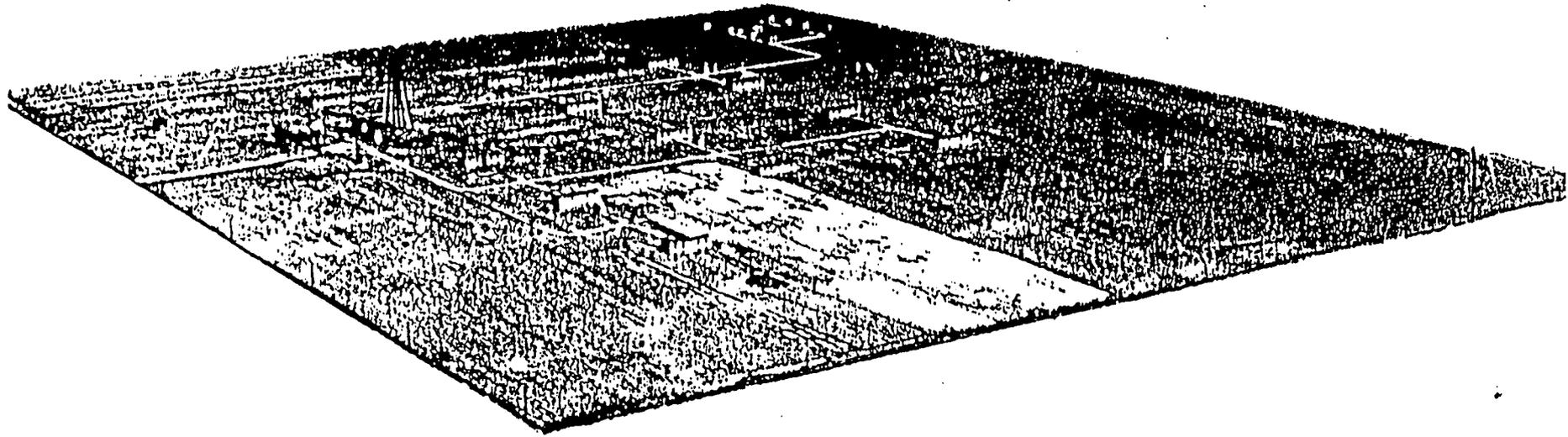
October 12, 1990

Joe Morris and Eva M. Morris  
Kilgore Manufacturing Company

Kilgore, Inc.

Otterbein College

Emmett M. Wickham, et al

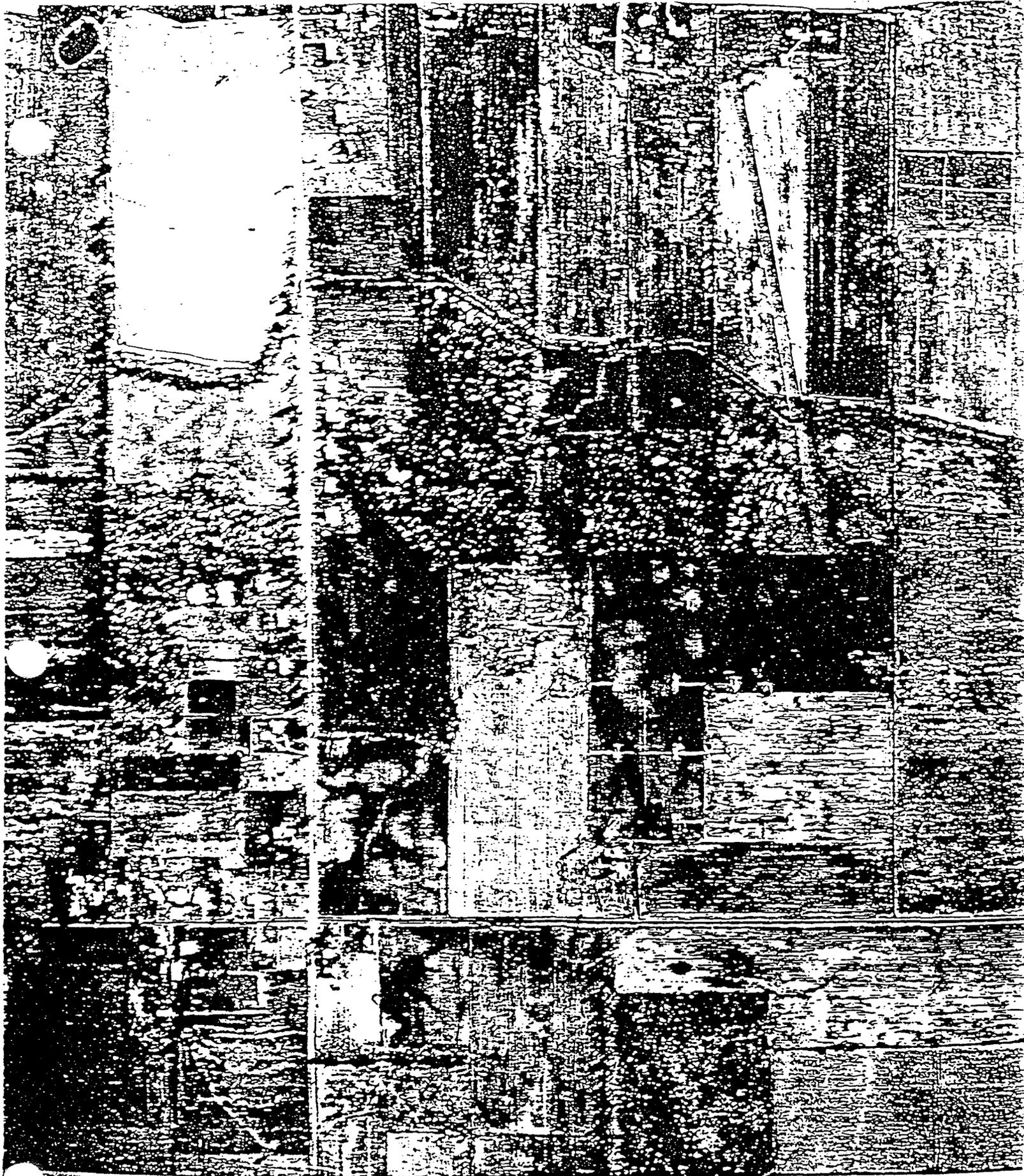


KILGORE, INC.  
PLANT AREA  
DELAWARE COUNTY OHIO

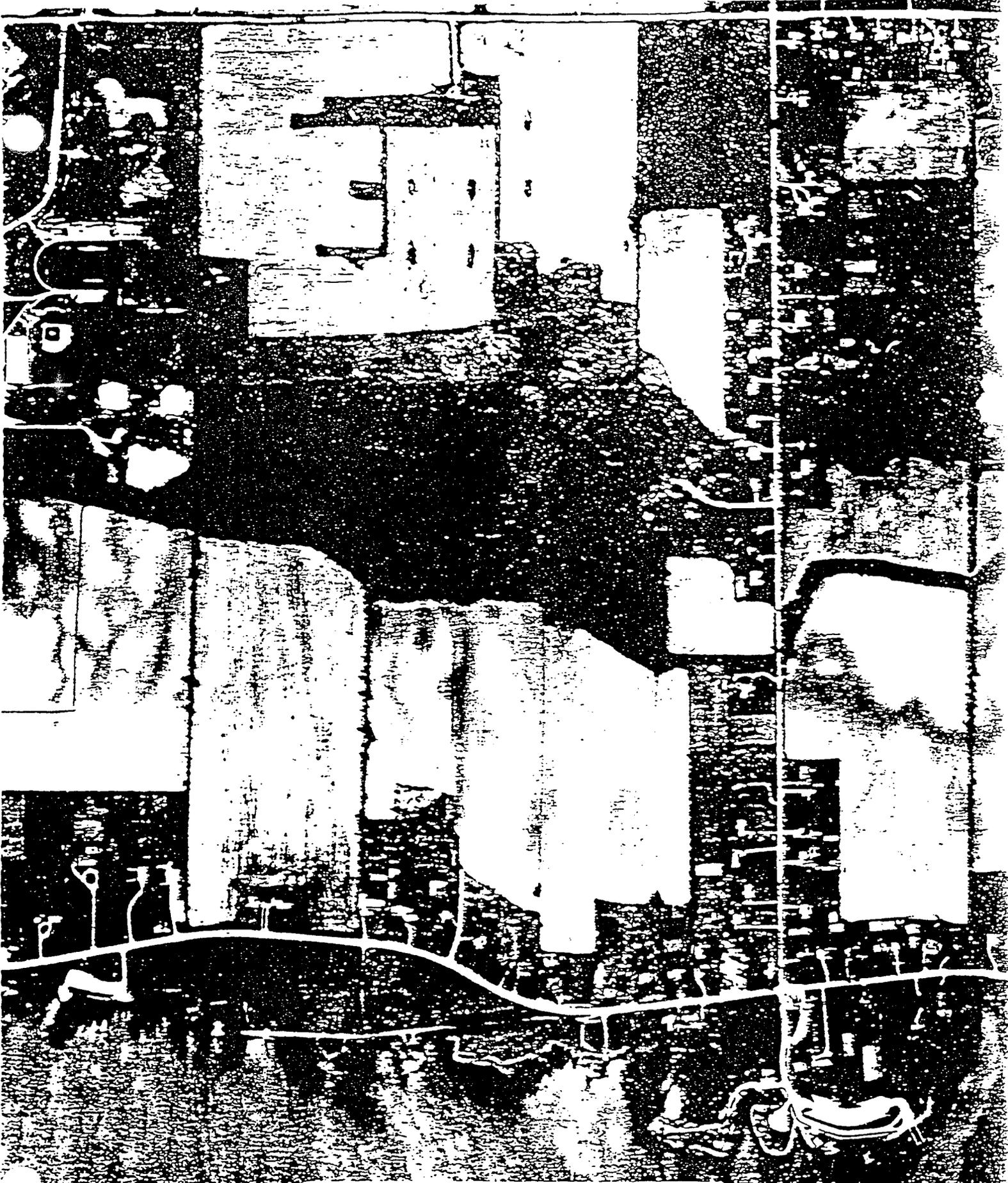
Pre-1962 Aerial Photograph



OC 015505



1967 Aerial Photograph



1986 Aerial Photograph



OC 015507

## HISTORIC MAP SEARCH

**PERTAINING TO:**

Kilgore Property-Tussic Street Road  
Westerville, OH 43085

**REPORT NUMBER:**

115517A

No historic map coverage is available for this site in the ERIS  
Historic Map Collection, for the period covering the years 1867-1990

Copyright (c) 1996 by Environmental Risk Information & Imaging Services.  
505 Huntmar Park Dr. - Ste 200, Herndon, VA 22070, Ph. (703) 834-0600,  
1-800-989-0403, FAX: (703) 834-0606.

**OC 015508**

**APPENDIX 2.9.4**

**INTERVIEW DOCUMENTATION**

**Lawhon & Associates, Inc.**  
6330-A Proprietors Road  
Worthington, Ohio 43085

Phone: 614/436-8400

**Ohio-EPA / Spills Requests**

Project#: 6177006.003

1. Site Description/Name

The Kilgore Farm  
800 Tussic Street Road  
Westerville, Ohio 43085

\_\_\_\_\_  
Name/Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

\_\_\_\_\_  
Agency

\_\_\_\_\_  
Phone



**Lawhon & Associates, Inc.**

TECHNICAL SERVICES

September 30, 1996

Mr. Richard Morris  
Westerville Fire Department  
400 W. Main Street  
Westerville, Ohio 43081

Dear Mr. Morris:

Lawhon & Associates, Inc. is an environmental consulting firm that has been retained to perform an environmental hazard assessment and investigation of property described on the enclosed attachment.

Part of the environmental investigation deals with the presence of underground storage tanks on the subject property, as well as any spills, releases or remediation projects within the vicinity of the property. **Would you please send us any information your files may have for the mentioned attached property?**

We appreciate your assistance in this matter. If you have any questions, please contact me at (614) 436-8400.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Chuck Wilson', is written over a horizontal line.

Chuck Wilson  
Project Manager

caw:6177006.003

Attachment

**Lawhon & Associates, Inc.**  
6300 Proprietors Road  
Worthington, OH 43085

Phone: 614/436-8400  
FAX: 614/438-5499

**Fire Department Information Request**

**Project#: 6177006.003**

1. Property Location & Description

The Kilgore Farm  
800 Tussic Street Road  
Westerville, Ohio 43085

\_\_\_\_\_  
Name/Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

\_\_\_\_\_  
Agency

\_\_\_\_\_  
Phone



## Lawhon & Associates, Inc.

TECHNICAL SERVICES

September 30, 1996

Delaware County Health Department  
Mr. Paul Rosile  
109 North Sandusky Street  
Delaware, Ohio 43015

Dear Mr. Rosile:

Lawhon & Associates, Inc. is an environmental consulting firm that has been retained to perform an environmental hazard assessment and investigation of property described on the enclosed attachment.

Part of the environmental assessment deals with health related problems. Would you please complete the attached health environment questionnaire and return it to Lawhon & Associates?

We appreciate your assistance and have enclosed a self-addressed return envelope for your convenience. If you have any questions, please contact Lawhon & Associates at (614) 436-8400.

Sincerely,

A handwritten signature in black ink, appearing to read 'Chuck Wilson', is written over the typed name.

Chuck Wilson  
Project Manager

caw:6177006.003

Attachment

**Lawhon & Associates, Inc.**  
6300 Proprietors Road  
Worthington, OH 43085

Phone: 614/436-8400  
FAX: 614/438-5499

**Questionnaire**

Project #6177006.003

1. Property Location & Description:

The Kilgore Farm  
800 Tussic Street Road  
Westerville, Ohio 43085

2. Has the property described above been the subject of documented health related problems? YES\_\_\_ NO\_\_\_

(If yes, please provide a brief summary and a point of contact for additional information.)

3. Has the property described above been the subject of documented problems associated with hazardous materials? YES\_\_\_ NO\_\_\_

(If yes, please provide a brief summary and a point of contact for additional information.)

\_\_\_\_\_  
Name/Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

\_\_\_\_\_  
Agency

\_\_\_\_\_  
Phone

**APPENDIX 2.9.5**

**CONTRACT BETWEEN USER AND ENVIRONMENTAL PROFESSIONAL**



## Lawhon & Associates, Inc.

TECHNICAL SERVICES

September 25, 1996

Mr. William W. Keethler  
The Keethler Companies  
7870 Olengtangy River Road  
Suite 200  
West Worthington, Ohio 43235

**Subject: Proposal to Conduct a Phase I Environmental Site Assessment of The Kilgore Farm, 800 Tussic Street Road, Westerville, Ohio**

Dear Mr. Keethler:

Lawhon & Associates, Inc. (L&A) is pleased to submit this proposal to conduct a Phase I Environmental Site Assessment (ESA) at the above-mentioned property. This ESA will be performed in accordance with the general procedures outlined in ASTM Standard E1527-94. Specifically, L&A proposes to complete the following tasks:

1. Review & analyze available property records for current and past uses. This review will include but is not limited to recorded deed records, Sanborn Fire Insurance Mapping and past City/County Street Directories.
2. Conduct interviews with persons knowledgeable about past and present uses of the subject site and surrounding area.
3. Review available aerial photography of the site and adjacent properties to establish and assess historical development of the subject property and surrounding area.
4. Review federal, state, and local lists of hazardous waste sites (designated & under construction) to determine if the subject property is listed, or if any neighboring sites with the potential to impact the subject site are listed. Lists to be reviewed will include the National Priorities List, CERCLIS, RCRA, Registered USTs and Leaking USTs (LUST), licensed solid waste facilities, closed landfills and open dump sites.
5. Contact city, county & state agencies for records of problems associated with the subject property or any neighboring sites.
6. Perform a detailed site investigation of the subject property to determine if there are any adverse environmental conditions present.
7. Determine waste issues, if any.
8. Identify characteristics of wetland environments (if present).
9. Identify suspect asbestos-containing materials (if present).

L&A will provide a written report of findings (3 copies) upon conclusion of the effort.

L&A estimates that this project can be completed for a price not-to-exceed Three Thousand, Seven Hundred Ten Dollars (\$3,710.00). This price includes all drawings, travel and staff charges. Asbestos samples will be billed at an additional \$25 each (if needed).

Lawhon & Associates, Inc. is a licensed company within the state of Ohio. L&A carries an exceptional insurance package, including \$2 million professional liability (Errors & Omissions) and

P.O. Box 377  
6300 Proprietors Road  
Worthington, OH 43085

Phone: (614) 436-8400  
Fax: (614) 438-5499

271 Alpha Park  
Cleveland, OH 44143

Phone: (216) 446-9696  
Fax: (216) 446-9695

OC 015516

pollution liability; \$2 million general liability, with a \$5 million umbrella; and Workers' Compensation. Certificates will be provided upon request.

One signed copy of the attached *General Conditions* will serve as our authorization to proceed with this project. The proposed cost estimate is effective for a period of sixty (60) days. If you have any questions, please call me at 800/436-8402.

Sincerely,

A handwritten signature in cursive script that reads "William T. Lawhon, Jr.".

William T. Lawhon, Jr.  
President

WTL:caw:0178000.006

Attachments

**Lawhon & Associates, Inc.**  
**General Conditions**

1. **PARTIES & WORKSCOPE:** Lawhon & Associates, Inc. (hereinafter referred to as L&A) shall include said company, its affiliates, suppliers, or subcontractors performing the work. "Work" means the specific services to be performed by L&A as set forth in L&A's proposal, and these General Conditions. Client refers to the person or business entity ordering the work to be done by L&A. If the client is ordering the work on behalf of another, the client represents and warrants that the client is the duly authorized agent of said party for the purpose of ordering and directing said work. Unless otherwise stated in writing, the client assumes sole responsibility for determining whether the quantity and nature of the work ordered by the client is adequate and sufficient for client's purposes. The ordering of work from L&A constitutes acceptance of the terms of L&A's proposal and these *General Conditions*.
2. **SCHEDULING OF WORK:** The services set forth in L&A's proposal will be accomplished in a timely, workmanlike and professional manner by L&A personnel at the prices quoted. If L&A is required to delay commencement of the work, or if, upon starting the work, L&A is required to stop or interrupt the progress of its work as a result of changes in the scope of the work requested by the client, to fulfill the requirements of third parties, or other causes beyond the direct reasonable control of L&A, additional charges will be applicable and payable by the client. Additional charges will be billed at rates so stated in the proposal.
3. **CONFIDENTIALITY:** L&A agrees not to violate the confidentiality of the client through the release or disclosure of contractual agreements, testing results, processing procedures and any other information made available by the client in the conduct of said project, without client's express consent, except where such disclosure is required by a court or governmental agency of competent jurisdiction.
4. **INSURANCE:** L&A shall maintain all appropriate Workmen's Compensation, General Liability Insurance, Professional Liability Insurance, and Pollution Liability Insurance.
5. **LIMITED WARRANTY:** Materials supplied by L&A are warranted per the manufacturer's written warranty. Installation is warranted for one year, ordinary use, wear or tear, or damage from abuse or accident excepted. **NO OTHER WARRANTY IS EXPRESSED OR IMPLIED.**
6. **PAYMENT:** The client shall be invoiced at least once each month for work performed during the preceding period. The client agrees to pay each invoice upon its receipt. Past due payments shall bear interest at the rate of 1 1/2% per month on the outstanding balance until paid. In the event of default in payment or any other terms of this Agreement by client, L&A may, at its option: (i) terminate this Agreement; or (ii) declare the unpaid balance due and payable, without notice or demand to client, and sue and recover from client said amount, together with all reasonable costs and attorney's fees incurred by L&A relating to its enforcement or preservation of its rights hereunder.
7. **TERMINATION:** This Agreement may be terminated by either party upon seven (7) days written notice. In the event of termination, L&A will be compensated by the client for all services performed up to and including the termination date.
8. **INDEMNITY:** The client, and if the client is acting as an agent for a principal in ordering work from L&A, then also said principal, agrees to indemnify, defend and hold L&A, its officers, employees and agents harmless from any and all claims, suits, losses, costs and expenses, including but not limited to, court costs and reasonable attorney's fees arising or alleged to have arisen out of or resulting or alleged to have resulted from the performance of L&A's work on or about the project and caused in whole or in part by any negligent, willful or wanton act or omission of the client or the client's principal or any party directly or indirectly employed by the client or the client's principal or anyone for whose costs the client or the client's principal may be liable except to the extent, and only to such degree, as such claim, suit, loss or damage is caused by the sole negligence or willful, or wanton act of L&A, its officers, agents, employees or anyone for whose acts L&A may be liable. In the event that the client or the client's principal shall bring any suit, cause of action, claim or counterclaim against L&A, and to the extent that L&A shall prevail upon such suit, cause of action, claim or counterclaim, the person or business initiating such actions shall pay L&A the costs expended by L&A to answer and/or defend against such suit, cause of action, claim or counterclaim, including reasonable attorney's fees, witness fees, and other related expenses.
9. **NOTICE OF COMMENCEMENT:** This contract constitutes an immediate and continuing request by L&A that it be provided with a copy of the Notice of Commencement on this project from the owner and execution of this agreement constitutes acknowledgment by client of this request. Owner shall prepare and record a Notice of Commencement on this project and respond timely to requests for copies of the Notice of Commencement by subtrades. L&A shall not start work until it has received proof that a Notice of Commencement has been recorded by the owner with the County Recorder and shall be entitled to an extension of time for every day of delay caused by a late filing of the Notice of Commencement.
10. **DIRECT PAYMENTS:** Owner shall make no direct payments to subcontractors or suppliers on the project without giving ten (10) day written notice to L&A of its intention to do so. If L&A disputes or contests this direct payment in writing to the owner within this ten (10) day period, owner will refrain from any such direct payment unless L&A is adjudged bankrupt, insolvent or in receivership.
11. **COMPLETE AGREEMENT:** Client and L&A mutually agree that the L&A written proposal and these *General Conditions* comprise the full and entire agreement between the parties and no other agreement or understanding has been entered into or will be recognized, and that all negotiations, acts, or representations made prior to the ordering of work shall be deemed merged in, integrated and superseded by the L&A proposal and these general conditions. This agreement may be amended only by an instrument in writing signed by both parties.

Name: William W. Keethler

Company: THE KEETHLER COMPANY

Date: Sept 27, 1996

**APPENDIX 2.9.6**

**QUALIFICATIONS**

## **RUSSELL K. SMITH**

### **Education and Registrations**

B.S., Chemical Engineering, The University of Toledo, 1972  
M.S., Chemical Engineering, The University of Toledo, 1978

### **General Background**

As a chemical engineer and Certified Industrial Hygienist with 23 years of experience, Mr. Smith has solved a variety of problems related to environmental control in industrial process operations. He has directed projects related to environmental assessments, permitting, and remediation; pollution prevention by recycle, reuse, and process and chemical replacement; indoor air evaluations and ventilation design improvements related to lead, acids, solvents, CO, and particulates; sampling programs for air, waste-water, and solid wastes; and has conducted waste minimization surveys and process change investigations for iron and steel plants, solid and hazardous waste facilities; TSCA and RCRA waste treatment facilities; and cleaning, de-greasing, and electroplating facilities.

### **Project Experience**

- Managed testing and re-permitting of a hazardous waste processing facility to bring the facility into Clean Air Act compliance. Successfully negotiated new limits at 10000 times those initially recommended by Ohio EPA
- Permits to install and operate prepared for hazardous waste treatment process, dry cleaning, aluminum flake manufacturing, UST installation, and painting process
- Determined ambient carbon monoxide and dust levels in a combined garage/office complex. Recommended ventilation changes which reduced levels as predicted
- Managed a \$250,000 design effort for an EPA SITE grant project to demonstrate low cost in-situ containment/treatment system
- Managed removal, design and re-installation of both above and below-ground tank systems for more than 100 sites. Managed over 50 site assessment and over 20 remediation projects
- Manage, design, and operation of a system for a soil venting
- Prepared 35 percent design for waste disposal, ventilation and heating/air conditioning systems for the U. S. Army Chemical Defense Training Facility, at Fort McClellan, AL used to train soldiers to decontaminate nerve and blister agents
- Prepared a concept design and led detailed design for ventilation and heating systems for the U. S. Army BZ Demilitarization Facility at Pine Bluff Arsenal, AR
- Led a task to evaluate industrial hygiene controls in the electronic industry to identify good control strategies for improvement of the industry state-of-the-art
- Participated in the evaluation of industrial hygiene in lead and ink production plants, and recommended actions to improve the controls and reduce worker exposure
- Evaluated tests of an aerosol decontamination for use in airlocks as an adjunct to air changes for contamination prevention
- Designed, developed and successfully piloted a process to make chlorinated lime with zero discharge
- Designed ventilation controls and scrubbers necessary to test a pressure-swing adsorption system against high HCN challenge quantities for laboratory tests

### **Certifications and Registrations**

Certified Industrial Hygienist  
Professional Engineer, State of Ohio, 1978, Registration No. E-043545  
Member, American Institute of Chemical Engineers  
Member, American Industrial Hygiene Association  
Asbestos Hazard Evaluation Specialist—Ohio #32016  
40-Hour Health & Safety Training—Hazardous Waste Operations  
Underground Storage Tank Installer #10-93-2131

# WILLIAM T. LAWHON, JR.

## Education

B.S., Biology, Memphis State University, 1968  
M.S., Biology, Memphis State University, 1969  
Ph.D., Ecology, The University of Tennessee, 1973

## General Background

Dr. Lawhon is founder and President of Lawhon & Associates, Inc.

Prior to founding Lawhon & Associates, Inc., Dr. Lawhon was Director of Research & Development for International Spike, Inc. Also, Dr. Lawhon was employed as research scientist and managed the Environmental Section at Battelle Laboratories for the period 1973-1981.

## Project Experience

- Conducted "sick building" investigation
- Managed "mysterious disease phenomenon" for fertilizer facility
- Conducted asbestos assessments for state institutions
- Designed and managed construction of 10,000 square foot research laboratories
- Managed construction of pesticide manufacturing facility
- Established product quality assurance plan and OSHA compliance program
- Managed an asbestos abatement project for a 28 acre, 32 building site
- Served as an expert witness for the Department of Energy and presented testimony on environmental issues
- Managed nationwide EPA program to determine threshold levels of selected organic compounds
- Supervised an environmental assessment of a 75 acre site for buried asbestos waste materials
- Supervised soil farming of gasoline contaminated soils
- Supervised multiple site assessments
- Supervised PCB spill and clean-up for local school system
- Managed a venting system project designed to prevent contamination from entering a public building
- Managed a soil venting project to remove 30,000 yd<sup>3</sup> of gasoline contamination from an industrial site

## Registrations

Asbestos Hazard Evaluation Specialist—Ohio #3160

# CHARLES A. WILSON

## Education

Ohio State University, 1987-1989

## General Background

Mr. Wilson joined Lawhon & Associates, Inc. in June, 1993. He is currently responsible for coordinating and conducting environmental assessments. Prior to joining L&A, he gained extensive experience in project design and management of asbestos related projects.

## Project Experience

### Asbestos

- Conducted numerous AHERA surveys
- Designed and managed numerous AHERA re-inspection projects
- Designed and managed numerous asbestos abatement projects
- Performed numerous asbestos surveys and compiled reports, including recommendations and cost estimates
- Served as on-site monitor for numerous asbestos abatement projects

### Underground Storage Tanks

- Completed written reports for underground storage closure and remediation projects
- Conducted soil sampling of test borings for underground tank projects
- Performed magnetic underground storage tank searches using Fisher M-Scope TW-6 pipe and cable locator

### Environmental Assessments

- Conducted Phase 1 Environmental Assessments for over 200 facilities
- Supervised completion of over 100 Phase 1 Environmental Assessments

### Industrial Hygiene

- Conducted industrial hygiene sampling
- Managed stack emissions monitoring project for large commercial establishment

## Registrations

Asbestos Hazard Evaluation Specialist—Ohio #31284  
Asbestos Hazard Abatement Specialist—Ohio #23212  
Asbestos Management Planner—Michigan #20031  
Asbestos Inspector—West Virginia #I-92-0206  
ASTM Member #BB2434600  
Member ASTM Committee E-50 on Environmental Assessments  
Confined Space Entry Training, 29 CFR 1910.146  
40 Hour Health & Safety Training—Hazardous Waste Operations  
36 Hour Certified Tank Installer Training

# **ROBERT F. MILLIGAN**

## **Education**

B.A., Arts and Sciences, Zoology and History Majors, Miami University, 1994

## **General Background**

Mr. Milligan joined Lawhon & Associates in October of 1994. He is presently responsible for conducting environmental assessments. Prior to this position, Mr. Milligan's duties involved hands-on technical activities on numerous field projects.

## **Project Experience**

### **Asbestos**

- Conducted asbestos surveys for both residential and commercial facilities on a statewide basis
- Performed on-site monitoring for asbestos abatement projects

### **Environmental Assessments**

- Conducted over 100 Phase I Environmental Assessments for residential, commercial, and industrial properties
- Completed written reports of findings to financial institutions, realtors and attorneys
- Reviewed over 200 Environmental Assessment reports prior to client presentation
- Performed numerous wetland determinations
- Performed over 500 technical reviews for an environmental insurance underwriter

### **Subsurface Investigations**

- Reviewed numerous underground storage tank closure and remediation projects
- Conducted soil sampling at commercial and industrial facilities

## **Registrations**

Asbestos Hazard Evaluation Specialist—Ohio #32797  
Fairfield County Wetlands Seminar, 1996  
Member Society of Wetland Scientists  
Basic Wetland Delineation 5 Day Course, Memphis, 1996  
Wetland Vegetation 4 Day Course, Toledo, 1996

## Appendix B

### Trenching Letter Report



## Lawhon & Associates, Inc.

TECHNICAL SERVICES

December 12, 1996

Mr. William Keethler  
The Keethler Companies  
7870 Olentangy River Road  
Suite 200  
West Worthington, Ohio 43235

**Re: Results of Test Pits at the Southeast 11 Acre Tract of the Kilgore Farm, 800 Tussic Street, Westerville, Ohio**

Dear Mr. Keethler:

On Monday, October 7, 1996, representatives of Lawhon & Associates, Inc. (L&A) mobilized equipment and materials to the 11 acre tract at the southeast corner of the former Kilgore Family Farm, 800 Tussic Road, Westerville, Ohio to install test trenches. The area investigated for this project was an approximate 3.5 acre section of the tract formerly known as the "Burial Area". The intent of the test trenches was to investigate the possible presence of energetic and ordnance from the former use of the site for the manufacture and testing of munitions. The site location is shown on the attached Figure 1. Figure 2 provides a site map that shows location of trenching activities in relationship to the site.

A total of twenty (20) test trenches were installed according to Task 3, Subtask A of L&A's September 25, 1996 proposal. The trenches were approximately 10 feet deep and 3 feet wide, averaging 160 feet in length in a north-south orientation, beginning at the south property border. The trenches were installed on approximately 10 foot centers in the area (Figure 3 attached). Two of the trenches were installed in an east-west fashion, north of the initial 18 trenches. The total square foot area covered by the trenches was 9,600 square feet (approx. ¼ acre, or 7% of the available area).

Trenches were installed utilizing a trackhoe. As trenches were excavated, the excavated material was sifted through the bucket teeth and deposited next to the trench excavation. Suspect energetic and hazardous materials were segregated and placed in 55 gallon drums. The drums were then soaked in water to reduce the deflagration hazard. Once the trench excavation was complete, all excavated soils were placed back into the trenches for storage and safety reasons.

### Results of Trenching

Three locations were noted during trenching where specific items were encountered:

1. The north end of trench #1.
2. The north end of trench #16.
3. The southern third of trench #18 (Figure 2).

P.O. Box 377  
6300 Proprietors Road  
Worthington, OH 43085

Phone: (614) 436-8400  
Fax: (614) 438-5499

271 Alpha Park  
Cleveland, OH 44143

Phone: (216) 446-9696  
Fax: (216) 446-9695

OC 015525

The items encountered are listed below:

#### Area 1: North End of Trench #1

A number of suspected energetic materials were encountered approximately 50 feet from the north end of trench #1. The items included primers and projectile fuses. The items were segregated from the waste in a five gallon pail. These items were subsequently disposed of by the US Army by detonation on November 13, 1996. A copy of the US Army disposal report is included as Appendix A.

#### Area 2: North End of Trench #16

Near the northern end of trench #16 (Figure 3), a reddish, friable solid was encountered that did not appear to be a native material. Additional small pockets of this reddish material were encountered in trenches 10 through 18; however, the largest deposit was encountered in trench #16. A sample of the material was collected and submitted to Belmonte Environmental Laboratories in Dayton, Ohio for analysis of phosphorous and metals content.

Laboratory results indicated that the material contained 43% phosphorous and 1% iron. Based on the composition of this material, it was most likely a smoke material for flare filling. According to Mr. Allen Harness of the Ohio EPA, the material would not be regulated as a hazardous waste. Because the material is not energetic, the Army would not detonate it on-site for disposal. A disposal plan for this material is currently under review by L&A and will be recommended to the client soon. A copy of the laboratory analyses are included as Appendix B.

#### Area 3: Southern End of Trench #18

Approximately 50 feet from the southern end of trench #18 (Figure 3), a number of empty casings were encountered. The casings bore a warning and were segregated as possible explosive materials. Upon review by the US Army, the casings were deemed as empty and non-explosive and can be disposed of as non-regulated waste.

The previously mentioned areas were not the only locations where non-native materials were encountered. Miscellaneous single items were found in almost every trench. These items included:

- Trip Flares
- M112 Signal Flares
- Smoke Grenade Bodies & Smoke Mix
- M66 Flares
- 155 mm Illuminating Candles
- Smoke Grenade Fuses
- M56 Projectile Fuses

These locations were mentioned because they were the only locations where concentrations of potentially hazardous materials were encountered.

From a hazard potential, the materials encountered do not appear to represent a serious threat to human health. The main issues are safety issues due to potential injuries from an explosion or fire concerning these materials; however, because these materials are kept quite moist while in the ground and were at depths of 2 to 6 feet, the danger would be low unless the materials are uncovered during construction and allowed to dry.

### Disposal

A total of two 5 gallon buckets of primers and fuses were segregated as suspected energetic materials. These materials, while not truly an energetic hazard, were disposed of by the US Army on-site by detonation according to US Army procedure. A copy of the "Energetic Ordinance Incident Report" is attached as Appendix A.

A total of eight 55 gallon drums of suspect materials were retrieved from the soils excavated from the trenches. The materials were submerged in water as a precaution to reduce any potential energetic or flammable hazards. Based on laboratory results and discussions with the OEPA, the remaining materials in these drums are not considered hazardous materials. A plan for disposal of the materials is forthcoming to the client from L&A.

### Discussion

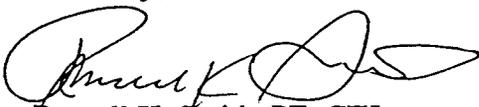
L&A installed a total of twenty trenches on the 11 acre tract for this project. The trenches were installed in a 3.5 acre section of this tract known as the "Burial Area." The trenches were installed with a track mounted backhoe which sifted through excavated soil looking for potential energetic or flammable materials. When such materials were found, they were segregated from the excavated materials, placed in 55 gallon drums, and wet down to reduce any potential hazards. A total of 8 drums of materials were generated.

Although materials were encountered throughout the area of investigation, it is the opinion of L&A that hazardous materials which would threaten human health are not an issue. The main issues in L&A's opinion appear to be safety issues which would arise from a potential explosion or fire due to these materials. In L&A's opinion, as long as these materials remain wetted down, or covered over, the potential hazards at this site due to these materials are low.

It is L&A's opinion that there is no remaining environmental hazard due to any residual energetic materials.

If you have any questions, please contact me at (614)436-8400.

Sincerely,



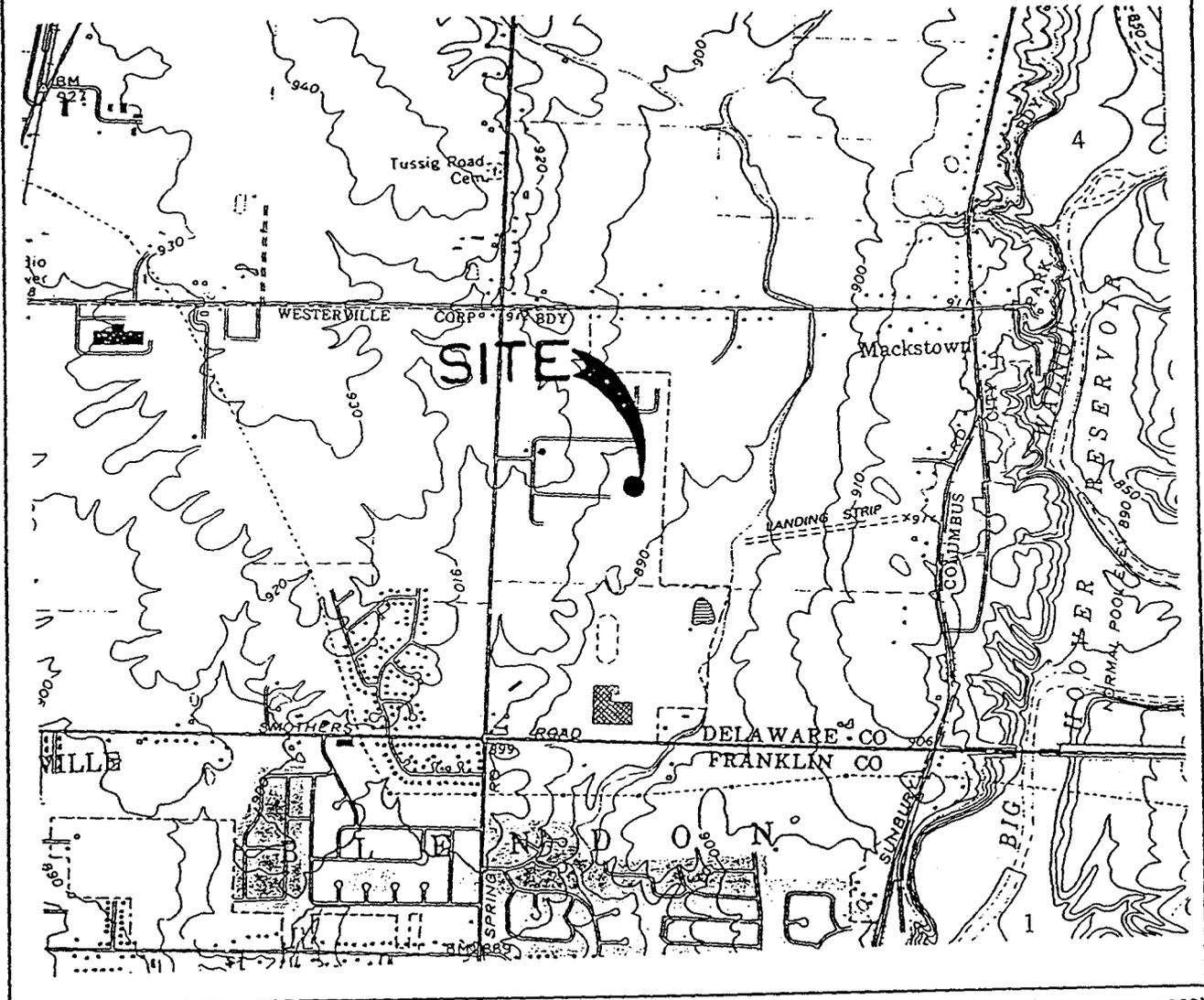
Russell K. Smith, PE, CIH  
Vice President

Attachment

RKS:PJB:SRS:mg.6177006.002.projects

OC 015527

## FIGURES



Galena, Ohio., Quadrangle, U.S.C.S., 1965 (Photorevised 1982)

Westerville, Ohio  
Delaware County



0 2000  
SCALE IN FEET

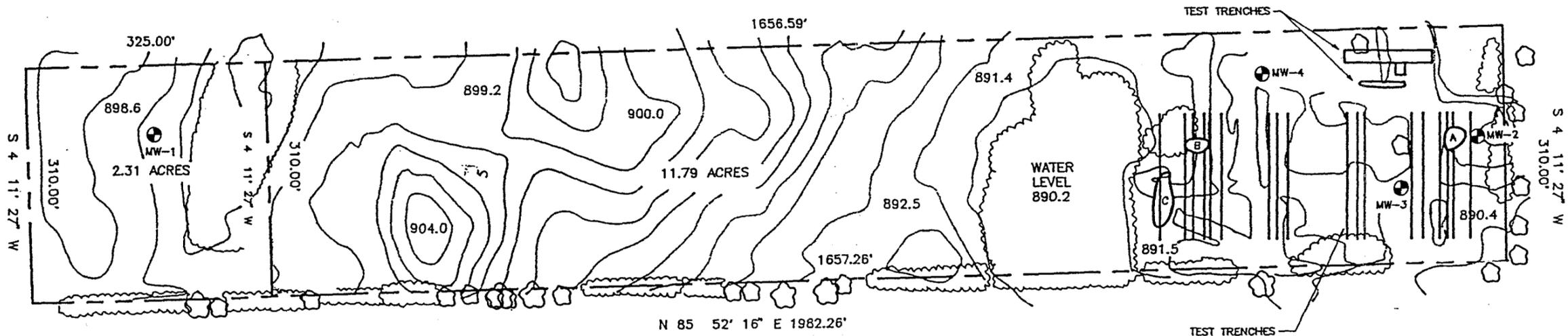
FIG1  
DLH121396

FIGURE 1  
SITE LOCATION MAP  
KILGORE FARMS  
14.104 ACRE TRACT  
WESTERVILLE, OHIO

DECEMBER 1996

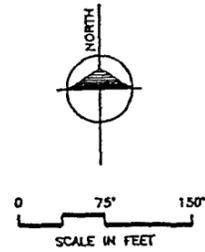
6177006

**L**AWHON  
& associates  
INC



**LEGEND**

- MONITORING WELL LOCATIONS
- A PROJECTILE FUSE
- B RED PHOSPHORUS
- C FLARE TUBES



**SITE MAP**  
**KILGORE FARMS**  
**14.104 ACRE TRACT**  
**WESTERVILLE, OHIO**

REVISED:

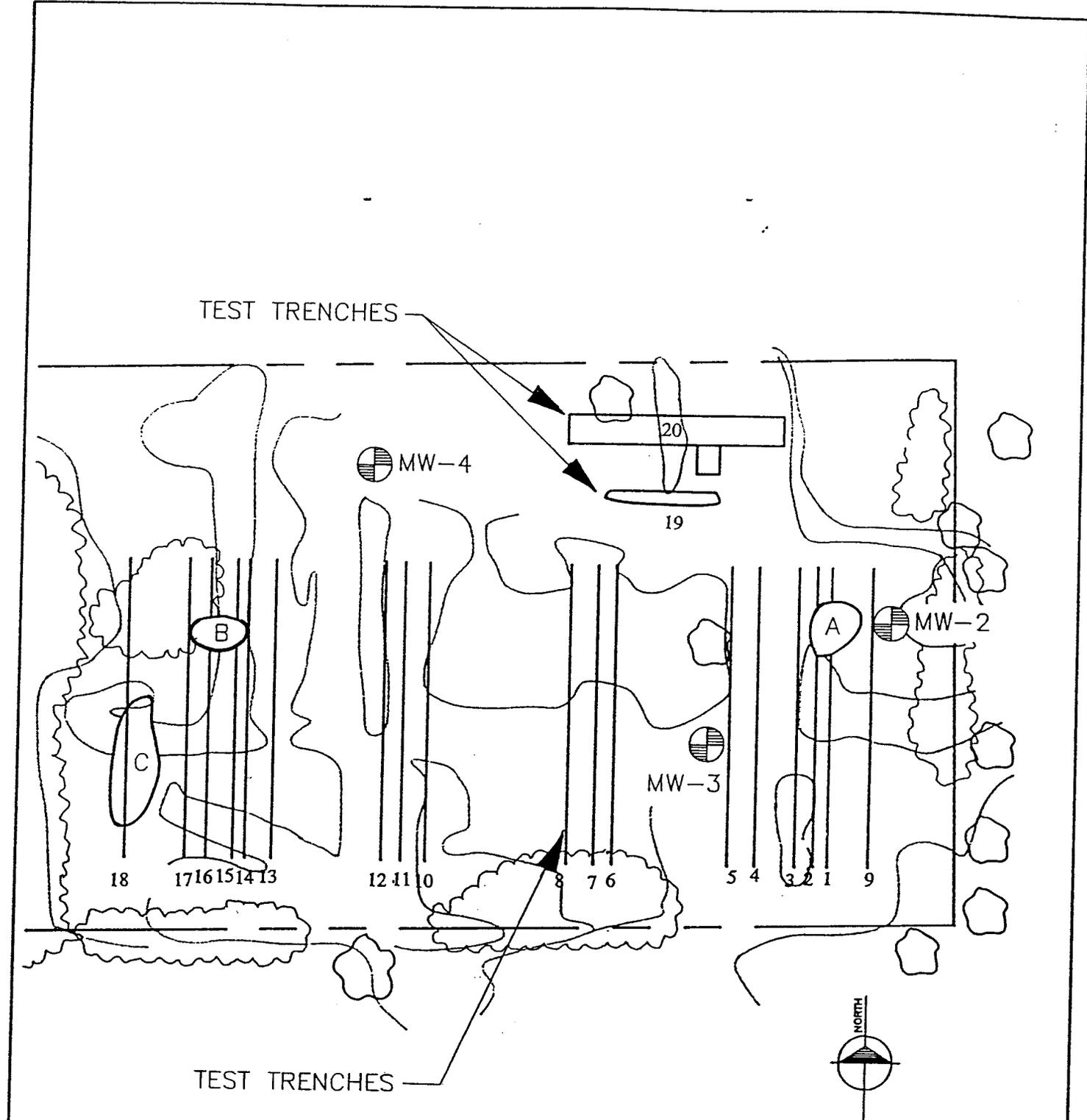
CHECKED BY:

Drawing Number 6177006.003

**FIGURE 2**



6300 Proprietors Rd. Worthington, Ohio 43085 (614) 436-8400 Fax (614) 438-5499



DRAWING NOT TO SCALE

1:1  
SGFIG2D  
DLH121396

<p>FIGURE 3</p> <p><b>SITE MAP</b></p> <p>KILGORE FARMS 14.104 ACRE TRACT WESTERVILLE, OHIO</p>	
DECEMBER 1996	6177006.003
REVISED:	CHECK BY:



OC 015531

**APPENDIX A**

**US ARMY ENERGETIC ORDINANCE INCIDENT REPORT**

**EXPLOSIVE ORDNANCE INCIDENT REPORT**

For use of this form, see FM 7-21.1; the proponent agency is US Army Training and Doctrine Command

Incident Number:

71-16-97

Control Number:

542-064-97

Unusual

Routine

Reported: 13-Nov-96 10:10  
 Departed Unit: 13-Nov-96 10:10  
 Arrived Site: 13-Nov-96 10:45  
 Depart Site: 13-Nov-96 11:00  
 Arrived Unit: 13-Nov-96 11:50  
 Travel Hours: 3.42  
 Air Hours: 0.00  
 Miles: 175  
 Man Hours: 52.00  
 Adjust Hours: 0

Incident Location:  
 KILGORE MANUFACTURING FARM  
 WESTERVILLE, OH (US)

Grid:  
 Latitude:  
 Longitude:

Supported:  
 WESTERVILLE POLICE DEPT  
 SGT JONES  
 WESTERVILLE  
 WESTERVILLE, OH  
 Phone: (614) 890-8515  
 Other Contact:

Item(s) Reported:  
 Various Flares, unknown ordinance, reddish reactive chemical

Personnel Dispatched  
 1LT Kreager, Derek A.  
 SPC Bonner, Corey W.

SSG Trezza, Maribel  
 SPC Locant, Jason L.

SPC Kearns, Lewis D.  
 SPC Lowe, Jeffery L.

Ordnance Item(s) Identification and Disposition

Quantity	UI	Description	Fuze Condition / Lot Number	NEW (lbs)	Initial Disposition:	Final Disposition:
3	EA	Trip Flare	model unknown (Armed) Lot #unknown	0	TRANS SDA	DISP BY DET
13	EA	M112 Signal	Flares (Armed) Lot #unknown	0	TRANS SDA	DISP BY DET
2	EA	65 gal drum	of reactive chemical (Unarmed) Lot #unk	0	OTHER	CIVIL LAW
120	EA	Smoke grenade	bodies and smokes mix (Unarmed) Lot	0	OTHER	CIVIL LAW
400	EA	M66 flare	(Armed) Lot #unknown	0	OTHER	CIVIL LAW
36	EA	155mm flare	igniting candles (Unarmed) Lot #unknown	0	OTHER	CIVIL LAW
11	EA	Smoke grenade	fuzeas, model unk: (Unarmed) Lot #unkn	0	TRANS SDA	DISP BY DET
142	EA	M56 projectile	fuzeas (Unarmed) Lot #unknown	5	TRANS SDA	DISP BY DET
Total Net Explosive Weight (lbs):				5.00		

# EXPLOSIVE ORDNANCE INCIDENT REPORT

Incident Number: **71-16-97**

Categories:

- News Media Coverage
- Civil Law Enforcement
- Chemical Response
- Nuclear Response
- Transportation Accident
- USACOE Supported
- Reserve Component Support
- Formerly Used Defense Site
- Injuries
- Death(s)
- Drug Related

Threat:

- Imminent Threat
- Threat
- Extended Threat

Demolition Materials Used:

DODIC:	Quantity:	U	Description / Lot Number:	NEW (lbs)	Total NEW (lbs):
M766 (1375-1671)	6	EA	IGNITER, TIME BLASTING FUSE M60 Lot SGK 92 AO13-002	0.000	0.0006
M670 (1375-5246)	42	FT	FUSE, BLASTING TIME M700 Lot EBM92 G002-042	0.0026	0.11214
M131 (1375-9440)	6	EA	CAP, BLASTING NON-ELEC M7 Lot CIL-1-8	0.0026	0.01608
M023 (1375-7040)	20	EA	CHG DEMO, M112 COMP C-4 Lot LOP92 B021-004	1.2	25
Total Net Explosive Weight (lbs):					25.13

Environmental Protection Agency Coordination:

Agency: OHIO EPA  
 Person Contacted: ALAN HESS  
 Phone: (614) 644-120  
 Contact Date/Time: 13-Nov-96 10:00

On-Site Disposal Approve   
 Permit Granted: 13-Nov-96 10:00  
 EPA Permit #: vertical

Additional Information:

EPA representative (Harness) at site  
 Disposal area was field adjacent to site

Signature of Unit Commander: (Record Copy Only)  
 DEREK A. KREAGER, 1LT, Commanding

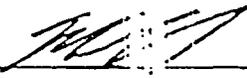
*Derek Kreager*

Date: 13 Nov 96

**EXPLOSIVE ORDNANCE INCIDENT REPORT**Incident Number: **71-16-97**

Narrative (Include all significant events and details)

All Explosive listed where contained during the incident.

TEAM LEADER 

TEAM MEMBER \_\_\_\_\_

13 Nov 96

Call was initially received from commercial contractor, Steve Sawyer, working at Kilgore farm in Westerville, Ohio. Items reported were military flares and unknown explosive material dug up and placed in 55gal drums. SFC Ehman informed Mr. Sawyer that he would have to notify local authorities and have them notify unit. Once notified by Westerville PD, a five member team responded to site to identify items. Documentation from previous remediation efforts identified the following materials as being buried on site at one point in time:

red phosphorous  
 ammonium and potassium nitrate  
 caps and primers  
 black powder  
 M1 flamethrowers  
 M112 photoflash cartridges  
 land flares  
 M66 flares  
 155mm illuminating shells

Documentation stated that all items at site were supposed to be remediated in 1963 when 120 tons of material was removed, but that EOD had been called on two occasions to detonate uncovered flare material. These items were not buried according to the historical drawings.

Initial reconnaissance of items resulted in positive identification of 155mm illuminating candles without shells, smoke grenade fuzes and bodies, empty M112 flare boxes, M56 projectile fuzes, various unknown pyrotechnics and 2 55gal drums of unknown reddish material assumed to be red phosphorous. The contractor stated that the reddish material burned violently when dried. The PA stated that prior testing had failed to identify the chemical composition of this substance.

The Army Corps of Engineers did not take responsibility for the site and would not declare it a FUDS site.

An EPA representative was on site (Harness) and asked for input on disposition instructions. He stated items did not fit requirements for hazardous waste and therefore were unregulated.

The fuzes were identified as an immediate hazard and were destroyed on site. Several canisters with intact primers were also destroyed by detonation. All other material had no means of initiation and was considered hazardous to release into the environment. The EPA stated they would work with the contractor for possible disposal options. The contractor was informed that if any fuzes or unidentified ordnance was uncovered to call the 71st EOD. He was also briefed on hazards associated with pyrotechnic material and red phosphorous.

The operation took two days to catalog and dispose of immediate hazards.

Test Form 52-1 (Narrative)

OC 015535

**APPENDIX B**

**LABORATORY ANALYSIS REPORTS**

- Order # 96-11-318  
11/19/96 19:30

Page 2

TEST RESULTS BY SAMPLE

Sample: 01A RED #1

10/21/96 Collected: 10/21/96 Category: SOLID

<u>Test Description</u>	<u>Result</u>	<u>Detection Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
IRON, EPA 6010A	9900	10	mg/Kg	11/18/96	RJE
METALS DIGESTION, SOIL	-		-		DLL
PHOSPHORUS	431000	10000	mg/Kg	11/19/96	LG



LAWHON & ASSOC INC.  
6300 PROPRIETORS ROAD  
WORTHINGTON, OHIO 43085

Attn: RUSSELL K. SMITH  
Invoice Number:

Order #: 96-10-745  
Date: 11/11/96 11:19  
Work ID: KILGORE (PHONE)  
Date Received: 10/29/96  
Date Completed: 11/08/96  
Client Code: LAWHON\_ASSOC

SAMPLE IDENTIFICATION

<u>Sample Number</u>	<u>Sample Description</u>	<u>Sample Number</u>	<u>Sample Description</u>
01	RED #1		10/21/96

Enclosed are results of specified samples submitted for analysis. If there are any questions, please contact Tom Batten. Our Ohio EPA Certification numbers are 836 & 837. Any result of "BDL" indicates "BELOW DETECTION LIMIT".

  
Certified By  
TOM BATTEN

Order # 96-10-745  
11/11/96 11:19

Page 2

TEST RESULTS BY SAMPLE

Sample: 01A RED #1

10/21/96 Collected: 10/21/96 Category: LIQUID

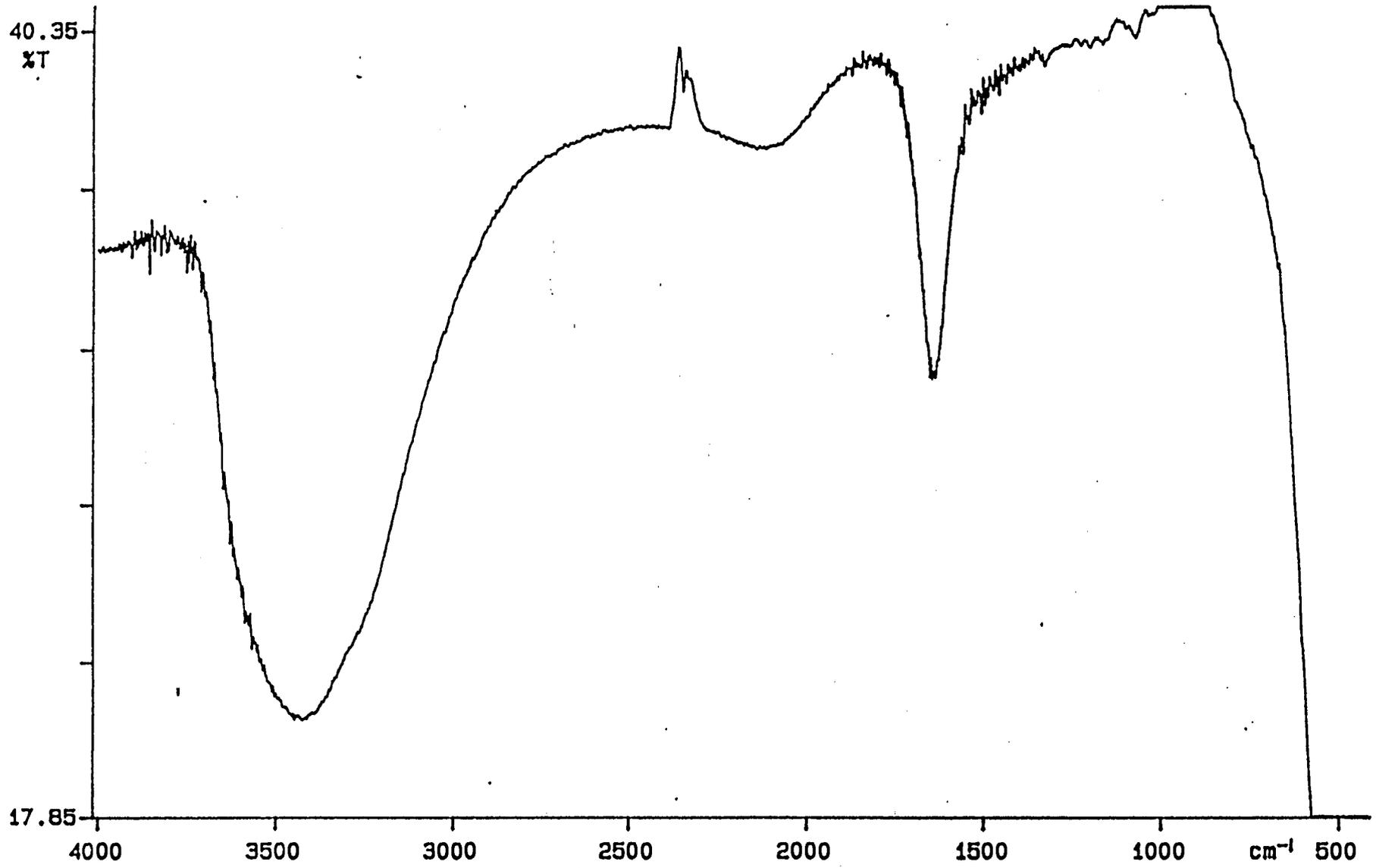
<u>Test Description</u>	<u>Result</u>	<u>Detection</u> <u>Limit</u>	<u>Units</u>	<u>Analyzed</u>	<u>By</u>
IR_SPECTRUM	-		-	11/08/96	THB

Order # 96-10-745  
11/11/96 11:19

-  
REPORT COMMENTS

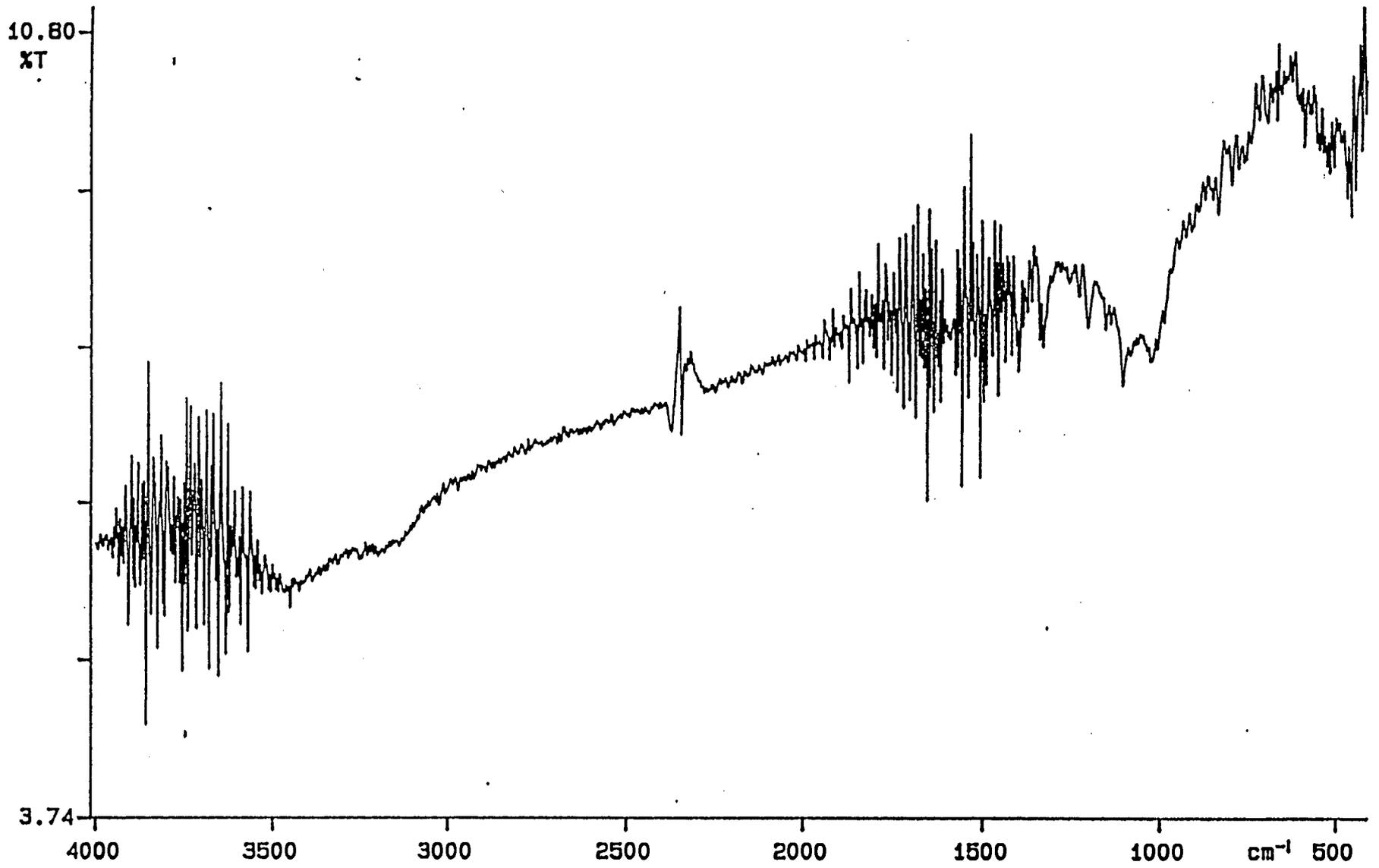
-  
Page 3

SAMPLE CONSISTS OF SOIL, VEGTABLE MATTER AND WATER CONTAMINATED WITH AN INORGANIC SUBSTANCE WITH A RED HUE. ORGANIC CHROMOPHORES DID NOT SHOW UP ON THE INFRA-RED ANALYSIS.



WATER

OC 015541



SOIL

OC 015542



Belmonte Park  
Environmental  
Laboratories

LAWHON & ASSOC INC.  
6300 PROPRIETORS ROAD  
WORTHINGTON, OHIO 43085

Attn: RUSS SMITH  
Invoice Number:

Order #: 96-11-318  
Date: 11/19/96 19:30  
Work ID: RED #1 (FAX)  
Date Received: 11/14/96  
Date Completed: 11/19/96  
Client Code: LAWHON\_ASSOC

SAMPLE IDENTIFICATION

<u>Sample</u> <u>Number</u>	<u>Sample</u> <u>Description</u>	<u>Sample</u> <u>Number</u>	<u>Sample</u> <u>Description</u>
01	RED #1		10/21/96

Enclosed are results of specified samples submitted for analysis. If there are any questions, please contact Tom Batten. Our Ohio EPA Certification numbers are 836 & 837. Any result of "BDL" indicates "BELOW DETECTION LIMIT".

Certified By  
TOM BATTEN

Committed to Quality Since 1958  
Dayton, Ohio 45426

11 East Main Street

(513) 837-3744

OC 015543



Lawhon and Associates, Inc.

L&A Engineering, Inc.

6300 - per receipt  
6300 A Proprietors Road  
Worthington, OH 43085  
Phone: (614) 436-8400  
Fax: (614) 438-5499

~~90-10-745~~  
90-10-745

Sent To: Belmont Park Labs (Lab Name)

VIA: UPS

Air Bill No.: \_\_\_\_\_

Page 1 of 1

### CHAIN-OF-CUSTODY RECORD

Project Contact: <u>Russell K Smith</u>				Sample Type: S-Soil                      SD-Sediment SW-Surface Water      WW-Wastewater GW-Groundwater        O-Other				Containers Intact: At L&A <u>Y/N</u> At Lab <u>Y/N</u>		As Received by Lab:	
Project No.:		Project Name: <u>Kilgore</u>		Number of Containers	Turn Around/Requirements	Analysis	Method	Expected Conc. (M.M.L.)	Hold	Strip	Remarks:
Sampler (print): <u>Steven Sawyer</u>		Signature: <u>[Signature]</u>									
Sample I.D. No.	Type	Comp	Grab	Date	Time	Sample Location					
<u>Red # 1</u>			<u>4</u>	<u>10/21</u>	<u>1500</u>	<u>Burrall Area</u>					<u>H = Hold</u>
Relinquished by: (signature)		Date/Time		Received By: (signature)		Date/Time		Relinquished By: (signature)		Date/Time	
				<u>[Signature]</u>		<u>10/21/11 1:30</u>					
Relinquished by: (signature)		Date/Time		Received By: (signature)		Date/Time		Relinquished By: (signature)		Date/Time	
Comments:											

OC 015544

*Appendix C*

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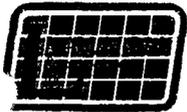
**Ohio EPA Selenium Background Data**

**Environmental  
Audit**

**800 Tussic Street Road,  
Westerville, Ohio**

***Lawhon & Associates, Inc.***

**OC 015546**



March 1, 1991

Mr. Steve Storck  
Business Office  
Otterbein College  
N. Grove St. & West College Avenue  
Westerville, OH 43085

**Re: Environmental Audit of Property at 800 Tussic Street Road,  
Westerville, Ohio**

Dear Mr. Storck:

The subject property was surveyed for environmental issues from January 23, 1991 to February 6, 1991, by representatives of Lawhon & Associates, Inc. (L&A). This report presents the findings of that survey and other data generated subsequent to our site visit.

## **1.0 Site Background Information**

### **1.1 General**

The property is located at 8800 Tussic Street Road, Westerville, Ohio and includes parcel 18-002600. The property consists of 110 acres of farmland, vacant building structures and foundations scattered throughout the site. With the exception of small wooded regions and areas where buildings, foundations and old roads are mixed with trees and brush, the property is mainly farmland. There is an abandoned farmhouse which is used by the local Jaycees once each year as a "haunted house". The farm land is nearly level and slopes gently towards the east. Location of the property is presented in Figure 1, with a tax parcel diagram presented in Figure 2.

The property is bordered to the West by farmland, to the South by Westerville schools, to the East and North by residential dwellings. The area surrounding the site is mixed farmland and residential.

### **1.2 Review of Aerial Photographs**

Historical aerial photographs of the site and surrounding areas were examined to assist in determining past land use. The photographs are dated 1967 and

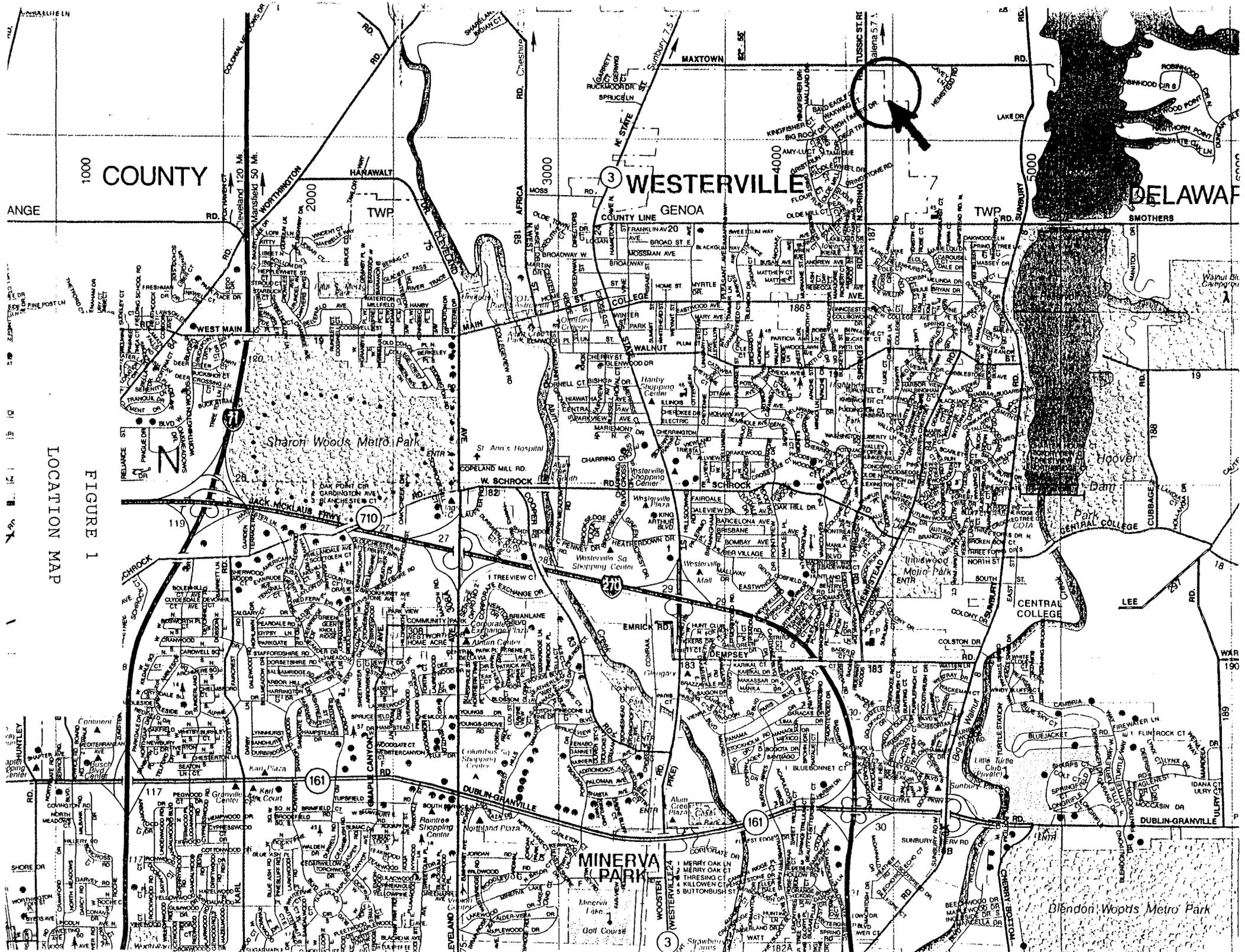


FIGURE 1  
LOCATION MAP

1000 COUNTY

WESTERVILLE  
GENOA

DELAWARE

MINERVA  
PARK

Sharon Woods Metro Park

Blendon Woods Metro Park

OC 015548

TUSSIC STREET RD. - 108

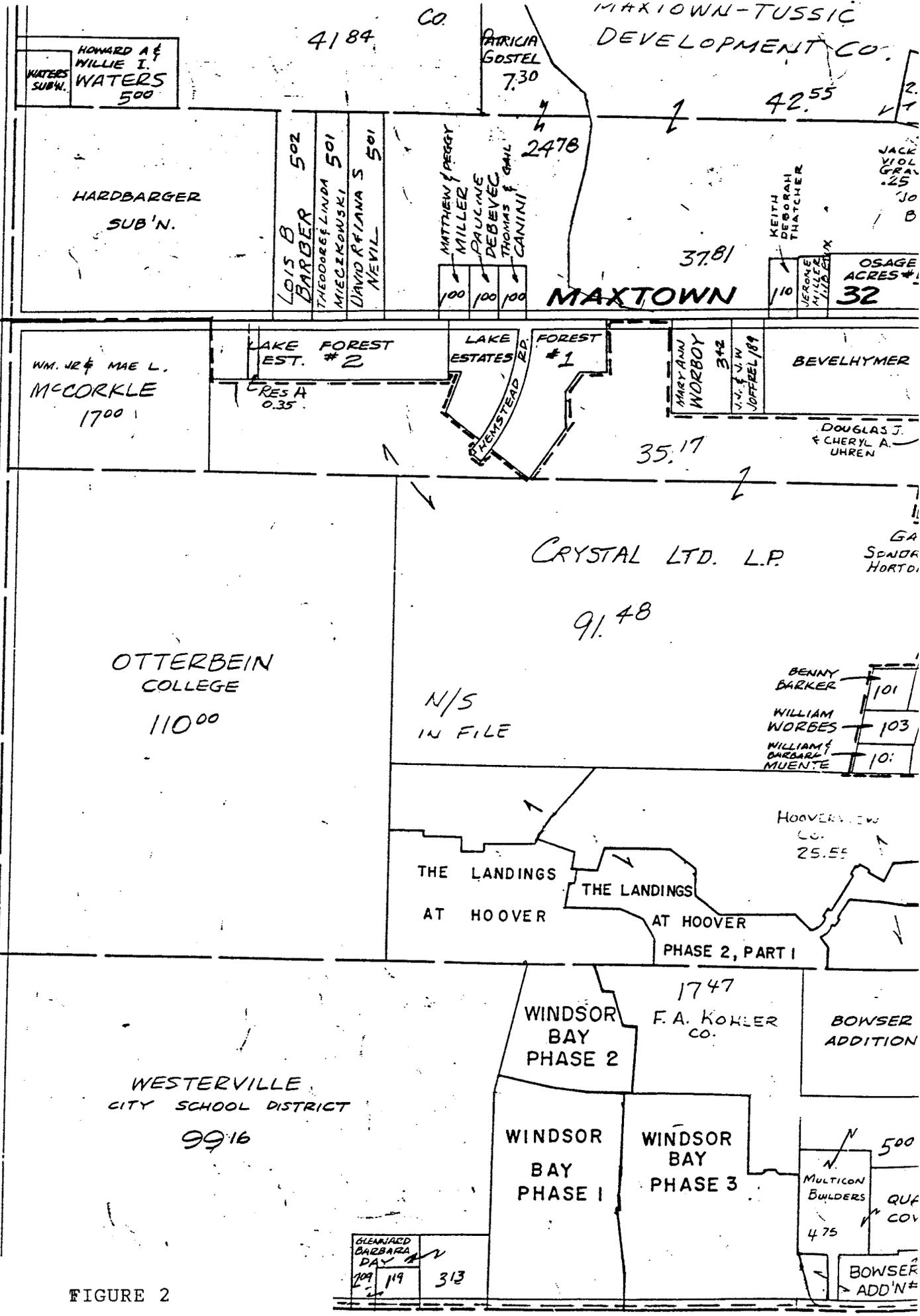


FIGURE 2

TAX PARCEL DIAGRAM

SMOTHERS - 3

1986 (Appendix A). This review indicates that the area has been farmed since 1967. Prior to 1941, the land was mostly arable and surrounded by woods.

### **1.3 Review of Soil Conditions**

A general soil profile of the subject property and surrounding areas was obtained from a 1969 soil survey. The soil series is of the Bennington, Pewamo and Cardington Association. The Bennington series consists of somewhat poorly drained, very poorly drained and moderately well drained soils. The soils are steep to nearly level on an undulating low-lime glacial till plain. A copy of the soils map and legend are included in Appendix B.

L&A suggests that there might be three separate wetland areas on the property.

### **1.4 Review of Available Property Records**

A review of deed records was conducted at the Delaware County Auditors Office. The earliest record of ownership was in 1900 by Emmett M. Wickham. All sections of the property have changed ownership numerous times and were acquired by the Kilgore Manufacturing Company which used the property for munitions manufacturing, storage and burials. The property is presently owned by Otterbein College. A chain of title is presented in Appendix C.

## **2.0 History of Kilgore Farm**

### **I. History of Kilgore Farm**

Prior to 1941, the Kilgore Manufacturing Company, which was located in Westerville, Ohio, produced toys, such as cap guns, and pyrotechnics used primarily for public celebrations. During the early stages of World War II, Kilgore converted to the production of explosives and incendiary materials and devices, such as flares, fuses, hand grenades, land mines and flame throwers. In order to meet the military standards necessary for the manufacturing and storage safety of these materials, Kilgore acquired a 110 acre farm northeast of Westerville near the Delaware/Franklin County line. A network of small magazines and concrete buildings (including a boiler house) dispersed over much of the property was constructed, as was a 75,000 gallon water tower that furnished water to all of the structures. Materials storage was not the sole activity at the Kilgore Farm. Other on-site activities included experimental work, manufacturing of some explosives and incendiary items, and burial of produced wastes and those items not meeting military standards of acceptability.

A burial site measuring six to eight acres and located in the southeast corner of the property was allocated for the disposition of produced waste and rejected materials. Waste materials are generally from settling sumps, which are mixtures of various chemicals used in the manufacturing process, and were packaged in wet cans (30" long x 15" in diameter). These cans were then laid in open trenches and covered with earth. Rejected materials, such as pyrotechnical devices, primary explosives, scrap powder, primers, detonators and liquid flares, were also placed in open trenches and covered with earth.

Recorded disposition of waste and rejected materials is complete only from January, 1951 through May, 1953. According to an ex-employee at Kilgore, no map was kept nor is there any accurate record of what was buried after 1953. He stated that, except for cap waste (red phosphorous material), burying was discontinued in 1957. There is an account of the disposal of waste powder by burning. An open pit 50' in diameter and 8' deep was located in the southeastern corner of the property and was used for this purpose.

## II. History of Decontamination

Early in 1961, the Kilgore Manufacturing Company suspended its operations in Westerville and merged with its sister plant in Bolivar, Tennessee, creating the Harvell-Kilgore Corporation. Commercial Credit Corporation, who owned Kilgore at the time, decided to donate the Westerville properties, including the 110 acre farm, to Otterbein College. An agreement was struck and the college was granted complete ownership of the properties under full knowledge that the Kilgore Farm was used for storage, burial and disposal of material that had explosive and incendiary characteristics.

Sanders Frye, business manager for Otterbein College at the time, initiated a clean-up of the official burial site at Kilgore Farm during the summer of 1962. He contacted the Ammunition and Supply Procurement Agency in Joliet, Illinois, and Virgil Carpenter was commissioned to supervise the decontamination of the site. After the known trench sites were marked, the earth was then removed and the buried materials were excavated and destroyed on the property. The dug trenches were then refilled. In all, over 120 tons of explosives and flares were removed and destroyed, including 3500 boosters, 200,000 fuses, cap mix, black powder, magnesium flares and other odds and ends. The decontamination project took six weeks to complete.

On August 24, 1962, Virgil Carpenter, in a letter sent to Sanders Frye, stated that the Kilgore property had been decontaminated "...in accordance with current Ordnance Corps procedures," and in his opinion no significant hazard remained which would prevent the usage of the land for any purpose or endanger the lives of individuals or the public. The property was then used to farm beans and corn, the practice of which continued throughout the years and finally ceased in 1986.

In 1985, Ernest Fritsche, who was a board member at Otterbein College and a World War II explosives expert, was asked to look into the sale of the Kilgore Farm; for the board had received several inquiries about the property. Mr. Fritsche visited the property on June 15 and June 26, 1985, and discovered nearly seventy flare canisters. The canisters were found in the southeast corner of the property and had apparently been dug up by plow blades. He buried the canisters and marked the area.

Mr. Fritsche called representatives at the Ohio Fire Marshall's Office (O.F.M.O.) and the Ordnance Department at Wright-Patterson A.F.B. and asked them to identify the canisters and determine whether or not it was hazardous. The canister, identified as having characteristics of U.S. Ordnance, could only be made reactive by attaching a counter-charge and detonating it [note: on the following day, when dry, bits of the exploded canisters and contents (phosphorous) burst into flame.] On September 5, 1985, a team from the Hazardous Materials Division of the O.F.M.O. collected the

nearly seventy canisters found by Mr. Fritsche and delivered them to the Ordnance Department at Wright-Patterson A.F.B. for disposal.

Mr. Fritsche returned to the Kilgore Farm in March and in mid-June, 1986, and he found thirty-four flare canisters in the southeast corner. The area was marked and arrangements were made for later pick-up. Officers from the O.F.M.O. and from Ordnance at Wright-Patterson visited the property in May, 1986 and Sergeant Smith from Ordnance recommended that the entire 110 acres be swept with mine detectors.

On July 7, 1986, David Douthat, a safety engineer with the U.S. Corps of Engineers, visited the Kilgore Property with Mr. Fritsche. Nearly fifty canisters were found during their visit. These canisters, plus the canisters found earlier in the year by Mr. Fritsche, were removed from the property by the Ordnance Department from Wright-Patterson A.F.B. Given the situation at the Kilgore property, Dr. Douthat believed that more clean-up was needed.

As for the sale of the property, the board at Otterbein College realized that they would need certification from a competent authority stating that the property was free of pyrotechnics, explosives and combustible materials buried by the Kilgore Manufacturing Company. The letter issued on August 24, 1962 by Virgil Carpenter of the Ammunition Procurement and Supply Agency stating that the Kilgore Farm was decontaminated appears to be accurate only for the decontamination work completed on known trenches, which had been plotted on a map in 1963 and labeled for content.

In 1987, Westerville Schools contacted Otterbein College and expressed interest in purchasing twenty-two acres of the Kilgore Farm north of and adjacent to the Westerville North High School grounds. In January, 1988, Westerville Schools contracted S.E.A., Inc. of Worthington, Ohio to conduct an environmental study of the desired portion of the property, which included the six to eight acre burial site. S.E.A., Inc. performed a detailed site investigation of the acreage in question in the southeast corner of the property. This investigation involved installing monitor wells and testing the ground water for contaminants. The walk-through with the metal detector located one area that produced many small unidentifiable metal objects.

Westerville Schools then contracted the <sup>LAMA</sup> Luna Excavation Company in May, 1988 to excavate the area containing the metal objects. On May 3, 1988, excavation uncovered a variety of materials related to Kilgore operations in the 1940's and 1950's, including parachute flares (dated 1954), black plastic caps, cylinders composed of gray, blue and purple granular substance, and many filled aluminium canisters. It was then decided to dig a series of trenches throughout the burial site. Excavation uncovered only a few pieces of debris. Materials were piled near the old farmhouse and were to be removed. Trenches were not filled in.

In June, 1988, in an attempt to test the reactivity of materials found during the excavation process, the Columbus Bomb Squad placed blasting caps on all items. When detonated, the caps exploded but the materials did not. Given the age of the materials and the conditions of burial, it was determined by Chief Morrison of the Columbus Bomb Squad that they were not explosive in their current state, but could be dangerous and advised removal and disposal of these materials. He also advised more trenching, followed by sifting through the excavated earth. Sergeant Smith of

Explosives Ordnance Disposal at Wright-Patterson A.F.B. stated that they will pick up any hazardous materials found on the property. (See Table 1 for history of events)

### III. List of Manufactured Materials

Kilgore Manufacturing Company in Westerville is believed to have produced these items at one time or another:

- Primary explosives; hand grenades
- Primers
- Detonators (old style)
- Hand grenade fuses; general igniters
- Land mines
- M1 flame throwers; flare pistols, rocket line launchers
- Explosive caps
- Numerous types of illuminating materials
  - battlefield flares
  - signal flares
  - M112 photoflash cartridges
  - 155mm illuminating shells
  - trip flares
  - emergency flares (highway)
  - parachute flares
  - landing flares
  - 3 minute flares
  - high altitude rocket flares
  - phosphorous float lights for the navy

Chemicals used include:

- |                                    |                          |
|------------------------------------|--------------------------|
| • red phosphorous                  | • potassium chlorate gum |
| • aluminum flitter                 | • antimony trisulphide   |
| • sodium hypophosphite             | • sulfur                 |
| • ammonium and potassium picrate   | • sodium nitrate         |
| • black powder                     | • permanganite           |
| • powdered aluminium and magnesium | • barium rhodanid        |
| • boron phosphide                  | • potassium perchlorate  |

### IV. List of Excavated Materials

1962 - Cap Mix (red phosphorous, potassium chlorate gum and antimony trisulphide), phosphorous sweepings, ammonium and potassium picrate, caps and primers, black powder, M1 flamethrowers, M112 photoflash cartridges, land flares, 66 waste, 155mm illuminating shells, 3 minute flares and M6, MK5 and M501-type materials. Figure 3 is a copy from a 1953 drawing of the recorded disposition of waste powder and rejected materials. Some trenches are not dated.

1985-1986 - Flare canisters

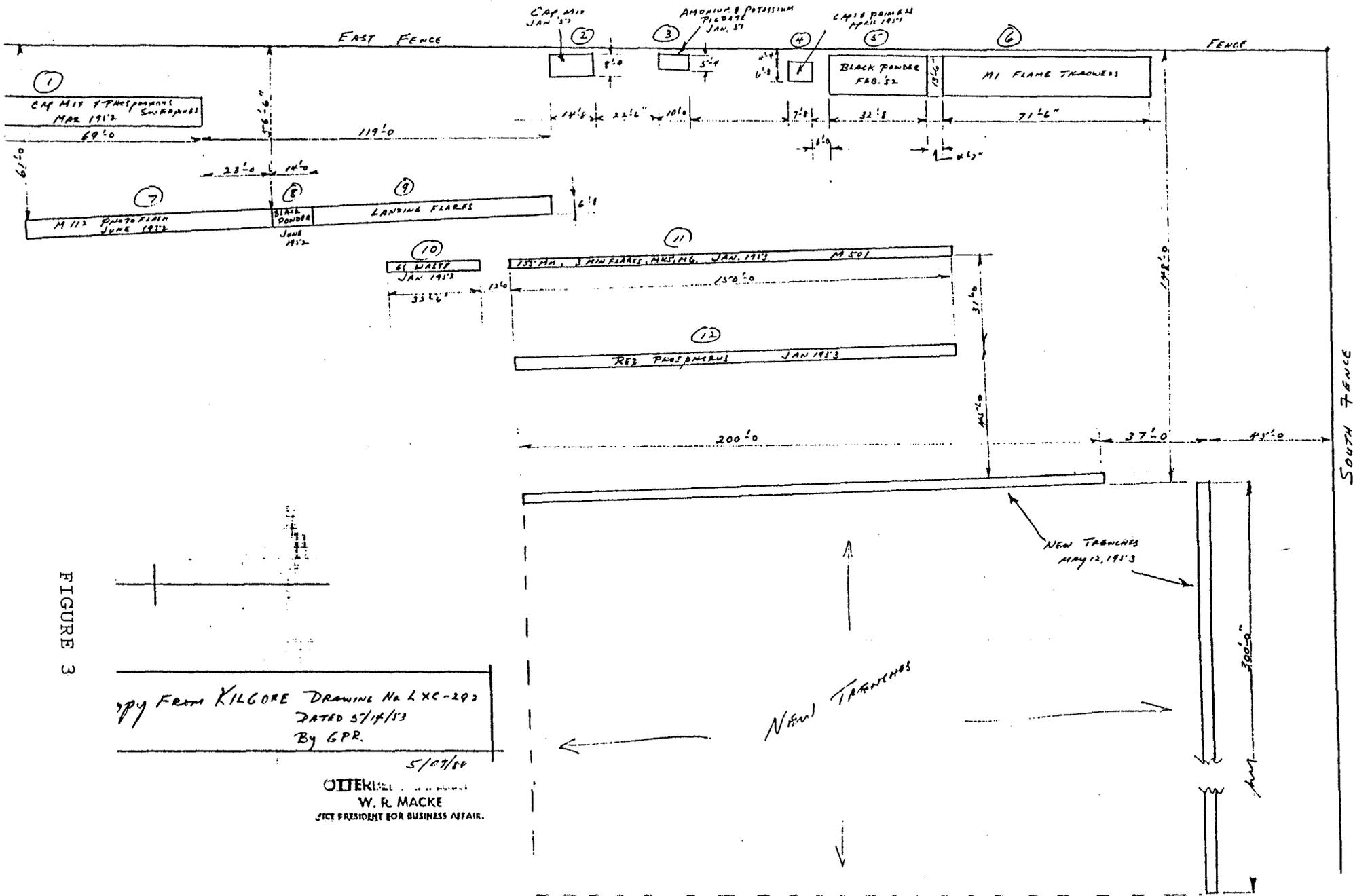


FIGURE 3

copy FROM KILGORE DRAWING No LXC-293  
 DATED 5/14/53  
 By G.P.R.  
 5/10/54  
 W. R. MACKIE  
 VICE PRESIDENT FOR BUSINESS AFFAIR.

1988 - Parachute flares (1954), black plastic caps, gray-white layered solid granular substance, short sections of a gray/blue/purple cylindrical-shaped material, aluminium flitter/sodium nitrate and sulfur

Figure 3: List of Trench Contents

<u>Trench Number</u>	<u>Description of Contents</u>	<u>Date</u>
1	Cap mix and phosphorous sweepings	March 1952
2	Cap mix	January 1952
3	Amonium and Potassium Picrate	January 1951
4	Caps and primers	April 1951
5	Black powder	February 1952
6	M1 flame throwers	unknown
7	M112 photoflash cartridges	June 1952
8	Black powder	June 1952
9	Land flares	unknown
10	66 waste (?)	January 1953
11	155mm Illuminating shells, 3 minute flares, MK5, M6 and M501 (?)	January 1953
12	Red phosphorous	January 1953

Two new trenches were dug on May 12, 1953 - contents unknown.

### **3.0 Underground Storage Tanks (USTs)**

The State of Ohio Bureau of Underground Storage Tank Regulations (BUSTR), 7510 E. Main Street, Reynoldsburg, Ohio, was contacted to determine if there were any listed underground storage tanks (USTs) on or around the subject property. They reported that their records did not list any tanks on the subject property (Appendix D). Visual inspection of the site by the L&A staff did locate a tank. The size of the tank and its contents are unknown because the fill pipe has broken off from the tank and cannot be accessed.

#### **4.0 Review of Hazardous Waste Site Lists**

The Delaware County designated hazardous waste site lists were reviewed. The property did not appear on these lists, nor were there any sites in the immediate area.

#### **5.0 Ohio EPA Spill Department**

There have not been any reported incidents and/or spills of hazardous chemicals or PCBs at the subject site. A copy of the EPA Response is included as Appendix E.

#### **6.0 Site Survey and Property Inspection**

A visual inspection of the subject property was conducted on January 23, 1991 through February 6, 1991. It was determined that several major environmental problems existed. These problems will be discussed in more detail under General Survey Information 6.1. A detailed *property Inspection Guide* and *Environmental Questionnaire* are presented in Appendix F. A photographic log of the property is included as Appendix G.

##### **6.1 General Survey Information**

L&A performed a magnetic survey over the property. A total of 385 marker flags were placed where metallic objects were located. L&A dug up several of the flagged areas and found flares and other metal objects. However, no samples were collected or analyzed. There are flares and miscellaneous objects visible throughout the site. In the southeast corner of the site where the old trenches are located, several "hot areas" still exist. (Please refer to survey map regarding these areas.) There are also a large number of pipes, drains, and water mains located throughout the property, particularly in the northeast section of the site.

In addition, there are approximately 25 buildings and foundations dispersed throughout the property. Among these buildings and foundations the following items were found: metal containers, flares, pipes, barrels, tile and metal debris, and an old boiler. Also, several of the foundations contain drains and water mains, and lines that connect to the water tower.

An underground storage tank (UST) is located in the northeast section of the property. Because of its proximity to the boiler house, it is believed that the UST stored fuel oil. An L&A representative and Otterbein maintenance personnel tried to remove the fill pipe cap but were unsuccessful.

During the site survey L&A located several areas which contained debris such as barrels, cans, old furniture, kitchen appliances, tires, concrete blocks and miscellaneous boards. The barrels were checked to see if they contained any materials and they did not. These piles of debris are dispersed throughout the property. The largest of these piles are adjacent to and 800 feet east of the old farmhouse. There is a small, 3-foot high pile of flares and black caps approximately 550 feet south of the water tower.

A septic tank is located in the northeast corner of the property. L&A suggests that this tank be pumped out and removed since it is no longer in use.

## **6.2 Polychlorinated Biphenyls (PCBs)**

One transformer was found on the property. The transformer is owned and operated by Columbus Southern Power (CSP). CSP was asked to provide documentation on the PCB content of the transformer; they responded that the equipment does not contain any PCB's. No spills or visual evidence of fluids were apparent. A copy of CSP's response is included as Appendix H.

## **6.3 Asbestos-Containing Materials (ACM)**

The building was surveyed for asbestos-containing materials. Laboratory reports, chain-of-custody forms, and sample locations are provided in Appendix I. L&A collected five samples of suspect material and roofing material in the building. These materials were delivered to Gelles Laboratories, Inc., and analyzed for asbestos content. The following materials were determined to contain asbestos: 1) 25 feet of pipe insulation and, 2) approximately 3,400 square feet of roofing material.

The pipe insulation, which is located in the basement, could not be accessed because of high water. The pipe insulation is assumed to be asbestos-containing because there is visible aircell material. L&A estimates the cost for pumping out the water, removal, air clearance, and project monitoring to be \$2,500.00.

The roofing material located on and around the house is considered transite asbestos and will have to be removed prior to demolition. There are portions of the roof structure that are damaged and have fallen to the ground. L&A estimates the cost for removal and project monitoring to be \$12,000.00.

## **7.0 Conclusion**

Lawhon and Associates, Inc. has completed the Phase I Environmental Site Assessment consistent with our proposal dated December 21, 1990. The activities performed for this particular assessment are what we consider to be appropriate for a Phase I site investigation and are consistent with industry standards for these investigations.

In light of the discoveries made during the initial site investigation, L&A recommends that the following steps be taken to render the current and future operations of the facility environmentally sound:

- 7.1 The removal of flares, caps, primers and other metallic objects. L&A has contacted the U.S. Army with the possibility of the Army cleaning up and removing the old ammunitions material. The U.S. Army is currently researching their connection with the Kilgore Manufacturing Company. If the Kilgore Manufacturing Company manufactured materials for the

government military services, they would be responsible to properly dispose of this material.

- 7.2 The demolition of the buildings and foundations - Since the buildings and foundations are in poor condition and pose a safety issue, L&A suggests that they be demolished and disposed of, however, it is not necessary to dispose of them as hazardous materials.
- 7.3 The removal of the underground storage tank - The UST is approximately 45 years old and has been abandoned since 1962. L&A suggests removing the tank and any contaminated soil if necessary due to the fact that the tank has surpassed its life span and is no longer in sound condition.
- 7.4 The removal of the septic tanks - L&A suggests removing the septic tanks since they are no longer in use and the systems pose a safety issue by being uncovered.
- 7.5 Removal of asbestos materials from the existing house - L&A suggests the removal of thermal insulation and transite shingles from the house. These materials are in poor condition and pose a environmental and safety issue.
- 7.6 Wetland mitigation - L&A suggests that further investigation considering three possible wetland issues be considered.
- 7.7 Based on the review of data, groundwater contamination is not an issue.
- 7.8 It is L&A's opinion that no soil chemical problem associated with the Pyrotechnic materials exists.

If I can answer any questions regarding these recommendations, please call me at (614) 436-8400.

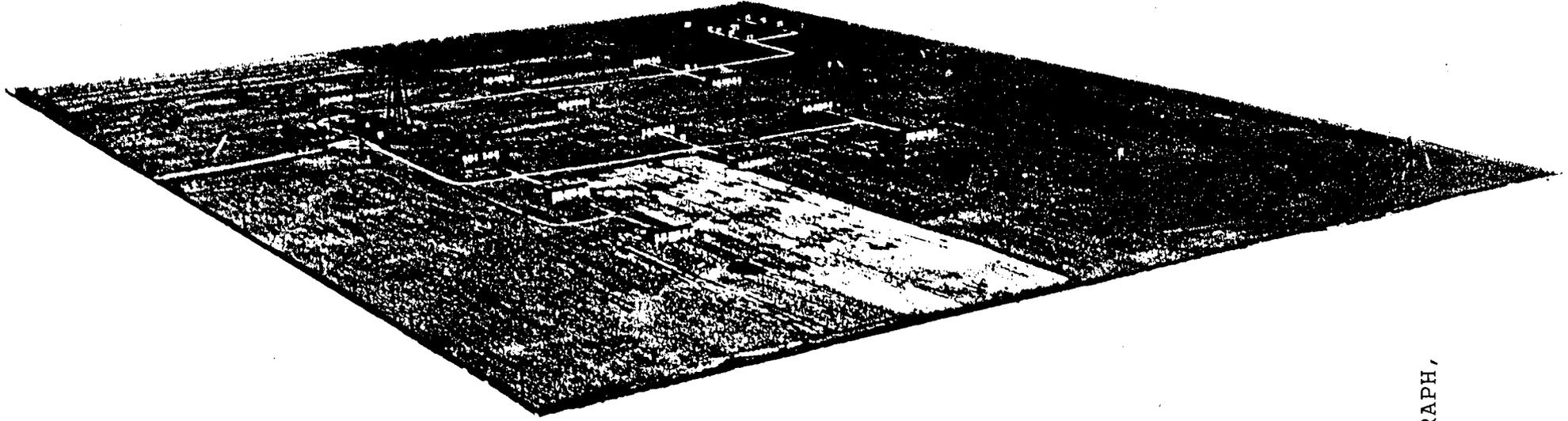
Sincerely,



William T. Lawhon, Jr.  
President

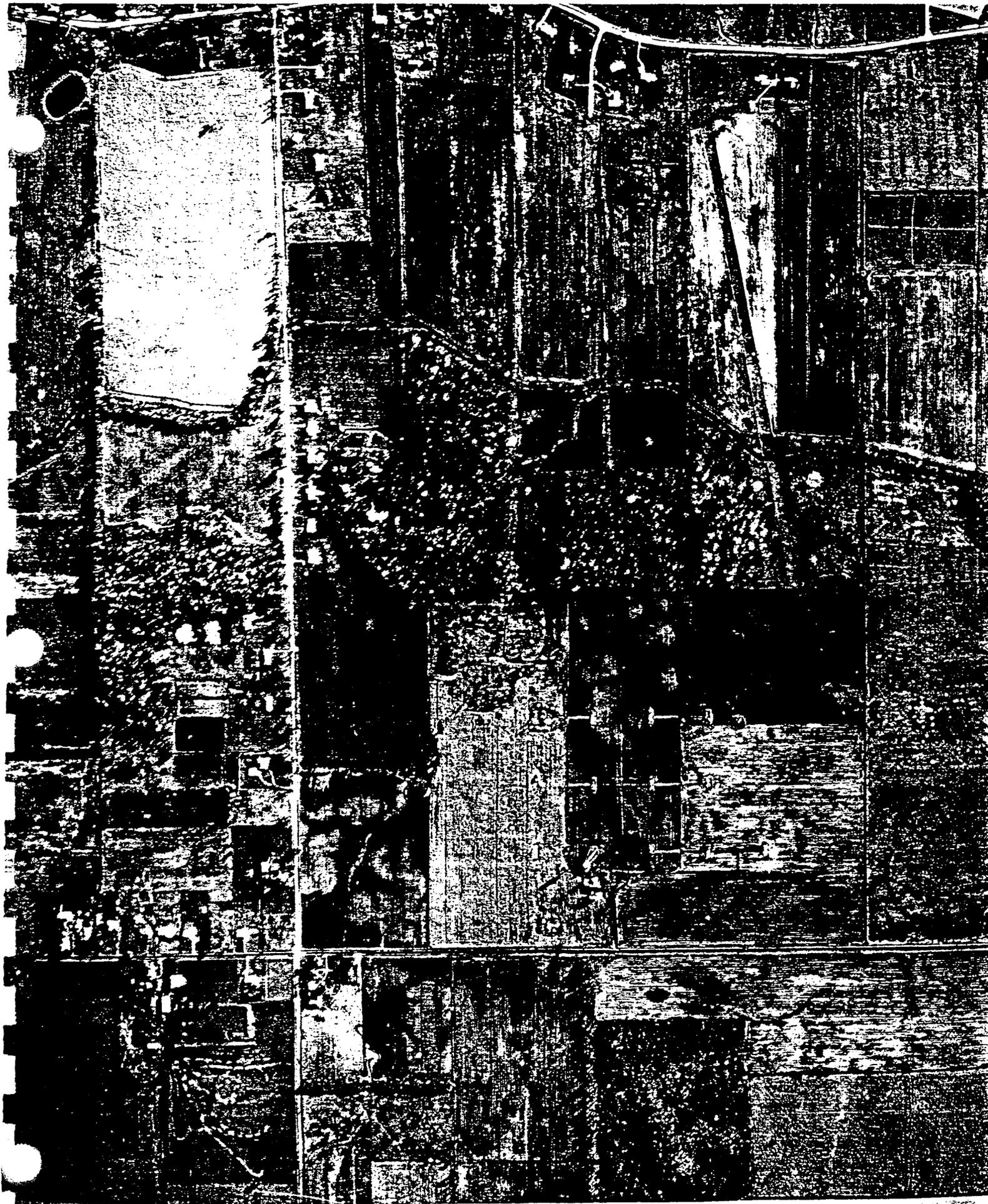
WTL:jp:80337

**APPENDIX A**  
**HISTORICAL AERIAL PHOTOGRAPHS**



**KILGORE, INC.  
PLANT AREA  
DELAWARE COUNTY OHIO**

**HISTORICAL AERIAL PHOTOGRAPH,  
PRE-1962**



HISTORICAL AERIAL PHOTOGRAPH,

1967

OC 015561



HISTORICAL AERIAL PHOTOGRAPH,  
1986

**APPENDIX B**

**GENERAL SOIL MAP AND LEGEND FOR DELAWARE COUNTY**

OTTERBEIN COLLEGE PROPERTY  
TUSSIC ROAD  
DELAWARE COUNTY  
SOIL TYPES

Property fronts on Tussic Road just north of the Heritage Middle School property all of which is just north of County Line Road. Property consists of 110 acres. There is an old house which has been used by the Westerville JC's for a haunted house over Halloween. The property also contains other, smaller out buildings. The site was once used for the manufacturing and storage of ammunition for WWII.

Soils on the site are:

Pw (Pewamo Silty Clay Loam) - HYDRIC SOIL  
Seasonally high water table; moderately slow permeability; too wet for construction and most other uses unless drained and tiled; severe conditions exist.

CaB (Cardington Silt Loam, 2 - 6% slope)  
High water table in winter and spring; moderately well drained; slight to moderate problem for construction and other uses.

CaB2 (Cardington Silt Loam, 2 - 6% slope, moderately eroded)  
See CaB above.

BeB (Bennington Silt Loam, 2 - 6% slope)  
Can contain HYDRIC INCLUSIONS in depressions; seasonal wetness a problem; slight to moderate problem for construction and other uses.

BeB2 (Bennington Silt Loam, 2 - 6% slope, moderately eroded)  
See BeB2 above.

Ma (Made Land) - Consists of fill material with no structure.

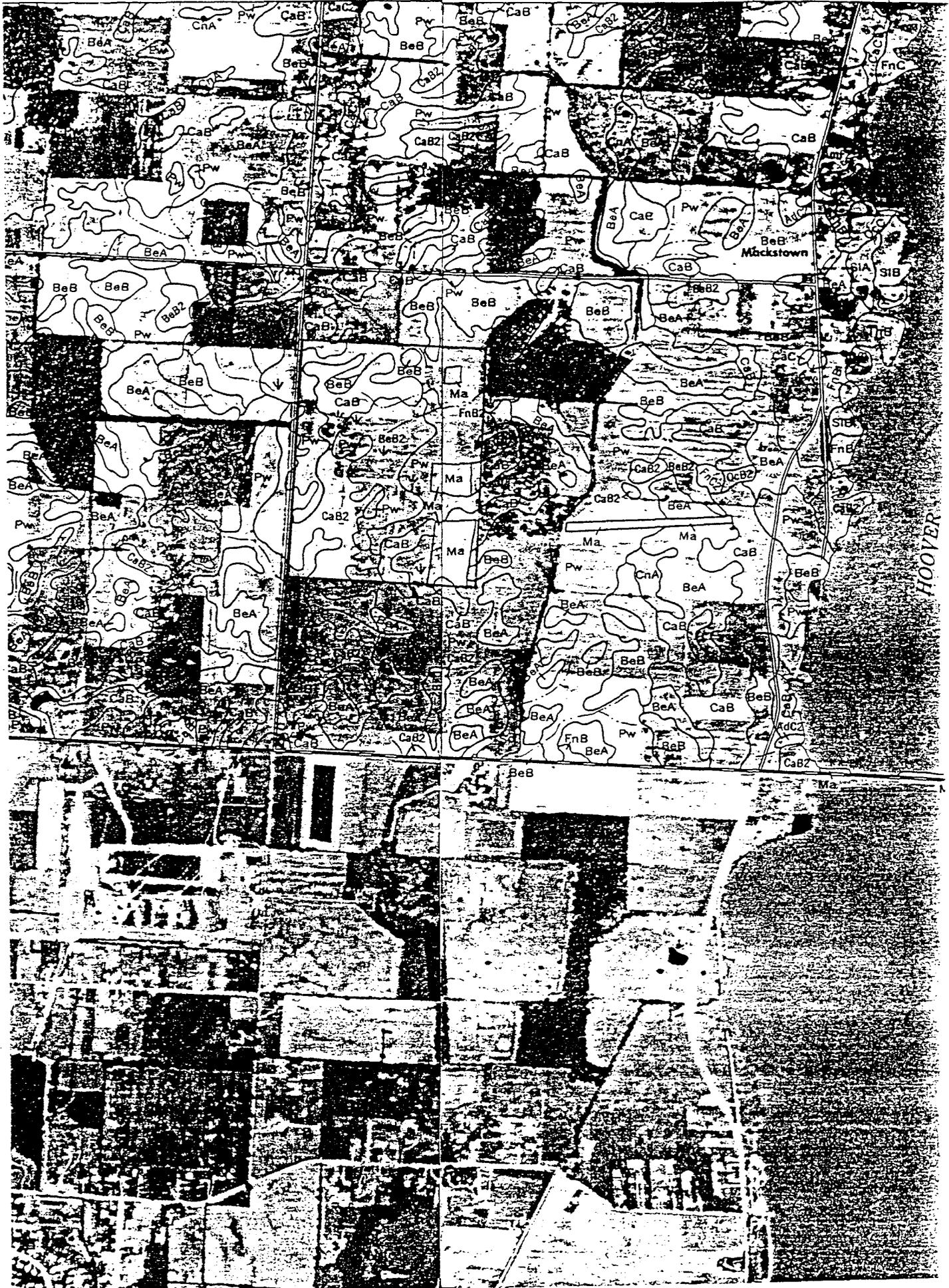
Ψ (Wet Spot)

Comments: Soil Survey was done by the Soil Conservation Service in 1969. Current satellite imaging shows no wetlands on the property that were identified using established parameters. Wetlands do show up in the wooded areas east of the property. However, because of the existence of Pewamo soil which is classified as hydric soil, wetlands could exist on the Otterbein site. Hydric soil is one of the three conditions needed for an area to be a wetland. The other two are hydrophytic vegetation (capable of growing in wet conditions) and hydrology (evidence of water).

If wetlands do exist on this property they will be small and isolated. Only a full wetland delineation will determine the extent of wetlands, if any. Wetlands should not be an issue unless there is an attempt to place fill into them which could require a permit from the U.S. Army Corps of Engineers depending on the size of the wetlands.

Dave Bergman  
265-6410  
April 9, 1992

OC 015564



5000 Feet



OC 015565

**APPENDIX C**  
**CHAIN-OF-TITLE**

## **CHAIN-OF-TITLE**

**PARCEL : 18-002600**

December 18, 1941	Joe Morris and Eva M. Morris
December 19, 1941	Kilgore Manufacturing Company.
July 2, 1952	Kilgore, Inc.
May 24, 1962	Otterbein College
October 12, 1990	Emmett M. Wickham, Etol

**APPENDIX D**

**BUSTR RESPONSES**

State of Ohio - Dept. of Commerce  
 Division of State Fire Marshal  
 Bureau of Underground Storage Tank Regulations  
 7510 E. Main Street, P.O. Box 525  
 Reynoldsburg, OH 43068

INVOICE

175592

INVOICE NO.

S  
 O Nancy A. Cotterman  
 L Lawton & Associates, Inc.  
 D 6330-A Proprietors Road  
 T Worthington, OH 43085  
 O

S  
 H  
 I  
 P  
 T  
 O

*nat*

CUSTOMER'S ORDER	SALESMAN	TERMS	DATE SHIPPED	SHIPPED VIA	F.O.B.	DATE
6037180215						2/1/07
Upon checking our database, we could find no record of tank notification for the site(s) that you requested.						
CHARGE FOR REQUEST @ \$15.25/hour						15.25
<u>TOTAL AMOUNT DUE UPON RECEIPT</u>						<u>15.25</u>
MAKE CHECK PAYABLE TO STATE FIRE MARSHAL-BUSTR						

REDIFORM 75729  
 POLY PAK (50 SETS) 7P729

**APPENDIX E**  
**EPA RESPONSE**



State of Ohio Environmental Protection Agency

P.O. Box 1049, 1800 WaterMark Dr.  
Columbus, Ohio 43266-0149  
(614) 644-3020 Fax (614) 644-2329

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January 30, 1991

Nancy A. Cotterman  
Lawhon & Associates, Inc.  
6330 - A Proprietors Drive  
Worthington, OH 43085

Re: N80337

Dear Ms. Cotterman:

This is in reply to your request of January 23. The Ohio EPA, Division of Emergency and Remedial Response, has no record of any spill or release reported for the properties in Delaware County, owned by:

Kilgore Property  
Otterbein College

This is only a search of the records in the Emergency Response Section database and does not include the records of any other office or division at Ohio EPA. The Emergency Response Section is the designated reporting point for spills and unauthorized discharges in Ohio. If you require information about permits or storage please contact the appropriate division directly.

If you have any questions about the this request or response please contact (614) 644-3069 and ask for assistance.

Sincerely,

Zack A. Clayton  
Health Physicist

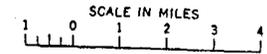
ZAC/cs

**APPENDIX F**

**PROPERTY INSPECTION GUIDE AND ENVIRONMENTAL  
QUESTIONNAIRE**

U. S. DEPARTMENT OF AGRICULTURE  
 SOIL CONSERVATION SERVICE  
 OHIO DEPARTMENT OF NATURAL RESOURCES  
 DIVISION OF LANDS AND SOIL AND  
 OHIO AGRICULTURAL EXPERIMENT STATION

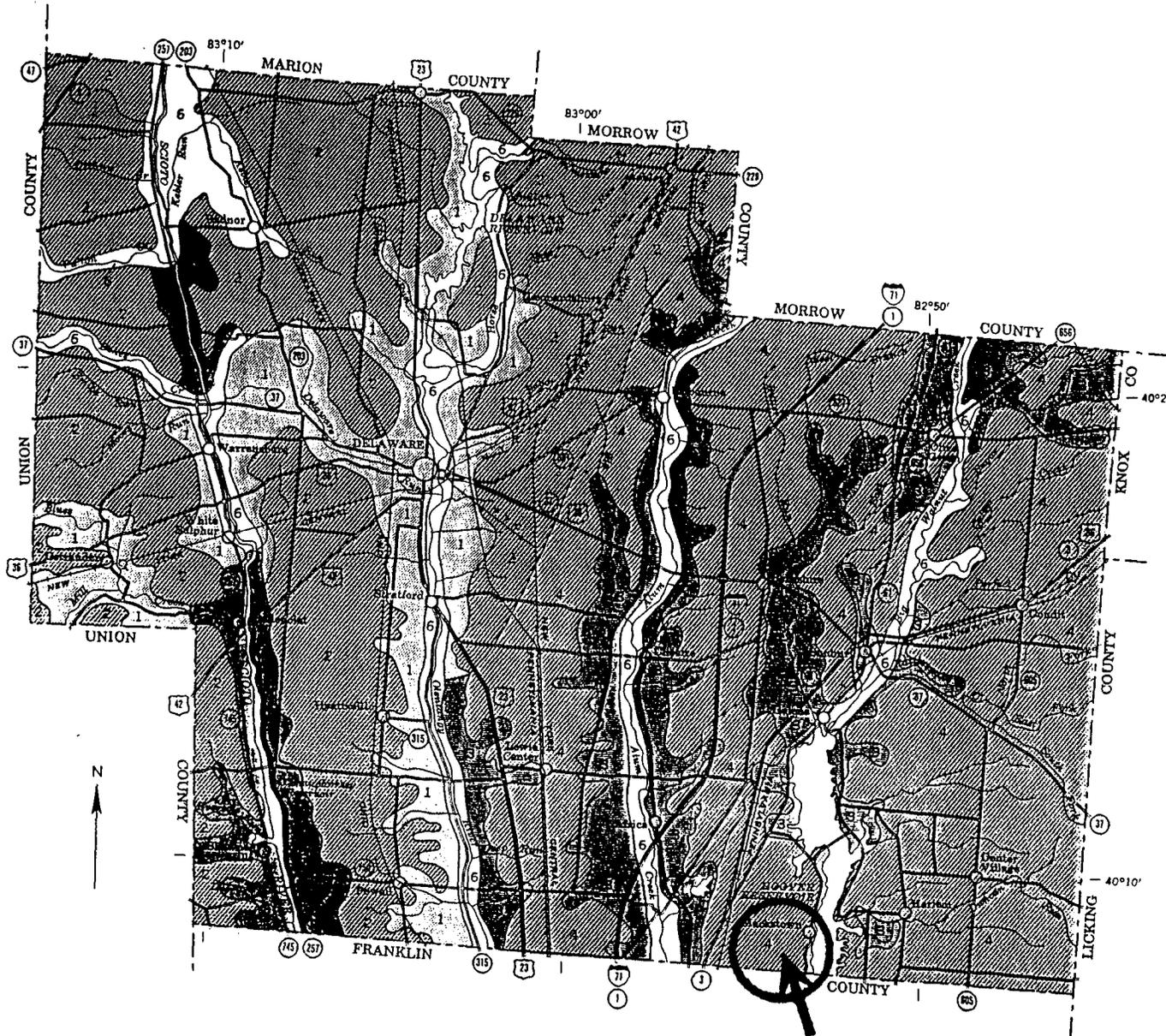
**GENERAL SOIL MAP**  
 DELAWARE COUNTY, OHIO



**SOIL ASSOCIATIONS**

-  Marley-Blount association: Moderately well drained and somewhat poorly drained, gently sloping to steep soils on an undulating high-lime glacial till plain
-  Blount-Pewamo association: Somewhat poorly drained and very poorly drained, nearly level to gently sloping soils on an undulating high-lime glacial till plain
-  Cardington-Alexandria association: Moderately well drained and well drained, gently sloping to steep soils on an undulating low-lime glacial till plain
-  Bennington-Pewamo-Cardington association: Somewhat poorly drained, very poorly drained, and moderately well drained, nearly level to steep soils on an undulating low-lime glacial till plain
-  Marley-Milton association: Moderately well drained soils on high-lime glacial till and well drained soils on high-lime glacial till over limestone
-  Eel-Fox association: Moderately well drained soils on flood plains and well drained soils on outwash terraces, kames, and eskers

May 1968



OC 015573

**Lawhon & Associates, Inc.**  
 6330-A Proprietors Road  
 Worthington, Ohio 43085  
 (614) 436-8400  
 FAX (614) 436-2229

# Property Inspection Guide

(To be completed for all properties)  
 (Privileged and Confidential)

Site Name Kilgore Property; Otterbein College

Borrower Name \_\_\_\_\_

Others Participating in Site Inspection Steve Sawyer, Project Manager

<u>Property Condition</u>	<u>Location</u>	<u>Significance</u>
<u>Underdeveloped Property</u>		
1. Stained or discolored ground	<u>Yes</u>	<u>Throughout</u>
2. Absence of vegetation or dead vegetation	<u>No</u>	
3. Hills, mounds, depressions	<u>Yes</u>	<u>Throughout</u>
4. Liquids (flowing, standing, ponded) - discolored, odorous	<u>Yes</u>	<u>Septic Tank/Boiler</u>
5. Odors (solvent, petroleum, etc.)	<u>N/A</u>	
6. Containers (drums, pails, bags, boxes, barrels)	<u>Yes</u>	<u>Barrels, Drums, Pails</u>
7. Fill pipes (pipes sticking out of ground)	<u>Yes</u>	<u>One UST</u>
8. Roads, paths, trails, railroad tracks or railroad track bedding	<u>Yes</u>	<u>Roads, Paths, Trails</u>
9. Manholes, drainage ditches, culverts, gullies	<u>Yes</u>	<u>Drainage Ditches</u>
10. Discolored water, oil film, foaming, etc.	<u>Yes</u>	<u>Septic System</u>
11. Stock-piled materials (road salt, coal, etc.)	<u>No</u>	
12. Buildings	<u>Yes</u>	<u>One House</u>
13. Stained or discolored walls, floors, ceilings	<u>Yes</u>	<u>Water Damage</u>
14. Unpaved parking lots	<u>Yes</u>	<u>Gravel Lot</u>
15. Pollution control equipment	<u>No</u>	
16. Raw material receiving and storage areas	<u>No</u>	
17. Sanitary, process waste and storm sewers and pump stations	<u>Yes</u>	<u>Septic Tank-back bed</u>
18. Electrical transformers	<u>Yes</u>	<u>One</u>
19. Fuel storage and transfer lines	<u>Yes</u>	<u>UST</u>
20. Process tanks, vats, pits, ponds, lagoons	<u>Yes</u>	<u>Pits and Pond</u>
21. Waste disposal areas	<u>Yes</u>	<u>Trash Throughout</u>
22. Indications of asbestos and other similar materials	<u>Yes</u>	<u>Roof Material, Thermal and Floor Tile</u>
23. Other (describe) _____		
_____		
_____		
_____		

Adjacent Property

24. Locations (in relation to project): N + E - Residential; S - Westerville Schools; W - Farmland

25. Physical characteristics (by property): Semi-flat Farmland

26. Apparent property conditions: Good

27. Significance of property conditions: None

28. Other (describe): \_\_\_\_\_

Attachments to Property Inspection Guide: Yes \_\_\_\_\_ No X

List: \_\_\_\_\_

Date 2/15/91 Environmental Consulting Firm Lawhon & Associates, Inc.

By Steve Sawyer Name Steve Sawyer Title Project Manager

# Environmental Questionnaire

(Used for any new development and all existing non-industrial or nonmanufacturing facilities)  
(Privileged and Confidential)

Instructions: Please complete the following questionnaire as completely as possible. If you have any questions about how to answer the question, answer to the best of your ability, and indicate your question. If additional pages are necessary to fully respond to the question, please mark each page "Privileged & Confidential" and attach them to this questionnaire. Also, please attach copies of any requested documents. If copies cannot be made, please indicate that, and have the originals available for review during our visit to your facility.

## General Background Information

- Address of Facility: 8800 Tussic St. Rd., Westerville, OH 43081  
Telephone: \_\_\_\_\_  
County: Delaware
- Name and position of person responding to this Questionnaire: Steve Storck, Business Office, Otterbein College
- Describe the general character of the Facility site and the surrounding area (including terrain, location of wetlands, coastlines, rivers, streams, lakes, springs, drinking water wells, roads, water intake and discharge structures, landmarks, flood plains, etc.):  
*The land is generally flat, there are several possible wetlands and streams located on the site.*
- Describe the Facility (including the age and date of construction of the Facility or its structures) and each of its operations or processes:  
*Farmland*
- Describe all known former uses of the Facility, whether carried out under the current ownership or any prior ownership:  
*Farmland and munitions manufacturer.*
- Does any person, firm or corporation other than the owner occupy the site or any part of it? If yes, identify them and describe their use of the property.  
*Yes. Jaycees use the house once a year for a "haunted house".*
- Have there been any spills, releases, or unpermitted discharges at or near the Facility (including neighboring properties)? If so, describe; and attach any incident reports and the results of any investigations.  
*No.*
- Has the Facility ever been the subject of any enforcement actions by any federal, state, or local government entities, or does the Facility have knowledge of any contemplated enforcement actions? If so, state the results of the enforcement action (consent order, penalties, no action, etc.) and describe the circumstances.  
*No*
- Is the Facility now under any state, federal, or local agency orders or consent decrees? If so, attach them to this response.  
*No*
- Have there been any formal or informal citizen complaints regarding the Facility? If so, did they result in the filing of a notice of citizen suit, or a civil complaint, or other administrative or criminal procedure? If so, describe in full detail:  
*Yes*

## Solid and Hazardous Wastes

- Does the Facility generate any solid or hazardous wastes? If so, provide the Facility's EPA (or State) identification number \_\_\_\_  
*No*
- Does the Facility have any RCRA Hazardous Waste Permits? If so, please attach them to this questionnaire.
  - Generator
  - Transporter
  - Treatment, Storage, Disposal Facility*No*
- Have any of the Facility's solid or hazardous wastes been analyzed? If so, attach the results of any analyses done on those wastes.  
*No*
- Identify the transporter of any hazardous wastes, and attach a copy of the transporter's permits and invoices from the last two years for the transport of wastes.  
*None*
- Identify the solid or hazardous waste disposal or treatment facilities which receive the Facility's wastes, and attach a copy of the applicable permits and invoices from the last two years.  
*None*
- Does the Facility treat or dispose of any wastes on site (including without limitation incineration, reclamation, neutralization or recovery)? If so, describe in full, and attach any applicable permits.  
*No*

17. Attach copies of the hazardous waste manifests for the last two years and all annual/biennial reports on hazardous wastes.  
*N/A*
18. Does the Facility transfer, incinerate, process, or store any nonhazardous solid wastes or hazardous wastes other than refuse-derived fuel or waste oil, which is generated off-site? If so, describe:  
*No*
19. Does the Facility accumulate and store any hazardous wastes on site for disposal for longer than 90 days? If so, identify the substance, the quantity and describe how it is stored:  
*No*
20. Identify all hazardous wastes generated at the facility, and as to each, state its hazardous characteristics (toxicity, reactivity, corrosivity, ignitability) and whether it is listed hazardous waste:  
*None*

### Surface Water/Water Quality/Discharge to Municipal Sewage Treatment Facility

21. Identify and attach all permits at the Facility relating to all Facility discharges to water, including discharges of waste water, process water, contact or noncontact cooling water, storm water, as well as water from cafeterias and restrooms.  
*None*
22. Has the Facility tested the ground water at or around its Facility? If so, attach all analytical results.  
*N/A*
23. If any questionnaires have been completed and submitted to any federal, state, or local agencies relating to water, including industrial pretreatment questionnaires, please attach them.  
*No*
24. Is any waste deposited in or near surface or ground waters? If so, describe in detail, including not only the receiving water's classification, but a description of the type and quantity of the wastes.  
*No*
25. Attach copies of the Facility's Discharge Monitoring Reports for the last two years, if the Facility is required by regulation to complete such reports.  
*N/A*

### Air Pollution

26. Are there any air emission sources that emit contaminants from the Facility? If so, describe each such source, including whether it is a stationary combustion installation, process source, exhaust or ventilation system, incinerator, or other source.  
*No*
27. Are any of the sources permitted? If so, attach each such permit.  
*N/A*

### Spills and Underground Storage Tanks

28. List and describe all above and below ground storage tanks used to store petroleum or gasoline products, or other chemicals or wastes, including the contents and capacity of each tank.  
*No*
29. List all underground storage tanks on site, even if they are not now in service, and state whether any notification has been filed with the local, state or federal government concerning existence of those tanks.  
*One UST; no notification*
30. Have there been any leaks, spills, releases or other discharges (including loss of inventory) associated with any of these tanks? If so, give full details, including the response taken, all analytical results or reports developed through investigation (whether internal or external), and the agencies which may have become involved.  
*No*

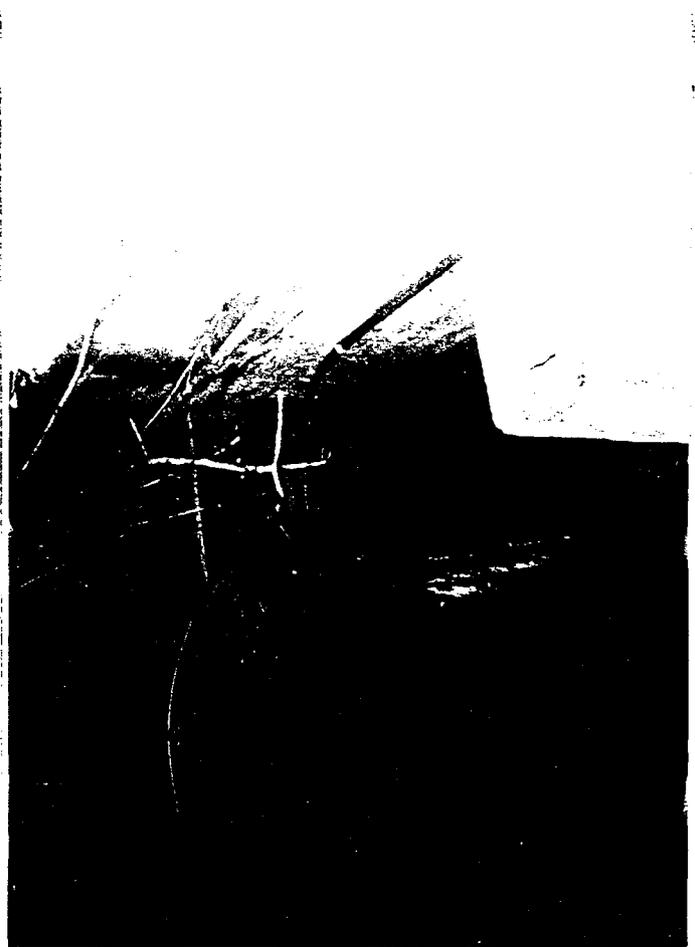
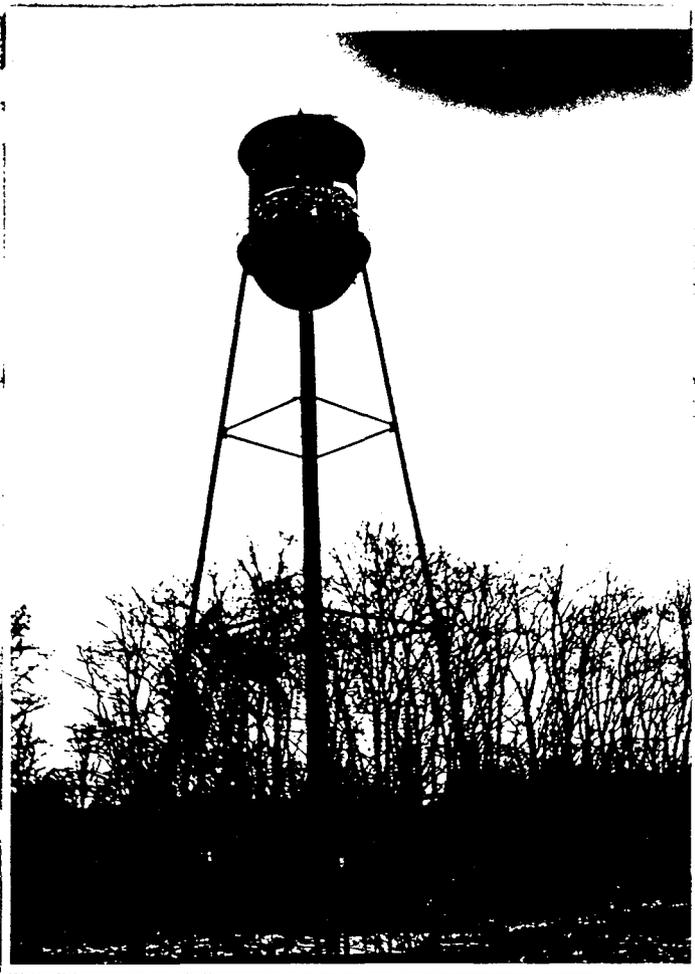
### Polychlorinated Biphenyls (PCBs) and Asbestos

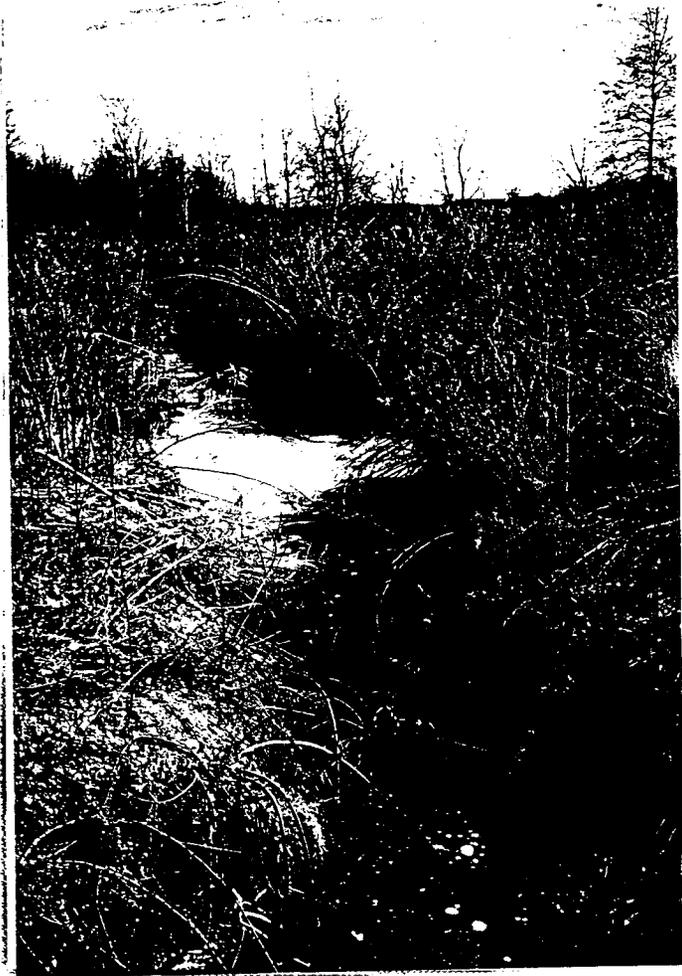
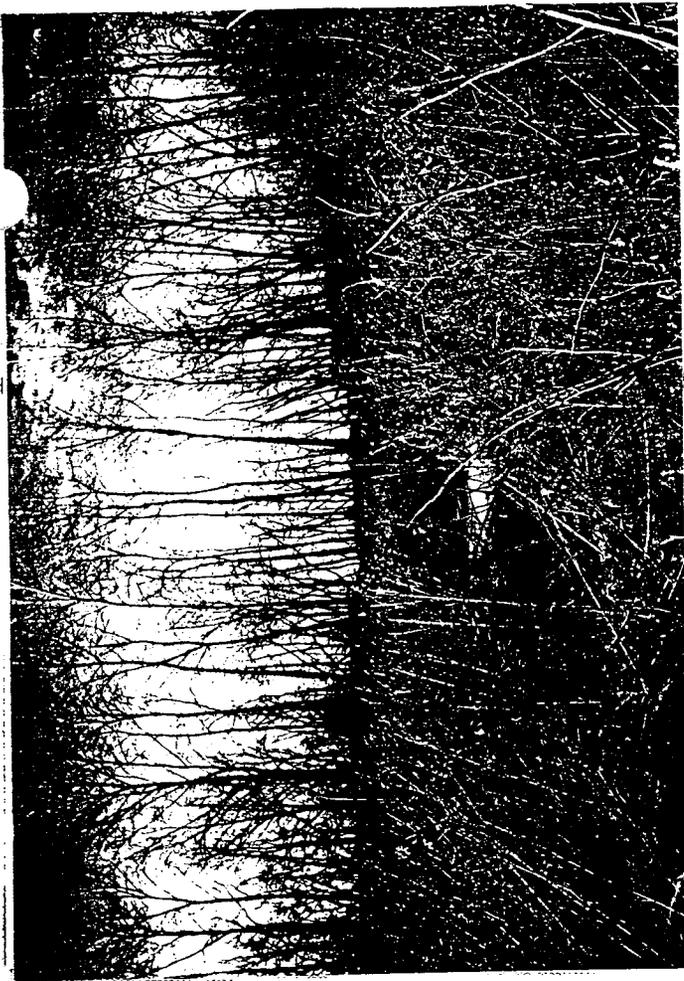
31. Provide any records the Facility has concerning any on-site PCBs or PCB equipment, whether used or stored, and whether produced as a byproduct of the manufacturing process or otherwise. (PCBs are generally associated with transformers or capacitors, circuit breakers, voltage regulators, switches or cables.)  
*None*
32. Have there been any PCB spills, discharges or other accidents? If so, relate all the circumstances.  
*No*
33. Does the Facility have any asbestos containing materials, including materials used to construct the building? If so, please list.

Date 2/8/91 Environmental Consulting Firm Lawhon & Associates, Inc.  
By Steve Sawyer LLL Name Steve Sawyer Title Project Manager

**APPENDIX G**

**PHOTOGRAPH LOG**







OC 015580



**APPENDIX I**

**LIST OF ACM**

Lawhon & Associates, Inc.  
6330-A Proprietors Road  
Worthington, OH 43085

Phone: 614/436-8400  
FAX: 614/436-2229

**PCB Questionnaire  
Electrical Equipment**

1. Property Location & Description:

Kilgore Property, Otterbein College (Owner), 8800 Tussic Street Road, Westerville, OH 43081, Genoa Township, Delaware County; 1 Pole Transformer

2. Does the suspect equipment contain PCB's?

YES \_\_\_ NO

Has it been tested?

YES \_\_\_ NO

(If yes, please list results.)

3. Have there been any documented PCB accidents on the property or in the vicinity of the property?

YES \_\_\_ NO

(If yes, please say where located in regard to said property and what level.)

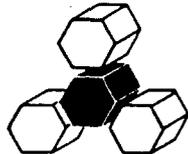
Deborah J. Taylor  
Name/Signature

Environmental Specialist  
Title

February 14, 1991  
Date

Columbus Southern Power Co.  
Company

(614) 464-7523  
Phone



**Gelles  
Laboratories, Inc.**

Materials Research and Development  
2836 Fisher Road • Columbus, Ohio 43204

Asbestos Analysis

SEM/EDS/WDS Services

Phone (614) 276-2957 / FAX (614) 276-3441

February 13, 1991

Lawhon & Associates  
6330A Proprietors Rd  
Worthington OH 43085

Attention: Tim Auch

Reference: Job No. 910153  
Job Ref. N 80337

Dear Tim:

Attached please find the results of the analyses conducted on the following bulk samples:

GLI Sample Number	Customer Sample Number
9100013	1 (TILE)
9100014	2
9100015	3
9100016	4
9100017	5
9100037	1 (MASTIC)

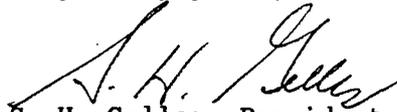
This job was received on February 12, 1991 .

The analysis was performed using the protocol outlined in 40 CFR 763, Appendix A to Subpart F.

Gelles Laboratories, Inc. is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for conducting asbestos fiber analysis by polarized light microscopy. The results listed in the report apply only to the sample analyzed.

If you have any questions about the results, please be sure to contact me.

Very truly yours,



S. H. Gelles, President  
GELLES LABORATORIES, INC.

OC 015584



Materials Research and Development  
2836 Fisher Road • Columbus, Ohio 43204

Asbestos Analysis  
Phone (614) 276-2957 / FAX (614) 276-3441

SEM/EDS/WDS Services

BULK SAMPLE ANALYSIS  
POLARIZED LIGHT - DISPERSION STAINING METHOD

JOB NUMBER: 910153  
CUSTOMER: Lawhon & Associates  
6330A Proprietors Rd  
Worthington, OH

P. O. NUMBER: PAGE 1  
CONTACT: Tim Auch  
REPORT DATE: February 13, 1991  
JOB REFERENCE: N 80337

=====  
GLI SAMPLE NUMBER: 9100013  
Analyst: Jeffrey S. Coutts  
Reference: KILGORE SITE  
Sample Characteristics

CUSTOMER SAMPLE NUMBER: 1 (TILE)  
Date Received: February 12, 1991  
Date Analyzed: February 12, 1991

Number of Layers: 1  
General Appearance: WHITE FLOOR TILE-LIKE MASS OF BINDER  
Fiber Appearance: FINE BUNDLES OF SILKY FIBERS, SOME CURLY FIBERS  
Comments & Other:

Fiber Analysis

% Asbestos:		% Non-Asbestos	
Chrysotile	3.	Cellulose	2.
		Fibrous Glass	
		Synth. Fibers	
		Hair	

=====  
GLI SAMPLE NUMBER: 9100014  
Analyst: Donald S. McKinney Jr.  
Reference: KILGORE SITE  
Sample Characteristics

CUSTOMER SAMPLE NUMBER: 2  
Date Received: February 12, 1991  
Date Analyzed: February 12, 1991

Number of Layers: 2  
General Appearance: BEIGE GRANULAR MASS/BLUE PAINT LAYER  
Fiber Appearance: THICK CURLED FIBERS/ NO FIBERS @ 30X  
Comments & Other:

Fiber Analysis

% Asbestos:		% Non-Asbestos	
No Asbestos Detected		Cellulose	4.
		Fibrous Glass	
		Synth. Fibers	
		Hair	20.

=====

JOB NUMBER: 910153  
CUSTOMER: Lawhon & Associates  
6330A Proprietors Rd  
Worthington, OH

P. O. NUMBER: PAGE 2  
CONTACT: Tim Auch  
REPORT DATE: February 13, 1991  
JOB REFERENCE: N 80337

GLI SAMPLE NUMBER: 9100015  
Analyst: Jeffrey S. Coutts  
Reference: KILGORE SITE  
Sample Characteristics

CUSTOMER SAMPLE NUMBER: 3  
Date Received: February 12, 1991  
Date Analyzed: February 12, 1991

Number of Layers: 2  
General Appearance: WHITE CHUNK OF PLASTERLIKE BINDER/THIN TAN PAPERLIKE LAYER  
Fiber Appearance: CURLY FIBERS IN BOTH LAYERS  
Comments & Other:

Fiber Analysis

% Asbestos:	% Non-Asbestos
No Asbestos Detected	Cellulose 20.
	Fibrous Glass
	Synth. Fibers
	Hair

GLI SAMPLE NUMBER: 9100016  
Analyst: Donald S. McKinney Jr.  
Reference: KILGORE SITE  
Sample Characteristics

CUSTOMER SAMPLE NUMBER: 4  
Date Received: February 12, 1991  
Date Analyzed: February 12, 1991

Number of Layers: 3  
General Appearance: BLACK TAR-LIKE MATRIX/GRAY BACKING/GRAY PRESSED LAYER  
Fiber Appearance: CURLED FIBERS/CURLED FIBERS/CURLED FIBERS  
Comments & Other:

Fiber Analysis

% Asbestos:	% Non-Asbestos
No Asbestos Detected	Cellulose 60.
	Fibrous Glass
	Synth. Fibers
	Hair

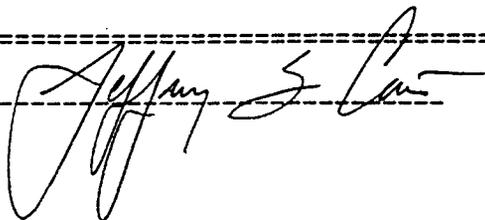
GLI SAMPLE NUMBER: 9100017  
Analyst: Donald S. McKinney Jr.  
Reference: KILGORE SITE  
Sample Characteristics

CUSTOMER SAMPLE NUMBER: 5  
Date Received: February 12, 1991  
Date Analyzed: February 12, 1991

Number of Layers: 2  
General Appearance: GRAY TRANSITE-LIKE MASS/BLACK PRESSED LAYER  
Fiber Appearance: COTTON-LIKE FIBERS/CURLED FIBERS  
Comments & Other:

Fiber Analysis

% Asbestos:	% Non-Asbestos
Chrysotile 50.	Cellulose 10.
	Fibrous Glass
	Synth. Fibers
	Hair





Lawhon & Associates, Inc.  
 6330-A Proprintors Road  
 Worthington, Ohio 43085  
 (614) 436-0400

# Chain-of-Custody Record

Please sign and return when samples are received

Project #		Project Name				No. of Containers				Remarks
W 80337		Kilgore Site								
Samplers: (Signature)										
<i>[Signature]</i>										
Sample Number	Date	Time	Cont.	Grac.	Sample Location					
1	1/25			J	KILGORE MANSION - floor tile	1	✓			
2	1			V	" " - wall plaster	1	✓			
3	1			J	" " - dry-wall ceiling	1	✓			
4	1			J	" " - linoleum flooring	1	✓			
5	1			J	" " - roofing tile	1	✓			
Relinquished by: (Signature)			Date	Time	Received by: (Signature)			Date	Time	Received by: (Signature)
<i>[Signature]</i>			2/6/91							
Relinquished by: (Signature)			Date	Time	Received by: (Signature)			Date	Time	Received by: (Signature)
Relinquished by: (Signature)			Date	Time	Received for Laboratory by: (Signature)		Date	Time	Remarks:	

OC 015588

***PHASE I PROPERTY ASSESSMENT REPORT:***

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***800 Tussic Street Road  
Westerville, Ohio 43081  
(Project #6177006.013)***

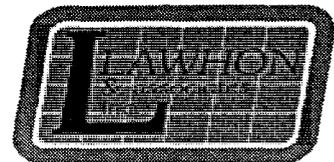
***Prepared for:***

***Mr. William W. Keethler  
The Keethler Companies  
7870 Olentangy River Road  
Suite 200  
West Worthington, Ohio 43235***

***Prepared by:***

***Lawhon & Associates, Inc.  
6300 Proprietors Road  
Worthington, Ohio 43085***

***July 14, 1997***



**Phase I Property Assessment Report**  
**800 Tussic Street Road**  
**Westerville, Ohio 43081**

(i) **Summary**

L&A's objective was to determine, to the extent feasible pursuant to the process prescribed in Ohio Administrative Code (OAC) 3745-300-06, whether there is any reason to believe that a release of hazardous substances or petroleum has, or may have occurred on, underlying, or is emanating from the subject property, formerly known as The Kilgore Farm, located at 800 Tussic Street Road, Westerville, Ohio.

A Phase I Property Assessment has been conducted in conformance with the scope and limitations of the above-mentioned code. The following potential environmental issues have been revealed as a result of this assessment:

- *An underground storage tank (UST), which formerly held heating oil, was removed from the property.* This UST is not regulated by the State Fire Marshal's Bureau of Underground Storage Tanks Regulations. The UST was removed following the rules outlined in the State Fire Code (OAC 1301:7-7-28), and then samples were collected from the bottom of the excavation and the waste soil. The samples collected from the bottom of the excavation were analyzed as required by the Ohio EPA's Petroleum Contaminated Soils (PCS) rule. **These samples were determined to be below the detection limit for applicable PCS contaminants. The waste soil has been disposed of off-site.**
- *Asbestos-containing water pipe was discovered on the property* and is being removed for off-site disposal. The pipe has been excavated intact for disposal off-site.
- *The subject property appears on the Ohio EPA's Master Sites List (MSL).* Kilgore Manufacturing, the target property, is listed as being located on North Spring Road in Westerville, Ohio. A preliminary investigation was conducted at the site on September 14, 1988, and a priority of zero was assigned. Zero priority sites are "sites where there is evidence or it is suspected that hazardous waste has been managed but there is no potential for the release of hazardous waste." The listed potential problem for the site is soil contamination due to explosives.

A "Phase II" investigation was conducted on the adjacent property to the south to determine whether or not a contamination issue exists in relation to explosives. **All potentially hazardous and/or explosive materials encountered were sampled and documented, and disposed of off-site (as necessary).**

**Based on a review of all available information, including "Phase II Property Assessment" activities, it is our opinion that once the asbestos-containing piping is removed from the site for disposal, there will be no risks associated with the above-mentioned issues, and no further "Phase II" activities, or remediation, are deemed necessary at this time.**

(ii) **Introduction**

(1) **Purpose**

As stated in OAC 3745-300-06(B), the purpose of a Phase I Property Assessment under the "Voluntary Action Program" ("VAP") is to determine whether there is any reason to believe that a release of hazardous substances or petroleum has or may have occurred on, underlying, or is emanating from a property including any release from management, handling, treatment, storage, or disposal activities from on or off-property activities. The scope of an ESA is to characterize a property for the purposes of participating in the "VAP" and to determine the necessity and initial scope of a Phase II Property Assessment.

(1)(a) **Legal Description of the Property**

The target property, formerly known as 800 Tussic Street Road, is located east of Tussic Street Road (also known as North Spring Road) and south of Maxtown Road in Westerville, Ohio, consisting of the following:

Situated in the State of Ohio, County of Delaware, City of Westerville, in Lot 9, Quarter Township 4, Township 3 North, Range 17 West, United States Military Lands and being 97.163 acres of land out of a 110 acre tract of land conveyed to Otterbein College by deed of record in Deed Book 299, Page 439, Recorder's Office, Delaware County, Ohio, and bounded and described as follows:

Beginning, for reference, at a 1" solid iron pin found at the southwest corner of said 110 acre tract, at the northwest corner of a 99.164 acre tract conveyed to The Board of Education of The Westerville City School District by deed of record in Deed Book 378, Page 417, Recorder's Office, Delaware County, Ohio, at the southwest corner of said Lot 9, at the northwest corner of Lot 12 and in the centerline of North Spring Road (60 feet in width), said iron pin being, N 4° 11' 27" E a distance of 1,782.10 feet from Franklin County Monument Box No. 3318, found at the centerline of North Spring Road with County Line Road;

thence N 4° 11' 27" E along a portion of the west line of said 110 acre tract and along the centerline of North Spring Road a distance of 310.00 feet to a railroad spike set at the true place of beginning of the tract herein intended to be described;

thence continuing N 4° 11' 27" E along a portion of the west line of said 110 acre tract and along the centerline of North Spring Road a distance of 2,138.20 feet to a railroad spike found at the northwest corner of said 110 acre tract and at the southwest corner of a 17 acre tract of land conveyed to Mae L. & William R. Jr. McCorkle by deed of record in Deed Book 603, Page 98, Recorder's Office, Delaware County, Ohio;

thence S 85° 51' 11" E along the north line of said 110 acre tract, along the south line of said 17 acre tract and along a south line of an original 126.651 acre tract of land conveyed to Crystal, Ltd., by deed of record in Deed Book

501, Page 724, Recorder's Office, Delaware County, Ohio, a distance of 1,977.13 feet to a #5 rebar found at the northeast corner of said 110 acre tract and at a corner of said original 126.651 acre tract (passing a point in the existing east right-of-way line of North Spring Road at 30.00 feet and passing a 3/4" I.D. iron pipe set in the proposed east right-of-way line of North Spring Road at 40.00 feet);

thence S 4° 02' 42" W along the east line of said 110 acre tract, along a west line of said original 126.651 acre tract and along the west end of Sunbury Lake Drive (50 feet in width), the west lines of Lots Numbers Fifty-One (51), Fifty (50) and Forty-Nine (49), as shown on the plat of Mariners Cove Section 1, In Plat Cabinet 1, Slides 220 through 226, Recorder's Office, Delaware County, Ohio, a distance of 1,464.34 feet to a #5 rebar found in the east line of said 110 acre tract, the southwest corner of said Lot No. 49 and at the northwest corner of Lot Number Forty-Eight (48) as shown on the plat of The Landings at Hoover Phase 2 Part 1, in Plat Book 24, Pages 65 & 66, Recorder's Office, Delaware County, Ohio;

thence S 4° 05' 50" W along the east line of said 110 acre tract, along the west line of said Lot No. 48, along the west line of Lot Number Forty-Seven (47) in The Landing at Hoover Phase 2 Part 1 and along the west lines of Lot Numbers Twenty (20), Nineteen (19), Eighteen (18), along the west end of a 10' Walkway, along the west line of Lot Number Seventeen (17) and along a portion of the west line of Lot Number Sixteen (16), as shown of record on the plat of The Landings at Hoover Phase 1 in Plat Book 23, Pages 14 & 15, Recorder's Office, Delaware County, Ohio, a distance of 673.15 feet to a 3/4" I.D. iron pipe set;

thence N 85° 51' 11" W crossing a portion of said 110 acre tract parallel with and 310.00 feet northerly by perpendicular measurement from the south line of said 110 acre tract a distance of 1,981.95 feet to the true place of beginning (passing a 3/4" I.D. iron pipe set in the proposed east right-of-way line of North Spring Road at 1,941.95 feet and passing a point in the existing east right-of-way line of North Spring Road at 1,951.95 feet);

containing 97.163 acres of land more or less and being subject to all easements, right-of-ways and restrictions of record.

The above description was prepared by Kevin L. Baxter, Ohio Surveyor No. 7697, of C.F. Bird & R.J. Bull, Inc., Consulting Engineers & Surveyors, Columbus, Ohio, from an actual field survey performed under his supervision in September, 1996. Basis of bearings is the centerline of Spring Road, being N 4° 11' 27" E, as shown of record in Deed Book 378, Page 417, Recorder's Office, Delaware County, Ohio.

**(1)(b) Latitude and Longitude Coordinates for the Subject Property**

Northwest corner of the property:

Latitude: 40.143059°  
Longitude: -82.903172°

Southwest corner of the property:

Latitude: 40.138237°  
Longitude: -82.903114°

Northeast corner of the property:

Latitude: 40.143093°  
Longitude: -82.896003°

Southeast corner of the property:

Latitude: 40.138233°  
Longitude: -82.895944°

**(1)(c) Current and Intended Use of the Property**

The subject property is currently being cleared and graded in preparation for future development. The property will ultimately be developed into a residential subdivision. It should be noted that the wetland in the northeast corner of the property will be retained.

**(1)(d) Site Visit and Report Completion**

Numerous site inspections were conducted by L&A staff. Mr. Chuck Wilson conducted a site inspection on June 9, 1997. The on-site technical specialist assigned to this project was Mr. Chuck Wilson. The compiling of historic, government agency and database records was performed by Mr. David Sedlick. Dr. William T. Lawhon, Jr. and Mr. Russell K. Smith, Certified Professional, reviewed pertinent information and provided a summary of environmental standing and recommendations. Individual profiles and certifications are presented in Appendix 13.

The written Phase I Property Assessment Report was completed on July 14, 1997.

**(2) Special Terms and Conditions**

Special terms and conditions are outlined in the proposal dated September 25, 1996 (signed September 27, 1996), and attached *General Conditions*. Copies of the executed proposal for services and *General Conditions* are included in Appendix 15.

**(3) Limitations and Exceptions of Assessment**

No environmental site assessment (ESA) can *wholly* eliminate uncertainty regarding the potential for recognized environmental conditions in connection with a property. The ESA practice is intended to reduce, but not eliminate, uncertainty regarding the potential for environmental conditions in connection with a property, and this practice recognizes reasonable limits of time and cost.

The conclusions presented in this report are professional opinions based on data contained in the report. They are intended for the purpose, site location and project indicated.

It should be noted that portions of this report are based on unverified information supplied to L&A by third-party sources. While efforts have been made to substantiate third-party information, L&A cannot guarantee its completeness or accuracy.

(4) **Limiting Conditions and Methodology Used**

The findings, observations and conclusions expressed in the report are limited by the procedures prescribed by OAC 3745-300-06. The methodology used to perform this Property Assessment is outlined in this rule.

This practice does not address specific requirements of any *other* state or local laws, or federal laws. It should be noted that other state, federal, and local laws may impose obligations that are beyond the scope of this practice.

(D)(1) **Historic and Current Uses of the Property**

As stated in OAC 3745-300-06(D)(1), the objectives of this portion of the Phase I Property Assessment are to establish a continuous history of the uses of the "Voluntary Action Property," to determine if those uses may have included the treatment, management, handling, storage or disposal of hazardous substances or petroleum, which have, or may have, led to a release of hazardous substances or petroleum on, underlying, or emanating onto the property.

(1)(a) **History Analysis**

(i) **Sanborn Fire Insurance mapping**

L&A attempted to obtain Sanborn Fire Insurance mapping in an effort to determine site specific information for the subject property and surrounding area. After a review of available mapping in Environmental Risk Information & Imaging Services' (ERIIS) map collection, **L&A was informed that there is no coverage for the subject property.** The absence of Sanborn mapping suggests a lack of historic industrial development in the area. In addition to the Sanborn Fire Insurance Collections, ERIIS' inventory includes images from the following publishers: Manufactures Mutual Fire Insurance Maps, Nirenstein Real Estate Atlases, William G. Baist, Hopkins, Rascher, Dakin, Scarlett and Scarlett, Bromley, and Hexamer.

(ii) **Directories**

L&A reviewed available Polk's Suburban Directories at the Columbus Metropolitan Library and the Delaware County Library in an attempt to determine previous occupants of the target property. **There is no coverage for the area in which the subject property is situated.**

(iii) **Historic Aerial Photographs**

Historical aerial photographs of the site and surrounding areas were obtained from the Delaware County Soil and Water Conservation Office.

These photographs were examined to assist in determining past land use. The available photographs are dated 1939, 1951, 1958, 1964, and 1988. The property appears primarily as farmland with several small pockets of wooded areas in the 1988 photograph. Numerous small structures and roads are located on the property on the 1951, 1958 and 1964 photographs. The area south of the property has obviously been disturbed on both the 1958 and 1964 photographs. The property appears to be farmland, with an orchard and a residential dwelling in the 1939 photograph.

Due to the altitude that the photographs were taken, it is not possible to determine site specific details. Copies of the historic aerial photographs are presented in Appendix 8.

**(1)(b) Chain of Title**

A review of deed records was conducted at the Delaware County Recorder's Office. The target property consists of parcel #18-002600. The earliest available record of ownership indicates that the target property was owned by Joe and Eva M. Morris in 1941. The current owner, Otterbein College, acquired the property in 1962.

Kilgore Manufacturing Company owned the subject property from 1941 until 1952, and Kilgore, Incorporated owned the subject prorate from 1952 until 1962.

Property tax file information is presented in Appendix 6, along with a copy of the tax parcel map.

**(1)(c) Interviews**

L&A placed a public notice in the *Westerville News & Public Opinion*, seeking any first hand knowledge or information related to activities which took place at The Kilgore Farm. This public notice appeared in the May 28, 1997, and June 4, 1997, editions of the above-mentioned paper. To date, L&A has not received any useful information relating to the property as a result of this public notice.

**(D)(2) Environmental History Review**

As stated in OAC 3745-300-06(D)(2), the objective of this portion of the Phase I Property Assessment is to provide a continuous environmental history to determine whether any management, handling, treatment, storage or disposal activities at the property have occurred, which have, or may have, led to the release of hazardous substances or petroleum on, underlying, or emanating from the property.

**(2)(a) Previous Environmental Assessments**

The following synopsis is based on information contained in documentation provided to L&A by Otterbein College; a Phase I Environmental Site Assessment (ESA) dated February 26, 1988; a Phase I Environmental Site Assessment (ESA) dated October 15, 1996; a *NFA Addendum for the VAP*

*2.31 Acre Parcel*; and a copy of the *Revised Preliminary Assessment*, dated October 22, 1992, which was revised by Diana L. Bynum (Site Coordinator) and reviewed by Deborah J. Strayton (Unit Supervisor) with the Ohio EPA - DERR/CDO. Copies of the ESA dated February 26, 1988; the *NFA Addendum for the VAP 2.31 Acre Parcel*; and the *Revised Preliminary Assessment*, dated October 22, 1992, are included in Appendix 7.

It should be noted that portions of this synopsis discusses the entire 110 acre Kilgore property. **The subject property , for the purpose of this "VAP" submittal, consists of the 97.163 acre tract only, as described in Section (1)(a) of this report.**

#### History of Kilgore Farm

Prior to 1941, the Kilgore Manufacturing Company, which was located in Westerville, Ohio, produced toys, such as cap guns, and pyrotechnics used primarily for public celebrations. During the early stages of World War II, Kilgore converted to the production of explosives and incendiary materials and devices, such as flares, fuses, hand grenades, land mines and flame throwers. In order to meet the military standards necessary for the manufacturing and safe storage of these materials, Kilgore acquired a 110 acre farm northeast of Westerville near the Delaware/Franklin County line. A network of small magazines and concrete buildings (including a boiler house) were constructed, as was a 75,000 gallon water tower that furnished water to all of the structures. Other on-site activities included experimental work, manufacturing of some explosives and incendiary items, and burial of wastes and those items not meeting military standards.

A burial site measuring approximately six to eight acres, located *south* of the subject property was allocated for the disposition of produced waste and rejected materials. Waste materials were generally from settling sumps, and included mixtures of various chemicals used in the manufacturing process. Waste materials were packaged in wet cans (30" long x 15" in diameter). These cans were then laid in open trenches and covered with earth. Rejected materials, such as pyrotechnical devices, primary explosives, scrap powder, primers, detonators and liquid flares, were also placed in open trenches and covered with earth.

Records concerning disposition of waste and rejected materials are available from the time period of January, 1951 through May, 1953. An open pit 50' in diameter and 8' deep was located south of the subject property and was used for this purpose.

*After this time the Kilgore property was used to farm beans and corn, the practice of which continued over the years.*

#### Comments Related to Pesticide and Herbicide Use on the Property

Otterbein College leased the property to local farmers. Otterbein College was contacted regarding restrictions in the leases concerning crops or chemicals used, but none were included. Mr. Stephen Storck of Otterbein

College indicated that the crops that were grown there were corn and soy beans.

The property is situated in an urban area, with a school located on one side and residential property adjacent to another. Based on the experience of Dr. William T. Lawhon, President of L&A, no pesticides have been used for corn or soy beans, rather, crop rotation is the major weapon against pests.

The primary herbicides used in the 60's and 70's would likely include 2,4D (prometon). In the mid-1970's to present the predominant use would likely be Roundup® (glyphosate) due to its lower application quantity per acre; hence, its lower cost. Toxicity and application data for these materials are listed below. IRIS data were taken from the US EPA on-line data base on April 16, 1997. The values for the Region IX Preliminary Risk Goals (PRGs) were taken from the August 6, 1996 document.

**Table 1. Herbicide Data**

Herbicide	Normal Application Rate (lb/acre)	RfD mg/kg/day <sup>1</sup>	Preliminary Remediation Goals <sup>2</sup> (mg/kg)	Degradation time <sup>3</sup>
prometon	10-30	0.015	980	Several years
glyphosate	1-1.5	0.01	6,500	t <sub>1/2</sub> <60 days

In a typical acre, the tilled soils (8 inches) have a weight of approximately 1100 tons. At an application rate of 1 pound per acre, the estimated concentration of herbicide in soil is about 0.5 ppm. Calculations were performed estimating the residual pesticide quantities and are presented in the NFA Addendum which is presented in Appendix 7. The calculations assume:

- A 5 year half-life of degradation for prometon. The Herbicide Handbook indicates disappearance in several years, so this assumption is very conservative,
- Application each year at the maximum rate per acre,
- A tillage depth of 8 inches,
- Use of prometon from 1960 to 1974, followed by use of glyphosate from 1975 through 1995, and no application since 1995. The data show that residual concentrations (expressed as mass fraction in the appendix) are substantially less than those which US EPA indicates as preliminary remediation goals (PRGs) in the August, 1996 Region IX table.

The OSU Extension Service in Delaware County was contacted regarding pesticides which may have been used on the property. The agent, Mr.

<sup>1</sup> From IRIS database, as of April 16, 1997

<sup>2</sup> From Region IX Preliminary Remediation Goals Data, August 1, 1996

<sup>3</sup> From Herbicide Handbook, Fourth Edition, Weed Science Society of America, (1979)

Robert Leeds, was interviewed. Mr. Leeds is only generally familiar with the area around the Kilgore Farm. He indicated that the Extension Service has no records of specific chemicals of use in this area. He did; however, indicate that aldicarb, which was a concern mentioned by Ohio EPA in a discussion, would be effective for insects such as leaf hoppers, Mexican beetles, and thrip. He indicated that the economics of aldicarb application would preclude use of this material based on the fact that the application of this material is expensive and that these pests have not presented a significant crop problem in Delaware County during his tenure (about 4 years).

The pesticide label for Temik® 15G (aldicarb) was ordered from Rhone-Poulenc. This material is labeled for application on soybeans. The soil types for this property which the County Soils Map for Delaware County (Bennington, Pewamo, and Cardington soils) are not listed on this label as restricted soil.

Dr. William Lawhon was interviewed to discuss pesticide and herbicide use as a farmer and a soil and plant chemist. He indicated that pesticides are not regularly used on corn or soybeans due to the low price of these grains as commodity materials.

Based on these discussions, L&A has concluded that pesticides are not an issue on this site.

### **History of Decontamination**

In early 1961, the Kilgore Manufacturing Company suspended operations in Westerville. Commercial Credit Corporation, who owned Kilgore at the time, decided to donate the Westerville properties, including the 110 acre farm, to Otterbein College.

Mr. Sanders Frye, former business manager for Otterbein College, initiated a clean-up of the official burial site at the Kilgore Farm during the summer of 1962. Mr. Frye contacted the Ammunition and Supply Procurement Agency in Joliet, Illinois, and Mr. Virgil Carpenter was commissioned to supervise the decontamination of the site. After the known trench sites were marked, the earth was removed and the buried materials were excavated and destroyed on the Kilgore property. The dug trenches were then refilled. In all, over 120 tons of explosives and flares were removed and destroyed, including 3,500 boosters; 200,000 fuses; cap mix; black powder; magnesium flares; and miscellaneous materials.

On August 24, 1962, Mr. Carpenter, in a letter sent to Sanders Frye, stated that the Kilgore property had been decontaminated "...in accordance with current Ordnance Corps procedures," and in his opinion no significant hazard remained which would prevent the usage of the land for any purpose, or endanger the lives of individuals or the public.

In 1985, Mr. Ernest Fritsche, who was a board member at Otterbein College and a World War II explosives expert, was asked to look into the sale of the Kilgore Farm. Mr. Fritsche visited the property on June 15 and June 26,

1985, and discovered approximately seventy flare canisters. The canisters were found south of the subject property, in the area of the former burial site, and had apparently been dug up by plow blades. Mr. Fritsche buried the canisters and marked the area.

Mr. Fritsche called representatives at the Ohio Fire Marshall's Office (OFMO) and the Ordnance Department at Wright-Patterson Air Force Base and asked them to identify the canisters and determine whether or not they were hazardous. The canisters, identified as having characteristics of U.S. Ordnance, could only be made reactive by attaching a counter-charge and detonating the material. However, on the following day, dry pieces of the exploded canisters and contents (phosphorous) burst into flame. On September 5, 1985, a team from the Hazardous Materials Division of the OFMO collected the canisters found by Mr. Fritsche and delivered them to the Ordnance Department at Wright-Patterson Air Force Base for disposal.

Mr. Fritsche returned to the Kilgore Farm in March and in mid-June, 1986, and found thirty-four flare canisters south of the property, in the area of the former burial site. The area was marked and arrangements were made for later pick-up. Officers from the OFMO and Ordnance at Wright-Patterson Air Force Base visited the property in May, 1986, and Sergeant Smith from Ordnance recommended that the entire 110 acres be swept with mine detectors.

On July 7, 1986, Mr. David Douthat, a safety engineer with the U.S. Corps of Engineers, visited the Kilgore Property with Mr. Fritsche. Approximately fifty canisters were found in the area of the former burial site during their visit. These canisters, plus the canisters found earlier in the year by Mr. Fritsche, were removed from the area south of the property by the Ordnance Department from Wright-Patterson Air Force Base.

In 1987, Westerville Schools contacted Otterbein College and expressed interest in purchasing twenty-two acres of the Kilgore Farm north of, and adjacent to, the Westerville North High School grounds. In January, 1988, Westerville Schools contracted S.E.A., Inc. of Worthington, Ohio, to conduct an environmental study of the desired portion of the property, which included the six to eight acre burial site. S.E.A., Inc. performed a detailed site investigation of the acreage in question. This investigation involved installing monitor wells and testing the ground water for contaminants. A walk-through with a metal detector located one area that produced many small unidentifiable metal objects. This report indicates that "...there does not appear to be any large metal structures beneath the top two feet of the surface on the property..." and "...the groundwater did not contain any volatile aromatic or chlorinated hydrocarbons above detectable limits..." The report further concludes that "...there was no contamination of the groundwater with PCBs above detectable limits," and, furthermore, "...although metals were detected in the groundwater, they were below the EP toxicity limits." Additionally, the report states that "...the concentration of nitrates in the groundwater is below the Safe Drinking Water Act..." A copy of this report is included in Appendix 7.

Westerville Schools contracted with Luna Excavation Company in May, 1988, to excavate the area containing the metal objects. On May 3, 1988, excavation uncovered a variety of materials related to Kilgore operations from the 1940's and 1950's, including parachute flares (dated 1954); black plastic caps; cylinders composed of gray, blue and purple granular substance; and many filled aluminum canisters. It was then decided to dig a series of trenches throughout the burial site. Excavation uncovered only a few pieces of debris. Excavated materials were piled near the old farmhouse and were to be removed. The trenches were not filled in at this time.

In June, 1988, in an attempt to test the reactivity of materials found during the excavation process, the Columbus Bomb Squad placed blasting caps on all items. When detonated, the caps exploded but the materials did not. Given the age of the materials and the conditions of burial, it was determined by Chief Morrison of the Columbus Bomb Squad that they were not explosive in their current state, but could be dangerous and advised removal and disposal of the materials.

#### List of Excavated Materials

- |           |   |
|-----------|---|
| 1962      | Cap Mix (red phosphorous, potassium chlorate, gum and antimony trisulphide), phosphorous sweepings, ammonium and potassium picrate, caps and primers, black powder, M1 flame-throwers, M112 photoflash cartridges, land flares, 66 waste, 155 mm illuminating shells, 3 minute flares and M6, MK5 and M501-type materials |
| 1985-1986 | Flare canisters   |
| 1988      | Parachute flares (1954), black plastic caps, gray-white layered solid granular substance, short sections of a gray/blue/purple cylindrical-shaped material, aluminum flitter/sodium nitrate and sulfur  |

#### Comments on Chemical Compounds/Mixtures of Concern (per EPA)

Comments on 14 listed chemical compounds or mixtures follow. The following comments were prepared by Dr. Henry M. Grotta, a Chemist with over 50 years experience. The following comments are specific to the list of materials referenced in the letter of September 26, 1961, from W.R. Grace & Company.

Materials will behave differently if disposed of as a single material as opposed to a mixture (i.e. red phosphorous, potassium chlorate gum and antimony trisulfide in cap mix). Since the data refer to the removal of formulated products, this discussion is specific to individual materials. Also of importance is the issue of whether or not the materials were stored in containers. The data do not address single concentrations stored in containers - only mixtures and formulated products. As a result, this discussion will focus on the material as it could possibly exist if spilled or packaged within a container that deteriorates before removed.

**Red phosphorous (1).** This material in bulk will not ignite in air below 240°C, and if diluted with inert material such as soil, it should be very difficult to burn. It oxidizes very slowly in air to P<sub>2</sub>O<sub>5</sub> which hydrates to phosphoric acid. Although it does not ignite below about 240°C, will slowly oxidize in air to produce phosphoric acid in the presence of moisture. In soil, the acid will be present as various salts (e.g. calcium phosphate) and be taken up by any growing plants that are present. Phosphate salts are an essential component of agricultural fertilizers. Over time, phosphorous can be expected to be completely eliminated from the soil, and thus of no concern. However, strong oxidizing agents (permanganate, chlorate) may cause explosive reaction with phosphorous when mixed or blended for pyrotechnical products. This event is unlikely in that materials were not buried in layers.

**Aluminum flitter (2).** This refers to aluminum metal in a finely divided state. It can be made to burn in air or oxygen at high temperatures and will explode if treated with a strong oxidizing agent. On exposure to the atmosphere in soil, it may slowly oxidize, the more so if conditions are not neutral. **Aluminum flitter**, itself innocuous, is oxidized by air to alumina. This reaction is retarded by the formation of a surface coating of the oxide on the metal which retards further oxidation. Aluminum, its oxide and salts which may be derived from it are not hazardous. Aluminum compounds are present naturally in most soils. Long term weathering is likely to produce the oxide and various salts.

**Sodium hypophosphite (3).** Hypophosphite salts are water soluble reducing agents. This compound will explode by reaction with an oxidizing agent. At the Kilgore site, any unconfined material will long ago have washed away and/or been oxidized. It is difficult to imagine such a reactive compound surviving for long under exposed conditions. Hypophosphites decompose at various temperatures above 130°C, producing phosphates and phosphine. Metallic salts in soil can be reduced to metals or other reduced states, again with the production of phosphates. Sodium hypophosphite is an extremely water soluble, strong reducing agent which will oxidize to phosphate when exposed to almost any reducible material. Metal salts, for example, present in soil will be reduced to lower oxidation states while the hypophosphite oxidizes to phosphate; silver salts are reduced to metallic silver for example, and cupric salts to cuprous hydride. In soil, the more likely reaction is reduction of ferric to ferrous ions. Phosphoric acid is, as noted above, not hazardous and sodium hypophosphite was once used medicinally as a tonic.

**Ammonium and potassium picrate (4).** These salts of picric acid (trinitrophenol) are toxic and explosive. They are; however, fairly water soluble and can be expected to have been leached from the Kilgore site. Furthermore, since it is an oxidizing agent, it has probably, over time, reacted with organic matter in the soil. Picric acid salts explode under various conditions: temperatures below 300°C are typical, but presence of water helps retard explosion. As an oxidizing agent, these compounds are reduced to the various amino nitrophenols and finally to triaminophenol. In water alone, the picrates can be expected to be quite stable. If the solution also contains oxidizable compounds, these may be oxidized if concentrations are sufficiently high. Ammonium and potassium picrates, though somewhat toxic, are moderately water soluble and have no doubt been leached from the soil over time. Ammonium and potassium cations have no doubt been used by plants growing in the soil and the picric acid anion (probably as its calcium salt), since it is an oxidizing agent, been reduced. Organic components of the soil will be oxidized.

**Black powder (5)** is generally considered to consist of sulfur, charcoal and potassium nitrate. Although it can be made to explode (primer), this is not a likely inadvertent event. Black powder presumably consists of a mixture of sulfur, charcoal and potassium nitrate. Sulfur and sodium (and thus potassium) nitrate are considered below. Charcoal is relatively stable and is not toxic. The three components must be considered on an individual basis. Nitrate salts, for example will be separated from the other two components because of their high water solubility. Please refer to sulfur and sodium nitrate comment.

**Powdered aluminum/magnesium (6).** The same comments apply to this mixture as for aluminum (above), except that Al/Mg is more readily combustible in air because Mg burns more readily than Al. Powdered aluminum/magnesium can be expected to behave as aluminum itself does; that is, the presence of the two metals as a mixture is not expected to cause each to behave differently than it would alone. Oxidation will be slow under neutral conditions in soil, more rapid as the pH varies above or below about 7. The hydroxides of both Mg and Al (hydrated oxides) are commonly ingested to treat gastric acidity.

**Boron phosphide (7).** BP is reported to be a very stable material, evidently quite resistant to chemical reaction or to decomposition under conditions well beyond those possible on exposure at the Kilgore site. If it was present in time past its low solubility makes it likely that it is still present unaltered. One reference (Hawleys, 1993) makes reference to "toxic fumes" produced when in contact with water and that the material spontaneously combusts at 390°F. It does not mention the chemical composition of the fumes or the amount evolved. In an attempt to verify this, three other references were checked. Bailey, et al, 1973; King, R.B., 1994; and Mueltenties, E.L. (1967). All indicate that BP is a non-reactive, refractory sand which does not devolve except under vacuum at 1100°F. It is unlikely, given the other three references, that the information given in Hawley is totally correct. Refractory sands, by their nature, are very stable and can routinely withstand extremely high temperatures and exposure to harsh chemical media.

**Potassium chlorate gum (8).** This material ( $KClO_3$ ) is a very strong oxidizing agent and is reasonably soluble in water. Over time, it will have been leached (by rainwater) and destroyed by contact with the organic matter in soil so none is expected to be present unless in sealed containers. "Gum" is not a definitive word and usually describes the properties of a substance or mixture, not its chemical identity. Comment in a letter to Mr. Frye of Otterbein College from W.R. Grace & Co., dated September 26, 1961, uses the word potassium chlorate and gum as if these two were separate entities, not a single substance or blend. Potassium chlorate's decomposition products are oxygen and potassium chloride. It is capable of reacting violently with phosphorous or sulfur producing the oxides of those elements, but these reactions would not be expected if the materials were well diluted with soil. Thermal decomposition is not be expected at ambient temperatures, occurring close to 400°C. The products formed when  $KClO_3$  reacts to oxidize another material are KCl and oxygen, although except for thermal decomposition, free oxygen will be liberated but will be incorporated in the reaction product from the oxidized species.

**Antimony trisulfide (9).** This compound appears to be fairly innocuous. It is used as a component of the striking surface for safety matches, as a pigment

in paint and glass, and, of course, in pyrotechnics. It is essentially water insoluble so may be present unaltered at the Kilgore site but appears not to be a hazard in that situation. It appears to be stable to decomposition at least up to its melting point (550°C). Toxic hydrogen sulfide can be generated by heating  $\text{Sb}_2\text{S}_3$  with strong hydrochloric acid but, except under these very unlikely conditions, the compound appears to be rather stable.

**Sulfur (10).** Elemental sulfur is a safe material to handle and presents no threat, although it is a component of gun powder. Sulfur can burn and does react with a variety of substances. It burns quietly in air producing sulfur dioxide. It is used in agriculture with no special precautions. Sulfur dumped at the Kilgore site may persist for years but should represent no hazard. Sulfur is used pharmaceutically as a scabicide. Although combustion of sulfur to produce the oxide is an industrial process, it would be virtually impossible to ignite sulfur diluted with soil, i.e. not in bulk form.

**Sodium nitrate (11).** Comments apply to potassium nitrate as well. The very high water solubility of these nitrate salts ensures that if exposed to weathering, they will be dissolved in rain water both from bulk deposits or by extraction from mixtures, and be dissipated in soil. A significant amount is likely to be taken up by plant material through the roots. It is difficult to imagine nitrate salts enduring out of doors for very long. Sodium nitrate is stable at up to temperatures above 300°C and is a mild oxidizing agent. It is found as mineral deposits only in dry locations where it is not washed away.

**Permanganite (12).** I do not know of any compound(s) of this name. Manganite ( $\text{MnOOH}$ ) is known, as are permanganate salts (e.g.  $\text{KMnO}_4$ ), and perhaps it is the latter which is meant. Permanganate salts are very strong oxidizing agents and would not long survive in contact with, for example, organic material in soil. Permanganate salts will also oxidize metallic cations to higher oxidation states. The reaction product is manganese dioxide which is essentially innocuous.

**Barium rhodonid (13).** This designation is probably equivalent to barium rhodanide and, if so, refers to barium thiocyanate, a very water soluble toxic salt. It will have been leached from discarded/buried deposits by rainfall. Its ultimate fate in soil is not obvious but its products may include various cyanides and cyanates in low concentrations due to high solubility.

**Potassium perchlorate (14).** This compound is a good oxidizing agent which is reasonably soluble in water. At the Kilgore site, it can be expected that potassium perchlorate will have been dissolved by rainwater and destroyed by contact with almost any oxidizable material such as the organic substances found in soil. Potassium perchlorate can decompose to produce potassium chloride and oxygen at 400°C and above. The ultimate products of its decomposition are  $\text{KCl}$  and  $\text{O}_2$ , but in reaction with oxidizable materials, the oxygen will have combined with the other reactant.  $\text{KCl}$  is, of course, a non-hazardous material frequently used as a component of commercial fertilizer.

Overall, many of the listed substances (3, 4, 8, 11, 12, 13 and 14) are sufficiently water soluble that, if present for many years at the site, would have been leached and dissipated. Some would have reacted with organic material in the soil and been destroyed as well. The metals (2 and 6) will have been partially oxidized, but in any event, represent no hazard, especially if mixed with soil. Carbon (of black powder) phosphorous and sulfur may have oxidized in part, but in any event, diluted by the soil in which they may have

been buried should present no hazard. Boron phosphite (7) is probably durable but seems to present no hazard. These comments apply to material on or mixed with soil. Material in packages (containers), if discovered, should be evaluated on an individual basis.

**(2)(b) Environmental Compliance History**

**(2)(b)(1) United States EPA**

The National Priorities List (NPL) is a U.S. EPA listing of the Nation's worst uncontrolled or abandoned hazardous waste sites. NPL sites are targeted for possible long-term remedial action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980. In addition, the NPL Report includes information concerning agreements between EPA and Potentially Responsible Parties (commonly called Records of Decision, or RODS), any liens filed against contaminated properties, as well as the past and current EPA budget expenditures tracked within the Superfund Consolidated Accomplishments Plan (SCAP). L&A contracted with Environmental Risk Information & Imaging Services (ERIIS) to assemble a Radius Report for the subject property. **The Radius Report does not identify any National Priorities List (NPL) sites within 0.5 mile of the boundaries of the subject property.** A copy of the Radius Report is included in Appendix 12.

The Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) is a comprehensive listing of known or suspected uncontrolled or abandoned hazardous waste sites. These sites have either been investigated, or are currently under investigation by the U.S. EPA for the release, or threatened release of hazardous substances. Once a site is placed in CERCLIS, it may be subjected to several levels of review and evaluation, and ultimately placed on the National Priorities List (NPL). A review of the CERCLIS is included in the Radius Report, and **the subject property does not appear on this list nor are there any CERCLIS sites identified within 0.5 mile of the boundaries of the subject property.**

The Resource Conservation and Recovery Information System - Treatment, Storage and Disposal (RCRA TSD) Facilities Report contains information pertaining to facilities which either treat, store, or dispose of EPA regulated hazardous waste. A review of this report is included in the Radius Report. **The subject property does not appear on the RCRA TSD Facilities report, nor are there any listed sites located within 0.5 mile of the subject property.**

The Resource Conservation and Recovery Information System - Large Quantity Generators Report contains information pertaining to facilities which either generate more than 1,000 kilograms of EPA regulated waste per month, or meet other applicable requirements of the Resource Conservation and Recovery Act. (RCRA). It also contains information pertaining to the status of facilities by the RCRA Administrative Action Tracking System (RAATS). A review of this report is included in the Radius Report. **The subject property does not appear on the RCRA - LQG report, nor are**

**there any listed sites located within 0.5 mile of the subject properties' boundaries.**

The Resource Conservation and Recovery Information System - Small Quantity Generators Report contains information pertaining to facilities which either generate between 100 kilograms and 1,000 kilograms of EPA regulated waste per month, or meet other applicable requirements of the Resource Conservation and Recovery Act. (RCRA). This report also contains information pertaining to the status of facilities by the RCRA Administrative Action Tracking System (RAATS). A review of this report is included in the Radius Report. **The subject property does not appear on the RCRA SQG report, nor are there any listed sites located within 0.5 mile of the subject properties' boundaries.**

The Emergency Response Notification System (ERNS) is a national computer database system that is used to store information concerning the sudden and/or accidental release of hazardous substances, including petroleum, into the environment. The ERNS Reporting System contains preliminary information on specific releases, including the spill location, the substance released, and the responsible party. A review of this report is included in the Radius Report. **The subject property does not appear on the ERNS database, nor are there any listed sites located within 0.5 mile of the subject properties' boundaries.**

The No Further Remedial Action Planned Sites Report (NFRAP), also known as the CERCLIS Archive, contains information pertaining to sites which have been removed from the U.S. EPA's CERCLIS Database. NFRAP sites may be sites where, following an initial investigation, either no contamination was found, contamination was removed quickly without need for the site to be placed on the NPL, or the contamination was not serious enough to require federal Superfund action or NPL consideration. A review of this report is included in the Radius Report. **The subject property does not appear on the NFRAP report, nor are there any listed sites located within 0.5 mile of the subject property.**

The Civil Enforcement Docket (CED) is the U.S. EPA's system for tracking civil judicial cases filed on the Agency's behalf by the U.S. Department of Justice. A review of this report is included in the Radius Report. **The subject property does not appear on the CED, nor are there any listed sites located within 0.5 mile of the subject property.**

The Facility Index System (FINDS) Report is a computerized inventory of all facilities that are regulated or tracked by the U.S. EPA. A review of this report is included in the Radius Report. **The subject property does not appear on the FINDS report, nor are there any listed sites located within 0.5 mile of the subject property.**

The Federal Reporting Data System Report (FRDSR) contains summary information pertaining to all public water supply wells and the associated treatment facilities. A review of this report is included in the Radius Report. **The subject property does not appear on the FRDSR, nor are there any listed sites located within 0.5 mile of the subject property.**

The Nuclear Power Facilities (NPF) Report is a comprehensive listing of all facilities which have been issued permits for the handling of radioactive materials. A review of this report is included in the Radius Report. **The subject property does not appear on the NPF report, nor are there any listed sites located within 0.5 mile of the subject property.**

The Permit Compliance System Report (PCSR) contains information pertaining to facilities that have been issued permits for the routine discharge of waste water or hazardous waste into either an injection well or surface water. A review of this report is included in the Radius Report. **The subject property does not appear on the PCSR, nor are there any listed sites located within 0.5 mile of the subject property.**

The Toxic Release Inventory System (TRIS) of 1994 Report contains information concerning the industrial release and/or transfer of toxic chemicals as reportable under Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA Title III). A review of this report is included in the Radius Report. **The subject property does not appear on the TRIS, nor are there any listed sites located within 0.5 mile of the subject property.**

L&A contacted the U.S. EPA's Freedom of Information Officer in Chicago, Illinois, for any and all information they have on file for the subject property. **Ms. Melvina M. Taylor, FOIA Specialist for Ohio, responded to our request and indicated that the Superfund Division has no documents that are responsive to our request.** Copies of our request for information and Ms. Taylor's response are included in Appendix 7.

#### **(2)(b)(2) Ohio EPA**

The subject property appears on the Ohio EPA's Master Sites List (MSL). The 1995 MSL indicates that a preliminary assessment was completed (September 14, 1988) and the site was assigned a zero priority. A zero priority is assigned to "sites where there is evidence or it is suspected that hazardous waste has been managed but there is no potential for the release of hazardous waste." The listed problem for the site is "soil explos." L&A reviewed the Ohio EPA file related to the Kilgore Farm. Much of what is contained throughout this report, specifically Section (D)(2)(a) is contained in this file.

The Ohio Emergency Response (EROS) Report contains summary information from 1978 through 1993 pertaining to all reported spills or releases to the environment that have occurred within the State of Ohio. The subject property does not appear on this data base; however, there is one listed site located within 0.5 mile of the subject property: Purdie Metals, listed as being located 0.495 mile northeast of the subject property at 263 Maxtown Road. Three spills are listed for this site, all of which have a spill date of January 19, 1995. The area affected for all three spills is "air." Given the nature of the "spill" and the lack of proximity, L&A has no reason to suspect that the subject property has been adversely affected by this spill.

The Ohio Solid Waste Facility List (OSWFL) contains information pertaining to all active and inactive permitted solid waste landfills and processing facilities within the State of Ohio. A review of the OSWFL is included in the Radius Report. **The subject property does not appear on the OSWFL list, nor are there any listed sites located within 0.5 mile of the subject property.**

L&A contacted the Ohio EPA Emergency Response Unit's Records Custodian, Ms. Cindy Lewis, for any and all information they have on file for the subject property. **Ms. Lewis (Ohio EPA ERU) responded to our request for information and stated that they have no record of any spill or release for the site.** Copies of our request for information and Ms. Lewis' response are included in Appendix 7.

L&A contacted Mr. Dick Lorenz, Water Superintendent for the City of Westerville Water Treatment Plant. **Mr. Lorenz indicated that they have no records or knowledge of any problems with water quality at the subject property because no public water service exists at the site.** Additionally, Mr. Lorenz indicated that they have no problems with water quality in the City of Westerville. A copy of a Telephone Conversation Report detailing our discussion with Mr. Lorenz is included in Appendix 7.

**(2)(b)(3) Bureau of Underground Storage Tank Regulations**

The Bureau of Underground Storage Tank Regulations (BUSTR) has no record of registered underground storage tanks (USTs), or suspected or reported leaking USTs for the subject property.

**(2)(b)(4) Ohio Department of Natural Resources**

No water wells were observed on the subject property. Additionally, to the extent possible, no wells were observed on any adjacent properties. L&A reviewed available *well logs* for the area in which the subject property is located from the Ohio Department of Natural Resources (ODNR). **There are no recorded wells (water or oil and gas) identified on the subject property or on any adjacent properties.**

L&A attempted to obtain information pertaining to contaminated public water wells. L&A was informed that **ODNR's Division of Water does not maintain records related to contaminated public water wells.**

Copies of the map identifying water wells in the vicinity of the subject property and available well logs are included in Appendix 10, and a map identifying oil & gas wells in the vicinity of the property is presented in Appendix 11.

**(2)(c) Review of Sources as Related to the Property:**

L&A contracted with Environmental Risk Information & Imaging Services (ERIIS) to assemble a Radius Report for the subject property.

(i) **Federal National Priorities List**

The National Priorities List (NPL) is a U.S. EPA listing of the Nation's worst uncontrolled or abandoned hazardous waste sites. NPL sites are targeted for possible long-term remedial action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980. In addition, the NPL Report includes information concerning agreements between EPA and Potentially Responsible Parties (commonly called Records of Decision, or RODS), any liens filed against contaminated properties, as well as the past and current EPA budget expenditures tracked within the Superfund Consolidated Accomplishments Plan (SCAP).

The Radius Report does not identify any National Priorities List (NPL) sites within one mile of the subject property.

(ii) **Federal Comprehensive Environmental Response, Compensation, and Liability Information System List**

The Radius Report does not identify any Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLA) sites within one mile of the target property.

(iii) **Federal Resource Conservation and Recovery Act (RCRA) Treatment, Storage and Disposal Facility List**

The Radius Report does not identify any RCRA treatment, storage or disposal (TSD) facilities within one mile of the target property.

(iv) **Federal RCRA Generators List**

The Radius Report does not identify the subject property as being on the Resource Conservation and Recovery Information System (RCRIS) Generator List. Additionally, the Radius Report does not identify any Resource Conservation and Recovery Information System (RCRIS) large quantity or small quantity generators within 0.5 mile of the subject property.

(v) **Federal Emergency Release Notification System List**

The ERNS was reviewed as part of the Radius Report. No record of any spill or release associated with the target property was identified by the Radius Report, nor is there any incident identified within 0.5 mile of the subject property.

(vi) **Federal National Corrective Action Priority System (NCAPS) List**

The subject property does not appear on the NCAPS List. No listings pertaining to the NCAPS List appear in the Radius Report; however, if there were any listings, they would be included in the RCRA TSD section.

(vii) **Ohio Master Sites List**

The Radius Report identifies the subject property as being on the Ohio Master Sites List (MSL).

Kilgore Manufacturing, the subject property, is listed as being located on North Spring Road in Westerville, Ohio. A preliminary investigation was conducted at the site on September 14, 1988, and a priority of zero was assigned. Zero priority sites are "sites where there is evidence or it is suspected that hazardous waste has been managed but there is no potential for the release of hazardous waste." The listed potential problem for the site is soil contamination due to explosives.

(viii) **Ohio Bureau of Underground Storage Tank Regulations (BUSTR) Registered Underground Storage Tank (UST) List**

A review of the State Fire Marshal's Bureau of Underground Storage Tank Regulations (BUSTR) list of registered underground storage tanks (USTs) is included in the Radius Report. According to the Radius Report, there are no registered USTs on the target property.

(ix) **Ohio BUSTR Leaking UST List**

A review of BUSTR's list of sites with reported closed or leaking UST systems (LUST List) is also included in the Radius Report. The subject property does not appear on this list; however, one (1) incident is listed within 0.5 mile of the target property: Fruehauf Corporation.

Fruehauf Corporation is listed as being located 0.457 mile northeast of the subject property at 111 East Maxtown Road. This incident is listed as having a tracking status of "no further action," indicating that "BUSTR/Ohio EPA has determined that further corrective actions are not necessary for this incident." Given the lack of proximity and the fact that BUSTR has determined that no further corrective actions are required, it is L&A's opinion that it is highly unlikely that the target property has been adversely affected by UST activity at this site.

(x) **Ohio Environmental Protection Agency (EPA) Spill Data Base**

The Ohio Emergency Response (EROS) Report contains summary information from 1978 through 1993 pertaining to all reported spills or releases to the environment that have occurred within the State of Ohio. The subject property does not appear on this data base.

Additionally, L&A contacted the Ohio EPA Emergency Response Unit's Records Custodian, Ms. Cindy Lewis, for any and all information they have on file for the subject property. Ms. Lewis responded to our request for information and stated that they have no record of any spills or releases for the site. Copies of our request for information and Ms. Lewis' response are included in Appendix 7.

(xi) **Ohio Department of Natural Resources (ODNR) Well Log Information**

No water wells were observed on the subject property. Additionally, to the extent possible, no wells were observed on any adjacent properties. L&A reviewed available *well logs* for the area in which the subject property is located from the Ohio Department of Natural Resources (ODNR). **There are no recorded wells (water or oil and gas) identified on the subject property or on any adjacent properties.**

Copies of the map identifying water wells in the vicinity of the subject property and available well logs are included in Appendix 10, and a map identifying oil & gas wells in the vicinity of the property is presented in Appendix 11.

(2)(d) **Review of the Following Sources:**

(i) **Community Right-to-Know Inventory Report Records**

Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) mandates that the public shall be provided access to facility specific chemical inventories. These records are to be made available at a location selected by the Local Emergency Planning Committee (LEPC). These records are maintained by facility name. **There is no facility located on the subject property; therefore, there are no records available for the site.**

The Toxic Release Inventory System of 1994 Report contains information concerning the industrial release and/or transfer of toxic chemicals as reportable under Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA Title III). A review of this report is included in the Radius Report. The subject property does not appear on this report.

(ii) **Local Fire Department Records**

L&A contacted the Westerville Fire Department for any and all information they have on file for the subject property. Mr. Jim Tharp responded to our request via telephone and indicated that the only document they have in their files relating to the property is the underground storage tank removal permit which was submitted to the by L&A. A copy of our request for information is included in Appendix 7.

(iii) **Local Health Department Records**

L&A contacted the Delaware County Health Department for any and all information they have on file for the subject property. Mr. Scott Rabun, Registered Sanitarian, responded to our request and indicated that L&A can review their Nuisance Complaint Log for any incidents relating to the subject property. A review of the Nuisance Complaint Log revealed no incidents relating to the subject property. Copies of our request for information and Mr. Rabun's response are included in Appendix 7.

(2)(e) **Review of Other Appropriate Records and Data Bases**

In our opinion, all appropriate and reasonably available records and data bases have been reviewed, and are discussed in their appropriate sections.

(2)(f) **Interviews with Reasonably Available Key Property Personnel, Residents, or Former Property Personnel**

L&A attempted to contact persons knowledgeable of past activities at the subject property to no avail.

L&A placed a public notice in the *Westerville News & Public Opinion*, seeking any first hand knowledge or information related to activities which took place at The Kilgore Farm. This public notice appeared in the May 28, 1997, and June 4, 1997, editions of the above-mentioned paper. To date, L&A has not received any useful information relating to the property as a result of this public notice.

(D)(3) **Review of Sources Contained in Paragraph (D)(2)(c) [of OAC 3745-300-06] as Related to the Surrounding Properties**

The objective of this portion of the Phase I Property Assessment is to identify all known or suspected releases of hazardous substances or petroleum which have or *may have* occurred on, underlying or is emanating onto the property from *adjoining properties*. OAC 3745-300-6(D)(3) states that this review must be conducted on surrounding properties to the "extent necessary" to determine if hazardous substances or petroleum which have or *may have* occurred on, underlying or is emanating onto the property from *adjoining properties*.

(i) **Federal National Priorities List**

The Radius Report does not identify any National Priorities List (NPL) sites within 0.5 mile of the subject property.

(ii) **Federal Comprehensive Environmental Response, Compensation, and Liability Information System List**

The Radius Report does not identify any Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLA) sites within 0.5 mile of the target property.

(iii) **Federal Resource Conservation and Recovery Act (RCRA) Treatment, Storage and Disposal Facility List**

The Radius Report does not identify any RCRA treatment, storage or disposal (TSD) facilities within 0.5 mile of the target property.

(iv) **Federal RCRA Generators List**

The Radius Report does not identify any Resource Conservation and Recovery Information System (RCRIS) large quantity or small quantity generators within 0.5 mile of the subject property.

(v) **Federal Emergency Release Notification System List**

The ERNS was reviewed as part of the Radius Report. No record of any spill or release associated with the target property was identified by the Radius Report, nor is there any incident identified within 0.5 mile of the subject property.

(vi) **Federal National Corrective Action Priority System (NCAPS) List**

No listings pertaining to the NCAPS List appear in the Radius Report; however, if there were any listings, they would be included in the RCRA TSD section.

(vii) **Ohio Master Sites List**

With the exception of the subject property, the Radius Report does not identify any Ohio Master Sites List (MSL) sites within 0.5 mile of the properties' boundaries.

(viii) **Ohio Bureau of Underground Storage Tank Regulations (BUSTR) Registered Underground Storage Tank (UST) List**

A review of the State Fire Marshal's Bureau of Underground Storage Tank Regulations (BUSTR) list of registered underground storage tanks (USTs) is included in the Radius Report. According to the Radius Report, there are no registered USTs within 0.5 mile of the target property.

(ix) **Ohio BUSTR Leaking UST List**

A review of BUSTR's list of sites with reported closed or leaking UST systems (LUST List) is also included in the Radius Report, and identifies one (1) listed incident within 0.5 mile of the target property: Fruehauf Corporation.

Fruehauf Corporation is listed as being located 0.457 mile northeast of the subject property at 111 East Maxtown Road. This incident is listed as having a tracking status of "no further action," indicating that "BUSTR/Ohio EPA has determined that further corrective actions are not necessary for this incident." Given the lack of proximity and the fact that BUSTR has determined that no further corrective actions are required, it is L&A's opinion that it is highly unlikely that the target property has been adversely affected by UST activity at this site.

(x) **Ohio Environmental Protection Agency (EPA) Spill Data Base**

The Ohio Emergency Response (EROS) Report contains summary information from 1978 through 1993 pertaining to all reported spills or releases to the environment that have occurred within the State of Ohio. The subject property does not appear on this data base; however, there is one listed site located within 0.5 mile of the subject property: Purdie Metals, listed as being located 0.495 mile northeast of the subject property at 263 Maxtown Road. Three spills are listed for this site, all of which have a spill date of January 19, 1995. The area affected for all three spills is "air." Given the nature of the "spill" and the lack of proximity, L&A has no reason to suspect that the subject property has been adversely affected by this spill.

(xi) **Ohio Department of Natural Resources (ODNR) Well Log Information**

No water wells were observed on the subject property. L&A reviewed available *well logs* for the area in which the subject property is located from the Ohio Department of Natural Resources (ODNR). There are no recorded wells (water or oil and gas) identified on the subject property; however, there are numerous recorded water wells located within 0.5 mile of the property. No anomalies were noted on the available well logs. No recorded oil and gas wells are located within 0.5 mile of the subject property.

Copies of the map identifying water wells in the vicinity of the subject property and the closest well logs are included in Appendix 10, and a map identifying oil & gas wells in the vicinity of the property is presented in Appendix 11.

(D)(4) **Release History**

The objective of this portion of the Phase I Property Assessment is to identify all known or suspected releases of hazardous substances or petroleum which have or *may have* occurred on, underlying or is emanating from the property.

(4)(a) **Contaminant Type**

L&A is aware of asbestos-containing piping and siding which has been removed from the site for off-site disposal.

(4)(b) **Quantity**

There was approximately 600 linear feet of asbestos-containing piping located throughout the property.

Approximately one hundred cubic yards of waste soil was removed from the property for off-site disposal.

**(4)(c) Date of Release**

There has not been a known release of asbestos. The piping was removed intact, and was disposed of off-site.

A date of release for the heating oil from the UST is unknown. Approximately 100 cubic yards of waste soil was removed and over-excavation occurred in order to remove all stained soils. This soil has been removed from the property for off-site disposal.

**(4)(d) Areas of the Property Impacted by the Release**

There are no known impacted areas related to the asbestos-containing piping.

The area where the UST was located was impacted due to heating oil. The soil directly adjacent to the UST was removed from the property for off-site disposal.

**(4)(e) Media Impacted, Including Soil, Groundwater, Surface Water and Sediments**

The media which may have been impacted by the asbestos consists of air and soil.

The media which was impacted by the UST was soil which was removed from the property for off-site disposal.

**(4)(f) Measure Taken to Address Those Releases, Including the Result of the Measures**

The asbestos-containing piping was removed intact and was disposed of off-site.

Approximately one hundred cubic yards of petroleum contaminated soils from the UST removal was removed from the property for off-site disposal.

**(D)(5) Property Inspection**

The objective of this portion of the Phase I Property Assessment is to obtain information from a *physical inspection* of the property to determine whether a release of hazardous substances or petroleum has, or may have occurred on, underlying or is emanating from the property.

**(5)(a) Areas Containing Hazardous Substances or Petroleum or Areas Where Hazardous Substances or Petroleum Were Located**

No underground storage tanks, above-ground storage tanks, water wells, oil and gas wells, underground injection control wells, cans, boxes and other containers were observed during the site reconnaissance.

Additionally, no fuel tanks, oil pans, lagoons, stacks, cooling systems, inventory, pits, piles, landfills waste or process water treatment systems, sediments, equipment and associated structures were observed during the site inspection.

The property is currently being cleared and graded in anticipation of future development.

**(5)(b) Evidence that a Release of Hazardous Substance or Petroleum Occurred or May Have Occurred on, Underlying or is Emanating From the Property**

**(i) Spilled Material**

L&A representatives observed no evidence of "spilled" materials on the property during the site reconnaissance.

**(ii) Stressed Vegetation**

L&A representatives observed no evidence of stressed vegetation during the site reconnaissance.

**(iii) Discolored Soils**

L&A representatives observed no evidence of discolored soils during the site reconnaissance.

**(iv) Strong, Pungent, or Noxious Odors**

L&A representatives observed no strong, pungent or noxious odors during the site reconnaissance.

**(v) Presence and Condition of Any Items Identified in Paragraph (D)(4)(a) of OAC 3745-300-06**

Approximately 600 linear feet of asbestos-containing piping was removed from the property for off-site disposal.

There was approximately 100 cubic yards of petroleum contaminated soil which was a result of the UST removal and subsequent over-excavation. This soil has been removed from the property for off-site disposal.

**(5)(c) Other Available Evidence of the Current and Past Uses of the Property or Evidence of Practices regarding the Management, Handling, Treatment, Storage or Disposal of Any Hazardous Substances or Petroleum**

L&A representatives observed no other evidence relating to the current and past uses of the property or evidence of practices regarding the management, handling, treatment, storage, or disposal of any hazardous substances or petroleum from the physical inspection of the site.

**(5)(d) General Topographic Conditions of the Property and Area Surrounding the Property**

The following information is based on the topographic map: the target property is located in Quarter Township 4, Township 3 North, Range 17 West, at an elevation of approximately 906 feet above mean sea level. The land surface in the vicinity of the target property is generally flat with the regional topographic slope and inferred surface drainage to the east. Primary drainage for the site is to the northeast corner and south central area of the property. Depressions are present in the southwest quarter of the property and centrally located along the west property boundary.

**(5)(e) Evidence of Current and Past Uses of Adjoining Properties Which May be Observed from the Property or Accessible from Public Rights-of-Way**

Adjoining properties were viewed, to the extent possible, to evaluate any apparent visual environmental conditions which could potentially impact the target property. L&A representatives did not physically enter any of the adjacent properties.

The property is bordered by residential property and vacant fields to the north, Westerville City Schools to the south, Tussic Street Road to the west, and residential property to the east. Vacant fields are located across Tussic Street Road to the west.

No environmental conditions were *observed* on any of the adjacent properties which would suggest a potential impact to the subject property.

**(5)(f) Identifiable Migration Conduits for Hazardous Substances or Petroleum**

No identifiable migration conduits for hazardous substances or petroleum were observed by L&A representatives during the physical inspection of the property.

**(5)(g) Physical Obstructions Which May Limit the Visibility of Conditions on the Property**

Portions of the property are moderately wooded with dense brush and vegetation in areas, somewhat limiting the visibility on those affected areas.

**(5)(h) Photographs**

Photographs of the property and surrounding area are presented in Appendix 5.

(I) **Findings and Conclusions**

(1) **Personnel**

On-site technical specialists assigned to this project were Mr. Chuck Wilson, and Mr. Rob Milligan. The compiling of historic, government agency and database records was performed by Mr. David Sedlick and Masseur. Wilson and Milligan. Dr. Henry M. Grotta, Dr. William T. Lawhon, Jr. and Mr. Russell K. Smith, Certified Professional, reviewed pertinent information and provided a summary of environmental standing and recommendations. Individual profiles and certifications are shown in Appendix 13.

(2) **Summary of Property Assessment**

L&A's objective was to determine, to the extent feasible pursuant to the process prescribed in Ohio Administrative Code (OAC) 3745-300-06, whether there is any reason to believe that a release of hazardous substances or petroleum has, or may have occurred on, underlying, or is emanating from the subject property, formerly known as The Kilgore Farm, located at 800 Tussic Street Road, Westerville, Ohio.

A Phase I Property Assessment has been conducted in conformance with the scope and limitations of the above-mentioned code. The following potential environmental issues have been revealed as a result of this assessment:

- *An underground storage tank (UST), which formerly held heating oil, was removed from the property.* This UST is not regulated by the State Fire Marshal's Bureau of Underground Storage Tanks Regulations. The UST was removed following the rules outlined in the State Fire Code (OAC 1301:7-7-28), and then samples were collected from the bottom of the excavation and the waste soil. The samples collected from the bottom of the excavation were analyzed as required by the Ohio EPA's Petroleum Contaminated Soils (PCS) rule. **These samples were determined to be below the detection limit for applicable PCS contaminants. The waste soil has been disposed of off-site.**
- *Asbestos-containing transite water pipe was removed from the property for off-site disposal.* The pipe was excavated intact .
- *The subject property appears on the Ohio EPA's Master Sites List (MSL).* Kilgore Manufacturing, the target property, is listed as being located on North Spring Road in Westerville, Ohio. A preliminary investigation was conducted at the site on September 14, 1988, and a priority of zero was assigned. Zero priority sites are "sites where there is evidence or it is suspected that hazardous waste has been managed but there is no potential for the release of hazardous waste." The listed potential problem for the site is soil contamination due to explosives.

A "Phase II" investigation was conducted for the adjacent property to the south to determine whether or not a contamination issue exists in relation to explosives. **All potentially hazardous and/or explosive materials**

encountered were sampled and documented, and disposed of off-site (as necessary).

Based on a review of all available information, including "Phase II Property Assessment" activities, it is our opinion that once the asbestos-containing piping is removed from the site for disposal, there will be no risks associated with the above-mentioned issues, and no further "Phase II" activities, or remediation, are deemed necessary at this time.

**(II) Signatures of Environmental Professionals**

The conclusions and recommendations contained in this report are based upon professional opinions with regard to the subject matter. This practice was performed in accordance with OAC 3745-300-06. This report was prepared and reviewed by L&A personnel.

\_\_\_\_\_  
William T. Lawhon, Jr.  
President

\_\_\_\_\_  
Russell K. Smith, CIH, PE  
Certified Professional

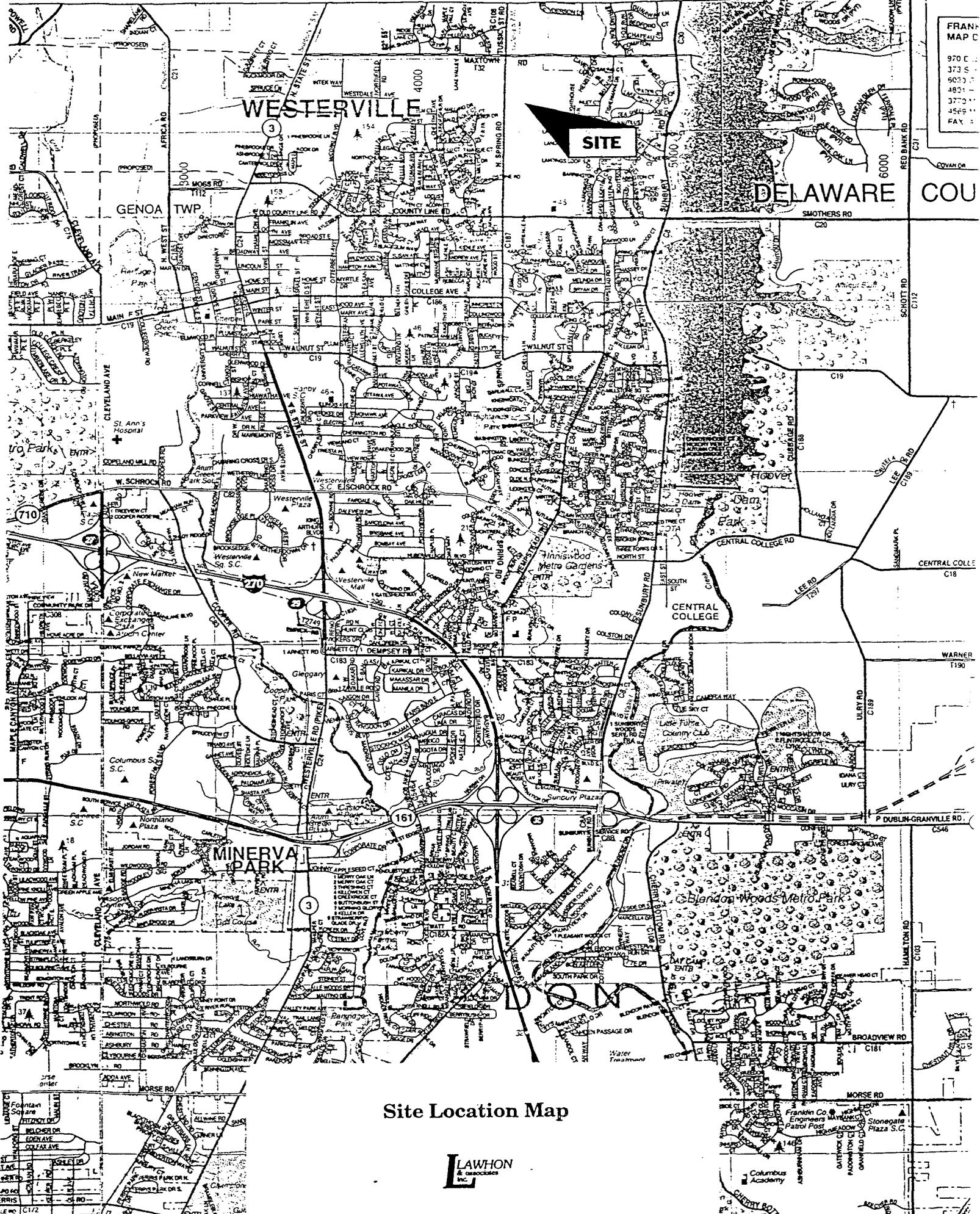
**(III) Qualifications of Environmental Professionals Participating in Property Assessment**

On-site technical specialists assigned to this project were Mr. Chuck Wilson, and Mr. Rob Milligan. The compiling of historic, government agency and database records was performed by Mr. David Sedlick and Masseurs. Wilson and Milligan. Dr. Henry M. Grotta, Dr. William T. Lawhon, Jr. and Mr. Russell K. Smith, Certified Professional, reviewed pertinent information and provided a summary of environmental standing and recommendations. Individual profiles and certifications are shown in Appendix 13.

WTL:caw:6177006.013

**APPENDIX 1**

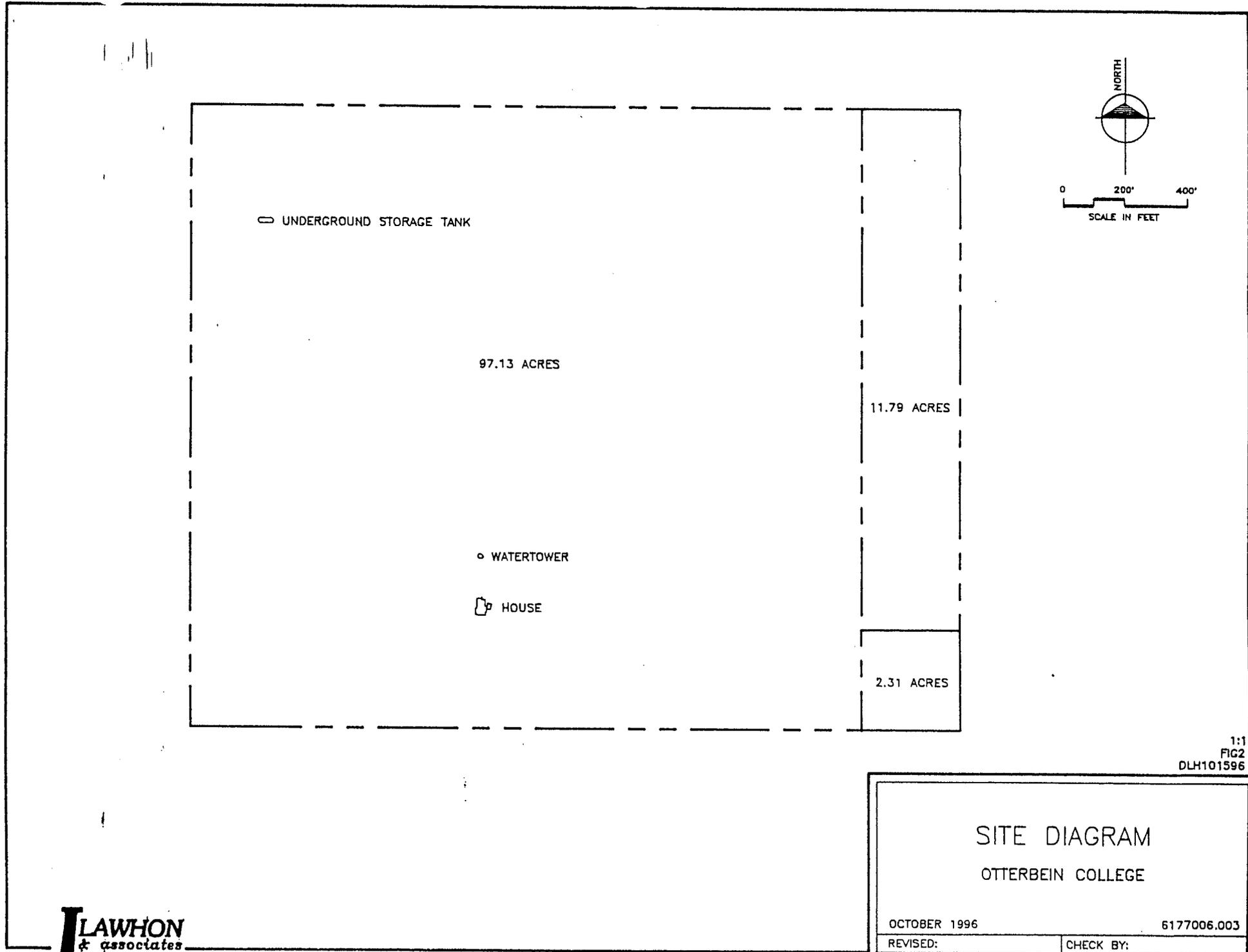
**PROPERTY LOCATION MAP**



**APPENDIX 2**

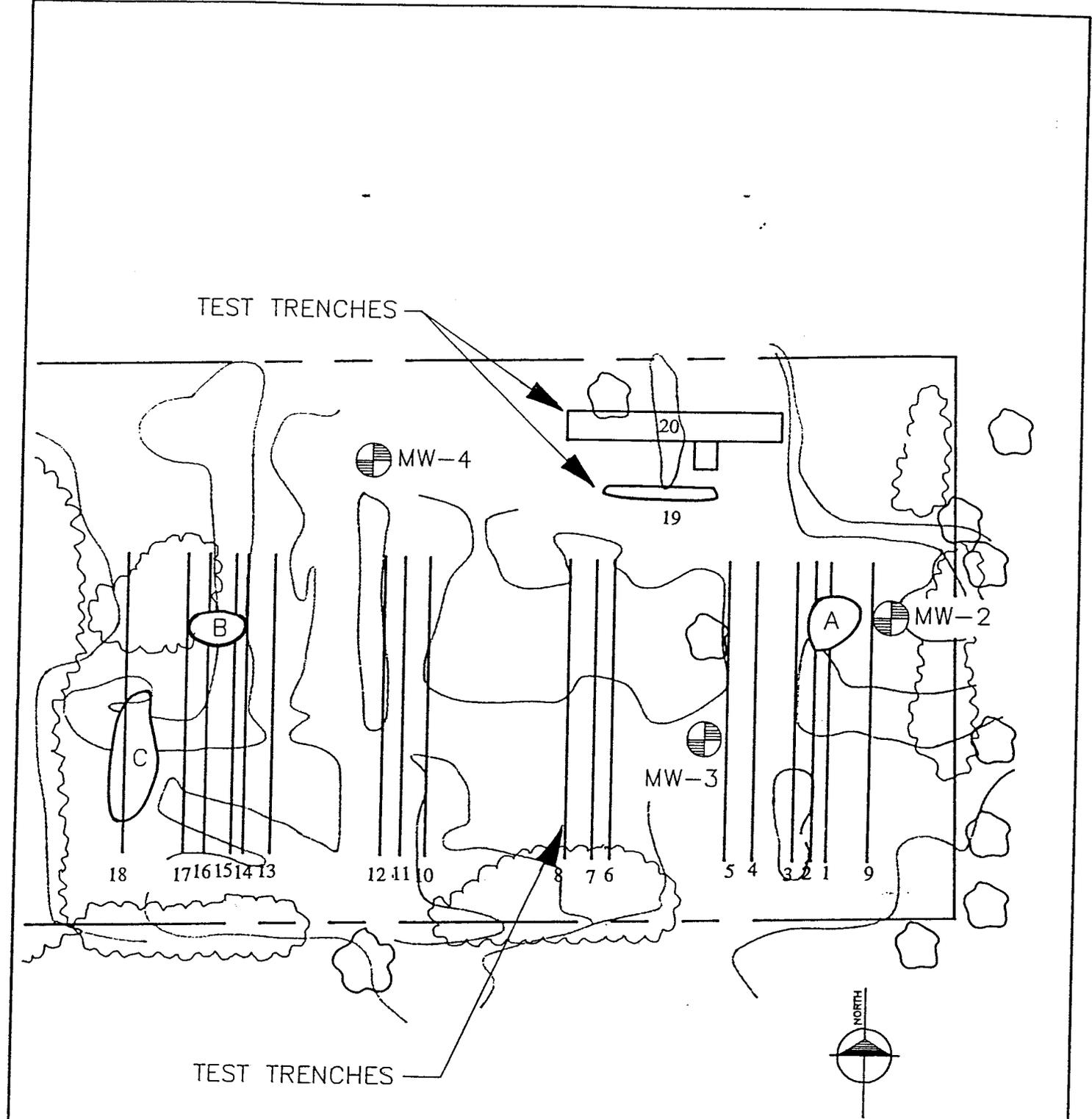
**PROPERTY MAP**

OC 015622



**APPENDIX 3**

**IDENTIFIED AREAS MAP**



DETAIL AREA MAP

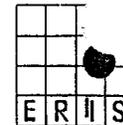
1:1  
SGFIG2D  
DLH121396

<p><b>FIGURE 3</b></p> <p><b>SITE MAP</b></p> <p>KILGORE FARMS 14.104 ACRE TRACT WESTERVILLE, OHIO</p>	
DECEMBER 1996	6177006.003
REVISED:	CHECK BY:



**APPENDIX 4**

**RADIUS MAP**



505 Huntmar Park Dr, Suite 200  
 Herndon, VA 22070  
 (703)834-0600 (800)989-0402  
 FAX: (703)834-0606

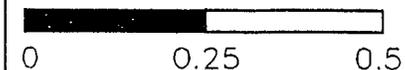
### SITE INFORMATION

6177006.003  
 Kilgore Property-tussic Street Road  
 Westerville, OH  
 Delaware County  
 Job Number: 115517A  
 Map Plotted: Oct 3, 1996

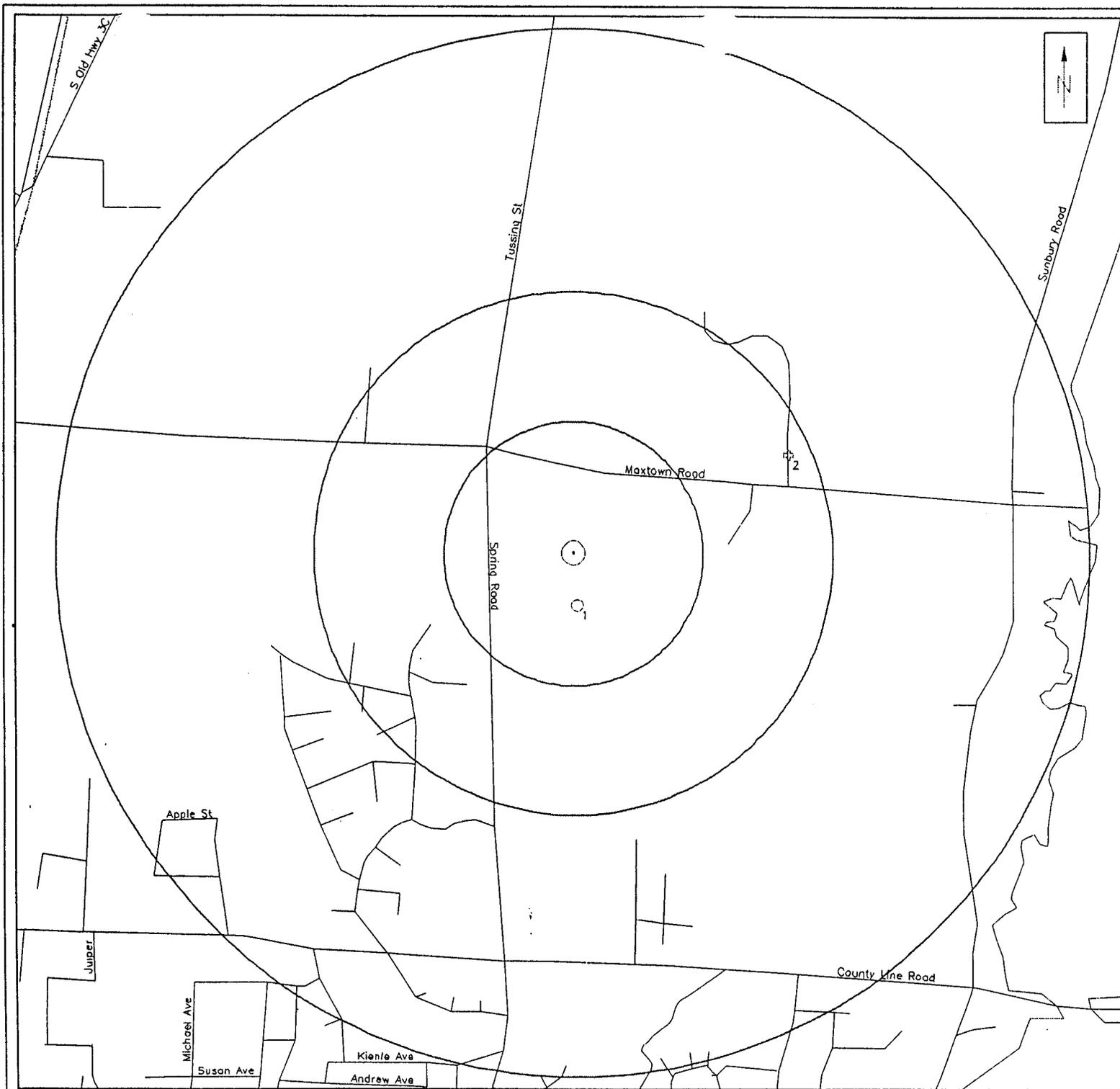
### MAP LEGEND

- Site
- Radii .25, .5, 1.000 Mi
- Hydrography
- Railroads
- Roads
- ★ NPL 0 Sites
- RCRIS\_TS 0 Sites
- CERCLIS 0 Sites
- NFRAP 0 Sites
- RCRIS\_LG 0 Sites
- RCRIS\_SG 0 Sites
- ☆ ERNS 0 Sites
- HWS 1 Site
- ⊕ LRST 1 Site
- △ SWF 0 Sites
- ◇ RST 0 Sites

Miles



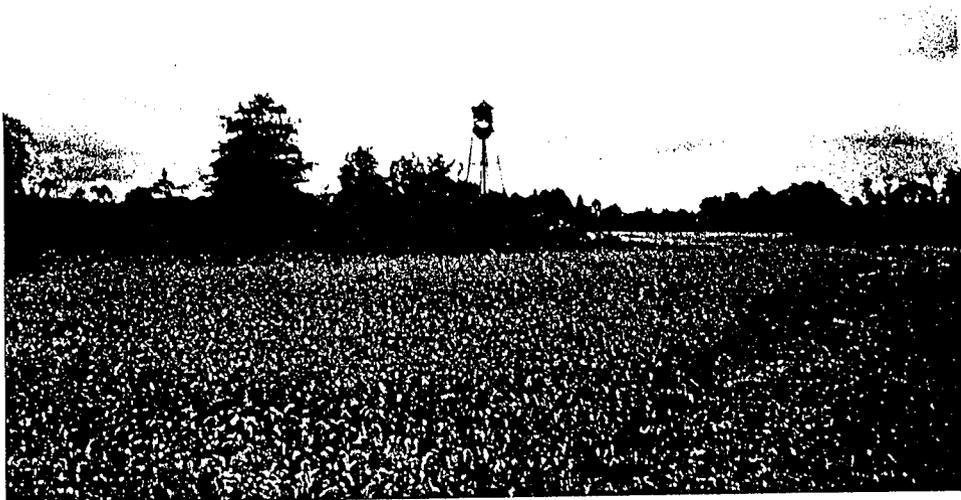
The information on this map is subject  
 to the ERIIS Disclaimer  
 Copyright 1996 ERIIS, Inc.



OC 015626

**APPENDIX 5**

**PHOTOGRAPHS**



Water tower viewed from the southeast



Brush pile and miscellaneous debris located south of the house



Typical view of open areas of the property



Empty drum and water tank located near base of water tower

OC 015628

**APPENDIX 6**

**CHAIN-OF-TITLE**

**CHAIN OF TITLE**  
**PARCEL: #18-002600**

December 18, 1941

December 19, 1941

July 2, 1952

May 24, 1962

Joe Morris and Eva M. Morris

Kilgore Manufacturing Company

Kilgore, Inc.

Otterbein College





DELAWARE COUNTY AUDITOR  
 JON M. PETERSON

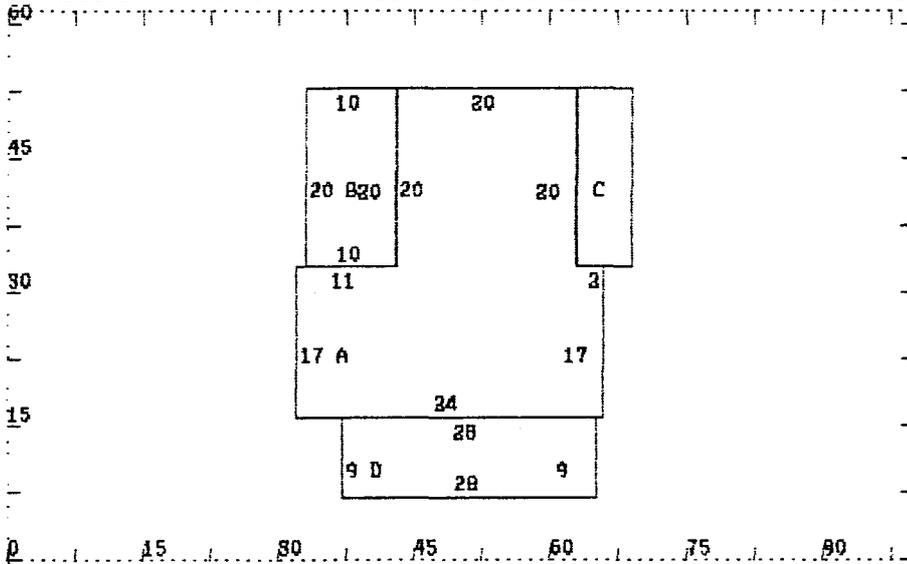
Delaware County

\*\*\* S N D A \*\*\*  
 SKETCH INQUIRY

20-May-97

09:14 AM

PARCEL 18-006-00-061-00 8800 TUSSIC STREET R CARD 1 OF 1 (6)



P/A	AREA
A	15 978
B	30 200
C	43 120
D	29 252

A)15BR/15BR/B B)15BR C)OP 6X20 <10> D)OP <17>



DELAWARE COUNTY AUDITOR  
 JON M. PETERSON

Delaware County  
 PARCEL NBR 18-006-00-061-00  
 DEL-PARCEL 18-002600  
 LOCATION 8800 TUSSIC STREET R  
 OWNER: OTTERBEIN COLLEGE

ADDRS: 8800 TUSSIC STREET RD  
 WESTERVILLE OH 43082  
 LEGAL: LANDS 17 3 4 9

CLASS: 101 (AGRICULTURAL)  
 ACRES: 110.000  
 USES - MARKET TAXABLE  
 .LAND 1,833,400 641,690  
 .IMPR 12,300 4,310  
 .TOTAL 1,845,700 646,000  
 .CAUV 54,850 19,200  
 SALE DATE AMOUNT NUM CONVEYANCE

\*\*\* S M D A \*\*\* 20-May-97 09:14 AM  
 TAXPAYER INQUIRY CARD NUMBER: 1 OF 1  
 ..... DWELLING INFORMATION .....

NBR LIVING UNITS 1  
 STORY HEIGHT 2  
 STORY HEIGHT DESIGN CONVENTIONAL  
 BASEMENT FULL  
 CRAWL SPACE NONE  
 YR BUILT/REMODELED OLD  
 TOT FINISHED LIVING AREA 2,156 SQ. FT.

ROOMS	7	GARAGE CAP	/0.0
BEDROOMS	3	REC ROOM	0
FAMILY	0	AIR COND	NONE
DINING	1	FIREPLACE	1/1
F/H BATHS	1/1	HEATING	BASE
ATTIC	NONE	GRADE	C- 1

(APP)RAISAL, (SAL)ES, (SKE)TCH, (OWN), (DET)AIL, OR (NEX)T: --- +++  
 (CON)T, (IMP)RV, (BLD), COMP(1), COMP(2), COMP(3)

**APPENDIX 7**

**FREEDOM OF INFORMATION ACT CORRESPONDENCE AND INTERVIEWS  
DOCUMENTATION**



**Lawhon & Associates, Inc.**

TECHNICAL SERVICES

June 2, 1997

Mr. Paul Roslie  
Delaware County Health Department  
109 North Sandusky Street  
Delaware, Ohio 43015

**Subject: Information Request**

**Property: The Kilgore Farm**  
**Street: 800 Tussic Street Road (also known as North Spring Road)**  
**City: Westerville, Ohio 43081**

Dear Mr. Rosile:

Lawhon & Associates, Inc. is an environmental consulting firm that has been retained to perform an environmental hazard assessment and investigation of the above-described property.

Part of the environmental assessment deals with health related problems. Would you please check your files for any records related to the property, and forward copies along with an invoice, if possible.

We appreciate your assistance. If you have any questions, please contact Lawhon & Associates at (614) 436-8400.

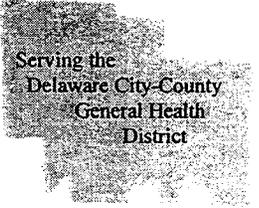
Sincerely,

Chuck Wilson  
Project Manager

caw:6177006.001

# Delaware City-County Health Department

109 North Sandusky Street, Delaware, Ohio 43015  
(614) 368-1700 • (614) 548-7055 • FAX (614) 368-1736



Frances M. Veverka, MPH  
Health Commissioner

June 17, 1997

Lawhorn & Associates, Inc.  
Mr. Chuck Wilson, Site Coordinator  
6300 Proprietors Rd.  
Worthington, OH 43085

Re: Information Request  
Kilgore Farm

Dear Mr. Wilson:

Our Department would like to inform your company that you may review our nuisance complaint log for any past complaints regarding sewage disposal, private water supply, indoor and/or outdoor air quality, and solid waste disposal. You may review this log free-of-charge. If you wish to review this file, please ask for Ms. Janette Baker, Environmental Health Secretary. She will be happy to provide you with the logbook.

Our office is open Monday & Wednesday-Friday 8:00am-5:00pm. And Tuesday 8:00am-7:00pm.

Should you have any questions, please feel free to call me.

Respectfully,

A handwritten signature in black ink that reads "Scott Rabun R.S." in a cursive style.

Scott Rabun, R.S.  
Program Manager

Clinics are located at 115 North Sandusky Street  
Vital Statistics • Environmental Health • Plumbing • Litter Prevention & Recycling  
Nursing • Health Education • WIC • Prenatal Care • Social Services

printed on recycled paper

OC 015636

June 2, 1997

Mr. Richard Morris  
Westerville Fire Department  
400 W. Main Street  
Westerville, Ohio 43081

**Subject: Information Request**

**Site Name: The Kilgore Farm**  
**County: Delaware**  
**Street: 800 Tussic Street Road (also known as North Spring Road)**  
**City: Westerville, Ohio 43081**

Dear Mr. Morris:

Lawhon & Associates, Inc. is an environmental consulting firm that has been retained to perform an environmental hazard assessment and investigation of above-mentioned property.

Part of the environmental investigation deals with the presence of underground storage tanks on the subject property, as well as any spills, releases or remediation projects within the vicinity of the property. **Would you please send us any information your files may have for the above-mentioned property?**

We appreciate your assistance in this matter. If you have any questions, please contact me at (614) 436-8400.

Sincerely,



Chuck Wilson  
Project Manager

caw:6177006.003

Attachment



**Lawhon & Associates, Inc.**

TECHNICAL SERVICES

June 2, 1997

Ms. Cindy Lewis  
Ohio EPA, Emergency Response Unit  
P.O. Box 163669  
Columbus, Ohio 43216-0149

**Subject: Information Request**

**Site Name: The Kilgore Farm**  
**County: Delaware**  
**Street: 800 Tussic Street Road (also known as North Spring Road)**  
**City: Westerville, Ohio 43081**

Dear Ms. Lewis:

Lawhon & Associates, Inc. is an environmental consulting firm that has been retained to perform an environmental hazard assessment and investigation of property described above.

Part of the environmental assessment deals with the research of hazardous chemical spills, known groundwater contamination and/or PCBs in, on or around the property. **Please research the above-mentioned property for any such information.**

If you have any questions, please contact me at (614) 436-8400.

Sincerely,

Chuck Wilson  
Project Manager

caw:6177006.001

Attachment



State of Ohio Environmental Protection Agency

STREET ADDRESS:

800 WaterMark Drive  
Columbus, OH 43215-1099

TELE: (614) 644-3020 FAX: (614) 644-2329

MAILING ADDRESS:

P.O. Box 1049  
Columbus, OH 43216-1049

June 6, 1997

Chuck Wilson  
Lawhon & Associates, Inc.  
6300 Proprietors Rd.  
PO Box 377  
Worthington, OH 43085

Dear Mr. Wilson,

This is in reply to your request for information from the Ohio EPA, Division of Emergency and Remedial Response. The Emergency Response Division, has no record of any spill or release reported for your request on Site Name: The Kilgore Farm.

Please be advised, this represents a search of the Emergency Response files only. There may be files in other Divisions which pertain to your request. If you have any questions please feel free to contact me at 614-644-2084.

Thank you,

Cindy Lewis

cc: Tim Hickin, Supervisor, DERR\ER  
Terri McCloskey, DERR\CRU

George V. Voinovich, Governor  
Nancy P. Hollister, Lt. Governor  
Donald R. Schregardus, Director



**Lawhon & Associates, Inc.**

TECHNICAL SERVICES

June 2, 1997

Freedom of Information Officer  
U.S. EPA  
77 West Jackson Boulevard  
Chicago, Illinois 60604

**Subject:** Additional Information

**Site name:** The Kilgore Farm  
**County:** Delaware, Ohio  
**Street:** 800 Tussic Street Road  
**City:** Westerville, Ohio 43085

Dear Freedom of Information Officer:

Lawhon & Associates, Inc. (L&A) is an environmental consulting firm that has been retained to perform an environmental hazard assessment and investigation of the above-mentioned property. We are seeking any and all information which U.S. EPA has in its files related to the above referenced site.

We would also appreciate any information you have concerning this location.

Thank you in advance for your attention to this matter and I look forward to your response. If you have any questions, feel free to contact me at (614) 436-8400.

Sincerely,

Chuck Wilson  
Project Manager

caw:6177006.001



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

Freedom of Information Act  
Request Acknowledgment

REPLY TO THE ATTENTION OF:

Date: 06/05/97  
Chuck Wilson  
LAWHON & ASSOCIATES INC  
6300 Proprietors Rd  
Worthington, OH 43085

Date of Your Request: 06/02/97	Date Your Request was Received: 06/05/97
--------------------------------	--

<b>SUBJECT:</b>	THE KILGORE FARM OHIO
-----------------	-----------------------

The Agency has ten (10) working days to respond to your request.  
You can expect a reply shortly after expiration of the ten-working-day period. Further correspondence on this subject should cite the following Request Identification Number:

**05-RIN-01397-97**

Freedom of Information Officer ( )



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:  
SM-5J

JUN 16 1997

Chuck Wilson  
Lawhon & Associates, Inc.,  
Technical Services  
6300 Paroprietors Road  
Worthington, Ohio 43086

RE: Freedom of Information Act  
Request Identification Number: 05-RIN-01397-97

Dear Mr. Wilson:

This letter is in response to your Freedom of Information Act (FOIA) request of June 2, 1997, regarding The Kilgore Farm, in Westerville, Ohio.

The Superfund Division has no documents that are responsive to your request. I regret that we are unable to assist you in this matter. You may wish to contact the State Environmental Agency at the address below, for information that might be available from their files:

Thomas Crepeau  
Division of Solid and Hazardous Waste  
Ohio Environmental Protection Agency  
P.O. Box 1049  
Columbus, Ohio 43266-0149  
Contact Person: Lonnie Terry-614/644-2942

Should you need additional assistance or have questions regarding your FOIA request, you may contact me (312) 886-6225.

For all other matters, please contact Carolyn D. Bohlen, Chief,  
Documents Management Section at (312) 886-6541.

Sincerely,



Melvina M. Taylor  
FOIA Specialist for Ohio

cc: FOIA Officer, MI-13J  
FOIA File

Phone: (614) 436-8400

**Lawhon & Associates, Inc.**

6330-A Proprietors Rd.  
Worthington, OH 43085

FAX# (614) 436-2229

**Telephone Conversation Report**

Name David Sedlick

Date 6/4/97

Incoming

Time 9:20am

Outgoing

Organization:

Water Treatment Plant- City of Westerville  
890-8522

Contact(s): Mr. Dick Lorenz  
Water Superintendent

Copies:

Summary:

Q: Do you have any knowledge of who would service the area of the Kilgore Farm, 800 Tussic Street Road with a public water supply?

A: The City of Westerville would service the area with a public water supply. There are plans to install a public water supply to the site.

Q: Do you have any records or knowledge of any water quality problems for the area of the Kilgore Farm, 800 Tussic Street Road?

A: We have no records or knowledge of any problems with water quality at that site because no public water service exists at that site. We have had no problems with water quality in the City of Westerville.

Next Action:



7349 Worthington-Galena Rd.  
Columbus, Ohio 43085  
614 888-4160

*2/26/88  
C. Guinther - S.E.A. Inc.  
at the time of the  
Leaving  
2000-2001*

ENVIRONMENTAL SITE EVALUATION

KILGORE PROPERTY

TUSSIC ROAD

WESTERVILLE, OHIO

S.E.A. CONTRACT NO. L-104943

S.E.A. Laboratory No. 88-022-098

February 26, 1988

RECEIVED

OCT 21 1992

OHIO EPA/CDO

For

WESTERVILLE SCHOOLS

336 South Otterbein Avenue

Westerville, Ohio 43081



7349 Worthington-Galena Rd.  
Columbus, Ohio 43085  
614 888-4160

Charles Guinther

OC 015645

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
1. Introduction.....	1
2. Procedures.....	2
3. Observations and Analysis.....	10
4. Conclusions.....	13

## 1. INTRODUCTION

### 1.1

On January 12, 1988, S.E.A., Inc. was contacted by Dr. Richard Miller, Westerville Schools, 336 South Otterbein Avenue, Westerville, Ohio, concerning an environmental study to be performed at the Otterbein College property, formerly the Kilgore manufacturing facility on Tussic Road in Westerville, Ohio.

### 1.2

S.E.A. was requested to conduct a site evaluation on the southeast corner of the property.

### 1.3

The exact request was for S.E.A. to drill four monitor wells in the area in question and determine the presence of volatile aromatic hydrocarbons, chlorinated hydrocarbons, nitrates, and EP toxic metals.

### 1.4

S.E.A. was also requested to secure 24 composite samples from borings in the area in question to a depth of four to five feet.

## 2. PROCEDURES

### 2.1

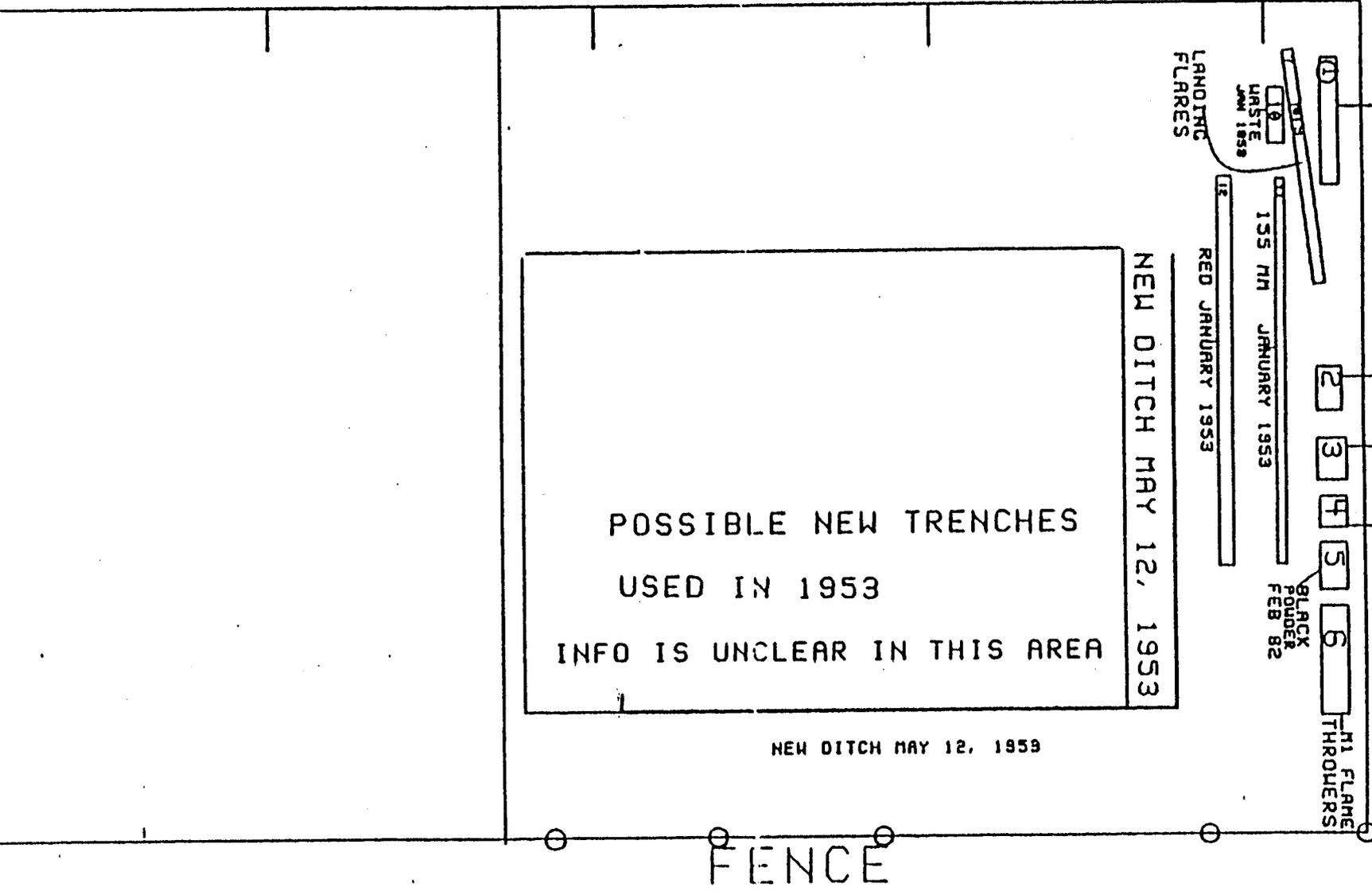
Four monitor wells were drilled and secured in the southeast corner of the Kilgore property. Figure 1 is a general overall view of the area examined. Figure 2 depicts the locations of the monitor wells put in place by S.E.A., Inc.

### 2.2

The four monitor wells were bailed three times each and water samples were then secured and transported to the Corporate Laboratories of S.E.A. in Columbus, Ohio.

### 2.3

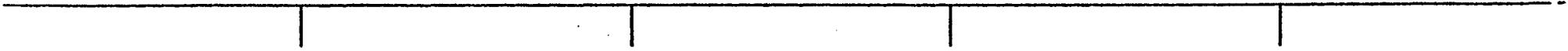
Twenty-four boring composite samples were secured in the southeast corner of the property in question. Figure 3 illustrates the locations of the borings. These samples are currently being stored by the Corporate Laboratories. Figure 4 shows a boring sample being secured.



AMMONIUM + POTASSIUM  
 PICRATE  
 JANUARY 1951

OC 015649

N



OC 015650

FIGURE 1: Nonscaled drawing of Otterbein property.

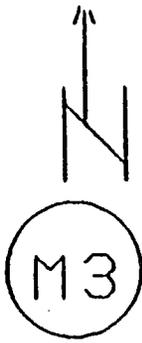
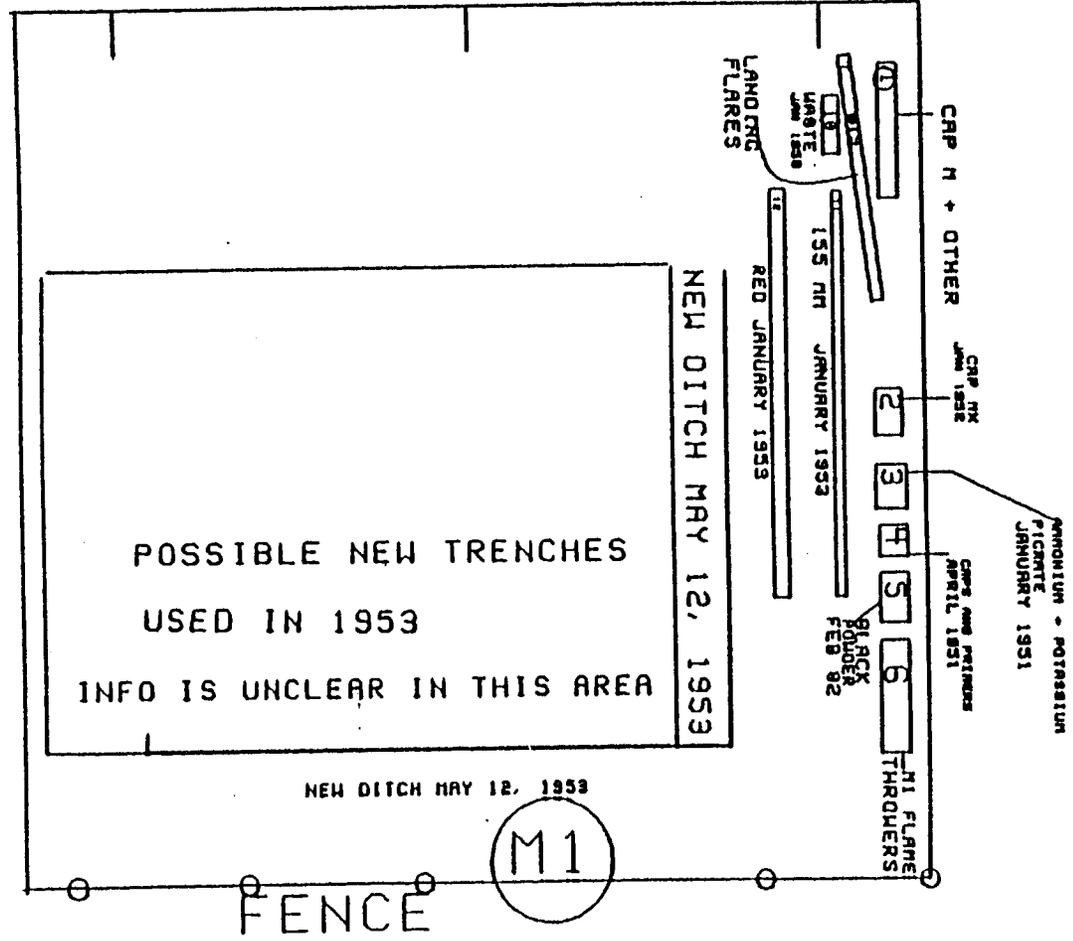


FIGURE 2: Monitor wells locations.

NORTH WELL

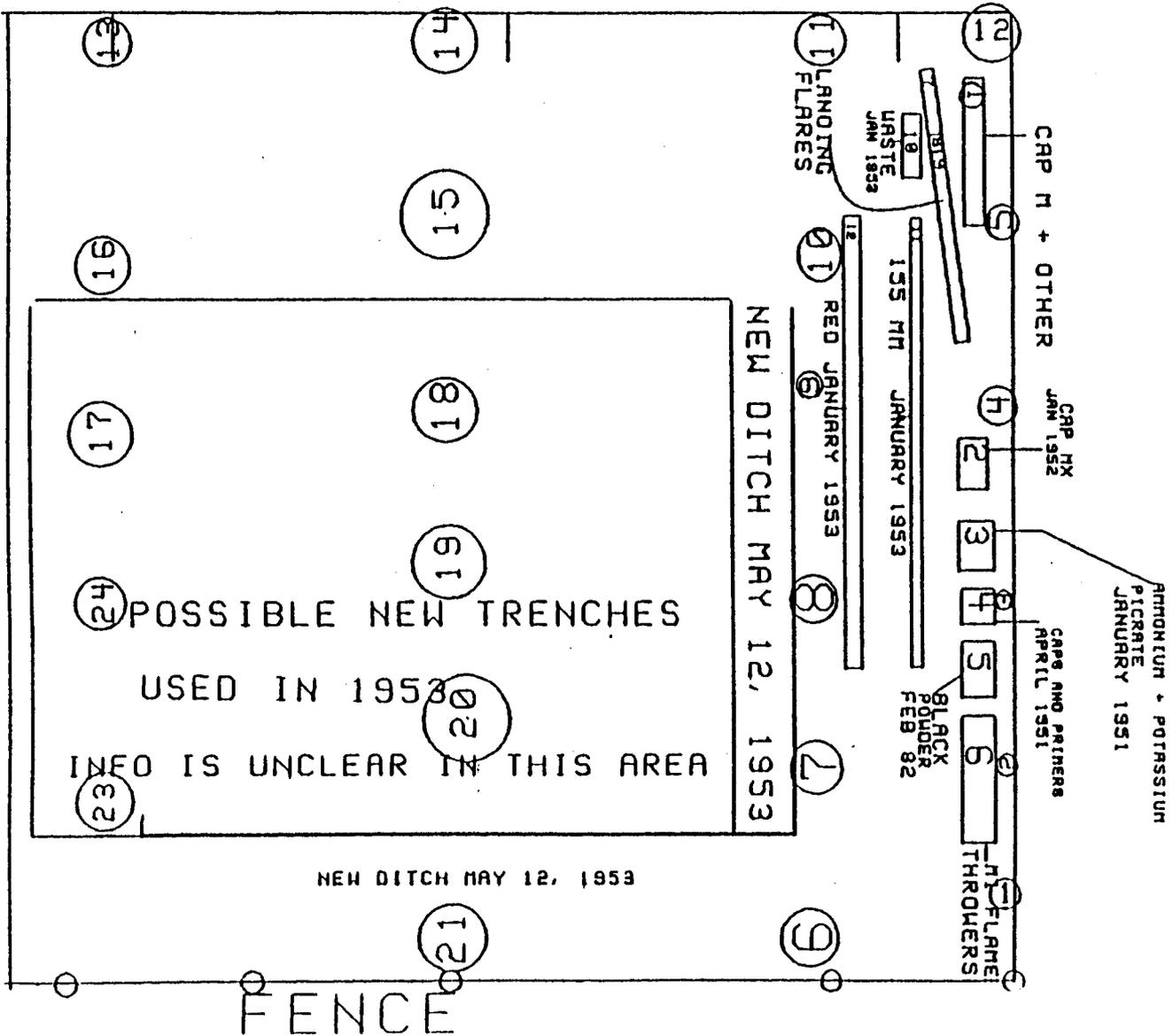


WEST WELL

SOUTH  
EAST  
WELL

SOUTH WELL

**FIGURE 3:** Soil boring samples locations.



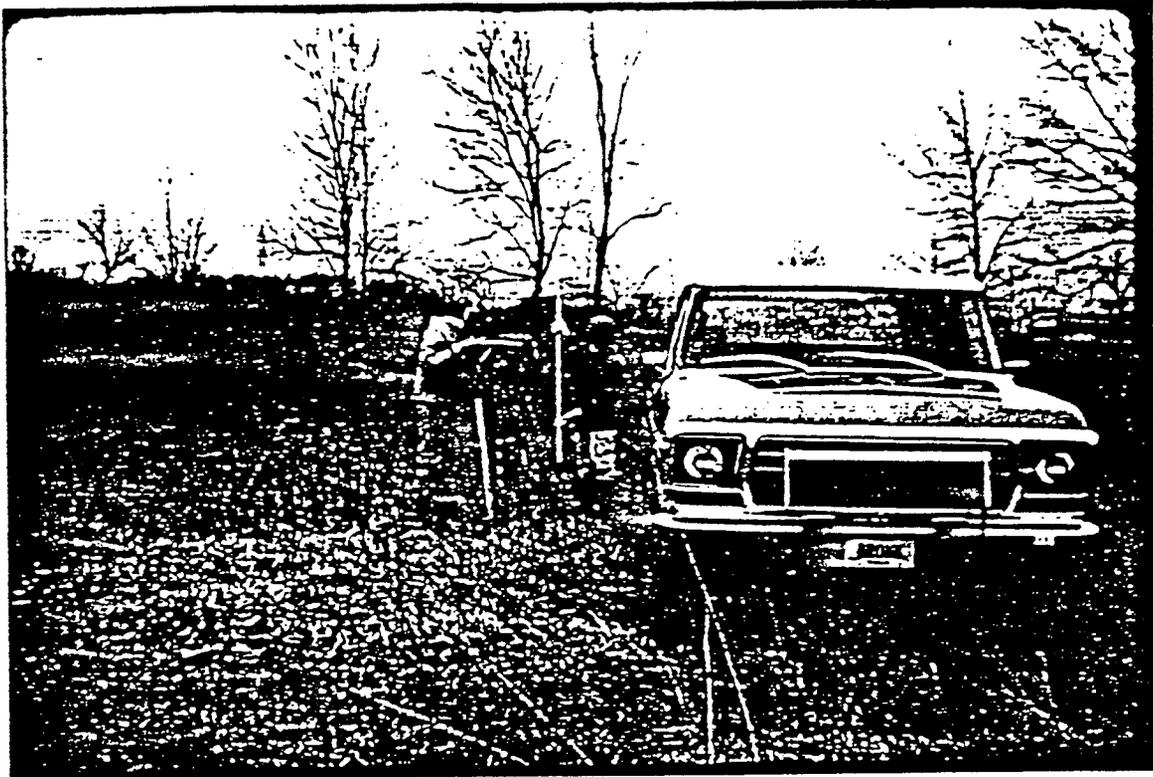


FIGURE 4: Boring sample being secured.

2.4

A walk-through of the property was performed with the use of a metal detector.

2.5

S.E.A. contacted the Department of the Army Corps of Engineers, to determine if they ever conducted any cleanup on the property in question.

2.6

S.E.A. also contacted the Franklin County and Delaware County Engineers' offices to determine the availability of aerial photographs of the area. Figures 5 and 6 are the aerial photographs obtained.



FIGURE 5: Photograph of area taken in 1938. Arrow indicates area in question.

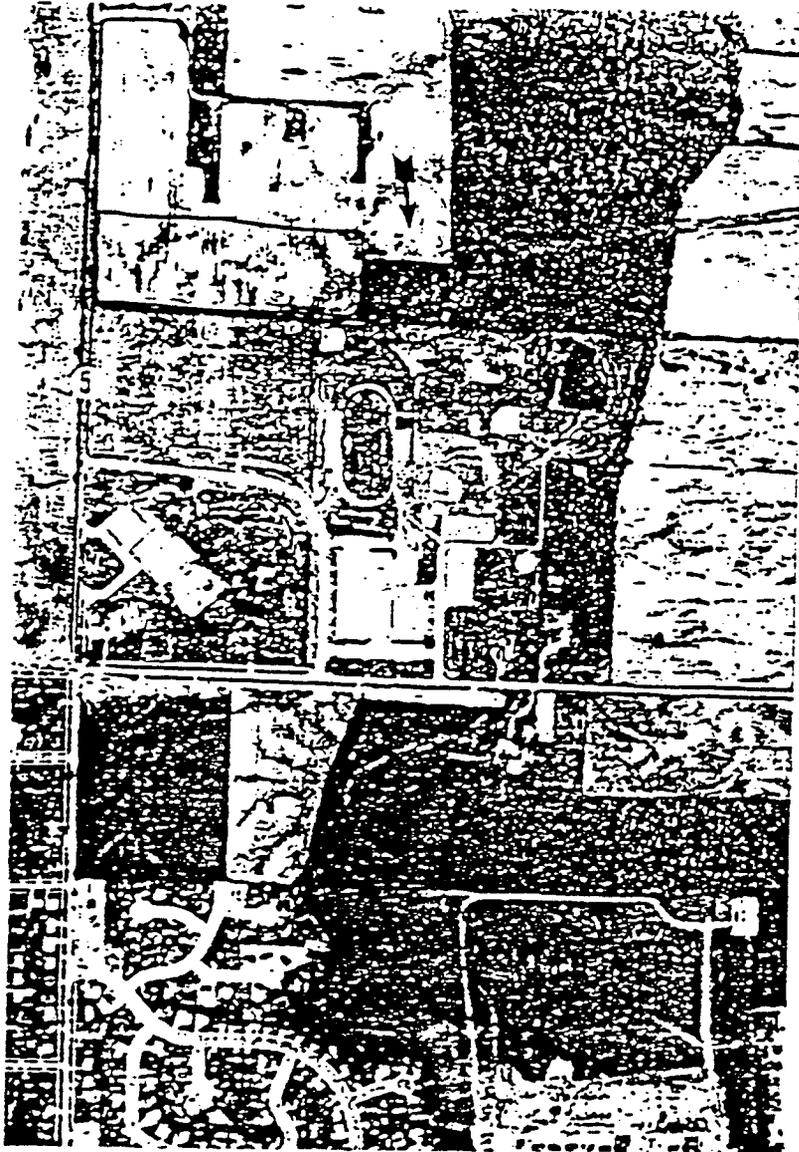


FIGURE 6: Photograph of area taken in 1981. Arrow indicates area in question.

## 2.7

The four water samples obtained from the monitor wells were then analyzed for the listed substances by the procedure stated.

2.7.1 Volatile aromatic hydrocarbon samples were prepared in accordance with SW-846 method 5020 and analyzed in accordance with SW-846 method 8020..

2.7.2 Polychlorinated biphenyls were extracted in accordance with SW-846 method 3510 and analyzed in accordance with SW-846 method 8080.

2.7.3 Chlorinated volatile hydrocarbon samples were prepared in accordance with SW-846 method 5020 and analyzed in accordance with SW-846 method 8010.

2.7.4 Nitrates were analyzed by taking 10 ml of each sample and analyzing it in accordance with the Miltron Roy Company's Spectro Kit reagent system specific for nitrates.

### 3. OBSERVATIONS AND ANALYSIS

#### 3.1

The walk-through of the area with the metal detector did not indicate the presence of any large metallic structure below the surface in the area in question to a depth of approximately two feet (i.e. drums). However, one area was located (Figure 7) which produced many small, unidentifiable metal objects.

#### 3.2

The analysis for volatile aromatic hydrocarbons did not indicate the presence of any above detectable limits in the ground water. Detectable limits were less than one microgram per liter for p-xylene.

#### 3.3

The analysis for the presence of polychlorinated biphenyls (PCBs) did not indicate their presence. The detection limits were less than 0.5 parts per million (ppm).

#### 3.4

The results of the analysis for EP toxic metals are presented in Table 1. Table 1 reveals that all metals analyzed were either not detected or found in concentrations below the EP toxicity limits.

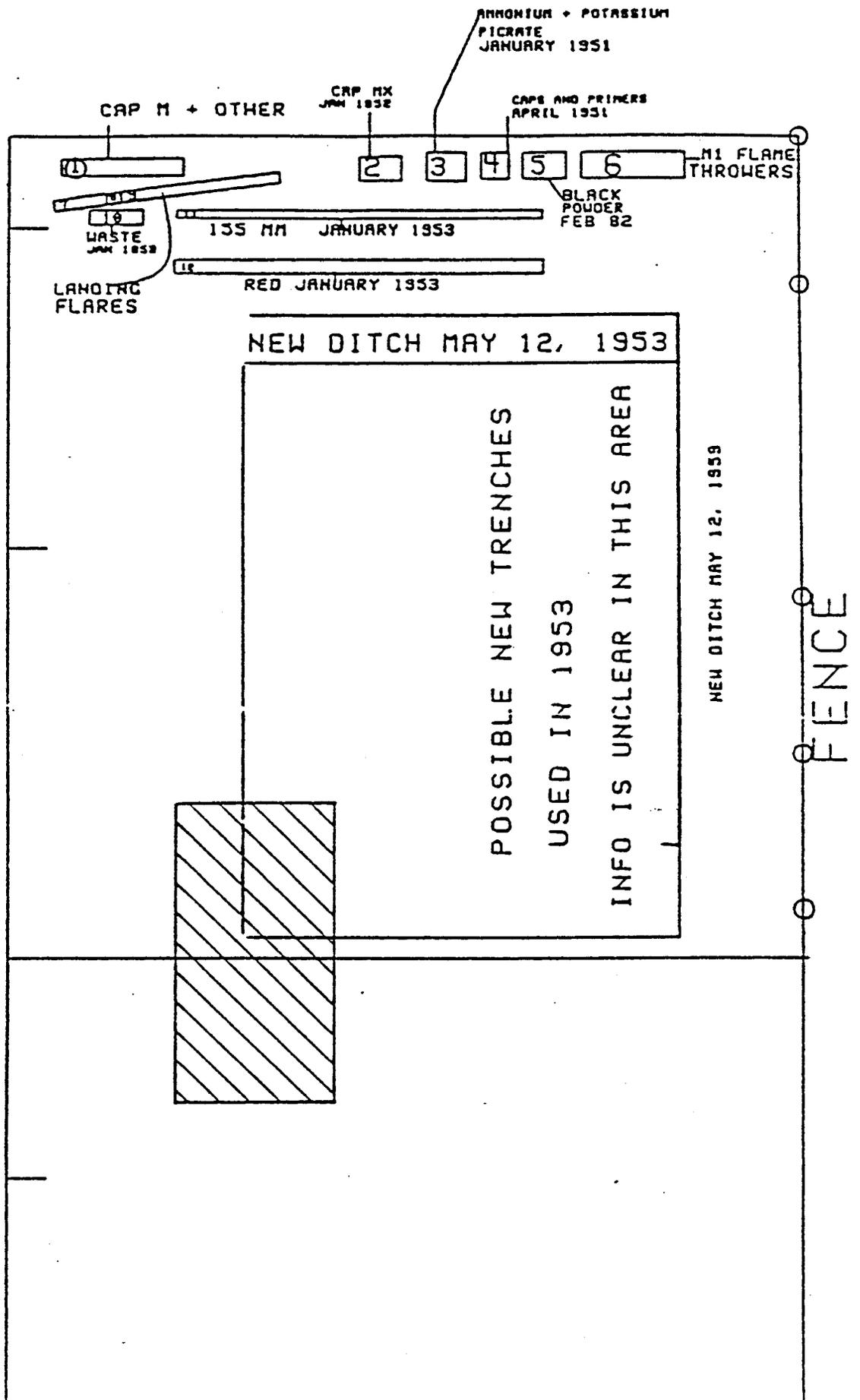




FIGURE 7: Nonscaled drawing of Otterbein property. Rectangle with diagonal lines indicates concentration of metal objects.

TABLE 1

EP Tox Analysis for Metals in Milligrams per Liter

Exhibit	Lead (Pb)	Cadmium (Cd)	Chromium (Cr)	Silver (Ag)	Barium (Ba)	Mercury (Hg)	Selenium (Se)	Arsenic (As)
ANK	<0.2	ND	ND	ND	ND	<0.0002	<0.005	<0.005
(North well)	1.1	ND	ND	ND	ND	<0.0002	<0.005	0.035
(West well)	<0.2	ND	ND	ND	ND	<0.0002	<0.005	0.018
(South well)	<0.2	ND	ND	ND	ND	0.00085	<0.005	0.019
(Southeast well)	<0.2	ND	ND	ND	ND	<0.0002	<0.005	0.016
tection limits	0.2	0.05	0.5	0.25	2.5	0.0002	0.005	0.005
urrent standard limits	5.0	1.0	5.0	5.0	100.0	0.2	1.0	5.0

### 3.5

The concentration of nitrates is presented in Table 2. As Table 2 reveals, the highest concentrations of nitrates were in samples 5 and 6, which were 1.15 mg/l and 2.20 mg/l, respectively. The maximum acceptable limits for nitrates according to the Safe Drinking Water Act is 10 mg/l which is above the concentration of nitrates isolated on all the samples.

### 3.6

S.E.A. contacted the Army Corps of Engineers and they informed S.E.A. that they did not perform any remedial action on the property in question.

## 4. CONCLUSIONS

### 4.1

It is the opinion of S.E.A., Inc. that there does not appear to be any large metal structures beneath the top two feet of the surface on the property (i.e. drums) using the metal detector. Small objects were found in the area as previously mentioned in paragraph 3.1.

### 4.2

It is also the opinion of S.E.A. that the ground water did not contain any volatile aromatic or chlorinated hydrocarbons above detectable limits at the time of the evaluation.

TABLE 2

Nitrate Analysis Results in Milligrams per Liter

<u>Exhibit</u>	<u>Nitrate Concentration</u>
5 (North well)	1.15
6 (West well)	2.20
7 (South well)	0.40
8 (Southeast well)	0.20
Tap water	0.80
BLANK	0.20

4.3

It is further the opinion of S.E.A. that there was no contamination of the ground water with PCBs above detectable limits.

4.4

Moreover, it is the opinion of S.E.A. that although metals were detected in the ground water, they were below the EP toxicity limits.

4.5

Finally, it is the opinion of S.E.A., Inc. that the concentration of nitrates in the ground water is below the Safe Drinking Water Act limits of 10 mg/l.

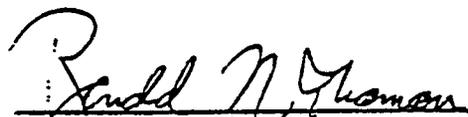
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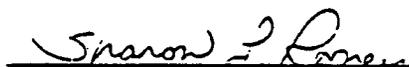
S.E.A., INC.

Report Prepared By:

Report Reviewed By:

  
\_\_\_\_\_  
Charles A. Guinther, Jr.  
Senior Environmental Scientist

  
\_\_\_\_\_  
Ronald N. Thaman  
Manager-Corporate Laboratories

  
\_\_\_\_\_  
Sharon L. Roney  
Environmental Scientist

CAG/djp



**Lawhon & Associates, Inc.**

TECHNICAL SERVICES

April 15, 1997

Mr Donald Schregardus  
Director, Ohio EPA  
1800 Watermark Drive  
P.O. Box 1049  
Columbus, OH 43216-1049

**Subject: NFA Addendum 2 for the Voluntary Action Program Kilgore Property  
2.31 Acre Parcel**

Dear Mr Shregardus:

This letter supplements our December 5, 1996 NFA and March 5, 1997 Addendum 1 on the subject property. The following addendum information is provided relative to questions asked by your staff related to the Voluntary Action on the 2.31 acre site at the Kilgore Property in Westerville, Ohio. This information is being provided as a result of questions raised several telephone conversations between Mr. Jellick, Mr. Sheahan, and Ms. Ephlin of your office and the undersigned.

- 1. The radius of the ERIS search for the property was a location on the North end of the property, and is such that the full 1/4 mile search is on the property. ASTM standards require a search to be 1/4 mile from the property boundaries.**

The search was conducted from the address for the property which L&A provided to ERIS. Because this address is apparently that of the former farm house, the search was conducted from this point. The total Kilgore property is approximately 2,000 feet east to west and 2,500 feet north to south. In order to be 1/2 mile from the Southern boundary, the site must be within 0.96 miles of the search address. Because the assignment of addresses which ERIS would accept was problematic, L&A chose instead to enlarge the search radius to 2 miles for all ERIS-searchable data bases and to analyze this report manually. This report is included in Appendix A. Based on this report, the former ammunition storage site on the Kilgore Farm itself and the UST at Freuhauf Corporation are the only two sites of issue (LUST or NPL sites) the area within 1/2 mile of the site borders. Both of these sites are described in the phase 1 which was enclosed with the NFA. In addition, there is one Small Quantity Generator (Swan Cleaners) and one non-leaking UST (Buildings and Grounds Services) reported approximately within 0.8 miles south of the property. Other reported sites are outside the 1/2 mile radius.

- 2. Enclose the ground water sampling data for the well placed on this property.**

The data for the soil boring and the ground water well on this site are enclosed in Appendix B. This boring was done only for background purposes related to the NFA on the adjacent 11.79 acre property. A Phase II Subsurface Investigation was completed for the adjacent 11.79 acre property in December, 1996. This investigation involved placement of 4 borings and four wells to confirm

the results of the ESA work done by SEA and to determine the potential impact on soil and ground water from any operations on this site.

Boring MW-1 revealed slightly elevated concentrations of arsenic in the soils when compared with the Ohio Farm Soils data, but the use of these compounds in manufacturing did not occur at this site. Because arsenic results were lower in the top, weathered till than in the unweathered till at 18 to 20 feet, it is L&A's opinion that the results for arsenic and cadmium are naturally occurring in the soil. Laboratory results found for cadmium are similar to those found at other locations in Franklin County which have been sampled by L&A.

**3. This site has been an operating farm for a long period of time. Discuss pesticide (and herbicide) use on the property.**

The former owner (Otterbein College) leased this property to local farmers. Otterbein was contacted regarding restrictions in their leases on crops or chemical used, but none were included. However, Mr. Stephen Storck of Otterbein College indicated that the crops actually grown there were corn and soybeans.

This is an urban area, with a school on one side and residences on one side. In the experience of Bill Lawhon, President of L&A, no pesticides have been used for corn and soybeans; instead, crop rotation is the major weapon against pests.

The primary herbicides used in the 60's and 70's would likely include 2,4D (prometon). In the mid-1970's to present the predominant use would likely be Roundup® (glyphosate) due to its lower application quantity per acre, hence its lower cost. Toxicity and application data for these materials are listed below. IRIS data were taken from the US EPA on-line data base on April 16, 1997 (Appendix C). The values for the Region IX Preliminary Risk Goals (PRGs) were taken from the August 6, 1996 document.

**Table 1. Herbicide Data**

Herbicide	Normal Application Rate	RfD mg/kg/day <sup>1</sup>	Preliminary Remediation Goals <sup>2</sup>	Degradation time <sup>3</sup>
prometon	10-30 lb/acre	0.015	980 mg/kg	Several years
glyphosate	1-1.5 lb/acre	0.01	6,500 mg/kg	t <sub>1/2</sub> <60 days

In a typical acre, the tilled soils (8 inches) have a weight of approximately 1100 tons. At an application rate of 1 pound per acre, the estimated concentration of herbicide in soil is about 0.5 ppm. Calculations were performed estimating the residual pesticide quantities and are attached as Appendix D. The calculations in Appendix D assume:

- A 5 year half-life of degradation for prometon. The Herbicide Handbook indicates disappearance in several years, so this assumption is very conservative,
- Application each year at the maximum rate per acre,

<sup>1</sup> From IRIS database, as of April 16, 1997

<sup>2</sup> From Region IX Preliminary Remediation Goals Data, August 1, 1996

<sup>3</sup> \_\_\_\_\_, Herbicide Handbook, Fourth Edition, Weed Science Society of America, (1979)

- A tillage depth of 8 inches,
- Use of prometon from 1960 to 1974, followed by use of glyphosate from 1975 through 1995, and no application since 1995. The data show that residual concentrations (expressed as mass fraction in the appendix) are substantially less than those which US EPA indicates as preliminary remediation goals (PRGs) in the August, 1996 Region IX table.

The OSU Extension Service in Delaware County was contacted regarding pesticides which may have been used on the property. The agent, Mr. Robert Leeds, was interviewed. Mr. Leeds is only generally familiar with the area around the Kilgore Farm. He indicated that the Extension Service has no records of specific chemicals of use in this area. He did, however, indicate that aldicarb, which was a concern mentioned by Ohio EPA in a discussion, would be effective for insects such as leaf hoppers, Mexican beetles, and thrip. He indicated that the economics of aldicarb application would preclude use of this material based on the fact that the application of this material is expensive and that these pests have not presented a significant crop problem in Delaware County during his tenure (about 4 years).

The pesticide label for Temik® 15G (aldicarb) was ordered from Rhone-Poulenc and is attached as Appendix E. This material is labeled for application on soybeans this site based upon the soil types on the site and its use for soybeans. The soil types for this property which the County Soils Map for Delaware County (Bennington, Pewamo, and Cardington soils) are not listed on this label as restricted soil.

Dr. William Lawhon was interviewed to discuss pesticide and herbicide use as a farmer and a soil and plant chemist. He indicated that pesticides are not regularly used on corn or soybeans due to the low price of these grains as commodity materials.

Based on these discussions, L&A concluded that pesticides are not an issue on this site.

Based on these data, the original NFA, and the Addendum 1, the undersigned still recommends a **NO FURTHER ACTION** on this property.

If you have any questions, please contact me at (614) 436-8400.

Sincerely,

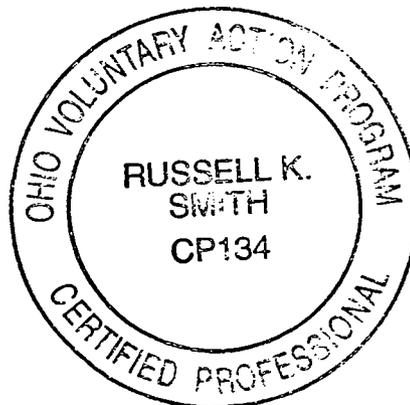


Russell K. Smith PE, CIH  
 Certified Professional (#134)

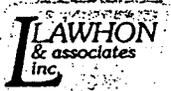
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Enclosure(s)

cc: Mr. William Keethler



**RUSSELL K. SMITH**  
 Certified Professional (CP 134)  
 ORC Section 3746.04 (B)(5)  
 OAC Rule 3745-300-05  
 My Certification Expires October 21, 1997



**Lawhon & Associates, Inc.**

TECHNICAL SERVICES

**AFFIDAVIT**

State of Ohio )  
 ) SS  
County of Franklin )

I William Lawhon, being duly sworn and cautioned, state:

1. I am a PhD graduate of the University of Tennessee in forest ecology with a minor in soil and plant chemistry.
2. I have been involved in pesticide system design for crops for over 17 years. I have one patent on controlled release fertilizers (The Jobe's Fertilizer Spike).
3. I have operated a farm in Knox County, Ohio for the last five years which produces soybeans, corn, and hay.
4. I am unaware of regular use of pesticides as general practice on the corn and soybean crops in the southeastern part of Delaware county.
5. The herbicides which I am aware of being commonly used on corn and soybean fields are:
  - 2,4 D (prometon), which is generally not used any longer,
  - Roundup® (glyphosate) now available to use with glyphosate-resistant genetics,
  - Post herbicides (new) – post-emergent material which allow tailored applications for specific weeds. Examples are Cobra® (lactofen) and Pursuit C®.

Affiant further sayeth naught.

*William Lawhon Jr*

William T. Lawhon, Jr.

Sworn before me according to law, by the above named party this 16<sup>th</sup> Day of April, 1997.

*Nancy A. Cotterman*  
Notary Public

My Commission Expires 8-2-99



**NANCY A. COTTERMAN**  
Notary Public, State of Ohio  
My Commission Expires 8-2-99



## AFFIDAVIT

State of Ohio            )  
                                  )SS:  
County of Franklin    )

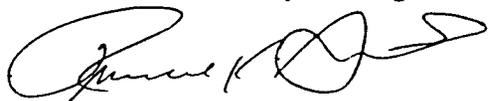
I, Russell K. Smith PE, CIH, CP134, being first duly sworn according to the law deposes and states that:

1. I am an adult over the age of eighteen (18) years old and competent to testify herein.
2. I am a Certified Professional in good standing under Chapter 3746.11 of the Ohio Revised Code and the rules adopted thereunder.
3. I have never owned or operated any of the property in Delaware County located at 800 Tussic Street Road, Columbus, Ohio, 43215.
4. I have never been employed by, affiliated with, or related to the Keethler Company, or persons who own the Keethler Company, for which I have prepared a No Further Action Letter under Chapter 3746 of the Ohio Revised Code.
5. I have no conflict of interest regarding the issuance of a No Further Action Letter on behalf of the Keethler Company.
6. I have reviewed Divisions (B), ( C), (D), (E), and (F) of Section 3746.071 of the Ohio Revised Code, and have acted in full compliance with all of these provisions.
7. All information, documents, records and data submitted in support of the No Further Action Letter and this Addendum are a truthful, accurate and complete characterization of the conditions at 800 Tussic Street Road, Westerville, Ohio 43081, to the best of my knowledge, information and belief. Information provided by the Keethler Company or used by permission of the Keethler Company includes:
  - a) Property description for the 2.31 acre section prepared by Kevin L. Baxter, Ohio Surveyor No. 7697, of C.F. Bird and R.J. Bull, Inc. Consulting Engineers and Surveyors September, 1996
  - b) A letter, dated August 24, 1962, from Ammunition Procurement and Supply Agency, Joliet, Illinois.
  - c) An Environmental Site Evaluation for the Kilgore Property, Tussic Road, completed by S.E.A., Inc., dated February 26, 1988. This report was prepared by Mr. Charles A. Guinther and Ms. Sharon L. Roney, and reviewed by Mr. Ronald N. Thaman.
  - d) A bound set of documents titled "Kilgore Decontamination," containing information dated from July, 1961, until May, 1988.

## AFFIDAVIT

- e) An Environmental Audit, completed by L&A, and dated March 1, 1991. Mr. Steve Sawyer is identified as Project Manager, and the report is signed by Mr. William T. Lawhon, Jr.
  - f) A Wetland Evaluation performed by L&A, dated September 24, 1996. This report is signed by Mr. William T. Lawhon, Jr.
  - g) Miscellaneous items documented over the years, including newspaper clippings, personal accounts and memos concerning the property.
  - h) The No Further Action Letter prepared for the Kilgore 2.31 acre property.
  - i) The Phase II site assessment for the 11.79 acre parcel of the Kilgore Farm.
8. Reference material provided by others used in this evaluation include:
- a) Temik® pesticide label provided by Rhone-Poulenc
  - b) IRIS data obtained from the US EPA web site
  - c) Region IX Preliminary Remediation Goals (PRGs) from the US EPA web site.

Further affiant sayeth naught.



Russell K. Smith PE, CIH  
Certified Professional 134  
Ohio Voluntary Action Program

Sworn before me according to law, by the above named party this Sixteenth Day of April, 1997.



Notary Public

My Commission Expires 8-2-99



NANCY A. COTTERMAN  
Notary Public, State of Ohio  
My Commission Expires 8-2-99

**RESTRICTED USE PESTICIDE**  
**ACUTE TOXICITY and GROUND WATER CONTAMINATION**  
 For retail sale to and use only by Certified Applicators or persons under the direct supervision of a Certified Applicator, and only for those uses covered by the Certified Applicator's certification.

# TEMIK® brand 15G ALDICARB PESTICIDE

**For Control of Certain Insects, Mites, and Nematodes**

ACTIVE INGREDIENT: Aldicarb [2-methyl-2-(methylthio) propionaldehyde O-(methylcarbamoyl)oxime] ..... 15%  
 INERT INGREDIENTS: ..... 85%

EPA Reg. No. 264-330

EPA Est. No. 264-GA-01



**KEEP OUT OF REACH OF CHILDREN**  
**DANGER POISON**  
**PELIGRO**



Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.  
 (If you do not understand the label, find someone to explain it to you in detail.)

For MEDICAL and TRANSPORTATION Emergencies ONLY Call 24 Hours A Day 1-800-334-7577  
 For PRODUCT USE Information Call 1-800-334-9745

### STATEMENT OF PRACTICAL TREATMENT

Aldicarb is a n-methyl carbamate.

**IF SWALLOWED:** Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger. Do not induce vomiting or give anything orally to an unconscious or convulsing person. Call a physician and follow General advice.

**IF IN EYES:** Flush eyes with plenty of water and get medical attention.

**IF ON SKIN:** Wash thoroughly with soap and water.

**IF INHALED:** Call a physician and follow General advice.

**GENERAL**

Contact a physician immediately in all cases of suspected poisoning. Illness may be produced rapidly following overexposure to TEMIK® Aldicarb. If breathing stops, establish an airway and start artificial respiration, and provide oxygen. Make certain to remove all sources of continuing contamination. Remove clothing and wash skin and hair immediately with large amounts of water. Transport the patient to a physician or hospital immediately and **SHOW A COPY OF THIS LABEL TO THE PHYSICIAN.** If poisoning is suspected in animals, contact a veterinarian.

**ANTIDOTE STATEMENT**

ATROPINE SULFATE IS HIGHLY EFFECTIVE AS AN ANTIDOTE. See NOTE TO PHYSICIAN.

**NOTE TO PHYSICIAN**

TEMIK® brand aldicarb is a n-methyl carbamate insecticide which is a cholinesterase inhibitor. Overexposure to this substance may cause toxic signs and symptoms due to stimulation of the cholinergic nervous system. These effects of overexposure are spontaneously and rapidly reversible.

Gastric lavage may be used if this product has been swallowed. TEMIK® brand aldicarb poisoning may occur rapidly after ingestion and prompt removal of stomach contents is indicated.

Specific treatment consists of the administration of parenteral atropine sulfate. Caution should be exercised to prevent overatropinization. Mild cases may be given 1 to 2 mg intramuscularly every 10 minutes until full atropinization has been achieved and repeated thereafter whenever symptoms reappear. Severe cases should be given 2 to 4 mg intravenously every 10 minutes until the patient is fully atropinized, then intramuscularly every 30 to 60 minutes as needed to maintain the effect for at least 12 hours. Dosages for children should be appropriately reduced. Complete recovery from overexposure is to be expected within 24 hours.

Narcotics and other sedatives should not be used. Further, drugs such as (pyridine-2-aldoxime methiodide) are NOT recommended unless organophosphate intoxication is also suggested.

To aid in confirmation of a diagnosis, urine samples must be obtained within 24 hours of exposure and immediately frozen. Analyses will be arranged by Rhône-Poulenc Ag Company.

Consultation on therapy can be obtained at all hours by calling the Rhône-Poulenc emergency number: 1-800-334-7577.

## PRECAUTIONARY STATEMENTS

### HAZARDS TO HUMANS AND DOMESTIC ANIMALS DANGER

**FATAL IF SWALLOWED.** Causes cholinesterase inhibition. May be fatal or harmful by skin or eye contact or by breathing dust. Rapidly absorbed through skin or eyes. Do not get on skin or in eyes. Do not breathe dust. Keep away from domestic animals.

Always stand up-wind from hopper when loading.

#### SIGNS AND SYMPTOMS OF OVEREXPOSURE:

Salivation, Muscle tremor, Nausea, Watery eyes, Difficult breathing, Vomiting, Pinpoint eye pupils, Excessive sweating, Diarrhea, Blurred vision, Abdominal cramps, Weakness, Headache,

In severe cases, convulsions, unconsciousness, and respiratory failure may occur.

### PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators and other handlers must wear coveralls over short-sleeved shirts and short pants, waterproof gloves, chemical-resistant footwear plus socks, chemical-resistant headgear for overhead exposure, protective eye wear, chemical-resistant apron when cleaning equipment, mixing or loading and a dust/mist filtering respirator (MSHA/NIOSH D/M approval number prefix TC-21C).

Follow manufacturer's instructions for cleaning/maintaining PPE. Keep and wash PPE separately from other laundry. Wash contaminated clothing in strong washing soda solution and rinse thoroughly before reuse. Discard clothing or other absorbent materials that have been heavily contaminated with this product. Do not reuse them.

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

### User Safety Recommendations

Users should wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.

Remove clothing immediately if pesticide gets inside. Then wash body thoroughly and put on clean clothing.

Users should remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

### ENVIRONMENTAL HAZARDS

Aldicarb residues may move into shallow ground water under certain conditions. The appended Environmental Precautions Booklet should be read and understood prior to making applications. If there are any questions, contact Rhône-Poulenc at 1-(800) 334-9745.

**TOXIC TO FISH, BIRDS, AND WILDLIFE:** This product is toxic to fish, birds, aquatic invertebrates and other wildlife. Birds feeding on exposed granules in treated areas may be killed. Cover or incorporate granules in spill areas.

Run-off from treated areas may be hazardous to fish in neighboring areas. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters. Apply this product only as specified on this label.

**NOTICE:** Under the Endangered Species Act, it is a Federal Offense to use any pesticide in a manner that results in the death of a member of an endangered species.

This Act protects Attwater's Greater Prairie Chicken in the Texas counties of Aransas, Austin, Brazoria, Colorado, Galveston, Goliad, Harris, Refugio, and Victoria.

Prior to making applications in these counties, the user must determine that this species is not located in or immediately adjacent to the area to be treated. If the user is in doubt whether or not the above named endangered species may be affected, he should contact either the regional U.S. Fish & Wildlife Service office (Endangered Species Specialist) or personnel of the State Fish and Game office.

## DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.  
Read entire label before using this product.

This Supplemental Label must be in possession of the user at the time of pesticide application.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulations.

### AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), notification to workers, and restricted-entry intervals. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 48 hours.

**Exception:** If the product is soil-incorporated or soil-injected, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated. Once the REI has expired, do not allow persons to come into direct contact with treated soil wet as the result of the initial irrigation or rainfall after treatment unless they are wearing the PPE specified below for early entry. PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water is coveralls over short-sleeved shirt and short pants, waterproof gloves, chemical-resistant footwear plus socks, protective eyewear and chemical-resistant headgear for overhead exposure.

Notify workers of the application by warning them orally and by posting warning signs at entrances to treated areas.

### STORAGE AND DISPOSAL

#### STORAGE

Store unused TEMIK® brand Aldicarb Pesticide in original container only, in well ventilated clean dry area out of reach of children and animals. Do not store in areas where temperature averages 115°F (46°C) or greater. Do not store in or around the home or home garden.

If container is broken, before cleaning up, put on long-sleeved shirt, full-length trousers, head covering and rubber gloves. Do not get dust or granules on skin or in eyes. Do not breathe dust. Always stand upwind from spill when cleaning up. Sweep up and bury any small spills or excess TEMIK® Aldicarb at least 18 inches deep in soil, isolated from water supplies and food crops.

#### PESTICIDE DISPOSAL

Do not contaminate water, food, or feed by storage or disposal. Open dumping is prohibited.

Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide is a violation of federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency or The Hazardous Waste representative at the nearest EPA regional office for guidance.

#### CONTAINER DISPOSAL

Completely empty container into application equipment. Then dispose of empty container in a sanitary landfill or by incineration, or if allowed by state and local authorities, by open burning. If container is burned, stay away from and do not breathe or contact smoke.

**IN CASE OF TRANSPORTATION OR WAREHOUSE EMERGENCY INVOLVING A SPILL, FIRE, OR EXPOSURE, CALL 1-800-334-7577 TWENTY-FOUR HOURS A DAY IN THE USA.**

### GENERAL INFORMATION

**READ ENTIRE LABEL BEFORE USING THIS PRODUCT.**

TEMIK® brand 15G Aldicarb Pesticide controls certain insects, mites, and nematodes. When applied into moist soil at planting and/or postemergence the active ingredient aldicarb is rapidly absorbed by roots and translocated to all parts of the plant. Rainfall or irrigation soon after application will ensure prompt uptake of aldicarb; however, if irrigation is necessary care should be taken not to over irrigate to reduce the potential for residues leaching to ground water. Control often lasts more than six weeks varying with growing conditions, rate of use, and pests. Crop yields are usually increased with treatments of TEMIK® brand 15G Aldicarb Pesticide.

### GENERAL CAUTIONS

Use TEMIK® brand 15G Aldicarb Pesticide only in accordance with label directions, warnings, and cautions. **DO NOT USE ON ANY CROP NOT LISTED ON THIS LABEL OR SUPPLEMENTAL LABELING AS ANY RESIDUES REMAINING MAY BE ILLEGAL OR HARMFUL. DO NOT STORE OR USE IN OR AROUND THE HOME OR HOME GARDEN.** Use higher rates on heavy organic or clay soils. Do not exceed the maximum label rate. Applications at higher rates or at more frequent intervals than is stated on the label may result in illegal residues in crop, meat, and milk. Treatments in excess of 7 pounds per acre made directly in the seed furrow of cotton or sugar beets, or treatments in excess of 5 pounds per acre made directly to the seed furrow of soybeans or drybeans may delay plant emergence and reduce plant stand.

Make side-dress applications close enough to plants to allow good uptake by the roots without injury to the plants from root pruning. In irrigated areas, follow application with irrigation within one week. If alternate furrows are irrigated after side-dress application, TEMIK® brand 15G Aldicarb Pesticide and water must be on the same side of the plant row.

Calibrate and adjust application equipment to insure proper rate and accurate placement. Clean application equipment thoroughly after use. For any left over material, see instructions for STORAGE AND DISPOSAL in this booklet.

Deep disc any spills at row ends immediately to prevent birds from feeding on exposed granules.

Do not wash, load, or empty application equipment near any well, as this practice is a potential source of ground water contamination.

Do not apply in Del Norte or Humboldt counties in California; Nassau or Suffolk counties in New York; or in Curry County, Oregon.

## **PRE-HARVEST, GRAZING, MAXIMUM USE RATE, AND GROUND WATER LIMITATIONS**

TO AVOID EXCESSIVE RESIDUES IN OR ON:

### **COTTONSEED**

- Do not make more than one 'at planting' application and one postemergence application per crop.
- Do not apply within 90 days of harvest.
- Do not feed cotton forage to livestock or allow livestock to graze in treated area.
- Do not exceed a total of 33 pounds per acre.

### **PEANUTS**

- Do not make more than one application per crop.
- Do not harvest within 90 days of application.
- Do not hog-off treated fields.
- Do not feed hay or vines to livestock.
- Do not exceed a total of 20 pounds per acre.

### **SUGAR BEETS**

- Do not make more than one 'at planting' application and two postemergence applications per crop.
- Do not apply within 90 days of harvest.
- If tops are to be fed to livestock, do not apply within 120 days of harvest.
- Do not use tops as food for humans.
- Do not exceed a total of 33 pounds per acre.

### **SOYBEANS**

- Do not make more than one application per crop.
- Do not harvest within 90 days of application.
- Do not feed green forage, hay, or straw to livestock.
- Do not exceed a total of 20 pounds per acre.

### **DRY BEANS**

- Do not make more than one application per crop.
- Do not harvest within 90 days of application.
- Do not feed green forage, hay or straw to livestock.
- Do not use green pods as food for humans.
- Do not exceed a total of 14 pounds per acre.

### **SUGARCANE AND SWEET POTATOES**

- Do not make more than one application per crop.
- Do not harvest within 120 days of application.
- Do not feed sweet potato vines to livestock.
- Do not exceed a total of 20 pounds per acre.
- For sweet potatoes, treatments must be made with Positive Displacement applicators (see Directions for Use section).
- Do not feed cane forage.

### **PECANS**

- Do not make more than one application per year.
- Do not allow livestock to graze in treated areas.
- Do not harvest foliage or hay from treated areas.
- In Florida do not exceed a total of 33 pounds per acre.
- In Arizona do not exceed a total of 47 pounds per acre.
- In other states do not exceed a total of 67 pounds per acre.

**PRE-HARVEST, GRAZING, MAXIMUM USE RATE, AND GROUND WATER LIMITATIONS (Continued)****SORGHUM**

- Do not make more than one application per year.
- Do not harvest within 90 days of application.
- Do not feed green forage to livestock.
- Do not exceed a total of 7 pounds per acre.

**ROTATIONAL CROPS RESTRICTION**

- Do not plant any crop not listed on this label in soil treated with TEMIK® brand 15G Aldicarb Pesticide within 10 months after the last application with the following exceptions:

**Six-month plantback restriction**

- Do not plant wheat or barley within 6 months after last application.
- Do not plant bulb crops (such as onions or garlic) within 6 months after the last application.
- Do not plant brassica crops (such as broccoli or cabbage) within 6 months after the last application.

**Eight-month plantback restriction**

- Do not plant corn within 8 months of last application.
- Do not plant melons within 8 months after last application.
- Do not plant other cucurbits (such as cucumbers and squash) within 8 months after last application.
- Do not plant fruiting vegetables (such as tomatoes or eggplant) within 8 months after the last application.

**MEAT AND MILK**

- Do not allow livestock to graze in treated areas before harvest.

**GROUND WATER**

- Observe Environmental Hazard precautions regarding Decomposition and Movement in Soil, and carefully follow Directions For Use.
- Do not wash, load, or empty application equipment near any well, as this practice is a potential source of ground water contamination.
- Do not apply this product in Del Norte or Humboldt Counties in California; Nassau or Suffolk Counties in New York; or in Curry County, Oregon.
- Do not apply more than 33 lbs/A in the state of Florida.
- Do not apply TEMIK® brand 15G Aldicarb Pesticide (EPA Reg. No. 264-330) to citrus. For citrus apply TEMIK® brand 15G Aldicarb Pesticide for Citrus (EPA Reg. No. 264-417).
- Do not apply to any field more than once every two years in Maine and Wisconsin.

**COMPATIBILITY**

Pesticidal activity of TEMIK® brand 15G Aldicarb Pesticide is not affected by normal applications of fertilizers or other pesticides. Its effectiveness may be reduced or lost if applied with alkaline materials such as lime. To minimize potential exposure hazards, do not mix TEMIK® aldicarb with other materials before application.

### DIRECTIONS FOR USE AND RECOMMENDED APPLICATIONS

To provide maximum performance and to minimize hazard to birds, work granules into or cover with soil to a depth of 2 inches or more. Deep disc any spills at row ends immediately to prevent birds from feeding on granules. When a range of rates are recommended, use the higher rate if pest infestations are expected to be severe.

Crop & Time Of Application	Pests Controlled	Pounds/Acre	Ounces/1000 Feet of Row	Recommended Application
<b>COTTON</b> At planting	Aphids, Thrips	3.5 to 5	<u>40" row spacing</u> 4.5 to 6	Drill granules just below seed line or place in seed furrow and cover with soil.  If seeds and TEMIK® are hill-dropped, TEMIK® rates may be reduced by one-half.
		(Except Texas, Oklahoma and New Mexico)		
	2 to 5	2.5 to 6	(Texas, Oklahoma, and New Mexico Only)	
	Fleahoppers, Leafminers, Mites, Overwintering boll weevil (adults feeding on foliage), Plant bugs, including Lygus	4 to 7	5 to 8.5	
	Nematodes	3.5 to 10	4.5 to 12	(Except Arizona)
Nematodes	14 to 27	17 to 33	(Arizona Only)	Apply granules in a 4 to 6-inch band 3 to 6 inches below seed line or cover with 3 to 6 inches of soil. Plant seed above treated zone.
At first squaring	Leafhoppers, Fleahoppers	7 to 14	8.5 to 17	Side-dress granules 8 to 16 inches to one side of the plant row and 2 to 6 inches deep (usually at or below bottom of water furrow).
	Mites, Boll weevil, Plant bugs, including Lygus	14 to 20	17 to 24.5	
From squaring through early bloom	Cotton leaf perforator	14	17	
	Whiteflies	14 to 20	17 to 24.5	
<b>Do not exceed a total of 33 lbs/A for all applications to cotton.</b>				
<b>GRAIN SORGHUM</b> At planting	Nematodes	7	<u>36" row spacing</u> 7.5	Apply granules in seed furrow and cover with soil.
		3.5 to 7	4 to 7.5	
	Greenbug Chinch Bug	7	7.5	
<b>PEANUTS</b> At planting	Thrips	7 to 14	<u>36" row spacing</u> 7.5 to 15	Apply granules in seed furrow and cover with soil. In Southwest use high rate only.
	Nematodes	14 to 20	15 to 22	Apply granules in a 6 to 12 inch band and work into the soil or cover with soil to a depth of 2 to 4 inches. Plant seed into treated zone.

Crop & Time Of Application	Pests Controlled	Pounds/Acre	Ounces/1000 Feet of Row	Recommended Application
<b>SUGAR BEETS</b> At planting or within one week before planting.	Nematodes	27 to 33	22" row spacing 18 to 22	Apply granules in a 4 to 6 inch band and immediately work into the soil or cover with soil to a depth of 2 to 4 inches. Plant seed into or above treated zone;  <b>OR</b> where furrow irrigation is employed for seed germination, drill granules 3 to 4 inches deep and 3 inches from seed row on water furrow side.
At planting	Aphids	7 to 14	4.5 to 9.5	Drill granules 1 to 3 inches below seedline. Granules can be placed in seed furrow if rate does not exceed 7 pounds per acre. Repeat applications will be required for continued protection against virus vectors (aphids and leafhoppers).
	Leafminers Leafhoppers	14 to 20	9.5 to 13.5	
	Sugar beet root maggot	7 to 14	4.5 to 9.5	Apply granules in a 2 to 3 inch band over seed row and immediately work into the soil or cover with soil; <b>OR</b> where furrow irrigation is employed for seed germination, drill granules 2 inches deep and 2 inches from seed row on water furrow side. For the 7 lb. rate, apply granules in a 1 to 2 inch band in front of the press wheel as the furrow is closing.
At planting plus postemergence (split applications)	Nematodes	14 to 20 at planting and at postemergence	9.5 to 13.5 at planting and at postemergence	<b>AT PLANTING:</b> Apply granules in a 4 to 6-inch band and immediately work into the soil or cover with soil to a depth of 2 to 4 inches. Plant seed into or above treated zone; <b>OR</b> where furrow irrigation is employed for seed germination, drill granules 3 to 4 inches deep and 3 inches from seed row on water furrow side. <b>POSTEMERGENCE:</b> Apply granules to both sides of plant row and immediately work into the soil or cover with soil, or for furrow irrigation side-dress granules 4 to 8 inches to water furrow side of plant row at furrow depth. Irrigate soon after application. Apply within 60 days after planting.
Postemergence Do not make any post-emergence application if 27 to 33 lbs./acre were applied at planting or one week before planting. Do not make more than one "at-planting" application and two postemergence applications per crop.  <b>Do not exceed a total of 33 lbs/A for all applications to sugar beets.</b>	Sugar root maggot	7 to 14	4.5 to 9.5	Apply granules to both sides of plant row and immediately work into the soil or cover with soil, <b>OR</b> for furrow irrigation, side dress granules 4 to 8 inches to water furrow side of plant row and at furrow depth. Irrigate soon after application.
	Aphids	7 to 14	4.5 to 9.5	Apply as above. A repeat application may be required for continued protection against virus vectors (aphids, leafhoppers).
	Leafminers Leafhoppers	14 to 20	9.5 to 13.5	
	Nematodes	27	18	Apply as above. Apply with 60 days after planting.

Crop & Time Of Application	Pests Controlled	Pounds/Acre	Ounces/1000 Feet of Row	Recommended Application
<b>SOYBEANS</b> At planting	Mexican bean beetle Thrips Suppression of three cornered alfalfa hopper	5 to 10	30" to 48" row spacing 5.5 to 11	Drill granules 2 to 3 inches below seed line, OR 2 to 3 inches to the side of the seed row and 2 to 3 inches deep. Granules can be applied to seed furrow if rate does not exceed 5 pounds per acre.
	Nematodes	10 to 20	11 to 22	Apply granules in a 6 to 8-inch band and immediately work into the soil or cover with soil. Plant seed into treated zone.
<b>DRY BEANS</b> At planting	Seedcorn maggot	3.5 to 5 (Michigan Only)	22" to 48" row spacing 4.0 to 5.5	Apply granules in seed furrow and cover with soil.
	Aphids	5 to 7	5.5 to 7.5	Drill granules 2 to 3 inches below seed line OR, 2 to 3 inches to side of seed row and 2 to 3 inches deep. <b>OR</b>
	Leafhoppers Mexican bean beetle Mites	7 to 14	7.5 to 15	Granules can be placed in seed furrow if the rate does not exceed 5 pounds per acre.
	Nematodes	7 to 14	7.5 to 15	Apply granules in a 6-inch band and immediately work into the soil or cover with soil. Plant seed into treated zone. Where furrow irrigation is employed soon after planting, drill granules 3 to 4 inches deep and 3 inches from seed row on water furrow side.
<b>SWEET POTATOES</b> At planting	Nematodes	10 to 20	48" row spacing 15 to 30	Apply granules in a 12-inch band in opened row. Cover immediately with soil by hilling up 8 to 10 inches. Plant in center of treated zone. Apply only with positive displacement applicators such as the Horstine Farmery Microband (see calibration chart at end of label), or the Gandy Orbit.
<b>SUGARCANE</b> At planting	Nematodes	14 to 20 (Louisiana Only)	60" row spacing 26 to 37	Apply granules in open row on top of newly planted cane and cover immediately with at least 6 inches of soil.
<b>PECANS (Southeast U.S. and Arizona)</b> <b>Producing Trees</b> During period from bud break to nut set	Aphids	33 to 47 (Arizona Only)	Not Applicable	Apply as a 4 to 6-foot band along dripline on both sides of tree row by spreading granules uniformly and immediately working into soil, OR by shanking 2-3 inches into soil on 12-inch centers.
	Aphids Mites	33 to 67 (except Florida and Arizona)		
	Suppression of Pecan leaf phylloxera	33 (Florida only)		
<b>Newly Transplanted Trees</b> (1-5 years old) During period of bud break	Aphids Mites	Dosage Ounces <u>TEMIK® 15G/Tree</u> 5 to 20	Not Applicable	Apply as a side-dress to individual trees by spreading the granules uniformly around the tree and immediately working into the soil to a depth of 2-3 inches.
One to two weeks before bud break	Bud moth Suppression of Pecan leaf phylloxera			

SEE PREHARVEST AND GRAZING LIMITATIONS ELSEWHERE IN THIS LABEL.

PLANT GROWTH STIMULATION: In the absence of recognizable target pests and under certain growing conditions, stimulation of plant growth by TEMIK® aldicarb on certain crops has been demonstrated under laboratory, greenhouse, and field conditions. Plants may be visibly taller, greener, and denser. Faster grow-off and an increase in fruiting rate and size often are results of the growth enhancement by TEMIK® brand aldicarb. However, such effects do not occur with all crops or under all conditions. Therefore, this product should not be used solely as a plant growth regulator, and its effect as one should be considered a side benefit which may or may not occur as a consequence of its use.

**TEMIK® BRAND 15G (GYPSUM) ALDICARB PESTICIDE CALIBRATION GUIDE**

APPROXIMATE APPLICATOR SETTINGS\* FOR TEMIK® BRAND 15G ALDICARB PESTICIDE (GYPSUM) AT 4, 5 & 6 MPH

NOTE: This calibration chart is applicable only to TEMIK® brand 15G Aldicarb Pesticide in this container which is formulated for use on a gypsum carrier. All rates are APPROXIMATIONS and must be confirmed by using a calibration tube (See Calibration Chart provided with tube). Calibration tubes are available from your TEMIK® brand 15G Aldicarb supplier.

TEMIK BRAND 15G (GYPSUM) ALDICARB PESTICIDE CALIBRATION GUIDE																
TYPE OF GRANULAR APPLICATOR																
POUNDS TEMIK® 15G PER ACRE FOR VARIOUS ROW SPACING					GANDY GAUGE SETTING			JOHN DEERE MAX EMERGE GAUGE SETTING**			JOHN DEERE MAX EMERGE II GAUGE SETTING			CASE-IH SERIES 800/900 GAUGE SETTING****		
ROW SPACING					MPH			MPH			MPH			MPH		
22"	34"	36"	40"	48"	4	5	6	4	5	6	4	5	6	4	5	6
5.5	3.5	3.3	3	2.5	12	13	14	6***	7***	8	8	9	11	1/6.0	1/6.5	1/7.5
7.3	4.7	4.4	4	3.3	13	15	16	7***	9	10	10	12	13	1/7.0	1/7.5	1/8.5
9.1	5.9	5.5	5	4.2	14	16	18	9	11	13	12	14	15	1/8.0	1/8.5	1/9.5
10.9	7.1	6.7	6	5.0	16	18	19	11	13	15	13	15	18	1/9.0	1/9.5	2/1.0
12.7	8.2	7.8	7	5.8	17	19	21	12	15	18	15	18	21	1/9.5	2/0.5	2/2.0
14.5	9.4	8.9	8	6.7	18	20	22	14	17	20	16	20	23	2/0.0	2/2.0	2/3.5
16.4	10.6	10.0	9	7.5	19	21	23	16	19	23	18	22	27	2/1.0	2/3.0	2/5.0
18.2	11.8	11.1	10	8.3	20	22	24	17	21	25	20	25	29	2/2.0	2/4.0	2/6.5
21.8	14.1	13.3	12	10.0	22	24	26	20	25	28	23	29	35	2/3.5	2/7.0	3/0.0
25.5	16.5	15.6	14	11.7	23	26	29	24	28	30	27	35	41	2/5.5	2/8.5	3/4.5
	18.8	17.8	16	13.3	25	28	31	26	29	32	31	39	45	2/7.5	3/2.5	3/8.0
	21.2	20.0	18	15.0	26	30	33	28	31	33	36	44	48	3/0.5	3/6.0	4/2.0
	23.5	22.2	20	16.7	28	31	34	30	32	35	40	46	50	3/2.5	3/9.0	4/5.5
			24	20.0	31	34	37	32	34	37	45	49	53	3/7.5	4/6.0	5/3.0
			27	22.5	33	36	40	33	36	38	48	52	56	4/2.5	5/0.0	5/9.5

\*All settings for one hopper box outlet per row

\*\*Odd Numbered Housing (0 - 45)

\*\*\*For John Deere gauge setting below 8 there will be great variations in flow rate. A gauge setting of 6 is the lowest recommended setting.

\*\*\*\*Gate/Dial

HORSTINE FARMERY MICROBAND*											
(Using one 3/16" rotor per outlet, part #094006)											
POUNDS TEMIK® 15G (GYPSUM) PER ACRE FOR VARIOUS ROW SPACINGS											
ROW SPACING	SPROCKET** COMBINATION					DRIVER/DRIVEN					
	19-34	22-34	25-34	28-34	25-28	22-22	28-25	34-28	34-25	34-22	34-19
22"	5.50	6.40	7.30	8.20	8.90	10.00	11.20	12.10	13.60	15.40	17.80
30"	4.00	4.60	5.30	5.90	6.50	7.30	8.10	8.80	9.90	11.20	13.00
36"	3.30	3.90	4.40	5.00	5.40	6.10	6.80	7.30	8.20	9.40	10.90
40"	3.00	3.50	4.00	4.50	4.80	5.50	6.10	6.60	7.40	8.40	9.80
48"	2.50	2.90	3.30	3.70	4.00	4.60	5.10	5.50	6.20	7.10	8.20
<b>RATIO:</b>	<b>0.550</b>	<b>0.640</b>	<b>0.730</b>	<b>0.820</b>	<b>0.890</b>	<b>1.000</b>	<b>1.120</b>	<b>1.210</b>	<b>1.360</b>	<b>1.545</b>	<b>1.789</b>

\* The Microband is based on positive metering. Settings do not need to be changed with different tractor speeds.

• All settings for one hopper box outlet per row.

• For alternative dose rates, different width rotors can be fitted. For example, a 3/8" wide rotor will deliver twice the rates indicated in the above table.

\*Calibrations based upon use of a Horstine Farmery or Canaan 29.5 inch diameter Landwheel drive.

\*\*Sprocket numbers, example: 19 - 34, indicate number of teeth on the DRIVER and DRIVEN Sprockets.

### TEMIK® BRAND 15G (CORNCOB) ALDICARB PESTICIDE CALIBRATION GUIDE

APPROXIMATE APPLICATOR SETTINGS\* FOR TEMIK® BRAND 15G ALDICARB PESTICIDE (CORNCOB) AT 4, 5 & 6 MPH

NOTE: This calibration chart is applicable only to TEMIK® brand 15G Aldicarb Pesticide in this container which is formulated for use on a comcob carrier. All rates are APPROXIMATIONS and must be confirmed by using a calibration tube (See Calibration Chart provided with tube). Calibration tubes are available from your TEMIK® 15G Aldicarb supplier.

#### TEMIK BRAND 15G (CORNCOB) ALDICARB PESTICIDE CALIBRATION GUIDE

##### TYPE OF GRANULAR APPLICATOR

POUNDS TEMIK® 15G PER ACRE FOR VARIOUS ROW SPACING

ROW SPACING					GANDY GAUGE SETTING			JOHN DEERE MAX EMERGE GAUGE SETTING**			JOHN DEERE MAX EMERGE II GAUGE SETTING			CASE-IH SERIES 800/900 GAUGE SETTING***		
					MPH			MPH			MPH			MPH		
22"	34"	36"	40"	48"	4	5	6	4	5	6	4	5	6	4	5	6
5.5	3.5	3.3	3	2.5	22	24	27	14	16	18	22	25	29	2/2.0	2/4.5	2/6.5
7.3	4.7	4.4	4	3.3	25	28	30	17	19	21	27	32	37	2/4.5	2/7.5	3/0.0
9.1	5.9	5.5	5	4.2	28	31	33	19	21	23	32	38	44	2/7.5	3/2.0	3/5.0
10.9	7.1	6.7	6	5.0	30	33	35	21	23	25	37	44	48	3/1.0	3/5.5	4/0.0
12.7	8.2	7.8	7	5.8	32	35	37	22	25	26	42	47	50	3/4.5	3/9.0	4/5.0
14.5	9.4	8.9	8	6.7	34	37	39	24	26	28	46	50	52	3/7.0	4/4.0	5/0.0
16.4	10.6	10.0	9	7.5	35	38	41	25	27	29	48	51	54	4/0.0	4/8.0	5/5.0
18.2	11.8	11.1	10	8.3	37	40	43	26	28	30	50	52	55	4/4.0	5/2.0	6/0.0
21.8	14.1	13.3	12	10.0	39	43	47	28	30	33	52	55	57	5/0.0	6/0.0	7/0.0
25.5	16.5	15.6	14	11.7	42	46	50	29	32	35	54	56	60	5/6.5	6/7.5	8/0.0
	18.8	17.8	16	13.3	44	49	54	31	34	37	56	59	62	6/4.0	7/7.5	9/0.0
	21.2	20.0	18	15.0	47	52	59	33	36	38	57	61	65	6/9.5	8/5.0	10/0.0
	23.5	22.2	20	16.7	49	56	66	34	37	40	59	63		7/7.5	9/2.5	11/2.5
			24	20.0	54	66		37	40	44	62			9/0.0	11/0.5	
			27	22.5	59			38	42		65			10/1.0		

\*All settings for one hopper box outlet per row

\*\*Odd Numbered Housing (0 - 45)

\*\*\*Gate/Dial

#### HORSTINE FARMERY MICROBAND\*

(Using two 3/16" rotors per outlet, part #094006)

POUNDS TEMIK® 15G (CORNCOB) PER ACRE FOR VARIOUS ROW SPACINGS

ROW SPACING	SPROCKET** COMBINATION								DRIVER/DRIVEN			
	19-34	22-34	25-34	28-34	25-28	22-22	28-25	34-28	34-25	34-22	34-19	
22"	5.50	6.40	7.30	8.20	8.90	10.00	11.20	12.10	13.60	15.40	17.80	
30"	4.00	4.60	5.30	5.90	6.50	7.30	8.10	8.80	9.90	11.20	13.00	
36"	3.30	3.90	4.40	5.00	5.40	6.10	6.80	7.30	8.20	9.40	10.90	
40"	3.00	3.50	4.00	4.50	4.80	5.50	6.10	6.60	7.40	8.40	9.80	
48"	2.50	2.90	3.30	3.70	4.00	4.60	5.10	5.50	6.20	7.10	8.20	
RATIO:	0.550	0.640	0.730	0.820	0.890	1.000	1.120	1.210	1.360	1.545	1.789	

• The Microband is based on positive metering. Settings do not need to be changed with different tractor speeds.

• All settings for one hopper box outlet per row.

• For alternative dose rates, different width rotors can be fitted. For example, a 3/4" wide rotor will deliver twice the rates indicated in the above table.

\*Calibrations based upon use of a Horstine Farmery or Canaan 29.5 inch diameter Landwheel drive.

\*\*Sprocket numbers, example: 19 - 34, indicate number of teeth on the DRIVER and DRIVEN Sprockets.

### LIMITED WARRANTY AND DISCLAIMER

The manufacturer warrants (a) that this product conforms to the chemical description on the label; (b) that this product is reasonably fit for the purposes set forth in the directions for use when it is used in accordance with such directions; and (c) that the directions, warnings and other statements on this label are based upon responsible experts' evaluation of reasonable tests of effectiveness, of toxicity to laboratory animals and to plants, and of residues on food crops, and upon reports of field experience. Tests have not been made on all varieties or in all states or under all conditions. THE MANUFACTURER NEITHER MAKES NOR INTENDS, NOR DOES IT AUTHORIZE ANY AGENT OR REPRESENTATIVE TO MAKE, ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, AND IT EXPRESSLY EXCLUDES AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

THIS WARRANTY DOES NOT EXTEND TO, AND THE BUYER SHALL BE SOLELY RESPONSIBLE FOR, ANY AND ALL LOSS OR DAMAGE WHICH RESULTS FROM THE USE OF THIS PRODUCT IN ANY MANNER WHICH IS INCONSISTENT WITH THE LABEL DIRECTIONS, WARNINGS OR CAUTIONS.

BUYER'S EXCLUSIVE REMEDY AND MANUFACTURER'S OR SELLER'S EXCLUSIVE LIABILITY FOR ANY CLAIMS, LOSSES, DAMAGES, OR INJURIES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT WHETHER OR NOT SUCH LIABILITY IS BASED IN CONTRACT, NEGLIGENCE, STRICT LIABILITY IN TORT OR OTHERWISE SHALL BE LIMITED, AT THE MANUFACTURER'S OPTION, TO REPLACEMENT OF, OR THE REPAYMENT OF THE PURCHASE PRICE FOR, THE QUANTITY OF PRODUCT WITH RESPECT TO WHICH DAMAGES ARE CLAIMED. IN NO EVENT SHALL MANUFACTURER OR SELLER BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT.

Rhône-Poulenc Ag Company  
P.O. Box 12014, 2 T.W. Alexander Drive  
Research Triangle Park, North Carolina 27709

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TEMIK brand 15G Aldicarb Pesticide

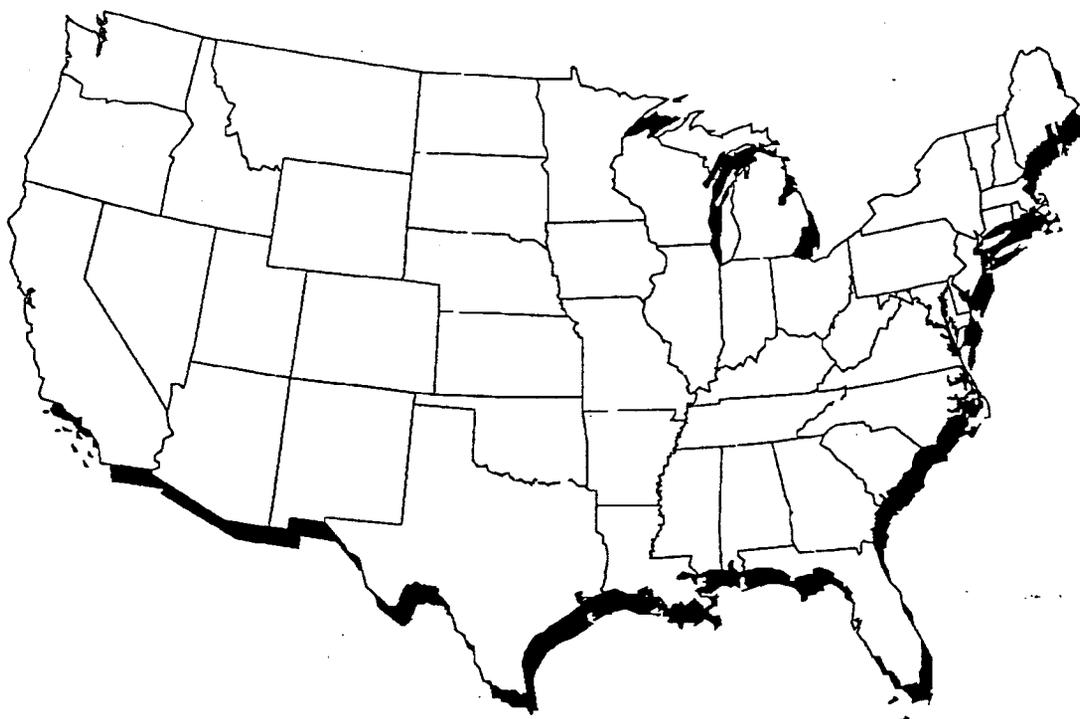
EPA Approved 7/16/96

**RESTRICTED USE PESTICIDE**  
**ACUTE TOXICITY AND GROUND WATER CONTAMINATION**  
For retail sale to and use only by Certified Applicators or persons under the direct supervision of a Certified Applicator, and only for those uses covered by the Certified Applicator's certification.

# TEMIK® Brand 15G Aldicarb Pesticide

EPA Reg. No. 264-330

## Environmental Precautions and Soil Type Restriction Tables



Refer to the container label for additional use precautions and directions.



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**TEMIK® Brand 15G Aldicarb Pesticide**

**EPA REG. No. 264-330**

**ENVIRONMENTAL PRECAUTIONS  
GENERAL USE RESTRICTIONS**

**AGRICULTURAL CHEMICALS HAVE THE POTENTIAL TO MOVE INTO SHALLOW GROUND WATER. THE FOLLOWING RESTRICTIONS HAVE BEEN DEVELOPED TO PROTECT DRINKING WATER SUPPLIES.**

**DO NOT APPLY WITHIN 50 FEET OF ANY DRINKING WATER WELL TO MINIMIZE CONTAMINATION BY SURFACE RUNOFF.  
MORE STRINGENT RESTRICTIONS MAY BE REQUIRED, AS DISCUSSED BELOW.**

Do not wash, load, or empty application equipment near any well, as this practice is a potential source of ground water contamination. In fields having soils with less than 15% field moisture holding capacity, special care must be taken not to over-irrigate, since substantial over-irrigation promotes the leaching of chemicals.

Contact your state pesticide regulatory authority for further information on state requirements for the use of this product.

Some states, including Florida, Massachusetts, New York and Rhode Island, have or may be developing more restrictive regulations regarding the use and application of TEMIK®. Follow all state regulations restricting the use and application of this product, including limitations on applications near drinking water sources. In all cases, the more restrictive requirements must be followed. It is the responsibility of the applicator to document the construction of wells claimed not to be shallow.

**SPECIFIC USE RESTRICTIONS**

**FOLLOW THE LISTED "ADDITIONAL RESTRICTIONS" if the following conditions are present:**

STATE	SOILS FOR WHICH RESTRICTIONS APPLY	ADDITIONAL RESTRICTIONS
AL, CO, DE, GA, KS, KY, LA, MD, MO, MS, NC, SC, TN, VA, WV	Loamy sand or sand surface soils <u>and</u> subsoils <u>with an</u> average organic matter in the upper 12 inches of less than 2% by weight.  See <i>SOIL RESTRICTION TABLES</i> for specific soil types.	If a vulnerable soil is present and the water table is less than 25 feet below ground surface, do not apply within <b>300 feet</b> of a drinking water well unless it is known or reasonably believed based upon authoritative sources that such wells are either cased to 100 feet below ground level or a minimum of 30 feet below the water table.
CT, IA, IL, IN, MA, MI, MN, MT, ND, NE, NJ, OH, SD, WY	Sandy loam, loamy sand, or sand surface soils, <u>and</u> loamy sand or sand subsoils, <u>with an</u> average organic matter in the upper 12 inches of less than 2% by weight.  See <i>SOIL RESTRICTION TABLES</i> for specific soil types.	If a vulnerable soil is present and the water table is less than 25 feet, do not apply within <b>500 feet</b> of a drinking water well unless it is known or reasonably believed based upon an authoritative source that such wells are either cased to 100 feet below the ground level or a minimum of 30 feet below the water table.
ME, NH	Sandy loam, loamy sand or sand surface soils.  See <i>SOIL RESTRICTION TABLES</i> for specific soil types.	If a vulnerable soil is present and the water table is less than 25 feet below ground surface, do not apply within <b>500 feet</b> of a drinking water well unless it is known or reasonably believed based upon an authoritative source that such wells are either cased to 100 feet below ground level or a minimum of 30 feet below the water table.
CA (Del Norte Co.) CA (Humboldt Co.) NY (Nassau Co.) NY (Suffolk Co.) OR (Curry Co.)	All Soils	Do not apply this product in the specified counties.
FL	All Soils	State regulations require that TEMIK® not be applied within <b>300 feet</b> of any drinking water well.