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**Phase II Environmental Site Assessment Workplan
(Contract Document)**

State of Ohio
Department of Transportation
Jolene M. Molitoris, Director

**Innerbelt Bridge
Construction Contract Group 1 (CCG1)**

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 - Addendum No. 2 - New Appendix

FINAL

PHASE II ENVIRONMENTAL SITE ASSESSMENT

WORK PLAN

INNERBELT STUDY CLEVELAND, OHIO

Prepared for
The Ohio Department of Transportation
District 12 Office
5500 Transportation Boulevard
Garfield Heights, Ohio 44125

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URS

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Table 1 - Proposed Phase II ESA Sampling

ACRONYMS AND ABBREVIATIONS

ASTM	American Society for Testing and Materials
bgs	Below ground surface
DO	Dissolved oxygen
DOT	Department of Transportation
DPT	Direct Push Technology
DRO	Diesel range organics
EC	Electrical conductivity
FSP	Field Sampling Plan
GPS	Global positioning system
HDPE	High-density polyethylene tubing
HSP	Health and Safety Plan
I.D.	Inner diameter
LUST	Leaking Underground Storage Tank
NTU	Nephelometric Turbidity Units
PAH	Polycyclic aromatic hydrocarbon
PID	Photo Ionization Detector
PPE	Personal Protective Equipment
PVC	Polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
SVOC	Semivolatile organic compound
TPH	Total petroleum hydrocarbons
USEPA	U.S. Environmental Protection Agency
USCS	United Soil Classification System
USGS	United States Geological Survey
UST	Underground Storage Tank

1.0 INTRODUCTION

URS Corporation was retained by the Ohio Department of Transportation (ODOT) to conduct an Environmental Site Assessment Screening and the associated Phase I Environmental Site Assessments (ESAs) for the Cleveland Innerbelt Study. The Cleveland Innerbelt Study begins at the Interstate 71 (I-71) and Fulton Road interchange and extends north through the merge with Interstate 90 (I-90) across the Central Viaduct Bridge, which spans the Cuyahoga River, through the Central Interchange and terminates at the I-90 curve just east of the I-90 merge with State Route (SR) 2 (the Project Area). In addition, the Cleveland Innerbelt Study includes the portion of Interstate 77 (I-77) that begins at the Central Interchange and extends south to the I-77 and East 30th Street interchange. The Project Area, which is wholly located in the City of Cleveland, Cuyahoga County, spans approximately seven miles.

The Cleveland Innerbelt Study has been undertaken by ODOT for the purpose of developing a strategy for the renewal of the transportation infrastructure in the I-71/I-90 corridor through downtown Cleveland. The pavements and structures comprising the existing Innerbelt through Cleveland are approaching the end of their service life. Further, the capacity of the existing Innerbelt is restricted by a series of interchanges and subsequent bottlenecks, which do not conform to current highway design standards, thereby contributing to traffic congestion, high accident rates, and traffic diversions through central city neighborhoods, which degrades the quality of life for Cleveland residents.

The Environmental Site Assessment Screening and associated Phase I ESAs were conducted in accordance with the ODOT guidance. The Project Area encompasses commercial, industrial, institutional, municipal, and residential properties. The Screening process consisted of historical research, regulatory records review, and a Project Area reconnaissance. As a result of the Screening, the 33 properties listed below were recommended for Phase I ESAs.

Phase I ESA Summary Table

Site Number	Site	Address	Rationale
2	Former Bauer Auto	3553 West 25th Street	LUST
<i>CENTRAL VIADUCT - NORTH</i>			
11	Stripmatic	1501 Abbey Road	LUST
13	Former Glove Cleaning Service/Scranton Averell	2132-2150 West 15th Street	Historic Operations
14	Bojacks Meats	1425 University/2000 West 14 th Street	Property Take
15	Leon Rudnick	1402-1408 Abbey Road	Property Take
16	Wendell & Carroll Collins/1501 Companies	West 15th Street	Property Take
17	Terminal Oil	308 Central Viaduct	UST
18	Cleveland Fire Station	310 Carnegie	Property Take
19	Gillota Fuel Products	206-300 Central Viaduct	Property Take
20	Earl Lee	2394 Canal Road	Property Take
21	White Properties	1996 West 3rd Street	Property Take
22	Nova Properties	West 4th Street	Property Take
23	NS Railroad Building	840 Minkon Lane	Property Take
24	James Vincent	2515 Canal Road	Property Take

Site Number	Site	Address	Rationale
<i>CENTRAL INTERCHANGE</i>			
27	Meridian Properties/Independent Towel	1802 Central Avenue	RCRA SQG, LUST
57	Charles Martin	3501 Croton	Property Take
58	JF Sanson	3561 Burwell	Property Take
<i>TRENCH</i>			
29	BP Gas Station	2701 Chester	UST
33	State Industrial Products/Information Systems Building	3100 Hamilton	RCRA SQG, LUST, OH Spills, PCBs
34	Former Teledyne Metal Finishing	1725 East 27th Street	RCRA TSD
41	1400 East 30th Partners	1400 East 30th Street	Property Take
42	CB Realty	2975 Superior	Property Take
43	KNC Building	2635 Payne	Property Take
44	EJ Investments	2630 Payne	Property Take
45	Harold Moss, Trustee	1748 East 27th Street	Property Take
46	Tri Building	2728 Euclid	Property Take
47	GKC Limited	2729 Prospect	Property Take
48	Parkwood Corporation	2829 Euclid	Property Take
49	Julius Sorma	3004 St. Clair	Property Take
<i>INNERBELT CURVE</i>			
50	Cleveland Mounted Police	1150 East 38th Street	Property Take
51	Temp Craft Plastics	3960 South Marginal	Manufacturing
52	Architectural Real Estate	3000 Lakeside	Property Take
53	Cleveland Fire Academy	3101 Lakeside	Property Take

The Phase I ESA process conducted for the above-referenced sites consisted of additional historic research, regulatory agency file reviews, a reconnaissance of each site, and property owner interviews. As a result of the Phase I ESAs, the 23 properties were recommended for Phase II ESAs. The findings of the Phase I ESA are presented the URS *Environmental Site Assessment Screening and Phase I Environmental Site Assessment Report for the Innerbelt Study*, dated December 2005.

Per the ODOT Inter-Office Communication dated December 13, 2005, the following sites will be further investigated via a Phase II ESA.

Phase II ESA Summary Table

Site Number	Site	Address	Rationale
2	Former Bauer Auto	3553 West 25 th Street	LUST Site.
13	Former Glove Cleaning Service/Scranton Averell	2132-2150 West 15 th Street	LUST Site and Suspected Dumping.
14	Bojacks Meats	2000 W. 14 th /1425 University	UST Site and Chemical Use
15	Leon Rudnick	1402-1408 Abbey Road	Historic UST Site
16	Wendell & Carroll Collins/1501 Companies	West 15 th Street	Property Take
17	Terminal Oil	308 Central Viaduct	LUST Site, ASTs and Drum Storage.
18	Cleveland Fire Station	310 Carnegie	LUST Site.
19	Gillota Fuel Products	206-300 Central Viaduct	LUST and UST Site.
20	Earl Lee	2394 Canal Road	Historic UST Site and Chemical Use
21	White Properties	1996 West 3 rd Street	Historic UST Site.
22	Nova Properties	West 4 th Street	Historic UST and OHSPILLS Site, Asphalt Plant. <i>check</i>
23	NS Railroad Building	840 Minkon Lane	Active UST Site and Waste Storage.
24	James Vincent	2515 Canal Road	Historic Operations
27	Meridian Properties/ Independent Towel	1802 Central Avenue	Historic UST and LUST Site.
29	BP Gas Station	2701 Chester Avenue	UST Site.
33	State Industrial Products	3100 Hamilton Avenue	OHSPILLS, LUST and UST Site.
34	Former Teledyne Metal Finishing	1725 East 27th Street	Historic UST and AST Site, Chemical Use.
42	CB Realty	2975 Superior Avenue	Historic UST Site.
43	KNC Building	2635 Payne Avenue	Historic UST Site.
45	Harold Moss, Trustee	1748 East 27th Street	Historic UST and Dump Site.

Site Number	Site	Address	Rationale
51	Temp Craft Plastics	3960 South Marginal Road	Historic UST Site and Chemical Use.
53	Cleveland Fire Academy	3101 Lakeside Avenue	Historic UST and AST Site.
57	Charles Martin	3501 Croton Avenue	Property Take

The following text describes the Phase I ESA finding for each site recommended for Phase II ESA activities.

SITE #2 – FORMER BAUER AUTO

According to the Cleveland City Directories, the site was occupied by a radiator repair shop from 1954 through 1984. In the 1989 Directory, the site was identified as Bauer Auto Radiator and Pittsburgh Radiator Company. The site was identified as a LUST site in the EDR Report. According to the City of Cleveland Fire Prevention Bureau files, five 2,500-gallon USTs were abandoned in place, with the approval of the Cleveland Fire Department, in August 1966.

URS conducted a file review at the BUSTR office in Reynoldsburg, Ohio. In 1992, the aforementioned abandoned-in-place USTs were removed from the property. Soil borings were advanced and soil and groundwater samples were collected and submitted for laboratory analysis. Benzene, toluene, ethyl benzene and total xylenes (BTEX) constituents were detected in the soil and groundwater samples, in excess of the applicable BUSTR Action Levels. In 1995, BUSTR indicated a Site Assessment would have to be conducted to further address the elevated contaminants. A Responsible Party Search was conducted by the State Attorney General; reportedly, these USTs were last utilized in 1966 by the Shell Oil Company. According to the files, there has been no further investigation conducted and the elevated contaminants remain in the soil and groundwater.

URS conducted a reconnaissance of the site, which is primarily vacant. A Metro Health Hospital sign was observed on the central portion of the site. No evidence of spills, stressed vegetation and/or the storage or handling of hazardous materials was observed on the site.

SITE #13 – FORMER GLOVE CLEANING/SCRANTON AVERELL

According to the Cleveland City Directories, the site was listed as Glove Cleaning Service Company in the 1954 through 1984 Directories. The site was identified as LUST site in the EDR Report.

According to the Cleveland Fire Prevention Bureau files, the site was occupied by the Glove Cleaning Service Company (2130), Eyre Glove Cleaners (2140) and Indu-Sol Products Inc. (2150) in 1941. An entry in 1947 indicates a 500 to 700-gallon AST of solvent was to be installed at the 2130 West 15th Street address. A Fire Inspection Report, dated August 1952, indicates there were four USTs located at the 2130 site; however, the contents and quantities were not provided. A 3,000-gallon UST, which contained #4 fuel oil, was installed at the 2150 site in May 1951. A complaint was received at the Bureau on October 20, 1970; the Glove Cleaning Service Company reportedly was dumping Stoddard solvent in a vacant lot next to 2149 West 15th Street.

An application for UST removal was submitted on April 22, 1994. A 500-gallon UST, which contained dry cleaning fluid, was to be removed under the supervision of the Bureau. The UST reportedly was

located north of the building. An NFA letter, dated January 30, 1996, was received for the incident. An application for UST removal was submitted on April 29, 1998. Two 4,000-gallon USTs, which contained heating oil, were to be removed under the supervision of the Bureau. The USTs reportedly were located to the west of the building. The USTs were removed by Cuyahoga Landmark. There was no further information regarding this closure in the file. An application for UST removal was submitted; however, the date was not provided. One 500-gallon kerosene and two 1,000-gallon cleaning fluid USTs were slated to be removed. The associated permit was dated February 10, 1999. All three USTs reportedly were located north of the building.

According to the BUSTR files, in August 1998, two 1,000-gallon cleaning fluid USTs and one 550-gallon kerosene UST were removed from the property. In the most recent correspondence, BUSTR sent a letter dated November 2001 requesting a Closure Assessment Report. Reportedly, no action has been taken by Scranton Averell, Inc. regarding this request.

According to the BUSTR files, a Closure Assessment for the removal of four 5,000-gallon USTs was submitted in October 2005. A Deficiency Letter was issued by BUSTR for the Closure on October 21, 2005. Scranton Averell indicated the USTs were not owned or operated by the company.

At the time of the URS reconnaissance, the site was occupied by TIG Products. A large concrete block building was observed in the central portion of the site. A gravel-covered area is located between this site and the adjacent Stripmatic site. Surface staining was observed on the site. No stressed vegetation and/or the storage or handling of hazardous materials was observed on the site.

SITE #14 – BOJACKS MEATS

According to the Cleveland City Directories, the site was listed as Paramount Fur Company from 1954 through 1974. Beginning in 1979 through 1999, the site was listed as Bojacks Meat and Poultry.

According to the Cleveland Fire Prevention Bureau files, the site was occupied by the J.R. Dymond Terminal Warehouse in 1944. An entry in March 1952 indicates the site was occupied by the Paramount Fur Company, which utilized mixtures of carbon tetrachloride and apco thinner to clean furs. A Fire Inspection Report dated November 1967 indicates the Cuyahoga Chemical Company stored multiple drums of sodium cyanide, potassium cyanide, zinc cyanide, and copper cyanide in the warehouse.

A permit dated November 1951 indicates a gas station was located at 2000-2180 West 14th Street. There reportedly were three 3,000-gallon USTs associated with this operation.

At the time of the URS reconnaissance, this site was occupied by two large warehouse buildings. While surface staining was not observed, distressed vegetation was observed on the site.

SITE #15 – LEON RUDNICK

According to the Cleveland City Directories, the site was listed as Baum Ice Cream from 1954 through 1979. According to the Cleveland Fire Prevention Bureau files, the site was occupied by Baum Ice Cream Company in 1944. An entry dated June 1950 indicates a fuel oil UST was to be installed in the tree lawn. A Fire Inspection Report dated December 1965 indicates a 1,000-gallon fuel oil UST was located on the site.

A Fire Inspection Report dated February 1987 indicates the 1,000-gallon UST was to be abandoned in place. On February 12, 1987, the UST reportedly was filled with a slurry mixture and abandoned in place, under the supervision of the Fire Department.

At the time of the URS reconnaissance, the site was occupied by one warehouse building, which was

divided into three units. No surface staining, stressed vegetation and/or the storage and handling of hazardous substances were observed.

SITE #16 – WENDELL & CAROLL COLLINS/1501 COMPANIES

According to the Cleveland Fire Prevention Bureau files, the site was occupied by Diamond Wheel Fabricating in 1999.

At the time of the URS reconnaissance, the site was occupied by a building and gravel-covered land. Surface staining was observed on the gravel-covered portion of the site.

SITE #17 – TERMINAL OIL

According to the Cleveland City Directories, the site was listed as O'Brien Cartage from 1954 through 1989. The site was listed as Gillota Fuel Products in the 1994 and 1999 City Directories. The site was identified as LUST site in the EDR Report.

According to the Cleveland Fire Prevention Bureau files, the site was occupied by O'Brien Cartage in 1940. According to a permit dated October 18, 1955, a 2,000-gallon gasoline UST was installed at the site by the Oil Equipment Service Company. The 2,000-gallon UST reportedly was installed to replace a 1,000-gallon UST, which had leaked. A permit dated March 7, 1957 indicates approximately 6,000-gallons of gasoline were stored at the site in USTs. In 1966, the site was occupied by O'Brien and Nye Cartage Company. A permit dated September 27, 1974 indicates a 6,000-gallon fuel oil UST was to be installed at the site.

A letter dated September 28, 1993 from Tank Tech Environmental to the Fire Prevention Bureau indicates BUSTR recognized Norfolk and Western Railway as the UST owner. The attached BUSTR registration form indicates there are two 6,000-gallon diesel USTs at the site. The operator of the steel USTs was listed as Gillota Fuel Products; however, the owner was listed Norfolk and Western Railway. A letter dated March 24, 1995 from BUSTR to Norfolk Southern indicates a UST Closure Report had been received and the extent of the release had been defined. The letter stipulates Norfolk Southern was required to submit a Remedial Action Plan to describe how the soil and/or groundwater at the site would be cleaned up.

At the time of the URS reconnaissance, the site was occupied by Terminal Oil. The site appeared to be utilized for the storage of tanker trucks. Several ASTs and multiple 55-gallon storage drums were observed on the site. Surface staining was observed.

SITE #18 – CLEVELAND FIRE STATION

According to the Cleveland City Directories, the site was listed as City of Cleveland from 1964 through 1999. The site was identified as a LUST site in the EDR Report.

According to the Cleveland Fire Prevention Bureau files, the site was occupied by Fire Station #28 in 1963. According to a Fire Inspection Report dated June 13, 1963, a 1,500-gallon gasoline UST was located at the site. A Report dated March 28, 1984 indicates the Fire Department Hazardous Materials Unit responded to a call regarding gasoline odors in the basement of the building. Approximately 25 gallons of gasoline were noted in the UST. A Report dated July 12, 1985 indicates gasoline odors were noted in the basement again. At this time, it was determined the 1,500-gallon UST should be removed from the ground, as well as an abandoned 2,000-gallon UST.

On September 16, 1965, a 550-gallon gasoline UST was installed. This UST reportedly was to be utilized for the emergency generator. A Report dated December 8, 1998 indicates gasoline odors were reported in the basement of the building. The odors were traced to a public sewer catch basin west of the building.

Approximately 14 gallons of product/water were removed and disposed of. A permit dated May 23, 2003 indicates a 250-gallon diesel UST was removed from the site. The UST reportedly was utilized in association with the emergency generator.

According to the BUSTR files, a diesel UST was removed from the site in May 2003. The UST Closure Report was received in July 2003. A NFA Letter was issued for the closure on July 28, 2003.

At the time of the URS reconnaissance, the site was observed to be a City of Cleveland Fire Department Fire Station. No surface staining, stressed vegetation and/or the storage and handling of hazardous substances were observed.

SITE #19 – GILLOTA FUEL PRODUCTS

According to the Cleveland City Directories, the site was listed as various warehouses and a gas station from 1954 through 1999. The site was identified as LUST, RCRIS-SQG and UST site in the EDR Report.

According to the Cleveland Fire Prevention Bureau files, the site was occupied by a furniture company (206) and a gas station (300) in 1950. A Permit dated February 1952 indicates a 1,000-gallon gasoline UST was located on the 206 property. A Permit dated August 1952 indicates there were approximately 13,600 gallons of gasoline stored on the 300 site in two USTs. A report dated October 2, 1964 indicates part of the site was a vacant service station. There reportedly were at least three USTs associated with the site, which had been vacant for approximately 1.5 years.

A Permit dated November 1984 indicates two 10,000-gallon USTs of #2 fuel oil and three 12,000-gallon USTs of #1 fuel oil were to be installed on the site. According to the Permit, the USTs are located east of the existing building. A Tank Inventory for the site, dated January 1, 1992, indicates there were 18 USTs containing various amounts of petroleum products.

A letter dated July 10, 1992 from Centerior Energy to Gillota Fuel indicates the adjacent CEI property had been impacted by petroleum products emanating from the site. The letter concludes that they expected Gillota to manage the regulatory implications. In September 1992, four USTs; two 1,500-gallon, one 12,000-gallon and one 20,000-gallon, were removed from the site. At this time four USTs were installed to replace the removed USTs. A Permit, dated September 16, 1992, was filed to remove six USTs from the adjacent CEI property. The USTs were four 6,000-gallon used oil and two 8,000-gallon used oil. The Bureau reports associated with this removal indicated petroleum product was observed throughout the excavations. According to the BUSTR files, over-excavation of the soils associated with the USTs was conducted; approximately 5,666 tons of soil were removed. This incident attained NFA status on October 25, 1993; however, it was noted in the file the site had the potential to be re-contaminated by seepage water. The seepage water reportedly was emanating from a bridge abutment; the contaminants were thought to be associated with USTs operated on the adjacent property.

A Permit dated October 5, 1993 was issued for the removal of two 6,000-gallon USTs from the site. A Permit dated May 11, 1995 was issued for the removal of three 12,000-gallon fuel oil USTs, two 10,000-gallon gasoline USTs, and one 1,000-gallon fuel oil UST from the 300 site. A Closure Report was written for the removal of the six USTs and submitted to BUSTR requesting No Further Action. NFA status was granted for the removal of the six USTs on October 3, 1995.

A Permit dated July 14, 2000 was issued for the installation of UST piping around two 8,000-gallon gasoline/diesel USTs, one 6,000-gallon gasoline UST and one 4,000-gallon kerosene UST. A Permit dated August 9, 2002 indicates there are two USTs located at the 300 site; one 8,000-gallon and one 6,000-gallon, which both contain gasoline. A Permit dated August 9, 2002 indicates there are four USTs;

one 8,000-gallon and two 6,000-gallon, which contain diesel and one 4,000-gallon kerosene.

At the time of the URS reconnaissance, the site was a Marathon Gas Station and an empty warehouse. An underground storage tank cavity was observed on the gas station property. Surface staining and a petroleum odor were discerned on the gas station property, as well.

SITE #20 – EARL LEE

The Cleveland City Directories indicate the site was listed as Allis Chemical Company from 1954 through 1979. The site was listed as W & W Meats in the 1984 through 1999 Directories.

According to the Cleveland Fire Prevention Bureau files, a Permit dated October 10, 1951 indicates the site was occupied by Allis Chemical Inc., which stored flammable materials in an outside shed. In addition, there was a 1,000-gallon kerosene AST. A Permit dated July 17, 1957 indicates a 4,000-gallon gasoline UST was installed at the site, which was occupied by the Elnor Provision Company.

A BUSTR permit dated January 1989 indicates the 4,000-gallon UST was present. The site was occupied by W & W Meats Incorporated. A Permit dated March 16, 1990 was issued for the removal of the UST. According to the BUSTR files, a NFA Letter was issued for the closure on March 23, 1992.

At the time of the URS reconnaissance, the site was vacant. No surface staining, stressed vegetation and/or the handling and storage of hazardous materials were observed on the site.

SITE #21 – WHITE PROPERTIES

According to the Cleveland City Directories, the site was listed as Whitman Jackson from 1954 through 1984. There were no further listings for the site.

According to the Cleveland Fire Prevention Bureau files, a Permit dated November 27, 1953 indicates a 500-gallon UST with unknown contents was installed at the site. In addition, there were dip tanks at the site, associated with the wood treatment operations. A Permit dated November 28, 1955, indicates a 1,000-gallon UST of gasoline was installed at the site. A Report dated August 10, 1965 indicates there is a 1,000-gallon gasoline UST, 900 1-gallon turpentine containers, 2,000 1-gallon liquid floor wax containers, and 250 gallons of spray paint in 8-ounce cans stored at the site. A Report dated March 25, 1983 indicates a 500-gallon steel UST was removed from the site. The UST was located near the northwest corner of the building. A letter was sent to the Mr. Andy Lakowitz of Global Reserve from the Bureau, indicating the USTs on the site had not been properly abandoned.

At the time of the reconnaissance, the site was a commercial warehouse. No surface staining, stressed vegetation and/or the handling and storage of hazardous materials were observed on the site. Multiple 55-gallon drums were observed on an adjacent property.

SITE #22 – NOVA PROPERTIES

According to the Cleveland City Directories, the site was listed as the National Engineering Company from 1954 through 1964. There were no further listings for the site. This site was identified as an OHSPILLS site in the EDR Report.

According to the Cleveland Fire Prevention Bureau files, in October 1953, two 1,000-gallon USTs; gasoline and diesel, were installed at the site. In 1965, the site was owned by the New York Central Rail Road and the ANCO Corporation. The last entry in the file indicates the on-site building was razed in 1974; however, the USTs did not appear to have been properly abandoned.

At the time of the URS reconnaissance, the site was occupied by an asphalt plant, which is operated by

Kenmore Construction. Large chunks of asphalt were observed in piles on the site. Surface staining was observed in multiple locations on the site.

SITE #23 – NS RAILROAD BUILDING

The Cleveland City Directories for 1954 through 1999, in five-year intervals, were reviewed for information regarding the site. There were no listings for the site.

According to the Cleveland Fire Prevention Bureau files, the site is currently occupied by a storage building for the Rail Road. There reportedly is a 500-gallon gasoline UST on the site.

At the time of the URS reconnaissance, the site was occupied by a railroad storage building. Multiple piles of tires, roofing materials, lumber, and construction debris were observed on the site. Surface staining and oily sheens were observed on the ground. Drums, which were labeled to contain soil cuttings, were located on the site.

SITE #24 – JAMES VINCENT

According to the Cleveland City Directories, the site was listed as the Pump and Ice Company from 1954 through 1999.

According to the Cleveland Fire Prevention Bureau files, the site was occupied by the American Vinegar Company in 1941. In 1964, the site was occupied by the Pump & Ice Machine Company Inc.

At the time of the URS reconnaissance, the site was occupied by the Pump Ice Machine Company. No surface staining, stressed vegetation and/or the handling and storage of hazardous materials were observed on the site.

SITE #27 – MERIDIAN PROPERTIES/INDEPENDENT TOWEL

According to the Cleveland City Directories, the site was listed as Independent Towel Company from 1954 through 1994. The site was listed as Thrifty Car Rental in the 1999 Directory. The site was identified as a LUST, RCRA-SQG and UST site in the EDR Report.

According to the Cleveland Fire Prevention Bureau files, the site was occupied by the Independent Towel Supply Company in March 1940. A 10,000-gallon gasoline UST reportedly was installed at the site in October 1957. A Fire Inspection Report, dated September 26, 1972, indicated there was a 20,000-gallon gasoline UST located near the southeast corner of the building. A 12,000-gallon #2 fuel oil UST was installed at the site in April 1979. A 10,000-gallon liquefied petroleum gas AST reportedly was installed at the site in August 1982. A 1,000-gallon propane AST reportedly was installed in June 1984. A Permit was issued in March 1986 for a 10,000-gallon gasoline UST and a 55-gallon drum of motor oil. A report dated October 8, 1986 indicated a 12,000-gallon #2 fuel oil UST was improperly abandoned. On January 5, 1987, the aforementioned improperly abandoned UST was removed from the site, under the supervision of the Bureau.

A Permit was issued in March 1994 for the removal of 10,000-gallon gasoline UST. According to the BUSTR files, in March 1994 a 10,000-gallon gasoline UST was removed from the site. A Closure Report reportedly was not submitted to the agency. BUSTR requested information from Meridian Partners to complete the closure requirements; subsequently, BUSTR issued a "No Response Received" letter in November 2001.

At the time of the URS reconnaissance, the site was occupied by a Thrifty Car Rental and a four-story brick building. According to personnel at the Car Rental, Thrifty has operated at this portion of the site for approximately 10 years. The service area has been utilized to wash automobiles; no automobile

maintenance is conducted on the site. The four-story building formerly was utilized by the Independent Towel Company; however, it reportedly has been vacant for approximately 10 years. A pad-mounted transformer was observed on the side of the building. No surface staining, stressed vegetation and/or the handling and storage of hazardous materials were observed on the site.

SITE #29 – BP GAS STATION

According to the Cleveland City Directories, the site was listed as a BP Gas Station from 1984 through 1999. This site was listed as a UST and RCRA-SQG site in the EDR Report.

According to the Cleveland Fire Prevention Bureau, there are no files for this site. According to BUSTR, there are no files for this site, as it has not reported any releases.

At the time of the URS reconnaissance, the site was occupied by a BP retail gasoline station. A UST cavity was observed on the site. In addition, surface staining and oily sheens were observed on the pavement.

SITE #33 – STATE INDUSTRIAL PRODUCTS/INFORMATION SYSTEMS BUILDING

According to the Cleveland City Directories, the site was listed as State Chemical Company from 1964 through 1999. This site was identified as an OHSPILLS, SSTS, UST, LUST, and RCRA-LQG site in the EDR Report.

According to the Cleveland Fire Prevention Bureau files, the site was occupied by the H. Leff Electric Company and State Chemical in 1961. A Permit was issued in October 1961 for the installation of a 5-foot by 9.5-foot acid storage tank. A Permit was issued in June 1962 for the installation of a 550-gallon drain oil UST, which reportedly was removed in October 1972. The Bureau issued a letter in March 1964, which indicated Leff Electric needed to properly abandon a UST located in front of the building. A Permit was issued in June 1965 for the installation of a 2,000-gallon gasoline UST, which reportedly was removed in October 1972. A Permit was issued in July 1967 for the installation of a 1,500-gallon Muriatic acid AST.

A violation notice was issued in July 1967 for the storage of the following substances; methanol, carbitol solvent, cellosolve solvent, isopropyl ether, mineral spirits, acetone, methyl-ethyl-ketone, naphtha, Muriatic acid, and propane. A Permit was issued in 1975 for the installation of six 8,000-gallon USTs reported to contain solvents. A BUSTR Permit for the USTs, dated 1989, indicates the USTs contained mineral spirits, 2-butylethanol, and aliphatic blends.

Communications dated August and September 1992 indicate a UST located in the loading dock was to be abandoned-in-place. Information in the file indicates the UST was located inside the building. According to the BUSTR files, an 8,000-gallon mineral spirits UST was abandoned in place. An NFA Letter, dated May 23, 1996, was issued by BUSTR for the incident. In addition, five 8,120-gallon USTs were removed from the site in April 1997. The contents of the USTs were not known. The status of the closure was reported as 'Additional Information Requested'.

At the time of the URS reconnaissance, the site was occupied by State Industrial Products World Headquarters. It appears the facility packages cleaning products from bulk containers to individual packages. A UST cavity, which was labeled to contain solvents, was observed outside the building. The site appeared to be very well maintained.

SITE #34 – FORMER TELEDYNE METAL FINISHING

According to the Cleveland City Directories, the site was listed as Metal Finishers from 1954 through 1994. The site was listed as Teledyne Metal in the 1999 City Directory. This site is identified as an

RCRA-TSD and RCRA-LQG site in the EDR Report.

According to the Cleveland Fire Prevention Bureau files, the site was occupied by Metal Finishers Incorporated in 1941. An entry dated January 1947 indicates a 4,000-gallon fuel oil UST was intended to be installed at the site; however, there was not enough room in the excavation for this capacity UST. An entry dated October 1950 indicates two fuel oil USTs were being installed at the site, without the oversight of the Bureau. A Permit dated September 5, 1951 indicates a 5,000-gallon fuel oil UST was installed on the site. A note on the Permit indicates this UST was removed from the site in November 1985.

A Fire Inspection Report dated July 23, 1952 indicates the site was occupied by Metal Finishers Inc. There reportedly were two USTs on the site; a 4,000-gallon and a 1,000-gallon, both of which contained fuel oil. Plating operations, for all metals including silver, were conducted in the building. In addition, a 5,000-gallon fuel oil UST was located on the site, near East 30th Street.

A Fire Inspection Report dated March 3, 1966 indicates there were multiple ASTs and USTs located on the site. A 5,000-gallon fuel oil UST was located near Building #2. Two 4,000-gallon ASTs, containing sulfuric and hydrochloric acid, were not located in secondary containment. A 300-gallon gasoline UST with dispenser was located on the site. Various quantities of chromic acid, nitric acid, potassium cyanide, sodium hydroxide, potassium hydroxide, and hydrogen peroxide were stored in carboys. A degreasing tank, which contains trichloroethane, was located in the building. A Fire Inspection Report dated March 8, 1971 indicates there were three USTs; a 300-gallon gasoline, a 1,000-gallon fuel oil and a 4,000-gallon fuel oil located on the site. In addition, there were two 3,000-gallon ASTs, which contained sulfuric acid and hydrochloric acid.

On September 25, 1986, the 300-gallon gasoline UST was abandoned in place. The UST reportedly was located in the building and could not be removed. A Permit was issued on August 21, 1991 for the removal of two ASTs. The 6,000-gallon ASTs reportedly contained chromic acid and Muriatic acid.

At the time of the URS reconnaissance, the site was a vacant gravel lot, used for private parking. No surface staining, stressed vegetation and/or the handling and storage of hazardous materials were observed on the site.

SITE #42 – CB REALTY

According to the Cleveland City Directories, the site was listed as Armstrong from 1954 through 1974. The site was listed as Bickoff's Carpet and Cuyahoga County in the 1979 through 1989 Directories. The site was listed as Ohio Carpet in the 1994 and 1999 Directories.

According to the Cleveland Fire Prevention Bureau files, the site was occupied by the Armstrong Cord Company in 1954. An entry dated 1954 indicates three USTs, contents unknown, were removed from the site. In approximately 1976, the site was occupied by Frank Bickoff's Carpet and various government offices.

At the time of the URS reconnaissance, the site was occupied by the Drape Factory and a carpet wholesaler. No surface staining, stressed vegetation and/or the handling and storage of hazardous materials were observed on the site.

SITE #43 – KNC BUILDING

According to the Cleveland City Directories, the site was listed as B.F. Goodrich from 1964 through 1984. The site was listed as NTB in the 1989 through 1999 Directories.

According to the Cleveland Fire Prevention Bureau files, the site was constructed by B.F. Goodrich in 1963. At the time of the construction, a 5,000-gallon UST was encountered; however, the origin and content were not specified.

At the time of the URS reconnaissance, the site was occupied by George R. Klein News Company, which does business as CKM Ventures, LLC. Mr. Shawn Spindel was available for information regarding the site. Reportedly, the site has been utilized for the distribution of magazines and newspapers since approximately 1999. Printing operations are not conducted on this site. Three overhead doors are located along the south side of the building. Remnants of hydraulic lifts and a UST were observed in this part of the building. Mr. Spindel indicated Muller Tire was the occupant of the building prior to 1999. Minor surface staining was observed in the building.

SITE #45 – HAROLD MOSS, TRUSTEE

According to the Cleveland City Directories, the site was listed as Wheel and Rim Company from 1954 through 1994. There were no further listings for the site. The site is listed as an abandonment/dump site for drums in the EDR Report.

According to the Cleveland Fire Prevention Bureau files, the site was occupied by the Musterole Company in 1940. An entry dated November 3, 1948 indicates the installation of a 10,000-gallon fuel oil UST was approved. A Fire Inspection Report dated December 5, 1966 indicates a gasoline UST had been ordered to be properly abandoned. A letter dated June 29, 1967 to the Bureau indicates two USTs were properly abandoned at the site. A Fire Inspection Report dated October 8, 1970 indicates the site was occupied by the Wheel and Rim Sales Company, an automotive parts warehouse. A Permit dated January 24, 1975 indicates small quantities of lacquer; lacquer thinner, MEK, paint and enamels were stored on the site.

A Report dated February 5, 1992 indicates six 55-gallon drums were dumped on the site. The property owner, Mr. Steven Singer, indicated the drums and other debris were dumped on the site. Testing conducted on the drums indicated the contents likely were auto spray paints or enamels. On February 28, 1992, the Bureau issued an order to Mr. Singer to properly remove the drums from the site.

At the time of the URS reconnaissance, the site was occupied by a vacant three-story warehouse. Three overhead doors and a loading dock were observed at the rear of the building. No surface staining, stressed vegetation and/or the handling and storage of hazardous materials were observed on the site.

SITE #51 – TEMP CRAFT PLASTICS

According to the Cleveland City Directories, the site was listed as Tempcraft from 1984 through 1999.

According to the Cleveland Fire Prevention Bureau files, the site has been occupied by Tempcraft Tool and Mold since July 1985. An entry dated March 10, 1986 indicates a 10,000-gallon UST had not been properly abandoned at the site. Permits dated 2003 indicate drums of xylenes, acetone, isopropyl alcohol, lubricating oils, paints, solvents and naphtha were stored at the site.

At the time of the URS reconnaissance, the site was occupied by Temp Craft Plastics. The operations reportedly consist of tool making and wax pattern finishing. ASTs and a hazardous waste storage building were observed outside the main building. No surface staining or stressed vegetation was observed on the site.

SITE #53 – CLEVELAND FIRE ACADEMY

According to the Cleveland City Directories, the site was listed as City of Cleveland from 1964 through 1999.

According to the Cleveland Fire Prevention Bureau files, the site was occupied by the Cleveland Fire Academy in 1963. An entry dated September 20, 1963 indicates a 500-gallon gasoline AST and a 500-gallon gasoline UST were located on the site. An entry dated December 4, 1987 indicates the UST was removed from the site.

At the time of the URS reconnaissance, the site was occupied by the City of Cleveland Fire Training Academy. According to Lieutenant Quinn, there are USTs, which contain water, located on the site for training purposes. In addition, there are 55-gallon drums for training purposes on the site. Minor surface staining and oily sheens were observed on the site.

SITE #57 – CHARLES MARTIN

According to the Cleveland City Directories, the site was listed as Lake Erie Metal from 1954 through 1989. There were no further listings for the site.

According to the Cleveland Fire Prevention Bureau files, the site was occupied by the Lake Erie Metal Company warehouse in May 1944. In October 1993, the site was occupied by MAX Pallet. The building was noted to be in disrepair.

At the time of the URS reconnaissance, the site was occupied by Impact Agency Inc. and Gregory & Flynn. No surface staining, stressed vegetation and/or the handling and storage of hazardous materials were observed on the site.

PHASE II ESA WORK PLAN

This Work Plan addresses the proposed Phase II Environmental Site Assessment activities, which will be conducted in accordance with the ODOT guidance entitled *Environmental Site Assessment Guidelines*, dated September 1, 1999.

In general, the Phase II ESA sites were selected because of known current or historic operations; known current or historic petroleum product and/or hazardous substance consumption, storage or use; or, the site is proposed for acquisition. To that end, the chemical parameters proposed for analysis were based on the notion that the sites fall into two categories; known petroleum product storage sites and other sites. In addition, based on conversations with ODOT Office of Environmental Services personnel, monitoring wells are proposed for all potential acquisition sites. The site-specific Phase II ESA recommendations are presented on **Table 1**.

2.0 FIELD ACTIVITIES/SAMPLING PROCEDURES

2.1 SITE RECONNAISSANCE

A site reconnaissance visit will be conducted prior to initiating field activities. Site reconnaissance tasks will include an assessment of proposed boring locations relative to potential obstructions and aboveground utilities, as well as an evaluation of these locations relative to site features (i.e. UST cavities, staining, etc.).

The location of each proposed boring or monitoring well will be evaluated relative to subsurface and aboveground utilities. A minimum of two days before the start of boring activities, the Ohio Utilities Protection Service (OUPS) will be contacted, by calling 800-362-2764 so that OUPS member utilities have the opportunity to mark their respective utility lines. Property owners may also be interviewed concerning the locations of underground utilities, if possible.

The selected drilling subcontractor will obtain and pay for all permits, applications, and other documents required by state and local authorities.

Following the completion of field activities, each site will be restored as nearly as possible to its pre-construction condition. Unused or surplus materials, supplies, and waste material will be removed from each sample location as the work is completed at that area. Stakes or flagging of monitoring wells, which are not located on concrete, will remain near the monitoring wells for ease of locating during each sampling event.

A summary of proposed field activities is presented in **Table 1**, Proposed Phase II ESA Sampling.

2.2 SURFACE SOIL SAMPLING

Surface soil samples will be collected at several of the sites, as indicated in **Table 1**. The samples will be collected from 0 to 2 feet below ground surface (bgs). The samples will be collected via a sampling shovel, which will be decontaminated between sample locations to minimize the potential for cross-contamination.

2.3 DPT SOIL BORING ADVANCEMENT

Soil borings will be advanced via direct push technology (DPT) at the Sites as designated in **Table 1**. Soil samples will be collected from DPT soil borings in accordance with procedures described below.

Soil borings will be continuously sampled using DPT sampling methodologies to a maximum depth of approximately 15 feet bgs, in accordance with American Society for Testing and Materials (ASTM)-D-6282-98 *Standard Guide for Direct Push Soil Sampling for Environmental Site Characterizations*. DPT soil samples will be collected using a 4-foot long, 2-inch diameter, solid-barrel sampler.

Lithologic descriptions of unconsolidated materials encountered in the boreholes will generally be described in accordance with ASTM D-2488-90 *Standard Practice for Description and Identification of Soils*. United Soil Classification System (USCS) group symbols will also be used to describe soil samples. Additional information, including the depth to the water table, caving or sloughing of the borehole, changes in drilling rate, depths of laboratory samples, presence of organic materials, presence of

fractures or voids in consolidated materials, and other noteworthy observations or conditions, such as the locations of geologic boundaries, will be noted.

All soil samples will be collected according to the following methodology:

- 1) The decontaminated solid barrel sampler will be equipped with a dedicated acetate liner.
- 2) The solid barrel sampler will be connected to the leading end of the rods and pushed or driven to the desired sampling depth.
- 3) The sampler will then be driven an additional 48 inches to fill the sample tube.
- 4) The solid barrel sampler will be retrieved from the hole and the acetate liner will be removed by unscrewing the cutting shoe.
- 5) The entire length of the acetate liner will be sliced open using a decontaminated utility knife.
- 6) The core will be examined and described with special attention given to zones where there is a high potential for contaminant transport (i.e., discoloration or presence of odors).
- 7) Samples submitted for analysis will be placed in dedicated laboratory supplied, clean containers, labeled, and placed in an ice-filled cooler maintained at approximately 4° Celsius.
- 8) The samples will be handled in accordance with procedures presented in Section 2.12.

Upon completion, each DPT boring will be backfilled with granular bentonite in accordance with ASTM-D-6282-98 *Standard Guide for Direct Push Soil Sampling for Environmental Site Characterizations* and the Ohio Department of Natural Resources (ODNR) *Technical Guidelines for Sealing Unused Wells*.

2.4 BOREHOLE AND MONITORING WELL INSTALLATION

Monitoring wells will be installed in a soil boring that will be advanced using 4¼-inch inner diameter (I.D.) hollow stem augers. During installation of the soil boring, subsurface samples will be continuously collected with a 2-foot long, 2-inch diameter split-spoon sampler in accordance with ASTM-D-1586 *Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils*. Once sampling is initiated, the number of blows will be recorded per six inches. The borings will be advanced 10 feet into the first water-bearing zone encountered.

The split-spoon sampler will be brought to the surface and opened. Soil samples will be described in accordance with ASTM D-2488-90 *Standard Practice for Description and Identification of Soils*. USCS group symbols will also be used to describe soil samples. Special attention will be given to zones where there is a high potential for contaminant transport (i.e., discoloration, silt zones). Information to be recorded includes the borehole location, drilling information, sample description and sampling information such as sample intervals, recovery, and blow counts.

Once the soil boring is advanced to the terminal depth, monitoring well installation will commence. The monitoring well will be installed in accordance with the Ohio Environmental Protection Agency's (OEPA) *Technical Guidance Manual for Hydrogeologic Investigations and Groundwater Monitoring Programs* and the *Technical Guidelines for Well Construction and Ground Water Protection* prepared by the State Coordinating Committee on Groundwater. The monitoring well will be installed such that the screen will intersect the top of the water-bearing unit so that seasonal water table fluctuations will not cause water levels to rise above or fall below the screened interval. The monitoring well will not be screened across more than one water-bearing unit.

The monitoring well casings will consist of 2-inch ID, Schedule 40, polyvinyl chloride (PVC) pipe with flush mount, threaded joints. The well screen will consist of a 10-foot section of 0.010-inch hermetically sealed, factory slotted screen, which will prevent 90 percent of the filter pack from entering the well. A flush threaded bottom plug will be installed at the base of the screen as well. The annular space around

the screened interval will be filled with a 100 percent silica sand filter pack. The filter pack will consist of clean, sorted, well-rounded, acid-resistant, 100 percent silica sand that contains less than two percent flat particles. The filter pack will be certified free of contaminants by the vendor. The filter pack will consist of Global # 7 sand, and will extend at least two feet above the screened section within the borehole. The top of the sand pack will be sounded to verify its depth during placement. Additional filter pack will be placed as required to return the level of the pack to the top of the screen. The well will be sounded until two feet of sand is measured above the top of the screen.

Once the sandpack is emplaced, a bentonite seal will be installed to a minimum depth of two feet above the top of the sandpack and will consist of 100% sodium bentonite chips with a minimum dry bulk density of 70 pounds per cubic foot. The top of the seal will be measured with a weighted tape to verify seal thickness. The remainder of the annulus will be grouted to the surface using a 100% bentonite grout using a decontaminated, side-discharge tremie pipe.

The monitoring well will be completed with flush-mounted surface casings in paved areas and standpipes in unpaved areas. For the flush-mounts, a steel well vault cover will be cemented in place over the well riser with a concrete pad at least two feet in diameter. The standpipes also will be cemented in place with a concrete pad at least two feet in diameter. The monitoring well will be secured as soon as possible after installation. A corrosion-resistant lock will be provided.

2.5 SOIL SAMPLING

Upon retrieval of the sampling barrel from the borehole, the lithology of the soils will be recorded as described in the preceding sections. Then, a portion of the soil will be placed into a resealable bag and allowed to volatilize for approximately 15 minutes. The remaining portions of the soil will be placed into laboratory-provided sampling jars.

After approximately 15 minutes, the tip of a Photo Ionization Detector (PID) will pierce the bag and the headspace of the bag will be taken. This headspace screening reading will be recorded. This procedure will be conducted on all the intervals of soils as the soil borings advance.

One soil sample per soil boring and/or monitoring well will be submitted for laboratory analyses. This sample will be selected based on the headspace screening readings; the sample exhibiting the highest reading will be submitted. If no readings are apparent, visual or olfactory indications of contamination will be used as a secondary basis for sample selection. If these are absent, the sample will be collected from the interval above the saturated zone. In the event groundwater is not encountered, the sample from the terminal depth of the boring will be submitted.

2.6 WELL DEVELOPMENT

Following completion of drilling, and no sooner than 24 hours after well installation, the monitoring well will be developed by purging or bailing until the discharged water is relatively sediment free and the indicator parameters (pH, temperature, and specific conductance) have reached stabilization criteria or until at least 6 well volumes are removed. Developing the well not only removes any sediment but also may improve the hydraulic properties of the sand pack. Development procedures are presented below:

- 1) The well will be developed using decontaminated bailers or pumps. Care will be taken not to introduce the equipment to contaminants during installation.
- 2) Well development will commence and continue until a minimum of three well volumes have been removed and stabilization criteria have been achieved. After each well volume is removed,

stabilization criteria and turbidity will be measured. Stabilization is achieved when variation in temperature is within $\pm 1^\circ\text{C}$, pH is within ± 0.1 units and electrical conductivity (EC) is within ± 5 percent over at least three successive well volumes.

- 3) All measurements, the volume of water removed, and the discharge water color will be recorded.

2.7 GROUNDWATER ELEVATION MEASUREMENT

Prior to sampling monitoring wells, the groundwater elevations will be collected from all wells in the monitoring well network at each site within one calendar day. Measurements will be taken after the well has been installed, developed, and the water level has recovered completely. After removal of the well cap, the well will be allowed to equilibrate prior to groundwater level measurements.

The thickness of any phase-separated hydrocarbon in the monitoring well will be measured with an electronic interface probe. Groundwater levels will be measured from the notch located at the top of the well casing to the nearest 0.01-foot. The static water level will be measured each time the well is sampled, before any sampling equipment enters a well. The water levels will be recorded for each well.

2.8 SURVEY

Groundwater monitoring wells will be surveyed and referenced to a fixed benchmark (i.e. manhole cover, fire hydrant, etc.) on each site. Additionally, all sampling locations will be located by measuring distances from surrounding buildings.

All surveying locations will be reported as the distance in feet. The elevation of monitoring wells will be surveyed at the water level measuring point (notch) on the riser pipe.

2.9 GROUNDWATER SAMPLING

Groundwater samples will be collected using a submersible pump with a modified low flow (500 ml). When numerous monitoring wells are to be sampled in succession, those wells expected to have low levels of contamination or no contamination will be sampled prior to those wells expected to have higher levels of contamination. This practice will help reduce the potential for cross contamination between wells. All sampling data will be recorded.

The temperature, pH, EC, and turbidity of the purged water will be measured and recorded. The sample may be collected after the above parameters have stabilized. Stabilization is defined as three consecutive measurements of the parameters measured within these ranges: temperature ($\pm 2^\circ\text{C}$), pH (± 0.1 SU), electrical conductivity (± 3 percent), and turbidity within 10 percent. Although turbidity readings should be at 10 NTUs or lower at the completion of purging, a maximum of six well volumes will be purged prior to collecting the sample.

2.10 SAMPLE HANDLING

Samples will not be numbered contiguously for the Project; but contiguously for each Site. For example, a soil sample will be identified by the Site Number, whether it came from a surface sample (SS) soil boring (SB) or monitoring well (MW), the number of that location, and the depth. Sample 57-MW2-0002 indicates the sample was collected at Site 57, Monitoring Well #2, from 0 to 2 feet bgs. A groundwater sample will be identified by the Site Number, the monitoring well number and the date collected. Sample 57-MW2-021506 indicates the sample was collected at Site 57, Monitoring Well #2, on February 15, 2006.

Samples collected for quality assurance/quality control purposes will be labeled as such. Field duplicates/replicates will be labeled as described in the previous paragraph; however, a D will be added to the end of the sample identification. Sample 57-MW2-0002D indicates the sample was collected at Site 57, Monitoring Well #2, from 0 to 2 feet bgs and is a duplicate sample.

Matrix spikes/matrix spike duplicates will be labeled as described in the previous paragraph; however, a MS/MSD will be added to the end of the sample identification. Sample 57-MW2-021506MS/MSD indicates the sample was collected at Site 57, Monitoring Well #2, on February 15, 2006 and is a matrix spike/matrix spike duplicate sample.

Trip blanks and equipment blanks will be labeled as such and also will reference the date collected. Field Blank 021306 indicates a field blank was collected on February 13, 2006.

Immediately after the samples are labeled for off-site laboratory analysis, each sample bottle will be sealed in a plastic bag and wrapped with shock-absorbent materials, such as bubble wrap, to prevent movement of sample containers during transport. Then, the samples will be placed in a sturdy ice chest (cooler). The cooler will be packed with resealable double-bagged ice packs and sealed with packaging tape.

The chain-of-custody sample log sheet(s) will be filled out in indelible ink, placed in a resealable plastic bag, and taped to the inside lid of the cooler. Each sample contained in the cooler will be specified on the chain-of-custody records by the sampling identification number. Sample containers will be packaged to minimize potential breakage and to comply with Department of Transportation (DOT) requirements.

2.11 SAMPLE ANALYSES

The soils from sites with a history of petroleum product consumption, storage or use will be analyzed for the following: volatile organic compounds (VOCs) via EPA Method SW-846 8260, semivolatile organic compounds (SVOCs) via EPA Method SW-846 8270, total petroleum hydrocarbons (TPH) gasoline range organics (GRO) and diesel range organics (DRO) via EPA Method SW-846 8015, and Resource Conservation and Recovery Act (RCRA) Metals via EPA Method SW-846 6010 and 7071. The soils from sites without this history will be analyzed for VOCs via EPA Method SW-846 8260, SVOCs via EPA Method SW-846 8270 and RCRA Metals via EPA Methods SW-846 6010 and 7071. Surface soil samples collected from Site 27 will be analyzed for polychlorinated biphenyls (PCBs) via EPA Method SW-846 8082.

The groundwater samples will be analyzed for VOCs via EPA Method SW-846 8260, SVOCs via EPA Method SW-846 8270 and RCRA Metals via EPA Methods Sw-846 6010 and 7071.

These analyses are further detailed in **Table 1**.

2.12 QUALITY ASSURANCE/QUALITY CONTROL

With the exception of the water level indicator and the interface probe, field instruments will be calibrated at least once per day at the beginning of the day's activities.

Precision, accuracy, and potential contamination will be measured in the field through the use of Equipment Blanks (drilling equipment only), Field Duplicates/Replicates, and Matrix Spike/Matrix Spike Duplicates. Equipment Blanks and Matrix Spike/Matrix Spike Duplicates will be collected at the rate of

one per 20 samples. Field Duplicates/Replicates will be collected at the rate of one per 20 samples. Trip blanks will be submitted daily; each cooler containing soil or groundwater samples for VOCs analysis will have a trip blank.

2.13 FIELD LOGS

During the advancement of the borings and monitoring wells, observations regarding lithology, potential contamination, headspace screening readings, and other pertinent information will be recorded using electronic logging software. The units will be downloaded at the end of each field day at the URS office in Cleveland, Ohio.

Boring logs, well completion and construction details, groundwater quality parameters, and other field information will be uploaded to a secure website created for this project. ODOT will be able to review real time information regarding the progression of the project.

2.14 DECONTAMINATION PROCEDURES

All equipment that may directly or indirectly contact samples will be decontaminated before and after each use. Decontamination may consist of varying combinations of high-pressure hot water rinse, Liquinox[®] or Alconox[®] wash, and potable water rinse. Decontamination water will be contained in 55-gallon drums and disposed properly, as discussed in **Section 2.15**.

Drilling, sampling, monitoring well installation and other equipment will be decontaminated using the following procedures:

- Drill rig augers, drill rods, bits, etc. will be steam cleaned before use and between borings.
- Soil and shallow groundwater sampling equipment will be cleaned with an Alconox[®] or Liquinox[®] and potable water solution and rinsed with potable water.
- Electronic water level sounders and water quality probes will be cleaned with an Alconox[®] or Liquinox[®] and potable water solution and rinsed with potable water.

The following procedure will be used to decontaminate large pieces of equipment, such as casings, auger flights, pipe and rods. The external surfaces of equipment will be washed with high-pressure hot water and Liquinox[®], or equivalent laboratory-grade detergent, and if necessary, scrubbed until all visible dirt, grime, grease, oil, loose paint and/or rust flakes have been removed. The equipment will then be rinsed with potable water. The inside surfaces of casing, drill rod, and auger flights will also be washed as described.

The following procedure will be used to decontaminate sampling and drilling devices, such as split spoons, bailers, and augers, which can be hand-manipulated. For sampling and smaller drilling devices the equipment will be scrubbed with a solution of potable water and Liquinox[®], or equivalent laboratory-grade detergent, and rinsed with potable water.

2.15 WASTE HANDLING AND DISPOSAL

Soil cuttings generated from boring installation and water generated from well development and purging will be contained separately in 55-gallon drums. Decontamination water will be containerized in 55-gallon drums. The drums will be labeled using a paint pen with date, project, boring or well designation, and type of waste (i.e., soil cuttings, purge water). In addition, non-hazardous drum labels will be

completed and affixed to each drum. All drums will be staged in a selected location. Disposal options will be presented following receipt of laboratory results.

2.16 GEOPHYSICAL SURVEY

A magnetometer survey has been determined to be the most applicable geophysical survey technique for the Project. It is assumed that abandoned or orphaned USTs associated with these Sites likely were constructed of steel. The magnetometer survey relies on the ability of the equipment to detect a contrast in the magnetic properties of the target (in this case the steel USTs) and the surrounding soil. This contrast would be present if a UST constructed of ferrous (iron-containing) material were present. The magnetometer is insensitive to the fiberglass material used in present day petroleum USTs.

The survey will be conducted using a Geometrics G-858 magnetometer operated with a two vertically oriented magnetometer sensors to collect gradient data. In this configuration, the magnetometer is capable of detecting small ferrous targets, such as a single drum to a depth of 18 feet or a UST at greater depths. Measurements will be collected at 1.5-second intervals as the operator walks along parallel survey lines spaced 5-foot on center. Following completion of the survey, the data will be transferred to a computer file for reduction.

Data reduction will be conducted using software developed by Geometrics. The reduced data will be plotted using color to denote areas of high and low magnetic gradients. Areas of high gradient would lie directly over ferrous objects. The color gradient plot then will be compared to a site plan and field notes in an effort to correlate observed surface features to areas of high magnetic gradient.

In the event site features interfere with the ability of the equipment to effectively plot subsurface features, exploratory test pits and/or trenches may be required to locate USTs. This process would require the use of an excavator and operator and would be conducted under the direction of URS personnel.

The geophysical survey sites are identified on **Table 1**.

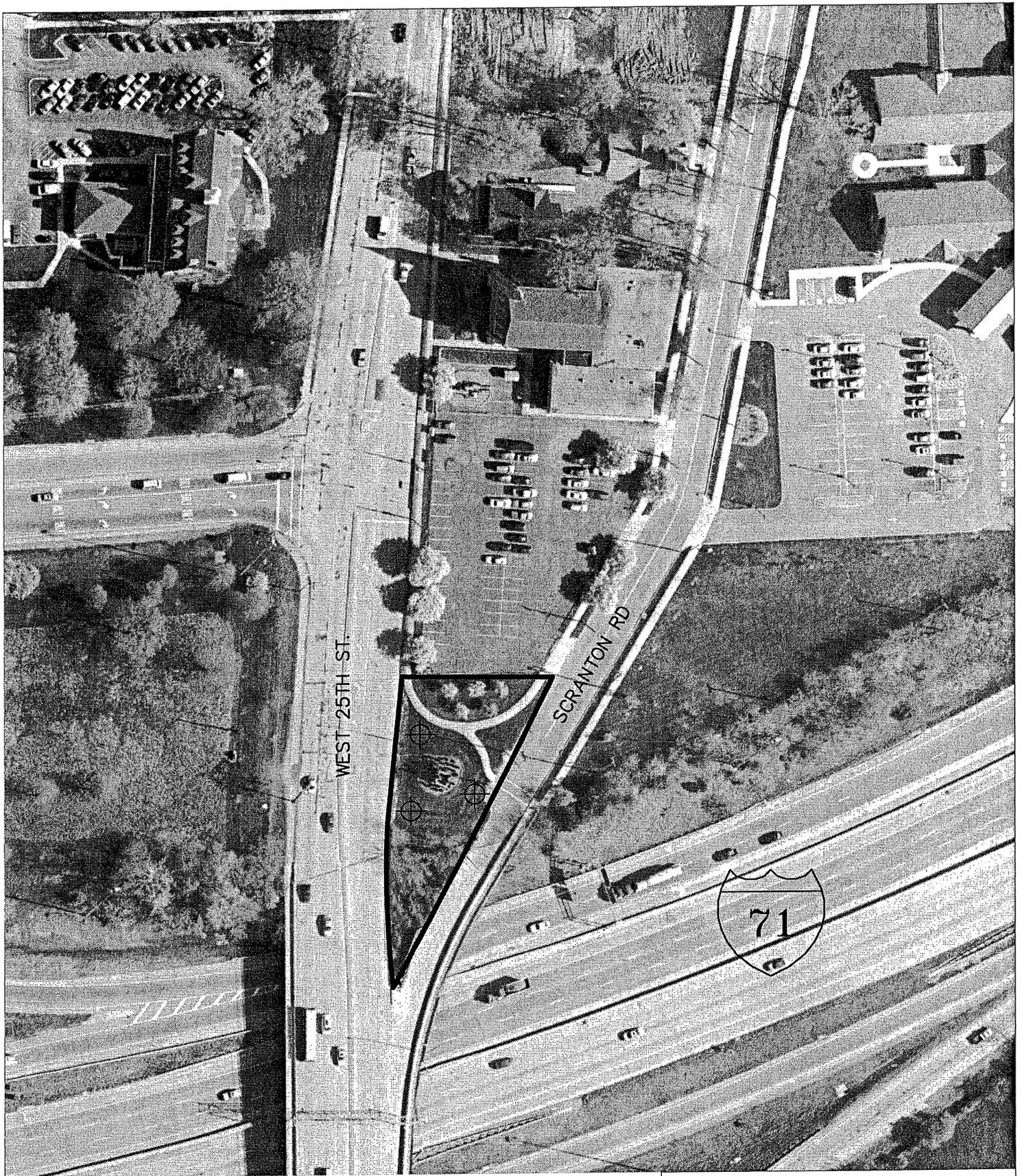
2.17 DATA REVIEW

All data generated by the analytical laboratory will be reviewed by a URS chemist to evaluate and document data quality. A standard review includes assessment of supporting quality control (QC) parameters such as laboratory blank results, laboratory control sample recoveries, and other batch QC results, as well as detection limits, holding times, and information provided in the report narrative. A standard review does not include reconstruction of the analytical data.

2.18 REPORTING

This portion of the Phase II ESA will culminate in the production of a Phase II Report in accordance with ODOT guidelines. This report will summarize the field activities, present the field observations, and provide the analytical data from the soil and groundwater samples and the geophysical analysis from the magnetometer survey. The analytical data will be compared to comparison standards typical for the State of Ohio; the Bureau of Underground Storage Tank Regulations (BUSTR) standards or the OEPA Voluntary Action Program (VAP) generic single-chemical direct contact standards.

3.0 SAMPLE DIAGRAMS



LEGEND

⊕ Proposed Soil Boring

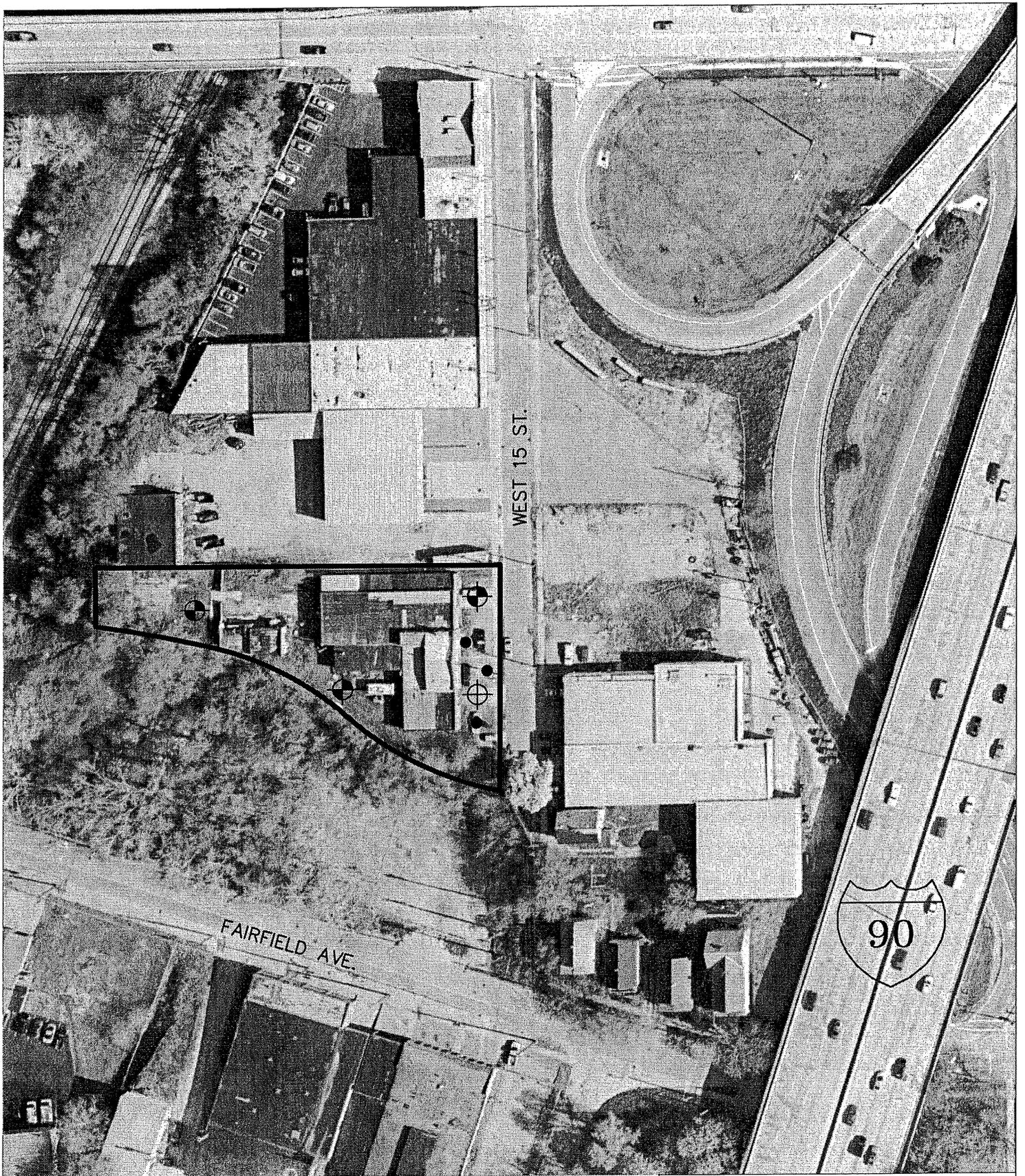
0 100
SCALE 1" = 100'



Cleveland Innerbelt Study
Cleveland, Ohio

Figure 2-A
Sample Location Map, Site #2
3553 West 25th Street

URS



LEGEND

-  Proposed Soil Boring
-  Proposed Monitoring Well
-  Proposed Surface Sample

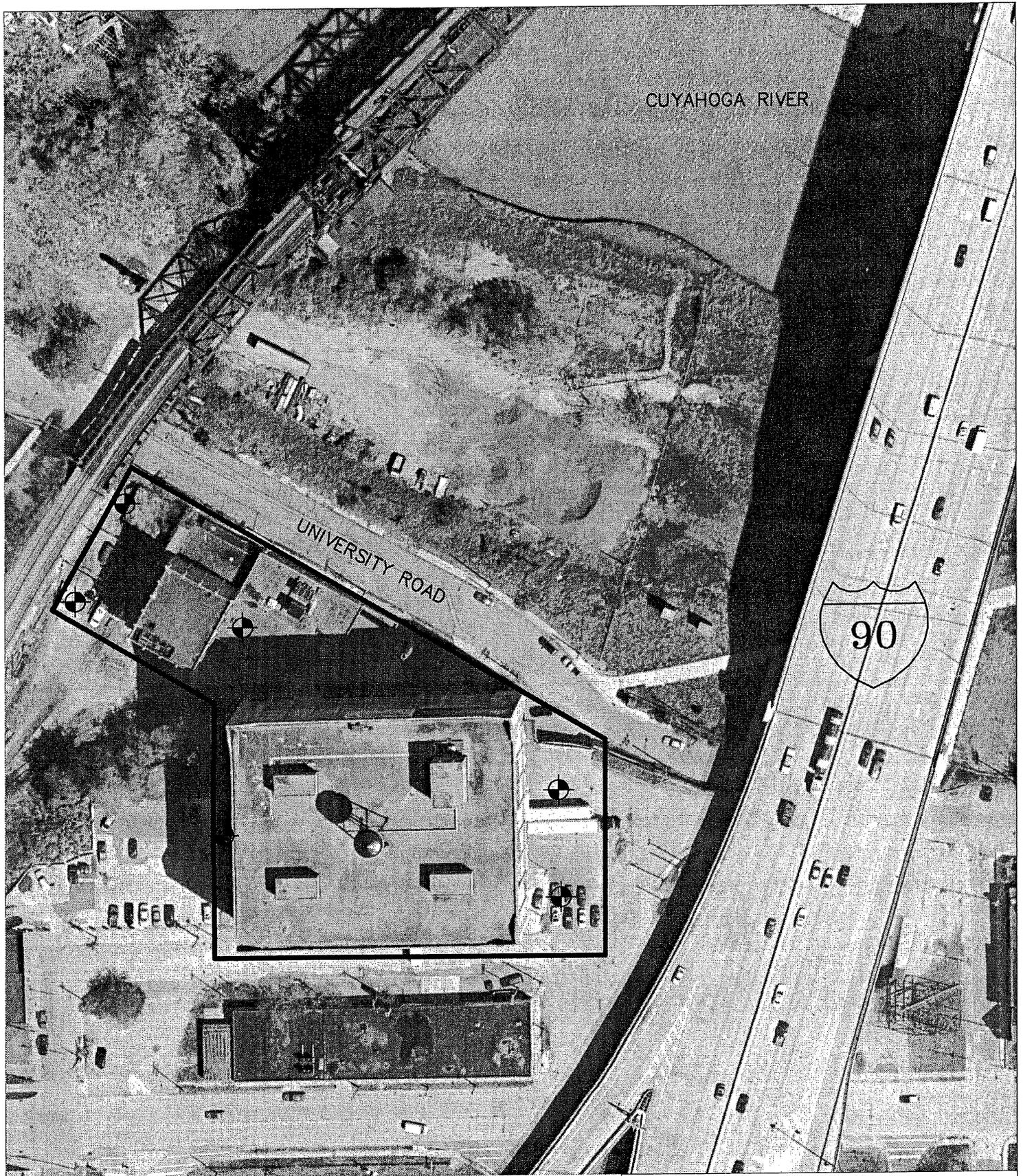
0 100
SCALE 1" = 100'



Cleveland Innerbelt Study
Cleveland, Ohio

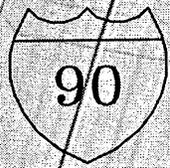
Figure 2-B
Sample Location Map, Site #13
2132-2150 West 15th Street

URS



CUYAHOGA RIVER

UNIVERSITY ROAD



LEGEND

 Proposed Monitoring Well

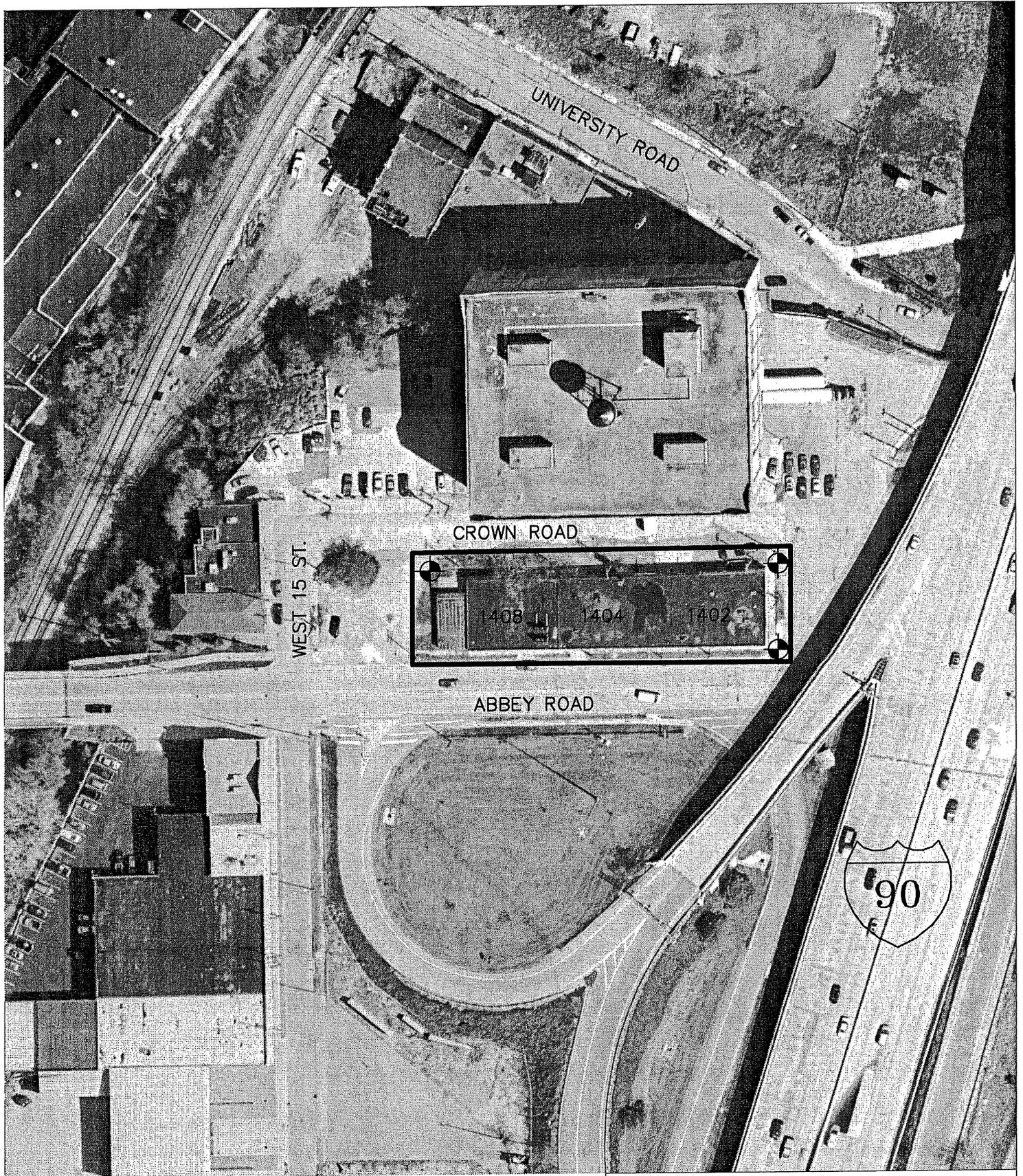
0 100
SCALE 1" = 100'



Cleveland Innerbelt Study
Cleveland, Ohio

Figure 2-C
Sample Location Map, Site #14
1425 University Road / 2000 W. 14TH Street





LEGEND

 Proposed Monitoring Well

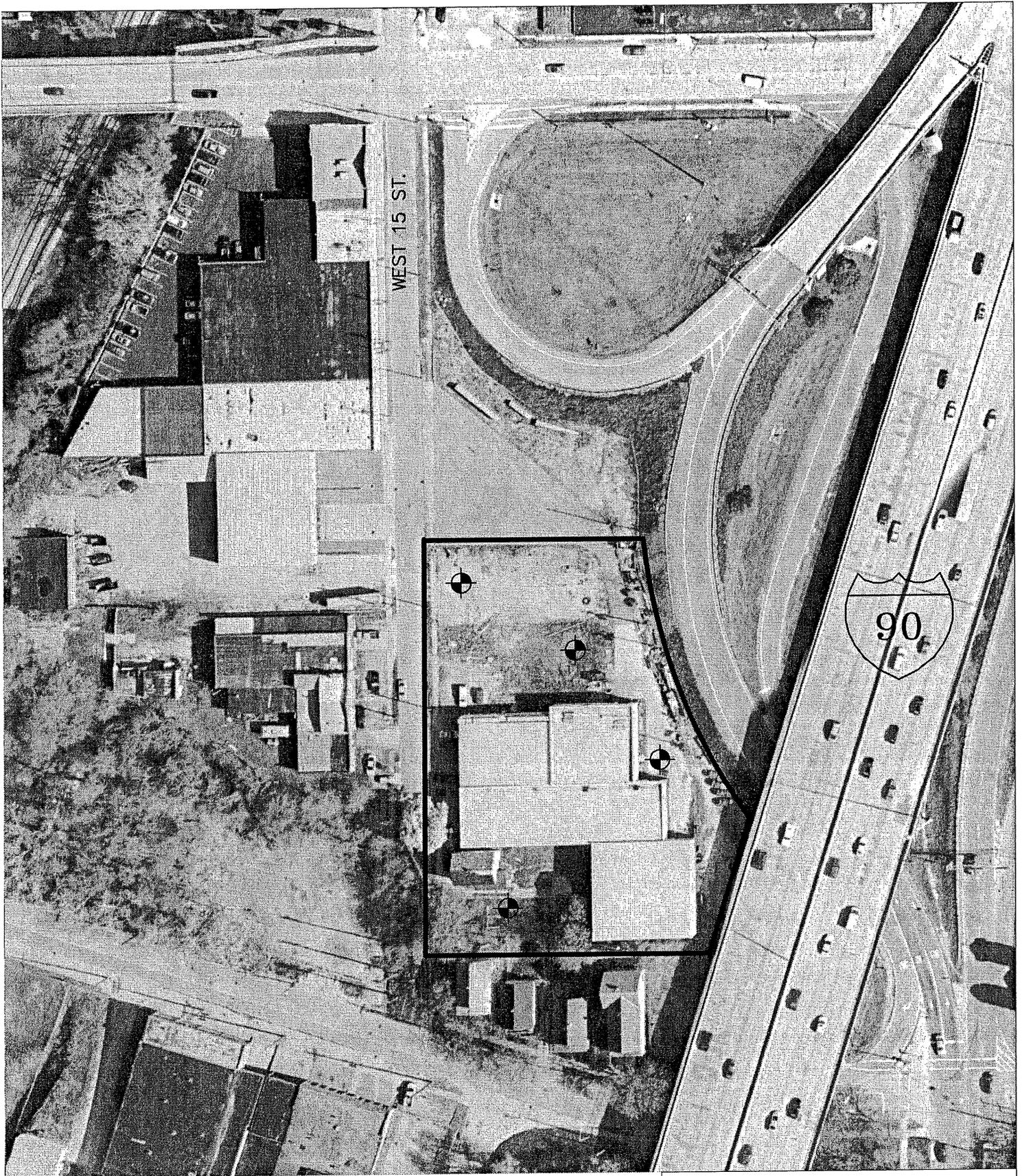
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SCALE 1" = 100'



Cleveland Innerbelt Study
Cleveland, Ohio

Figure 2-D
Sample Location Map, Site #15
1402-1408 Abbey Road

URS



LEGEND

 Proposed Monitoring Well

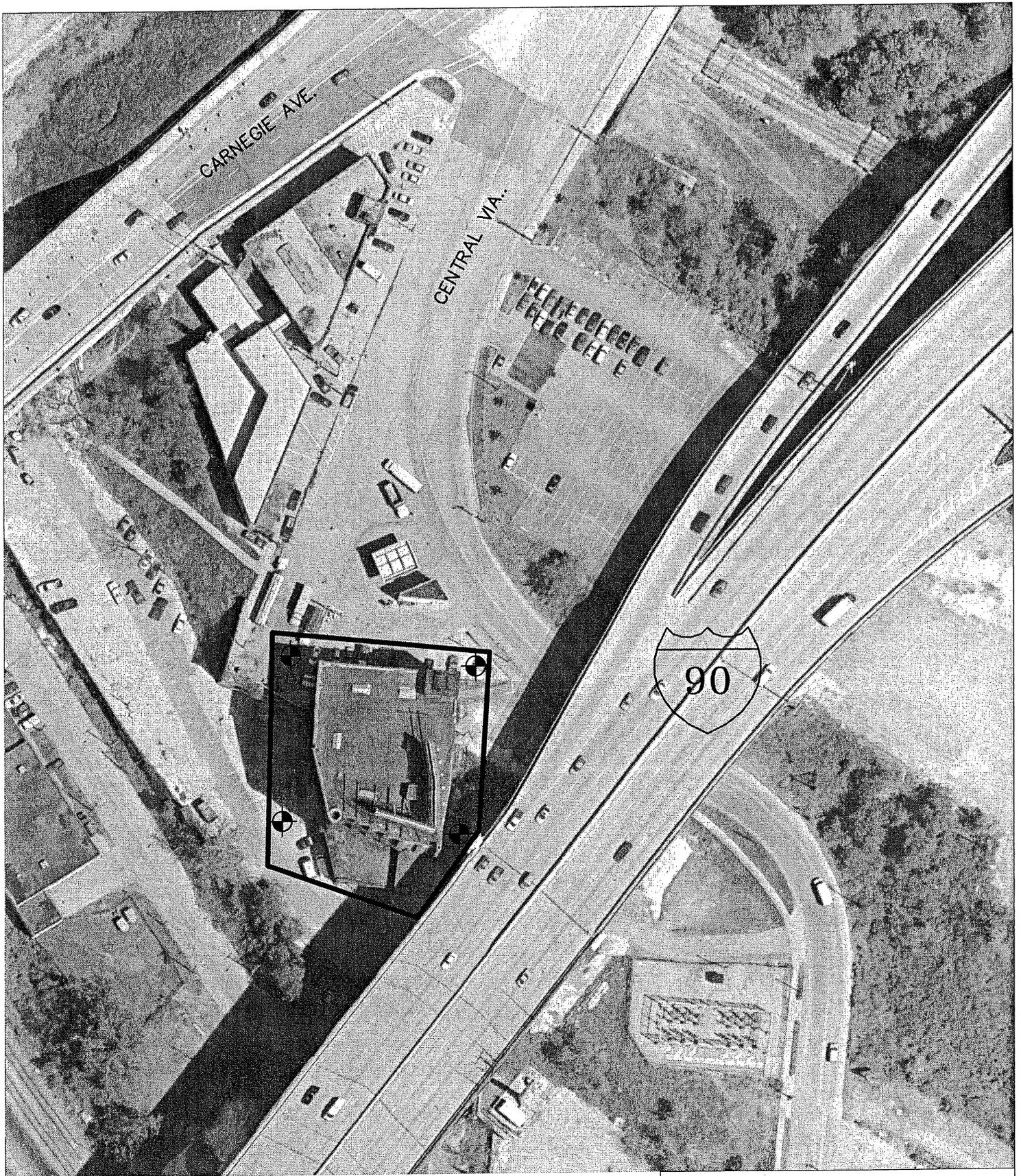
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Cleveland Innerbelt Study
Cleveland, Ohio

Figure 2-E
Sample Location Map, Site #16
West 15th Street

URS



LEGEND

 Proposed Monitoring Well

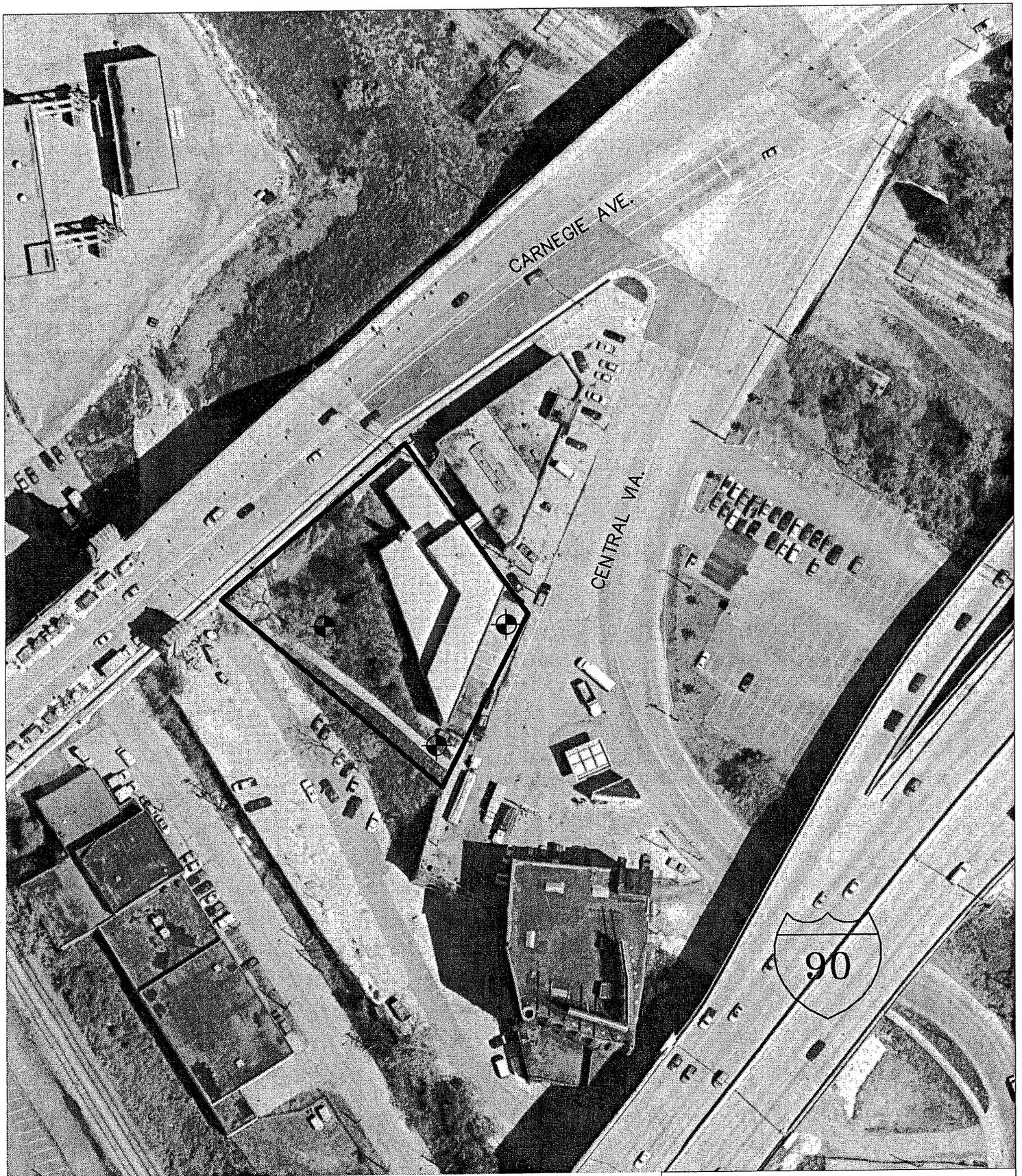
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SCALE 1" = 100'



Cleveland Innerbelt Study
Cleveland, Ohio

Figure 2-F
Sample Location Map, Site #17
308 Central Viaduct

URS



LEGEND

 Proposed Monitoring Well

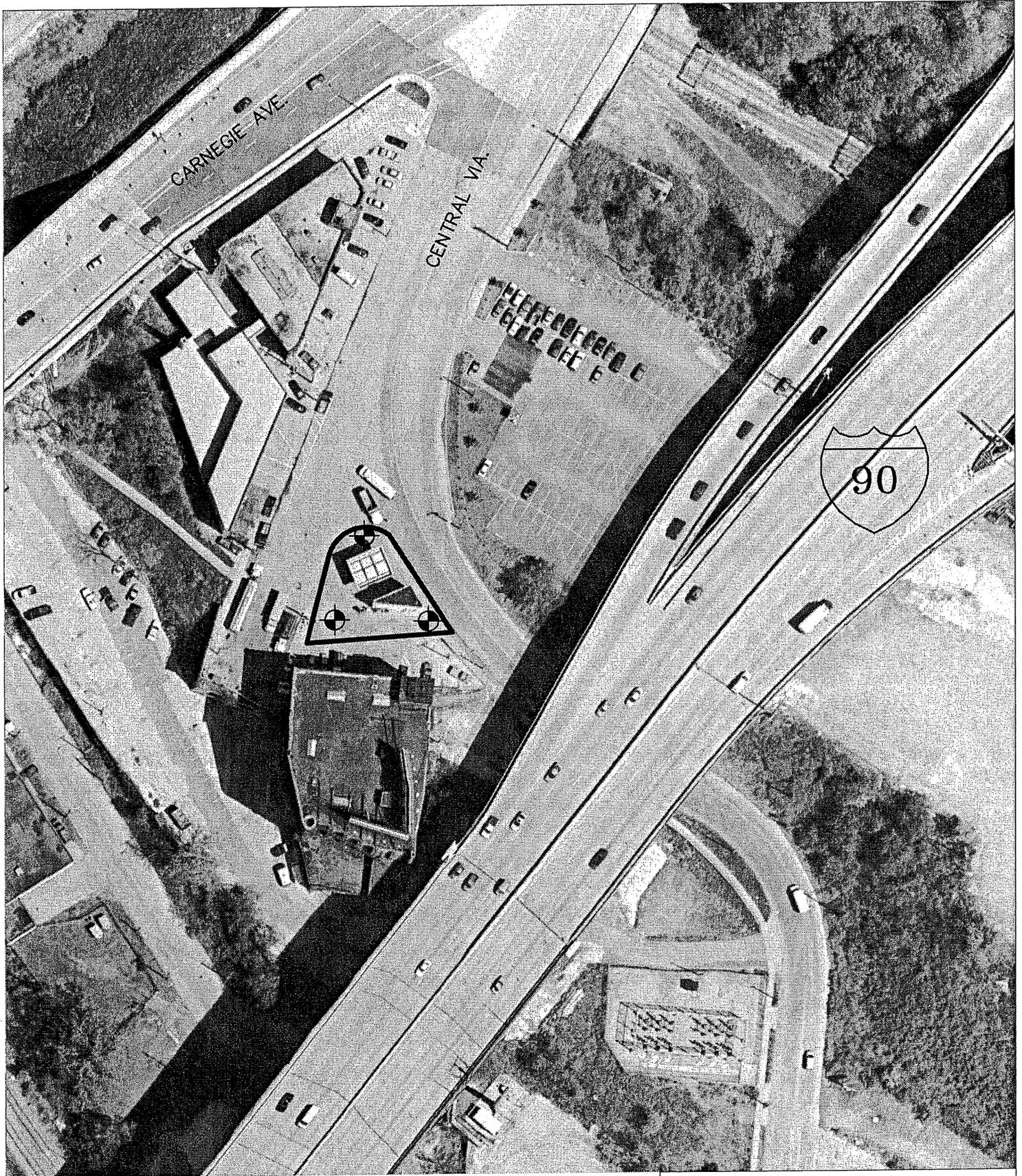
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SCALE 1" = 100'



Cleveland Innerbelt Study
Cleveland, Ohio

Figure 2-G
Sample Location Map, Site #18
310 Carnegie Avenue

URS



LEGEND

 Proposed Monitoring Well

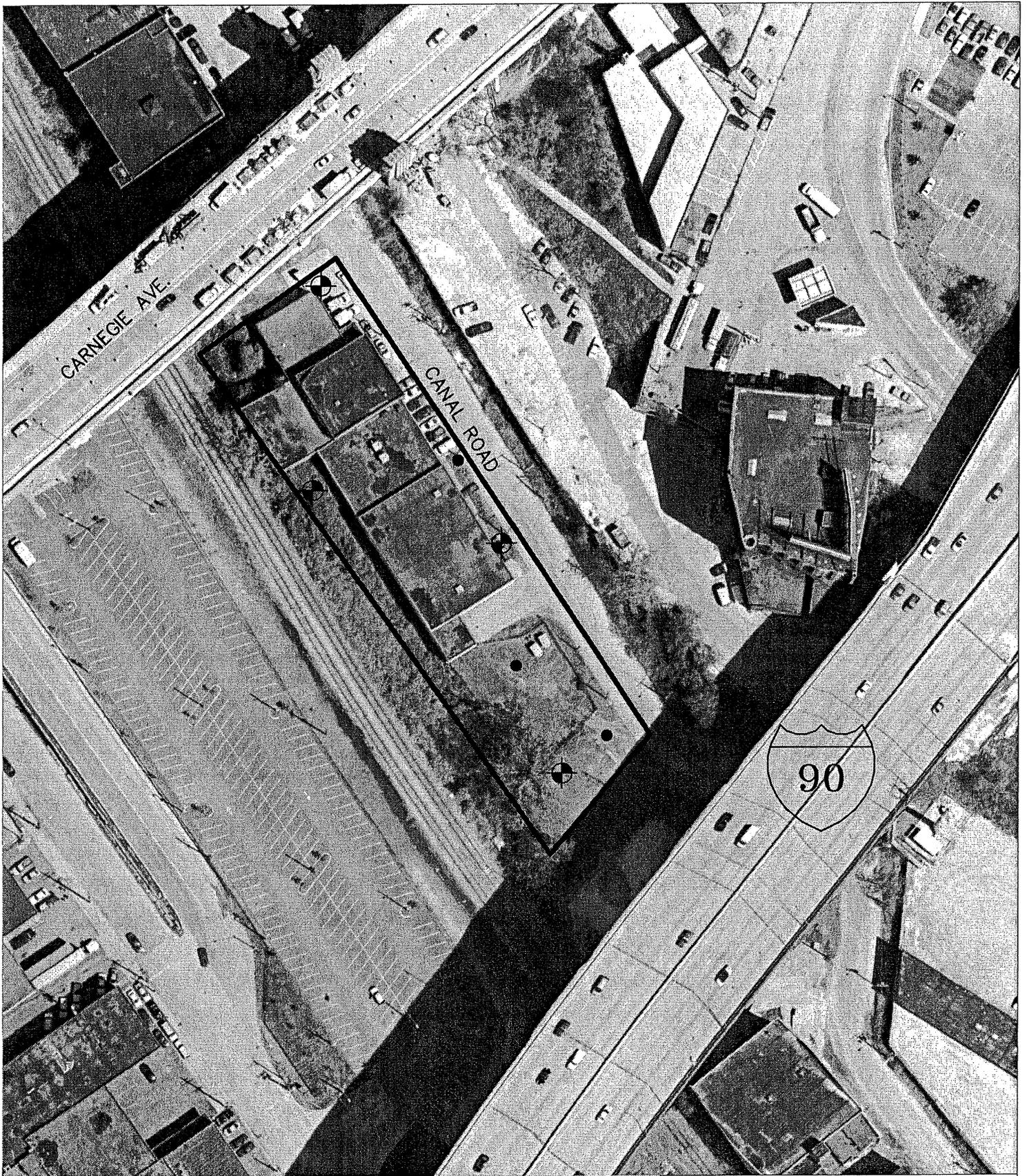
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Cleveland Innerbelt Study
Cleveland, Ohio

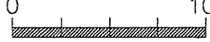
Figure 2-H
Sample Location Map, Site #19
206-300 Central Viaduct

URS



LEGEND

-  Proposed Monitoring Well
-  Proposed Surface Sample

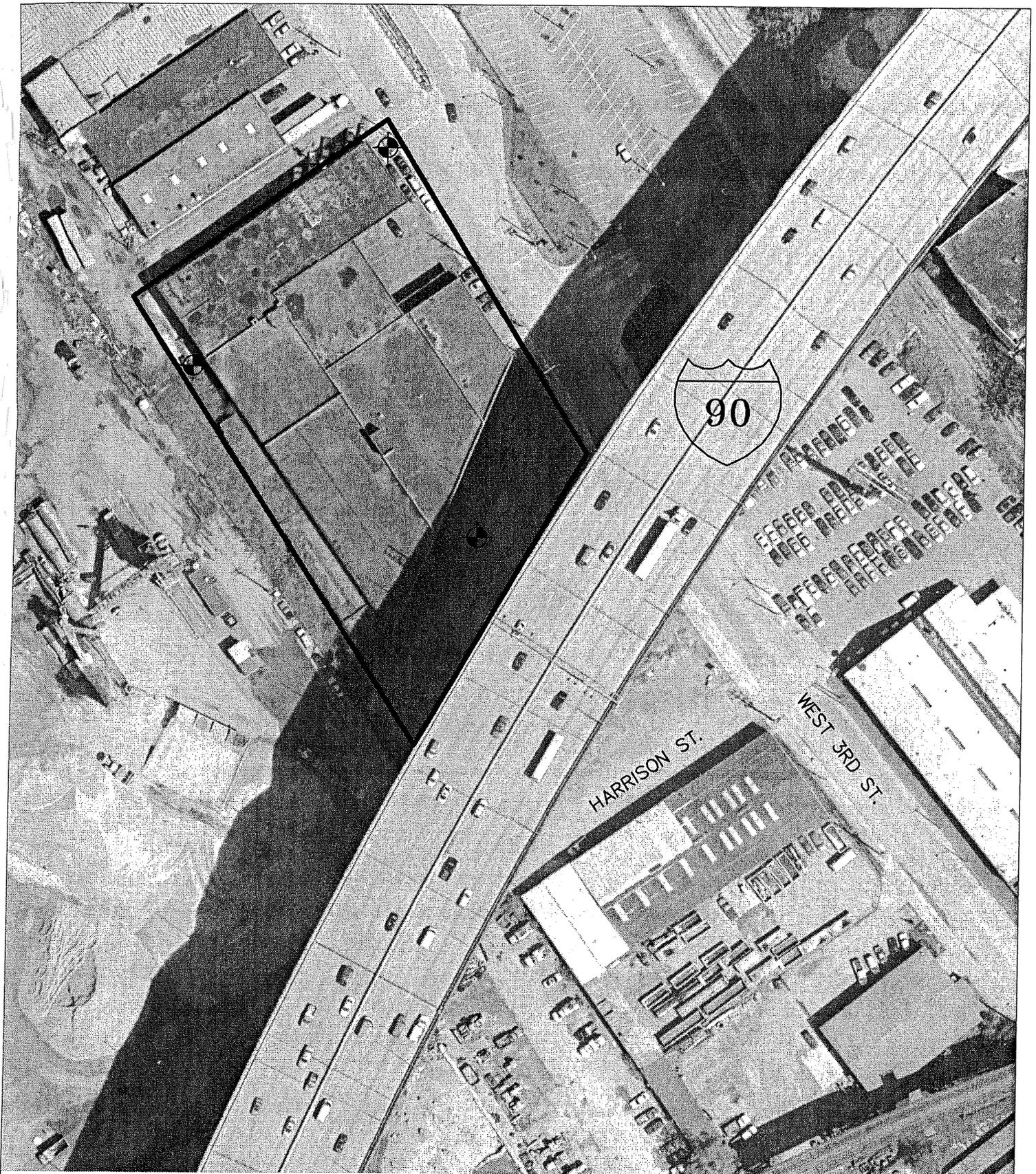
0 100

 SCALE 1" = 100'



Cleveland Innerbelt Study
 Cleveland, Ohio

Figure 2-I
 Sample Location Map, Site #20
 2394 Canal Road

URS



LEGEND

 Proposed Monitoring Well

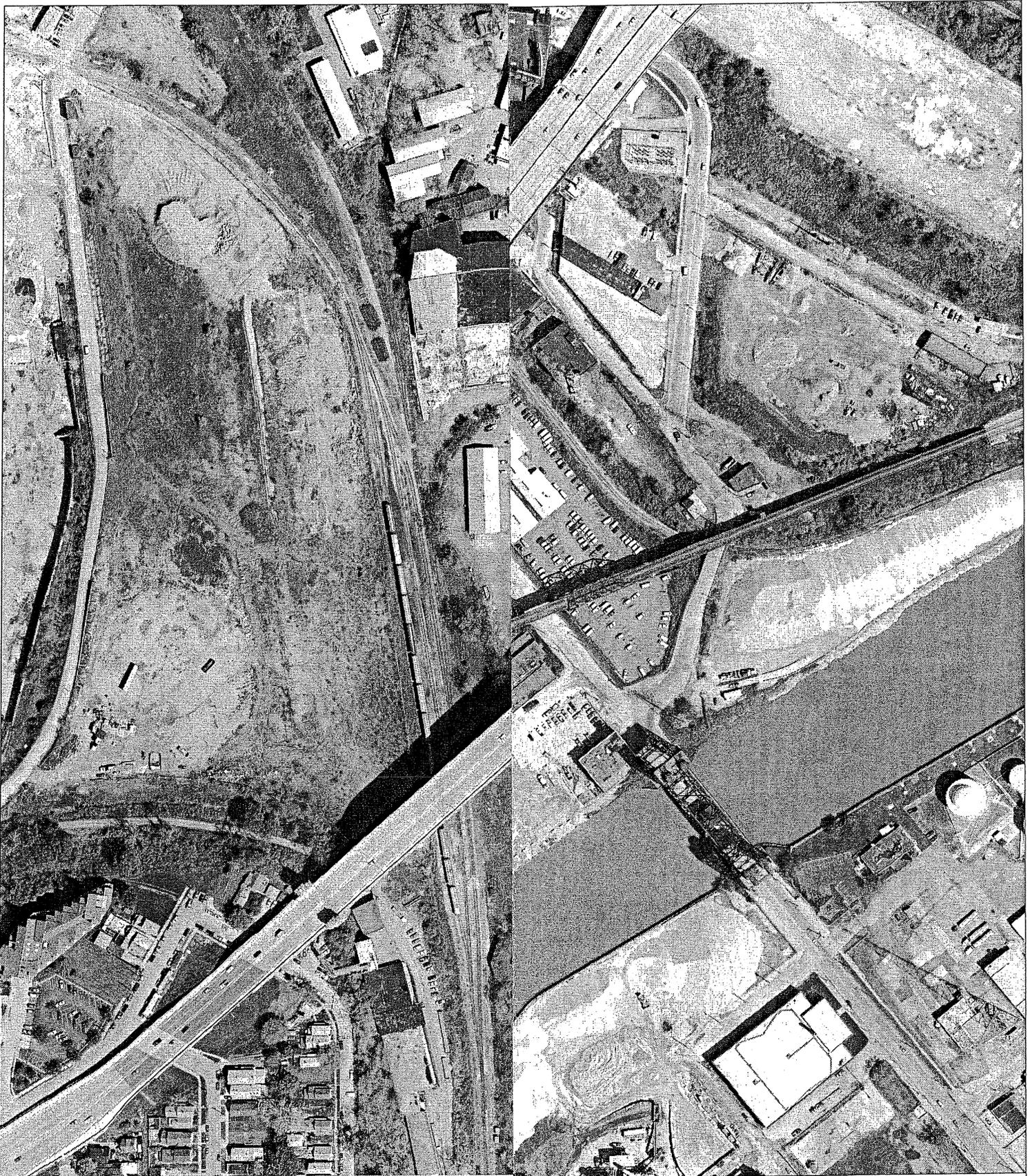
0 100
SCALE 1" = 100'



Cleveland Innerbelt Study
Cleveland, Ohio

Figure 2-J
Sample Location Map, Site #21
1996 West 3rd Street

URS



LEGEND

-  Propos
-  Propos

0 250
SCALE 1" = 250'



Cleveland Innerbelt Study
Cleveland, Ohio

Figure 2-K
Sample Location Map, Site #22
West Fourth Street

URS



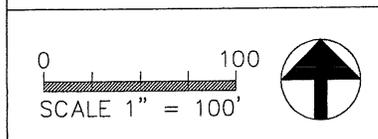
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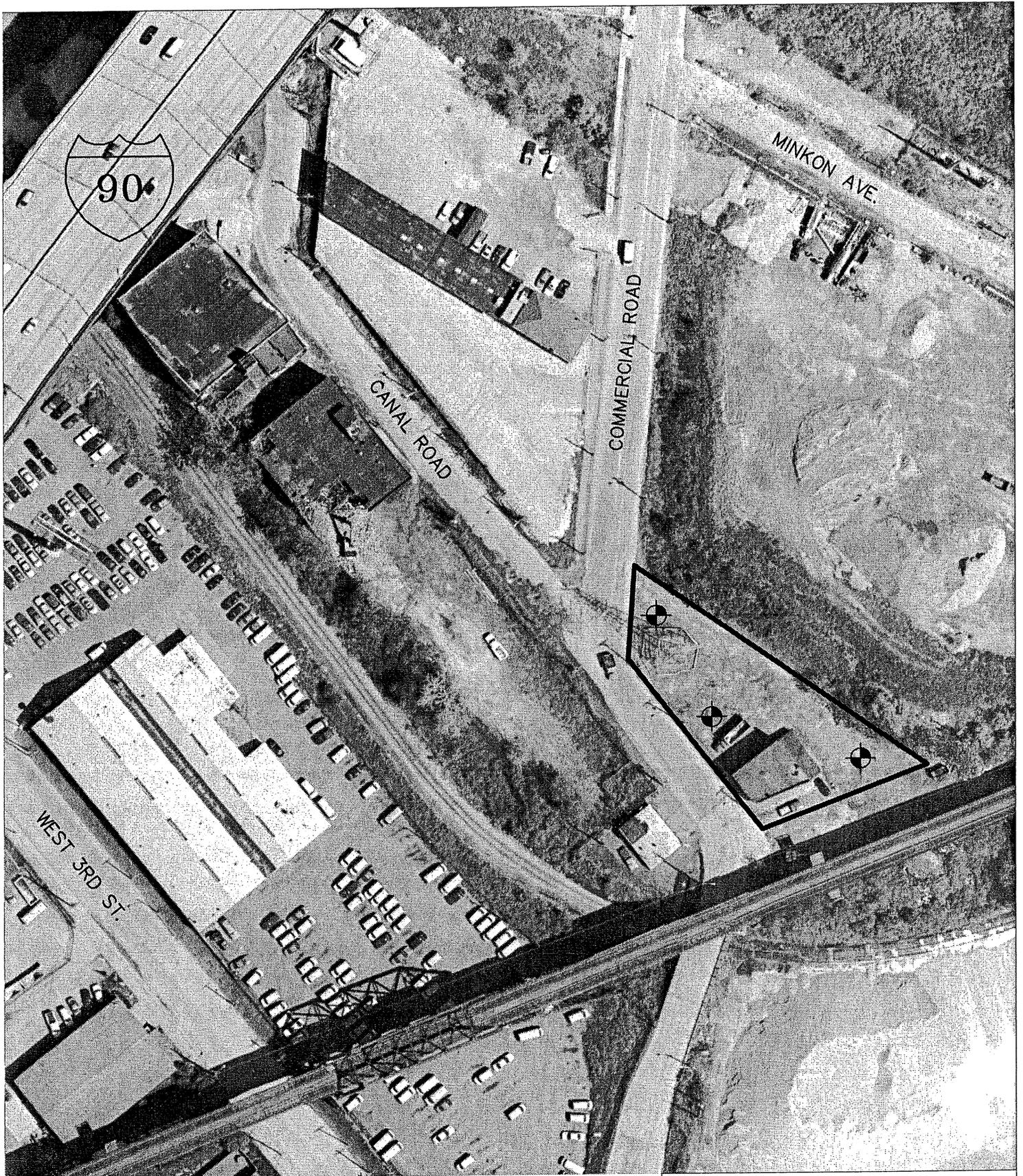
-  Proposed Monitoring Well
-  Proposed Surface Sample

Cleveland Innerbelt Study
Cleveland, Ohio

Figure 2-L
Sample Location Map, Site #23
840 Minkon Avenue

URS





LEGEND

 Proposed Monitoring Well

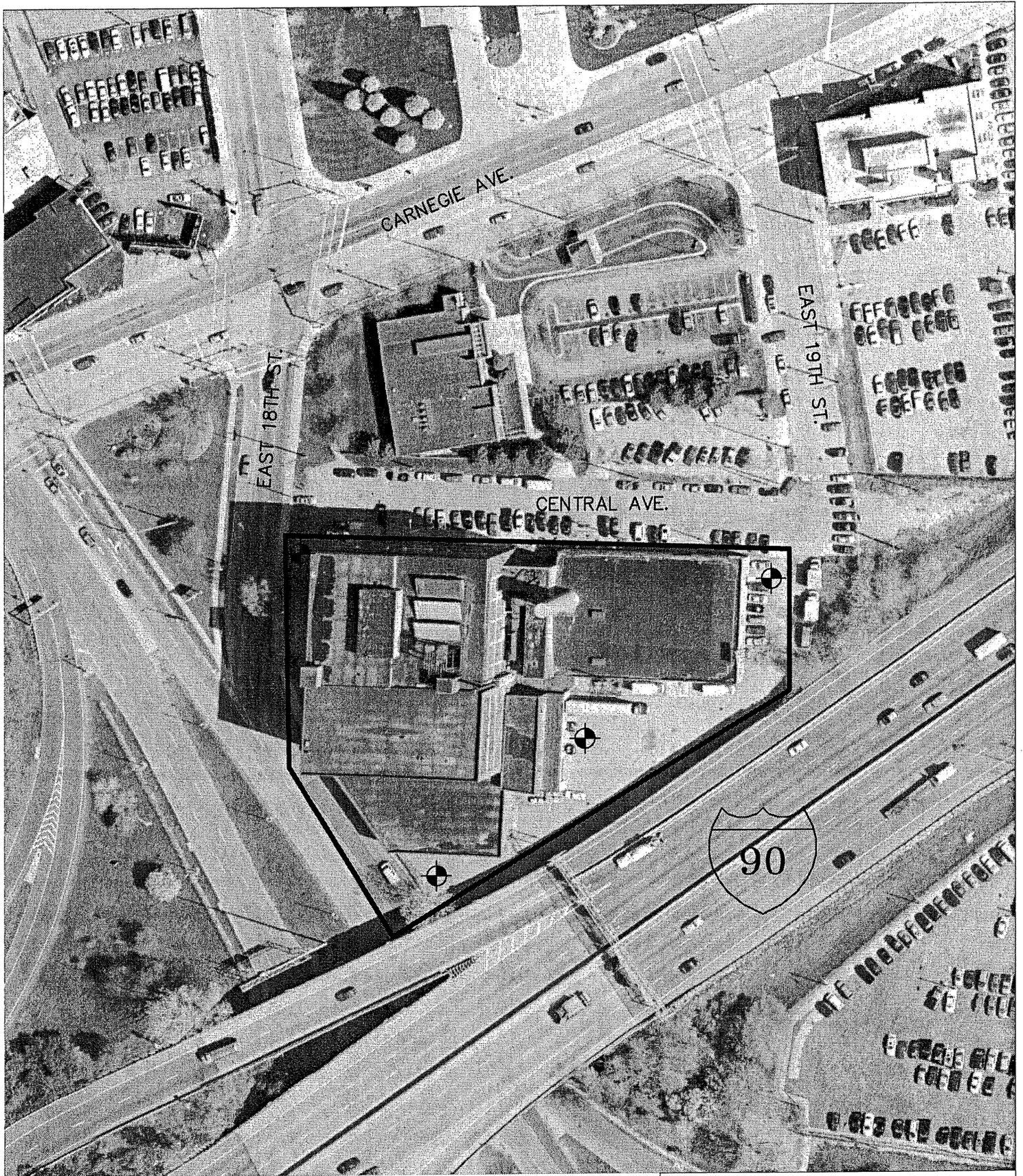
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Cleveland Innerbelt Study
Cleveland, Ohio

Figure 2-M
Sample Location Map, Site #24
2515 Canal Road

URS



LEGEND

 Proposed Monitoring Well

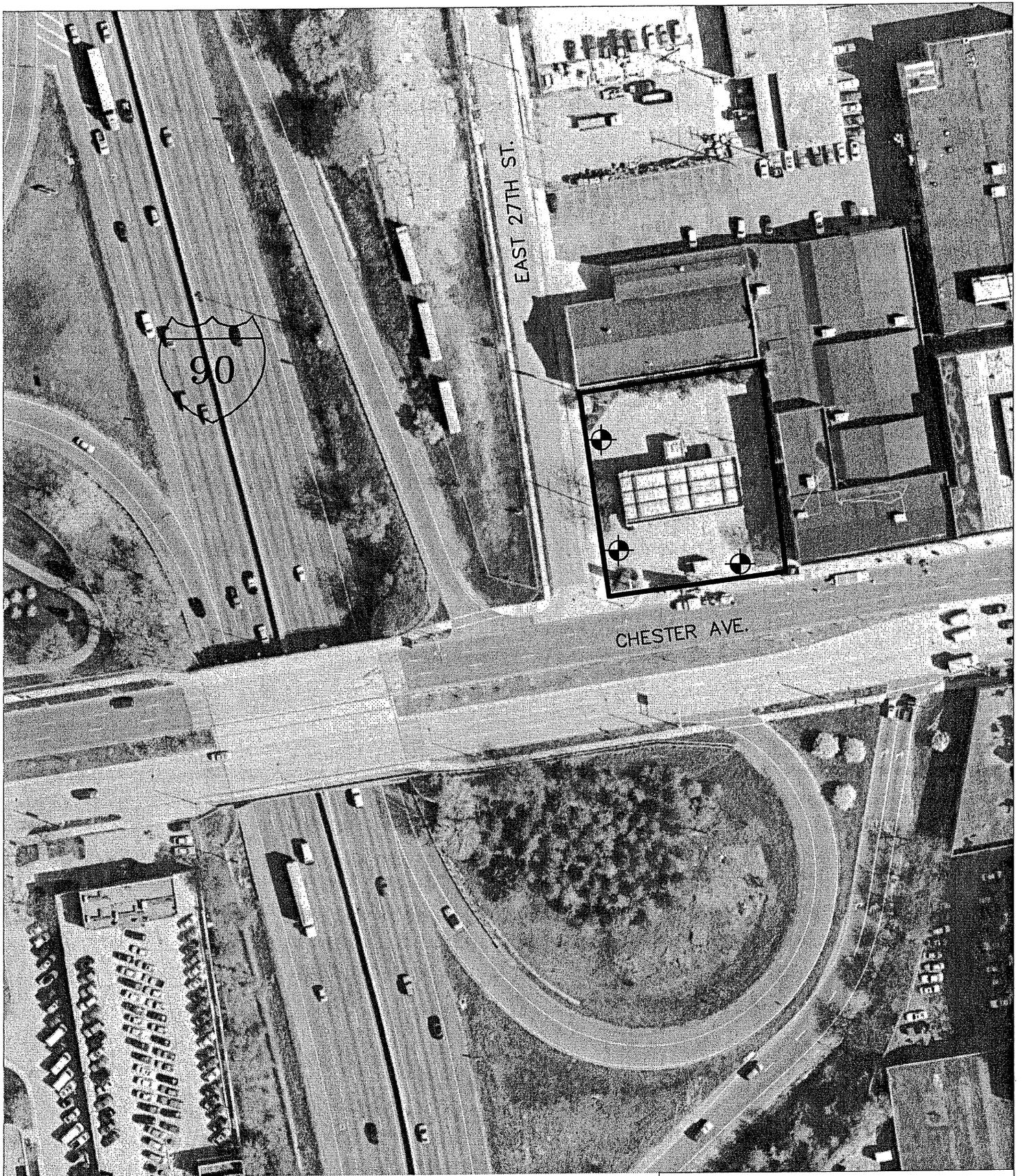
Cleveland Innerbelt Study
Cleveland, Ohio

Figure 2-N
Sample Location Map, Site #27
1802 Central Avenue

URS

0 100
SCALE 1" = 100'





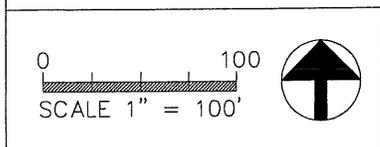
LEGEND

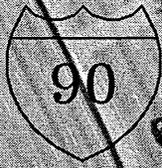
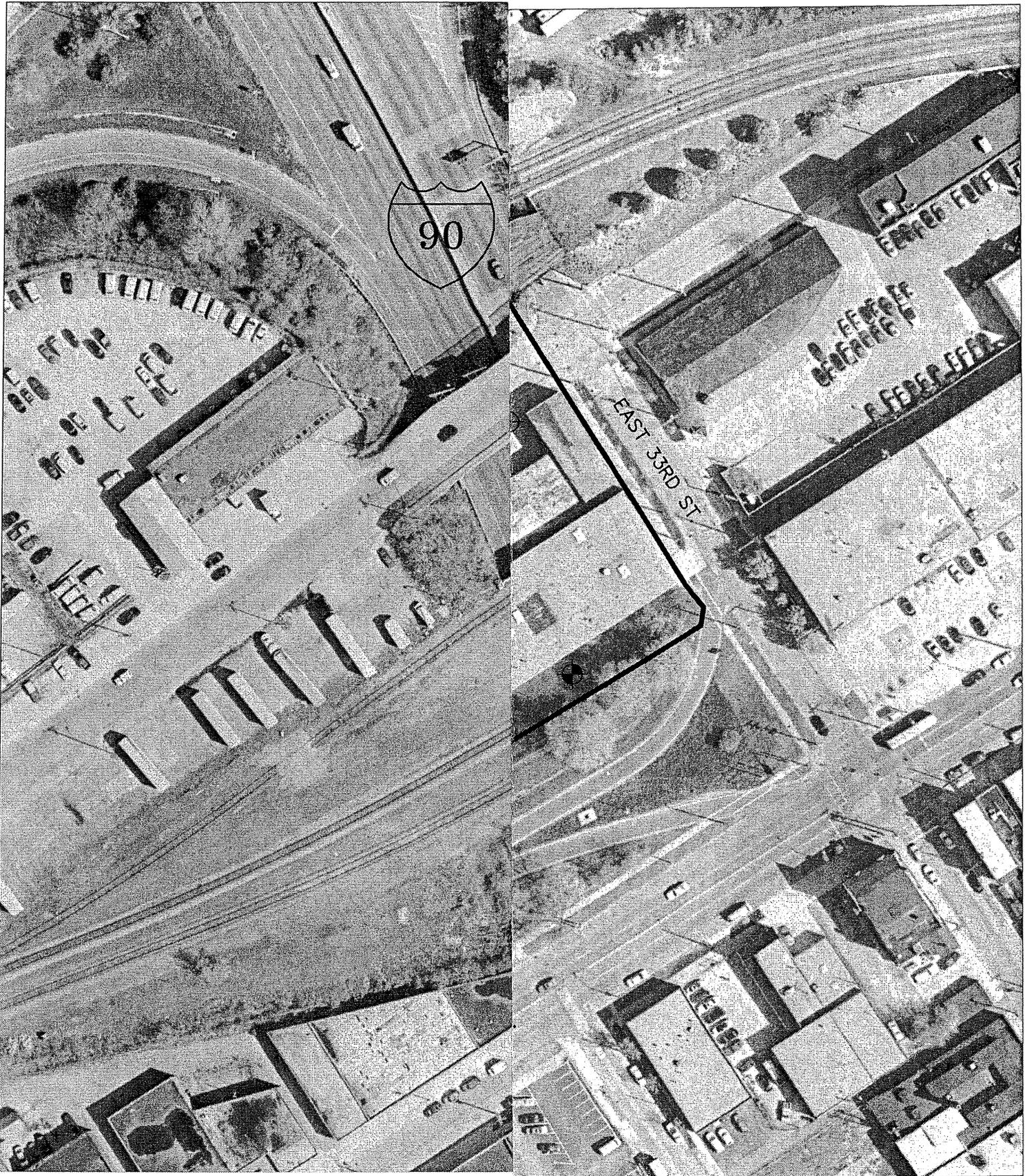
 Proposed Monitoring Well

Cleveland Innerbelt Study
Cleveland, Ohio

Figure 2-O
Sample Location Map, Site #29
2701 Chester Avenue

URS





EAST 33RD ST

LEGEND

-  Proposed
-  Proposed

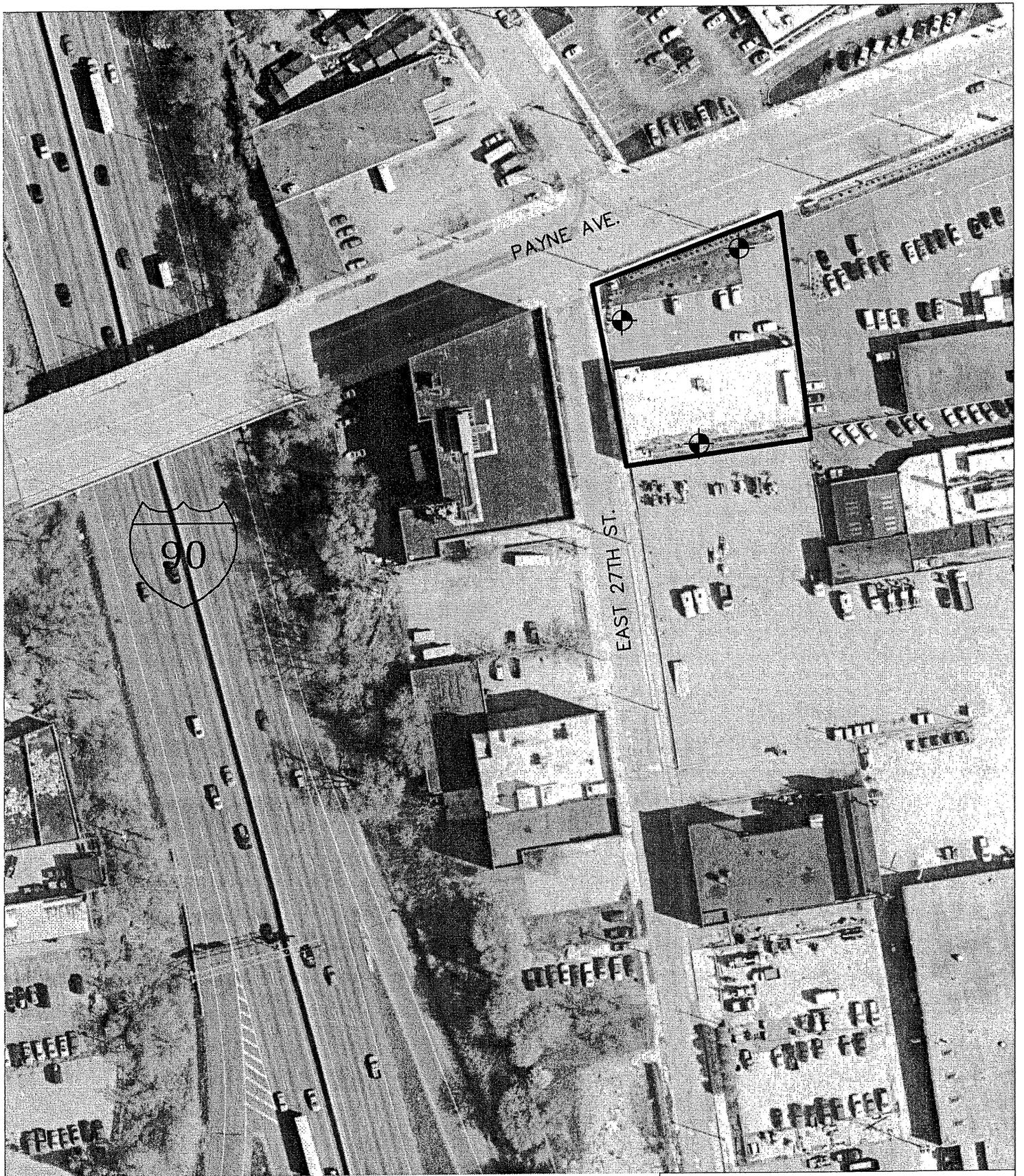
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SCALE 1" = 100'



Cleveland Innerbelt Study
Cleveland, Ohio

Figure 2-P
Sample Location Map, Site #33
3100 Hamilton Avenue





LEGEND

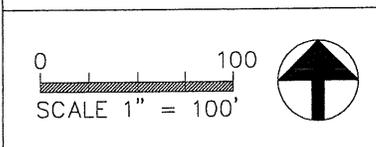
 Proposed Monitoring Well

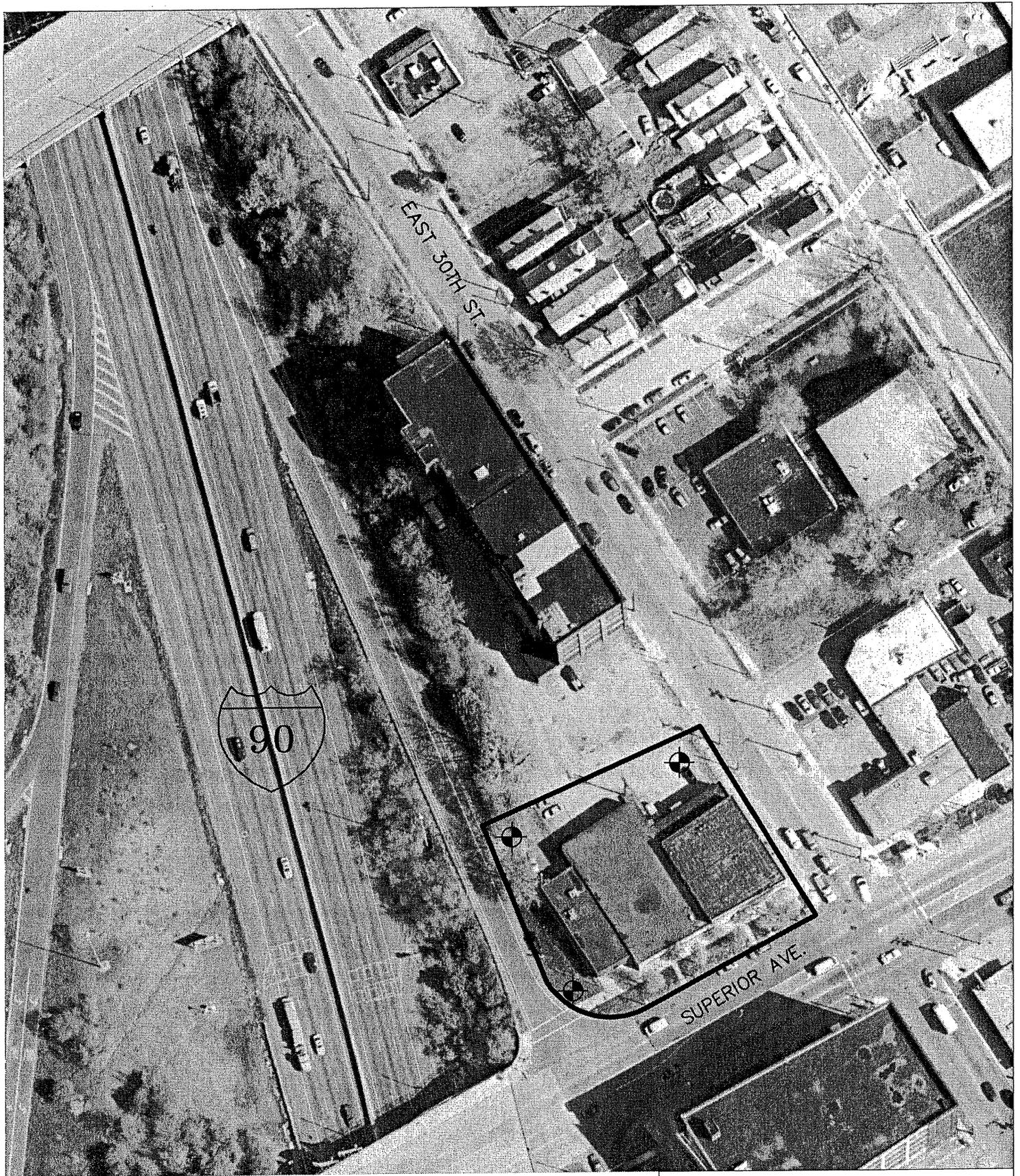
Cleveland Innerbelt Study
Cleveland, Ohio

Figure 2-Q

Sample Location Map, Site #34
1725 East 27th Street

URS





LEGEND

 Proposed Monitoring Well

Cleveland Innerbelt Study
Cleveland, Ohio

Figure 2-R
Sample Location Map, Site #42
2975 Superior Avenue

URS

0 100
SCALE 1" = 100'





LEGEND

 Proposed Monitoring Well

0 100
SCALE 1" = 100'



Cleveland Innerbelt Study
Cleveland, Ohio

Figure 2-S
Sample Location Map, Site #43
2635 Payne Avenue

URS



LEGEND

-  Proposed Monitoring Well
-  Proposed Surface Sample

Cleveland Innerbelt Study
Cleveland, Ohio

Figure 2-T
Sample Location Map, Site #45
1748 East 27th Street

URS

0 100
SCALE 1" = 100'





SOUTH MARGINAL

EAST 40TH ST.

LEGEND

 Proposed Monitoring Well

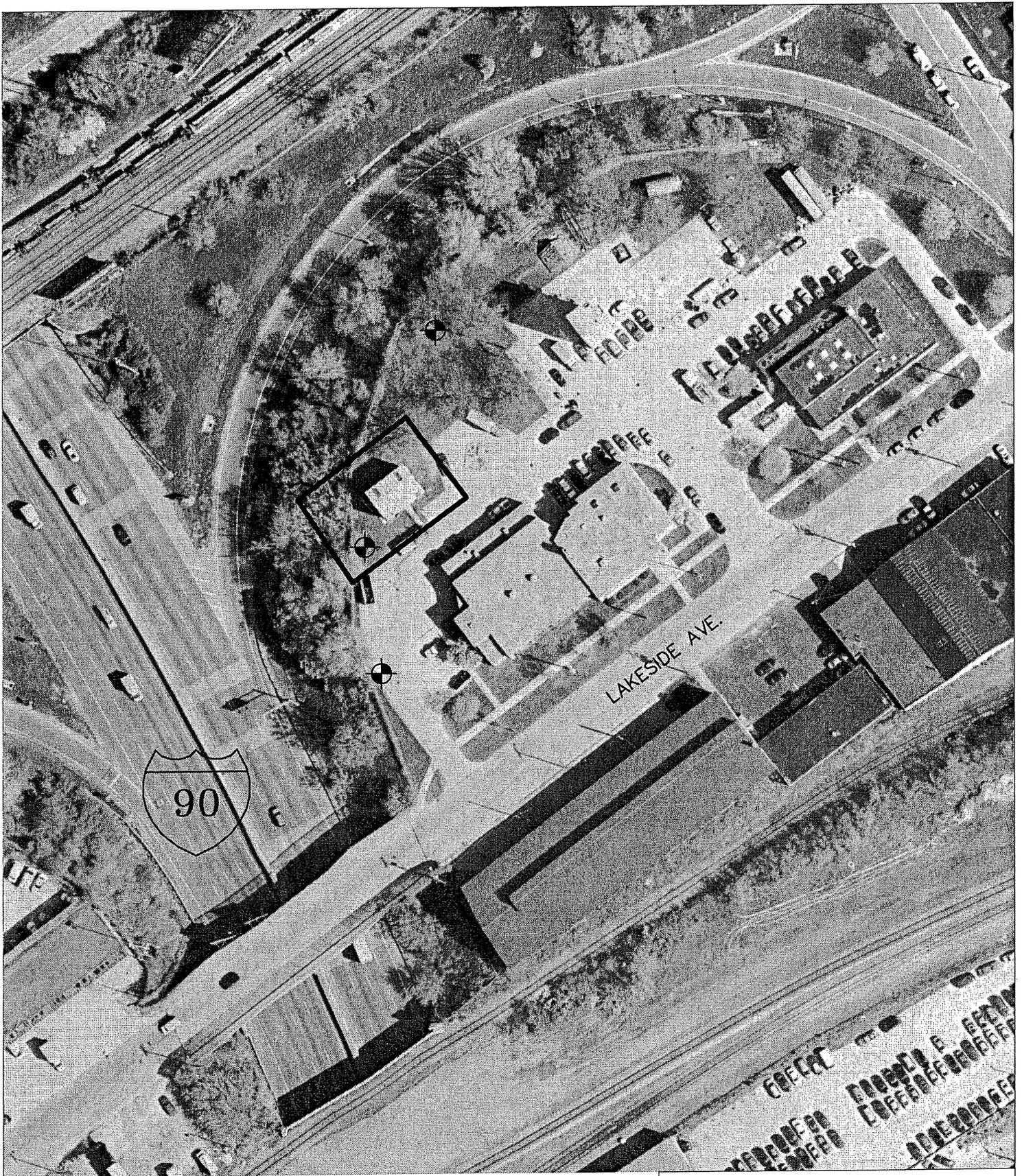
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SCALE 1" = 100'



Cleveland Innerbelt Study
Cleveland, Ohio

Figure 2-U
Sample Location Map, Site #51
3960 South Marginal Road





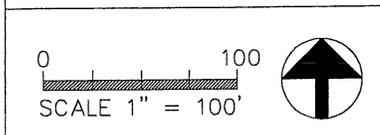
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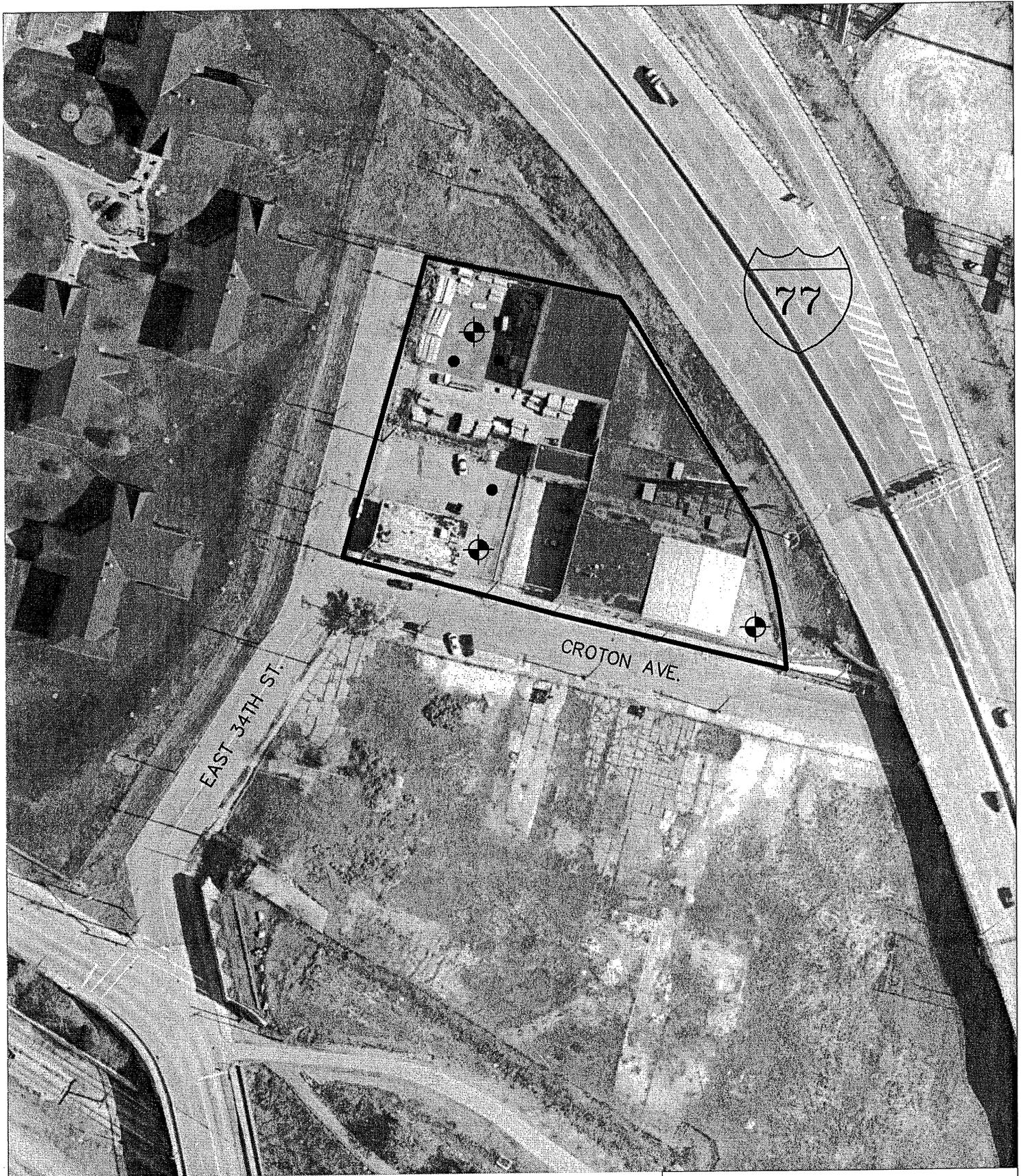
 Proposed Monitoring Well

Cleveland Innerbelt Study
Cleveland, Ohio

Figure 2-V
Sample Location Map, Site #53
3101 Lakeside Avenue

URS





LEGEND

-  Proposed Monitoring Well
-  Proposed Surface Sample

Cleveland Innerbelt Study
Cleveland, Ohio

Figure 2-W
Sample Location Map, Site #57
3501 Croton Avenue

URS

0 100
SCALE 1" = 100'



4.0 PROJECT MANAGEMENT PLAN

The responsibilities of URS personnel working on this project are summarized below:

Project Principal: The Project Principal assumes the primary responsibility for the overall Project Management and is the liaison to the Client (Burgess and Niple) as well as ODOT. This person is Cory Grayburn.

Project Manager: The Project Manager assumes the primary responsibility for technical, budget, and scheduling matters. This person is Seda Ergun.

Health and Safety Officer: The Health and Safety Officer is responsible for preparing the site-specific HSP and ensuring that its provisions are adhered to. This person is James Anderson.

Independent Technical Reviewer: The corporate URS QA program requires senior technical review of all deliverables. This reviewer is selected from URS personnel based on technical discipline(s) appropriate for the project. While the selected reviewer should have some knowledge of the project, the reviewer must not have been involved in the preparation of the deliverable. The purpose of the independent technical review will be to critically review the data that require interpretation or judgment and to verify the assumptions and conclusions based on appropriate professional standards and criteria. This person is Janet Bishop.

QA Manager: The QA Manager will serve as the official contact for all quality control issues including reviewing, evaluating, and approving the Work Plan, the Phase II ESA Report and any changes to these documents. This person is Larry Szuhay.

IT Manager: The IT Manager will construct a limited access website for the Project. From this website, real time information regarding the Project progress (i.e., boring logs, analytical results, etc.) can be viewed by ODOT. This person is April Baker.

Project Chemist: The Project Chemist is responsible for coordinating with the selected laboratory and review of the analytical data. This person is Peg Schuler.

Project Field Team Leader: The Field Team Leader will coordinate all field activities, as well as provide interpretation of the data collected during those efforts. Recommendations for further field activities as well as the preparation of report deliverables will be her responsibility. This person is Laura Clark.

Project Geophysicist: The Project Geophysicist will conduct the magnetometer survey and associated data reduction and interpretation. This person is Jeff Berk.

Field Team: The Field Team consists of geologists and environmental scientists that will oversee the advancement and installation of the soil borings and monitoring wells, determine the sample selection, coordinate the sample shipping and record the field information. These people are: Jerry Kaminski, William Mello, Jeremy Pasatta, Matthew Steinmetz, and Michelle Wolff.

5.0 REFERENCES

- ASTM (1990). ASTM-D-2488-90, *Standard Guide for Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)*. American Society for Testing and Materials, West Conshohocken, PA. 1990.
- ASTM (1998.) ASTM-D-6282-98, *Standard Guide for Direct Push Soil Sampling for Environmental Site Characterizations*. American Society for Testing and Materials. West Conshohocken, PA. 1998.
- ASTM (1988). ASTM-D-1586-88, *Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils*. American Society for Testing and Materials. West Conshohocken, PA. 1988.
- ODNR. *Technical Guidelines for Sealing Unused Wells*. Ohio Department of Natural Resources. Columbus, Ohio.
- ODOT-IOC. *Inter-Office Communication*. Ohio Department of Transportation. December 13, 2005. Columbus, Ohio.
- ODOT-OES. *Environmental Site Assessment Guidelines*. Ohio Department of Transportation, Office of Environmental Services. Columbus, Ohio. September 1, 1999.
- OEPA. *Technical Guidance Manual for Hydrogeologic Investigations and Groundwater Monitoring Programs*. Ohio Environmental Protection Agency. Columbus, Ohio.
- URS. *Environmental Site Assessment Screening and Phase I Environmental Site Assessment, Cleveland Innerbelt Study, Cleveland, Ohio*. URS Corporation. Cleveland, Ohio. December, 2005.

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Table

Table 1
 ODOT – Cleveland Innerbelt Study
 Proposed Phase II ESA Sampling

Site	Site	Address	Geophysical Survey	Surface Soils	Soil Borings	Monitoring Wells	Samples/Analyses
2	Former Bauer Auto	3553 West 25 th Street	N/A	0	3	0	3 soil samples; 1 per boring/VOCs, SVOCs, TPH, and RCRA Metals
13	Former Glove Cleaning Service/Scranton Averell	2132-2150 West 15 th Street	Yes	3	2	2	3 surface soil samples/VOCs, SVOCs, TPH, and RCRA Metals 4 soil samples; 1 per boring/VOCs, SVOCs, TPH, and RCRA Metals 2 groundwater samples/VOCs, SVOCs and RCRA Metals
14	Bojacks Meats	2000 W. 14 th /1425 University	Yes	6	0	6	6 surface soil samples/VOCs, SVOCs, TPH, and RCRA Metals 6 soil samples; 1 per boring/VOCs, SVOCs, TPH, and RCRA Metals 6 groundwater samples/VOCs, SVOCs and RCRA Metals
15	Leon Rudnick	1402-1408 Abbey Road	Yes	0	0	3	3 soil samples; 1 per boring/VOCs, SVOCs, TPH, and RCRA Metals 3 groundwater samples/VOCs, SVOCs and RCRA Metals
16	Wendell & Carroll Collins/1501 Companies	West 15 th Street	N/A	3	0	4	3 surface soil samples/VOCs, SVOCs, and RCRA Metals 4 soil samples; 1 per boring/VOCs, SVOCs and RCRA Metals 4 groundwater samples/VOCs, SVOCs and RCRA Metals
17	Terminal Oil	308 Central Viaduct	Yes	0	0	4	4 soil samples; 1 per boring/VOCs, SVOCs, TPH, and RCRA Metals 4 groundwater samples/VOCs, SVOCs and RCRA Metals
18	Cleveland Fire Station	310 Carnegie	Yes	0	0	3	3 soil samples; 1 per boring/VOCs, SVOCs, TPH, and RCRA Metals 3 groundwater samples/VOCs, SVOCs and RCRA Metals

Table 1
 ODOT – Cleveland Innerbelt Study
 Proposed Phase II ESA Sampling

Site	Site	Address	Geophysical Survey	Surface Soils	Soil Borings	Monitoring Wells	Samples/Analyses
29	BP Gas Station	2701 Chester Avenue	N/A	0	0	3	3 soil samples; 1 per boring/VOCs, SVOCs, TPH, and RCRA Metals 3 groundwater samples/VOCs, SVOCs and RCRA Metals
33	State Industrial Products	3100 Hamilton Avenue	Yes	0	4	6	10 soil samples; 1 per boring/VOCs, SVOCs, TPH, and RCRA Metals 6 groundwater samples/VOCs, SVOCs and RCRA Metals
34	Former Teledyne Metal Finishing	1725 East 27th Street	Yes	0	0	3	3 soil samples; 1 per boring/VOCs, SVOCs, TPH, and RCRA Metals 3 groundwater samples/VOCs, SVOCs and RCRA Metals
42	CB Realty	2975 Superior Avenue	N/A	0	0	3	3 soil samples; 1 per boring/VOCs, SVOCs, TPH, and RCRA Metals 3 groundwater samples/VOCs, SVOCs and RCRA Metals
43	KNC Building	2635 Payne Avenue	Yes	0	0	3	3 soil samples; 1 per boring/VOCs, SVOCs, TPH, and RCRA Metals 3 groundwater samples/VOCs, SVOCs and RCRA Metals
45	Harold Moss, Trustee	1748 East 27th Street	Yes	3	0	3	3 surface soil samples/VOCs, SVOCs, TPH, and RCRA Metals 3 soil samples; 1 per boring/VOCs, SVOCs, TPH, and RCRA Metals 3 groundwater samples/VOCs, SVOCs and RCRA Metals
51	Temp Craft Plastics	3960 South Marginal Road	N/A	0	0	4	4 soil samples; 1 per boring/VOCs, SVOCs, TPH, and RCRA Metals 4 groundwater samples/VOCs, SVOCs and RCRA Metals

Table 1
 ODOT – Cleveland Innerbelt Study
 Proposed Phase II ESA Sampling

Site	Site	Address	Geophysical Survey	Surface Soils	Soil Borings	Monitoring Wells	Samples/Analyses
53	Cleveland Fire Academy	3101 Lakeside Avenue	N/A	0	0	3	3 soil samples; 1 per boring/VOCs, SVOCs, TPH, and RCRA Metals 3 groundwater samples/VOCs, SVOCs and RCRA Metals
57	Charles Martin	3501 Croton Avenue	N/A	3	0	3	3 surface soil samples/VOCs, SVOCs, TPH, and RCRA Metals 3 soil samples; 1 per boring/VOCs, SVOCs, TPH, and RCRA Metals 3 groundwater samples/VOCs, SVOCs and RCRA Metals