SITE INVESTIGATION WORK PLAN
PHILLIPS PLASTICS CORPORATION
600 S. MILWAUKEE STREET
FREDONIA, WISCONSIN

BRRTS # 02-46-248387
FID# 246007740

PREPARED FOR:

RECEIVED
APR 13 2000
By

PHILLIPS PLASTICS CORPORATION
SEVEN LONG LAKE DRIVE
PHILLIPS, WI 54555

Code 735

AND

WISCONSIN DEPARTMENT OF NATURAL RESOURCES
SOUTHEAST REGION HEADQUARTERS
P.O. BOX 12436
MILWAUKEE, WISCONSIN 53212

PREPARED BY:

MCLAREN/HART, INC.
W239 N2890 PEWAUKEE ROAD, UNIT D
PEWAUKEE, WI 53072

APRIL 12, 2000

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1.0 INTRODUCTION

McLaren/Hart Environmental Engineering Corporation (McLaren/Hart) has prepared the following site investigation work plan for recommended site investigation activities for soil and groundwater impacts identified at the Phillips Plastics Site located in Fredonia, Wisconsin.

1.1 SITE LOCATION AND OWNERSHIP

The site is located at 600 South Milwaukee Street, Fredonia, Wisconsin. The site occupies a portion of the SW ¼ of the NE ¼ of Section 35, Township 12 North, Range 21 East (SW¼, NE¼, Sec. 35, T12N, R21E) in Ozaukee County; Figure 1. The site is located in an industrial park south of Fredonia.

The Property is owned by Phillips Plastics Corporation. The contact for Phillips Plastics is:

Robbin Krueger
Seven Long Lake Drive
Phillips, WI 54555
Ph: 715-339-5709
fax: 715-339-5786

The site investigation activities are being performed by:

Phillips Plastics Corporation
Seven Long Lake Drive
Phillips, Wisconsin 54555

1.2 BACKGROUND

A September 1989 Phase 1 Environmental Site Assessment conducted at the site revealed that the previous owners of the property (HVC, Inc.) were involved in the manufacturing of high voltage electrical components, including capacitors, between the period 1977 to 1984. During this period, a WDNR audit of the facility revealed that waste materials were found to be leaking into the soil from storage drums. The waste materials were described as "heavy metals" and "volatile organic compounds" (VOC's). Apparently, the contaminated soils were excavated and hauled away under the supervision of the WDNR.

At the time HVC, Inc. moved out of the building in 1984 and Graphic Technologies, Inc. moved in, it was noted that a "green dust" covered the interior of the building which was the result of

HVC's manufacturing operations of producing high voltage ceramic screen condensers. It is noted that Graphic Technologies, Inc. became Phillips Plastics Corporation in June 1989.

The operations at the facility since 1985 have included screen print laminating processes and die casting processes that involve inks and solvents. Solvents used to clean the inks from the die casting operations and the waste inks generated from screen print laminating processes are stored in 55-gallon drums in an explosion-proof room inside the facility. Solid waste generated from Graphic Technologies operations have included silk screens which were discarded into dumpsters located on the north side of the building.

A limited subsurface investigation conducted on the Phillips Plastics property by McLaren/Hart on January 25 through 27, 2000, revealed soil and groundwater impacts at the site. McLaren/Hart's investigation consisted of soil and groundwater sampling from seven soil Geoprobes and two groundwater monitoring wells. Conclusions from the limited subsurface investigation are as follows:

Soil

The impacted soils are beneath the building and extend outward to the central part of the property. Trichloroethene (TCE) is the primary compound detected at significant levels, and extends outward to the east, south, and north from beneath the facility (Figure 2). Soil in this area from 1 to 10 feet below ground surface (bgs) had detectable concentrations of TCE of up to 82,300 µg/kg (parts per billion). 1,1-Dichloroethene (290 µg/kg), 1,1,1-trichloroethane (4,750 µg/kg), and toluene (232 µg/kg), were also detected in the sample obtained from this depth interval. Soil in this area, from 10 to 20 feet bgs, had detectable concentrations of TCE of up to 18,500 µg/kg (Figure 3).

There were no PCB's or alcohols, with the exception of methanol, detected in any of the soil samples submitted for laboratory analysis. Methanol was detected in 7 of the soil borings with the highest detected concentration of 110 µg/g. There is currently no RCL for methanol in soil.

Groundwater

Groundwater at the site is also impacted with TCE and methylene chloride. TCE and methylene chloride are the only compounds detected above Wisconsin Administrative Code chapter NR140 enforcement standards. The highest detected TCE and methylene chloride concentration in groundwater was 55,000 µg/l and 1,200 µg/l, respectively (Figure 4).

Cis-1,2-Dichloroethene was also detected at 42 µg/L which is above the WAC NR 140 Preventative Action Limit (PAL) of 70 µg/L.

Barium, chromium, mercury, and selenium were also detected, but at levels below NR 140 PAL's. The concentrations detected appear to be representative of background levels because of

consistent low-level concentrations found at each of the sampling points. No PCB's, alcohols, or RCRA metals, other than barium, chromium, mercury and selenium, were detected in the groundwater samples submitted for analysis.

Based on a review of the USGS Port Washington West, Wis. 7.5-minute series Quadrangle (revised 1984) and from the limited site investigation data, the following observations are presented regarding the geologic, hydrogeologic and topographic characteristics of the site.

- The Property is located approximately 840 feet above mean sea level (MSL).
- The general topographic expression of the site gently slopes radially away from the property towards the west, north, and east.
- The depth to groundwater varies between 32 to 36 feet below ground surface (bgs).
- The subsurface lithology at the site is known to contain silts and clays within the top 30 feet of soil and grades into a fine to medium-grained sand from 30 feet bgs to the groundwater table.
- Surface water features within one mile of the Property consist of the Milwaukee River (approximately 0.9 miles to the west) and small wetland areas 0.5 miles to the southwest.

1.3 CONSULTANT AND CONTRACTOR IDENTIFICATION

The consulting firm that will be conducting the scope of work outlined herein is:

McLaren/Hart, Inc.
W239 N2890 Pewaukee Road, Unit D
Pewaukee, WI 53072
Attention: Scott Tarmann, P.E.
414-523-2040

Subcontractors anticipated to provide services for this project are identified below. The subcontractors selected to conduct the work may change due to availability or changes in the scope of work.

<u>Drilling</u>
Mid America Drilling Services
700 Hicks Drive
Elburn, IL 60119
(630) 365-0600

<u>Laboratory</u>
Test America
602 Commerce Drive
Watertown, WI 53094
(920) 261-1660
WDNR No. 128053530

2.0 OBJECTIVES AND PROJECT SCOPE

The objectives of this investigation are to define the lateral and vertical extent of volatile organic compounds (VOCs) present in the soil and groundwater. Also, the investigation will further ascertain the hydrogeological conditions at the site such as horizontal and vertical hydraulic gradients and groundwater flow direction. In addition, data collected during this investigation will be used to determine the most appropriate remedial alternative for the indentified soil and groundwater impacts.

The investigation will consist of the completion of six soil borings in which five will be converted into groundwater monitoring wells and one into a piezometer. Upon receipt of the sample results, the data will be evaluated and, if required, recommendations for further actions at the site will be made. The methodologies to be utilized during the investigation are described in the sections that follow.

2.1 PROJECT SCOPING

To the extent practical, the scope of the project was defined in consideration of the criteria listed in NR 716.07 listed below:

- Site Use: Site ownership and historical operations as described in Sections 1.1 and 1.2.

- Type and Amount of Impact: Based on the limited site investigation conducted on the Phillips Plastics property, impacts to the soil and groundwater include trichloroethene, cis-1,2-dichloroethene, 1,1-dichloroethene, methylene chloride, 1,1,1-trichloroethane, and toluene.

- Environmental Media Potentially Affected: Impacts to the soil and groundwater on the property are present.

- Potential Receptors: The City of Fredonia supplies potable water to the facility and to the properties immediately surrounding the facility from municipal wells. One municipal well is known to exist within 750 feet of the facility.

- Other Environmental Investigations/Findings: Investigation of soil and groundwater impacts has taken place on the adjacent property to the east (Modern Metals). During the subsurface investigation at the Modern Metals facility, groundwater impacts of trichloroethene, 1,1,1-trichloroethane, and methylene chloride at concentrations of 21,000 ppb, 78 ppb, and 150 ppb, respectively, were detected.

- Significant Resources: The contaminants found at the site are not believed to have impacted or threatened any endangered species, sensitive habitats, wetlands, resource waters, or historical or archaeological sites.

- Potential Remedial Actions: At this time, evaluation of potential remedial actions to address impacted media at the site is premature. The information needed to determine the most appropriate remedial response includes the lateral and vertical extent of groundwater and soil impacts, groundwater elevations, groundwater flow direction and gradient, geologic and hydrogeologic definition, groundwater flow velocity, and contaminant transport potential.

3.0 INVESTIGATION SCOPE OF WORK

The site investigation will be conducted to further evaluate the extent of the impacts in the soil and groundwater and to collect hydrogeologic data needed to determine the most appropriate remedial response action. The scope will include installing six soil borings, collection and analysis of select soil samples, converting the soil borings into five groundwater monitoring wells and one piezometer, collection and analysis of groundwater samples, and collection and field analysis of groundwater aquifer characteristics. Prior data will be utilized to the extent practical in development of this plan.

3.1 SOIL AND GROUNDWATER SAMPLING LOCATIONS AND LABORATORY ANALYSES

The sampling locations have been selected based on the available site operational information, the soil and groundwater impacts detected during the limited site investigation on the Phillips Plastics Property, and from the groundwater impacts detected at the adjacent Modern Metals Property. The recommended locations of the soil borings/groundwater monitoring wells and piezometer to address the site investigation scope of work, including the sampling parameters, are as follows:

- One soil boring/groundwater monitoring well located on the southwest corner of the existing building (MW-1P) to define the upgradent boundary of soil and groundwater contamination.

- One soil boring/groundwater monitoring well located along the southern property boundary (MW-2P) to define the lateral extent of groundwater impacts to the south of existing groundwater monitoring well MW-B.

- One soil boring/groundwater monitoring well located in the suspected source area (MW-3P).

- One soil boring/groundwater monitoring well located on the northern property boundary (MW-4P) to define the lateral extent of groundwater impacts sidegradient to the suspected source area.

- One soil boring/groundwater monitoring well (MW-5P) located northeast of the suspected source area and existing groundwater monitoring well MW-A to determine the downgradient degree and extent of groundwater impacts.

- One groundwater piezometer (PZ-1) located adjacent to existing monitoring well MW-A to determine the vertical extent of groundwater impacts and vertical groundwater flow gradients.

The soil borings will be continuously sampled and screened using a PID for in-field detection of VOC's. Two soil samples will be selected from each monitoring well location based on the field screening analysis and submitted to a State of Wisconsin certified laboratory for VOC analysis using U.S. EPA Method 8260.

Hollow stem auger drilling techniques will be used to install the monitoring wells. Each monitoring well will consist of one 2 inch diameter schedule 40 PVC well that intersects the groundwater table at an approximate depth of 35 feet below ground surface. Each well will be advanced to approximately 43 feet below ground surface and will have 10 to 15 feet of screen (0.010" slot) for water sample collection and groundwater elevation measurement purposes. Monitoring wells MW-3P, MW-4P and piezometer PZ-1, will be constructed with an 8 inch flush mount protective cover due to their proximate location in the facility parking area. The remainder of the wells will be completed as standpipes.

The piezometer will be constructed as a double cased well to prevent the vertical migration of contaminants during its installation. A four inch steel casing will be advanced to 60 feet bgs and grouted in-place. Rotary drilling methods will then be employed inside the steel casing to install one 2 inch diameter schedule 40 PVC piezometer with a five foot screened interval between the depths of 60 and 65 feet bgs. The piezometer will have a 0.010" slot screen for water sample collection and groundwater elevation measurement purposes at the specified depth. Soil samples, at the piezometer location, will be collected only for the purpose of logging the site geology as the boring is advanced. No laboratory analysis of soil samples is warranted at this location due to its proximity to MW-A.

The soil boring/monitoring well and piezometer locations identified above are illustrated in Figure 5.

Based upon the information gathered from the previous subsurface investigation at the facility, groundwater samples will be collected from the five newly installed groundwater monitoring wells and piezometer and submitted to a State of Wisconsin certified laboratory for analysis of VOC's using U.S. EPA Method 8260.

Groundsurface elevations and top of casing elevations will be surveyed and referenced to a local benchmark for each of the newly installed wells. Water level measurements will be collected from the monitoring wells and piezometer to obtain information relating to groundwater flow direction

and gradient. *In-situ* aquifer testing will be performed on MW-A, MW-B, PZ-1, MW-3P, MW-4P, and MW-5P to determine the transmissivity of the saturated deposits.

3.2 FIELD METHODOLOGIES

3.2.1 Soil Sample Collection and Handling

Soil samples will be collected using split-spoon sampling methods as described by ASTM. After collection, soil samples intended for laboratory analysis will be immediately sealed in appropriate laboratory-provided containers. A fresh pair of latex (or similar) gloves will be used during handling of each sample to minimize the potential for cross-contamination. The samples intended for VOC analysis will be containerized in pre-tared 60-milliliter glass jars with Teflon® septa. Approximately 25 grams of soil will be placed loosely in each jar. The sample will be preserved with laboratory-provided purge-and-trap grade methanol. A dry-weight sample will also be collected from each interval intended for laboratory analysis.

As quickly as possible following sample collection, the sample jars will be labeled with the sample location identification, depth of sample, date of sample collection and intended analysis. The sample jars will then be placed in resealable plastic bags and packed in an iced, insulated container. A chain-of-custody form will be filled out upon completion of sampling each day and will accompany each container of samples to a WDNR-certified laboratory. Samples will be transported from the facility to the laboratory via overnight courier.

3.2.2 Water Level Measurements

Water level measurements will be collected from all on-site monitoring wells, piezometer, and the existing Modern Metals wells. Wells with expandable caps will be opened and allowed to equilibrate prior to taking measurements.

Measurements will be made using a Heron electronic water level sensor, model ET-94 (accuracy 0.01 feet) or similar equipment. The well casing will be wiped clean and the survey measure mark on the top of the casing noted. The probe will be lowered carefully into the well and the depth to water measured from the survey mark at the top of the well casing. The depths will be recorded in a bound field notebook.

3.2.3 Groundwater Sample Collection and Handling

The groundwater sample will be containerized in laboratory-provided 40-milliliter vials. The sample will be preserved in the field using laboratory-prepared hydrochloric acid to lower the pH of the sample to less than 2. Each sample vial will be filled until a positive meniscus is formed and securely capped with a Teflon®-septum lid. Each sample will then be inverted and firmly tapped to check for air bubbles. If bubbles are present in the sample, the sample will be discarded and another collected.

As quickly as possible following sample collection, the sample vials will be labeled with the sample location identification, depth of sample (for soil samples), date of sample collection and intended analysis. The sample vials will then be placed in re-sealable plastic bags and packed in an iced, insulated container. A chain-of-custody form will be filled out upon completion of sampling each day, and will accompany each container of samples to the laboratory. Samples will be transported from the facility to the laboratory via overnight courier.

3.2.4 Decontamination Procedures

All down-hole equipment will be decontaminated before each sampling interval using an Alconox© or TSP© solution and rinsed in known-clean water (i.e., municipal tap or bottled deionized). Sampling tools (e.g., spoons, knives, spatulas, etc.) will be cleaned in a solution of Alconox© or TSP© and rinsed in known-clean water prior to collection of each sample. A clean pair of latex, or equivalent, gloves is used during collection of each sample to minimize the potential for cross-contamination of samples.

3.2.5 Investigative Waste Management

All soil and purge water waste generated during investigative activities, sampling sleeves, sampling gloves and used sample jars not intended for laboratory analysis will be contained in 55-gallon drums and stored on site, out of the way of daily site activities, pending disposal.

3.3 QUALITY ASSURANCE/QUALITY CONTROL METHODS

The following quality assurance/quality control measures will be implemented during the site investigation activities:

- Decontamination procedures and measures to minimize the potential for cross-contamination of samples will be followed as specified in the Field Methodologies section above.
- All site activities will be recorded in a bound field notebook (see Field Documentation section below).
- Stringent chain of custody procedures will be followed (see below).
- Sample blanks will be collected and analyzed (see below).

3.3.1 Chain of Custody Procedures

Chain-of-custody forms will be completed to the extent possible prior to sample shipment. Included on the form will be the sample identification (sample location identification, depth of sample and date of sample collection), sample type, sample container (type and number of containers), analytical method to be performed, preservatives, and name of sampler. The forms will be filled out in a legible manner, using blue or black waterproof ink.

A chain-of-custody document will accompany each sample shipment. The sampler will relinquish custody of the samples to the courier, retaining one copy of the record for the project file. Samples will be transported to the laboratory in containers that meet applicable state and federal standards for safe shipment.

3.3.2 Duplicate and Field/Trip Blank Samples

The following QA/QC samples will be submitted with the groundwater samples. NOTE: assumes all samples are collected and shipped to the laboratory the same day and in the same container. If multiple days and/or containers are used, appropriate increases in the number of blanks will be made.

- One methanol blank.
  The sample will be collected in the same manner as the soil samples.

- One trip blank sample.
  The trip blank will be prepared by the laboratory and transported with the sample jars.

The samples will be shipped on ice; therefore, no temperature blanks are anticipated to be required.

3.4 FIELD DOCUMENTATION

All site activities will be documented in a bound field notebook. Included in the daily documentation are:

- Procedures for sampling and other routine activities associated with the site investigation.

- Personnel working on the site.

- Chronological log of site activities.

3.5 SITE HEALTH AND SAFETY

The protection of site personnel and the general public is a primary concern. All reasonable measures will be taken to protect the health and safety of the project personnel and general public. A site health and safety plan that meets or exceeds the standards found in 29 CFR 1910.120 will be prepared and procedures outlined in the plan followed during site activities. Soil and groundwater waste generated during the investigation activities will be stored in 55-gallon drums pending disposal. All project personnel and subcontracted personnel are trained in hazardous materials handling and have appropriate on-site training and experience. During site activities the site Health and Safety Officer (HSO) may halt work if, in the HSO's opinion, unsafe conditions are present. Work will not continue until the unsafe conditions have been rectified to the satisfaction of the HSO.

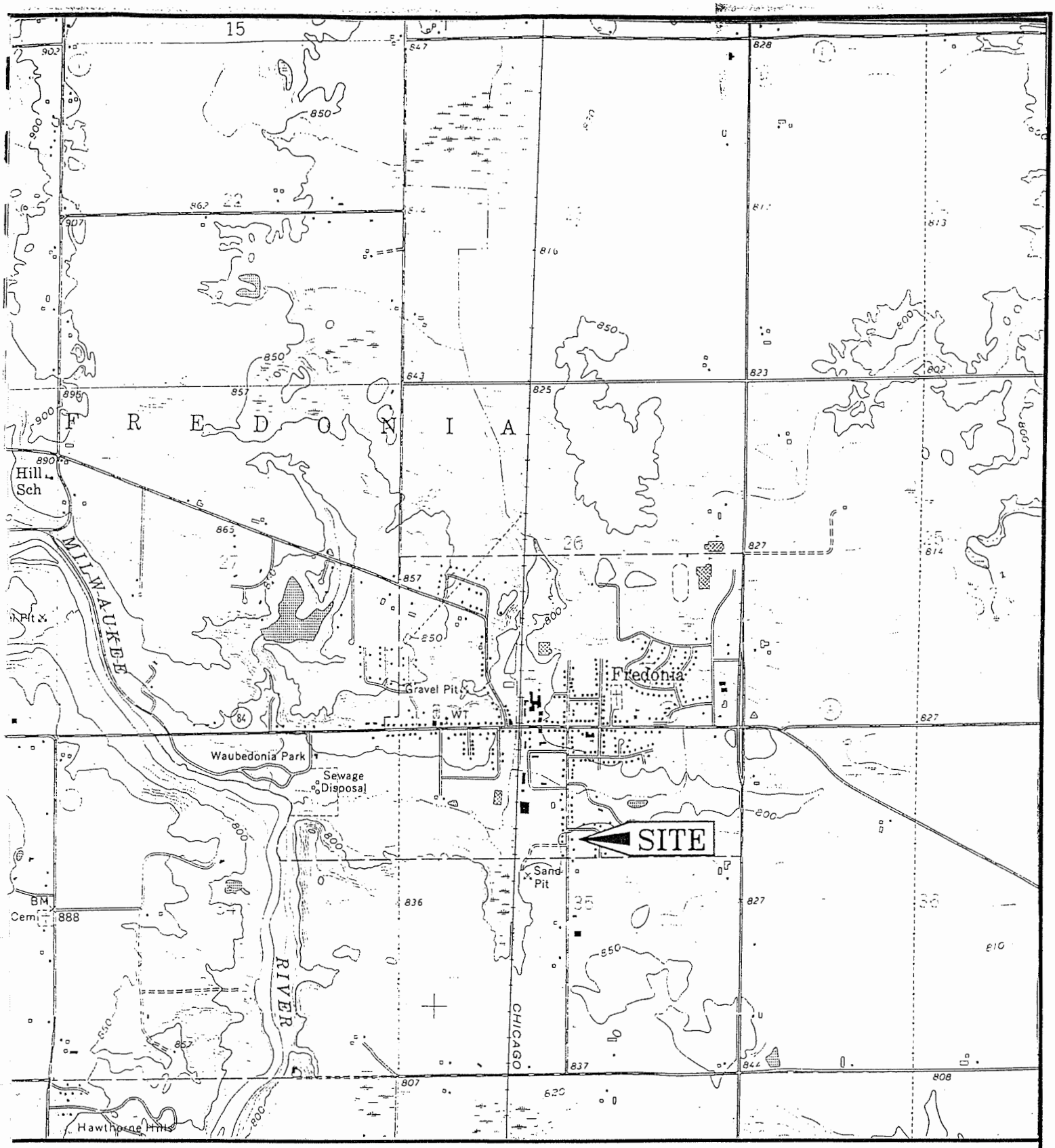
3.6 REPORTING

Upon receipt of the laboratory reports, a report detailing the investigative activities and results will be prepared. The report will be submitted to the WDNR not later than 90 days following receipt of the laboratory reports, unless otherwise directed by the WDNR or pending further investigative activities if the objectives of the site investigation are not met. The investigation report will include:

- A transmittal letter referencing the WDNR's identification number for the site investigation and the date of the submittal;
- An executive summary of the investigation results and conclusions;
- The project title and purpose;
- A complete identification of the current Property owner and other appropriate parties, the consulting firm and all subcontractors performing work associated with the investigation;
- A facility location description, site location map and site plan map showing sample locations and other relevant site information;
- An assessment of the potential for events at the site to present a public health threat and a summary of any response actions at the facility relating to the investigation;
- Investigative methods;
- Investigative results, including in-field observations, laboratory results, data interpretations; and
- Conclusions and recommendations.

4.0 SCHEDULE

The investigation activities at the Phillips Plastics site will commence one week following submission of this work plan. Field work is anticipated to commence during the week of April 24, 2000. Laboratory results are generally provided within three weeks. The draft investigation report is anticipated to be completed within three weeks following receipt of the laboratory reports. Updates to this schedule will be provided in quarterly status reports, if necessary.



SOURCE: USGS PORT WASHINGTON WEST QUADRANGLE, 7.5 MINUTE SERIES, 1959, REV. 1971 AND 1976.

APPROXIMATE SCALE

0 1000 2000 3000 4000 5000 feet

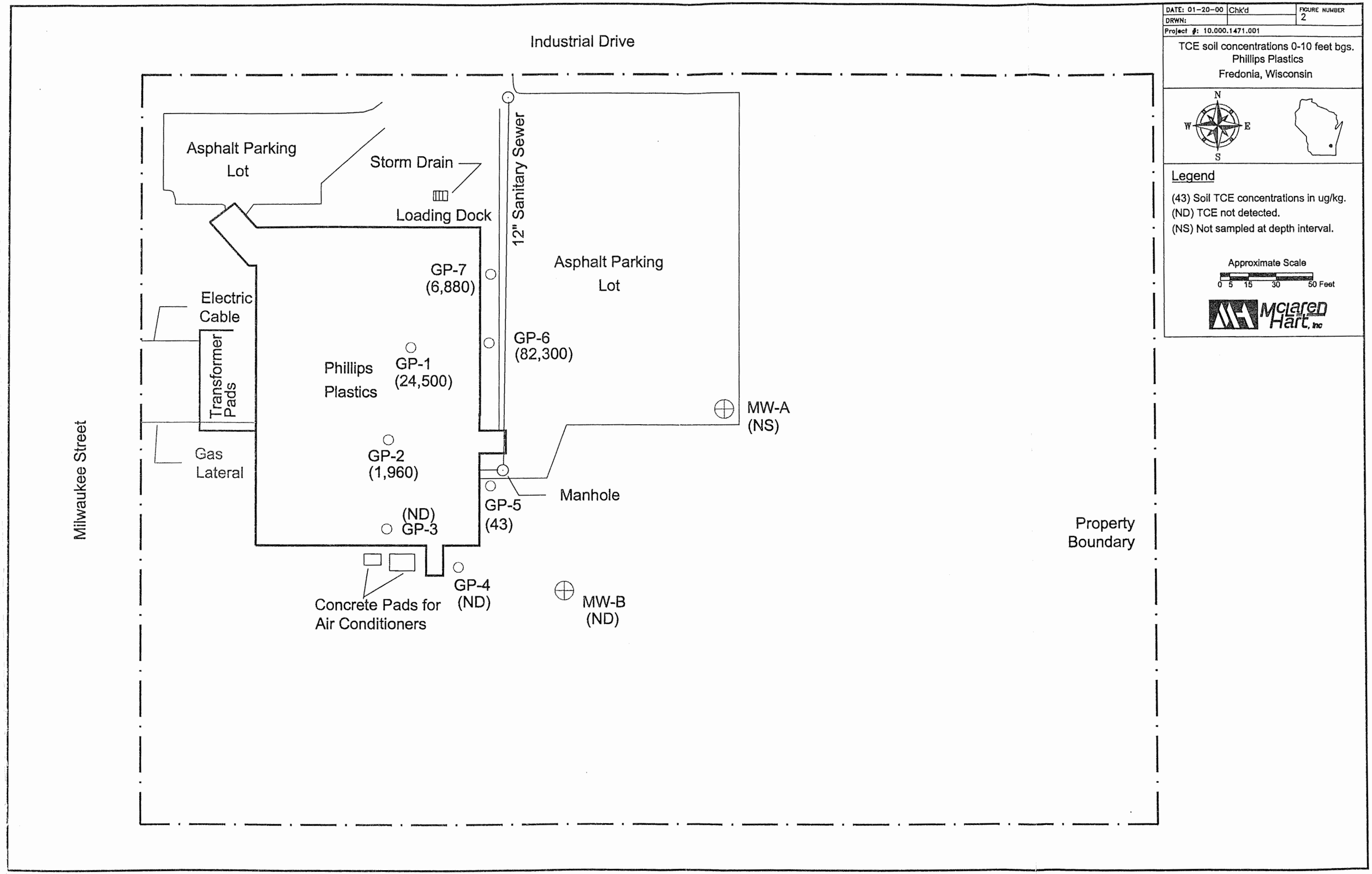
McLaren Hart® ENVIRONMENTAL ENGINEERING CORPORATION

DRWN: PDR	CHK'D:
JOB#: 10.000.1471.001	DATE: 02/23/00

FIGURE 1

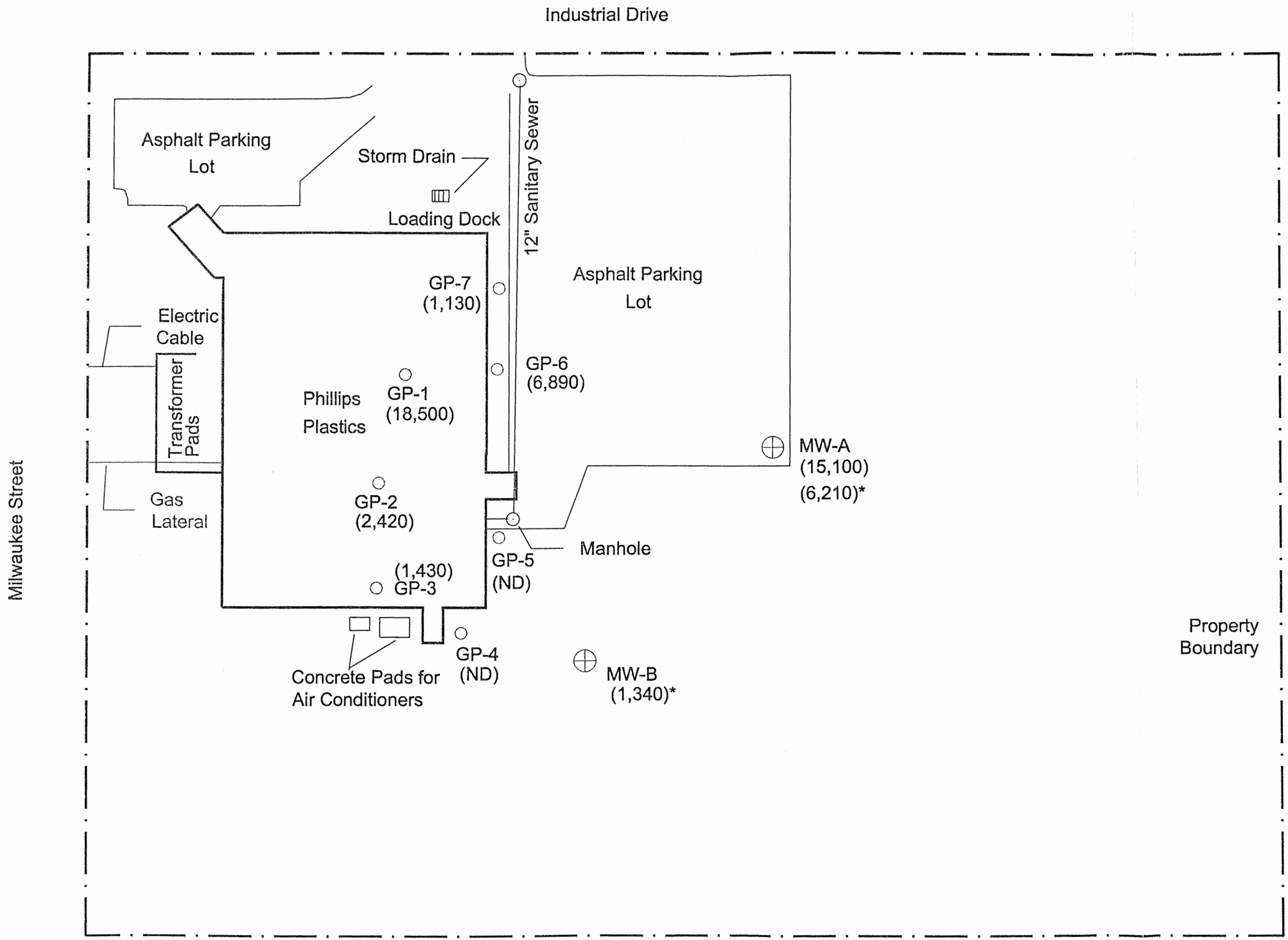
SITE LOCATION MAP

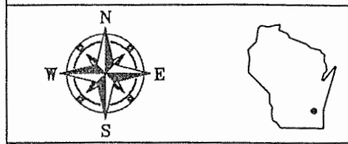
PHILLIPS PLASTICS
FREDONIA, WISCONSIN


Industrial Drive
Asphalt Parking Lot
Storm Drain
Loading Dock
12" Sanitary Sewer
Asphalt Parking Lot
GP-7 (6,880)
Electric Cable
Transformer Pads
GP-6 (82,300)
Phillips Plastics
GP-1 (24,500)
MW-A (NS)
Milwaukee Street
Gas Lateral
GP-2 (1,960)
Manhole
GP-5 (43)
(ND) GP-3
Property Boundary
GP-4 (ND)
Concrete Pads for Air Conditioners
MW-B (ND)
DATE: 01-20-00
Chk'd
DRWN:
FIGURE NUMBER 2
Project #: 10.000.1471.001
TCE soil concentrations 0-10 feet bgs.
Phillips Plastics
Fredonia, Wisconsin
N
W
E
S
Legend
(43) Soil TCE concentrations in ug/kg.
(ND) TCE not detected.
(NS) Not sampled at depth interval.
Approximate Scale
0 5 15 30 50 Feet
McLaren Hart, Inc

DATE: 01-20-00	Chk'd	FIGURE NUMBER 3
DRWN:		
Project #: 10.000.1471.001		

TCE soil concentrations 10-20 feet bgs.
Phillips Plastics
Fredonia, Wisconsin



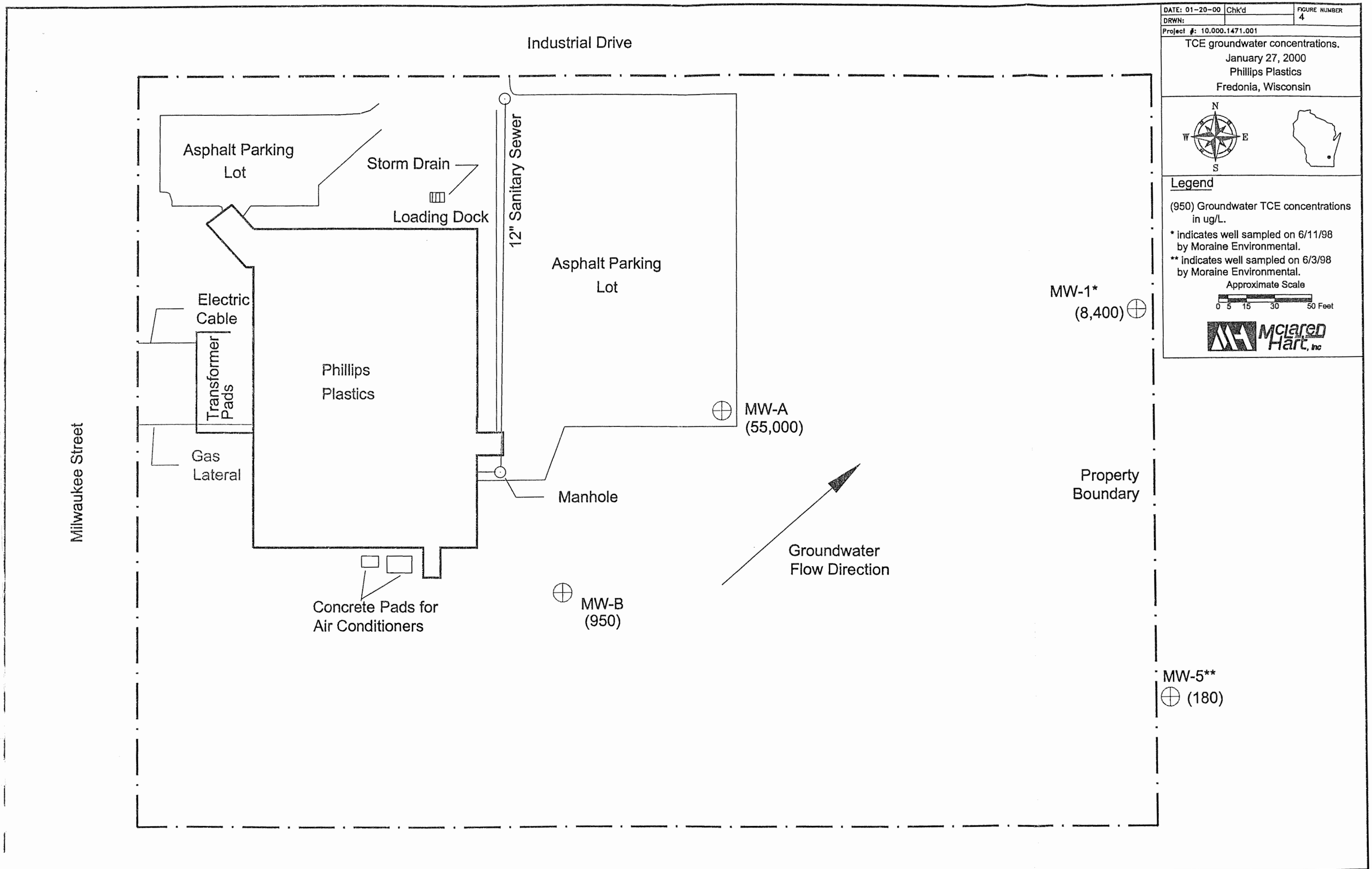


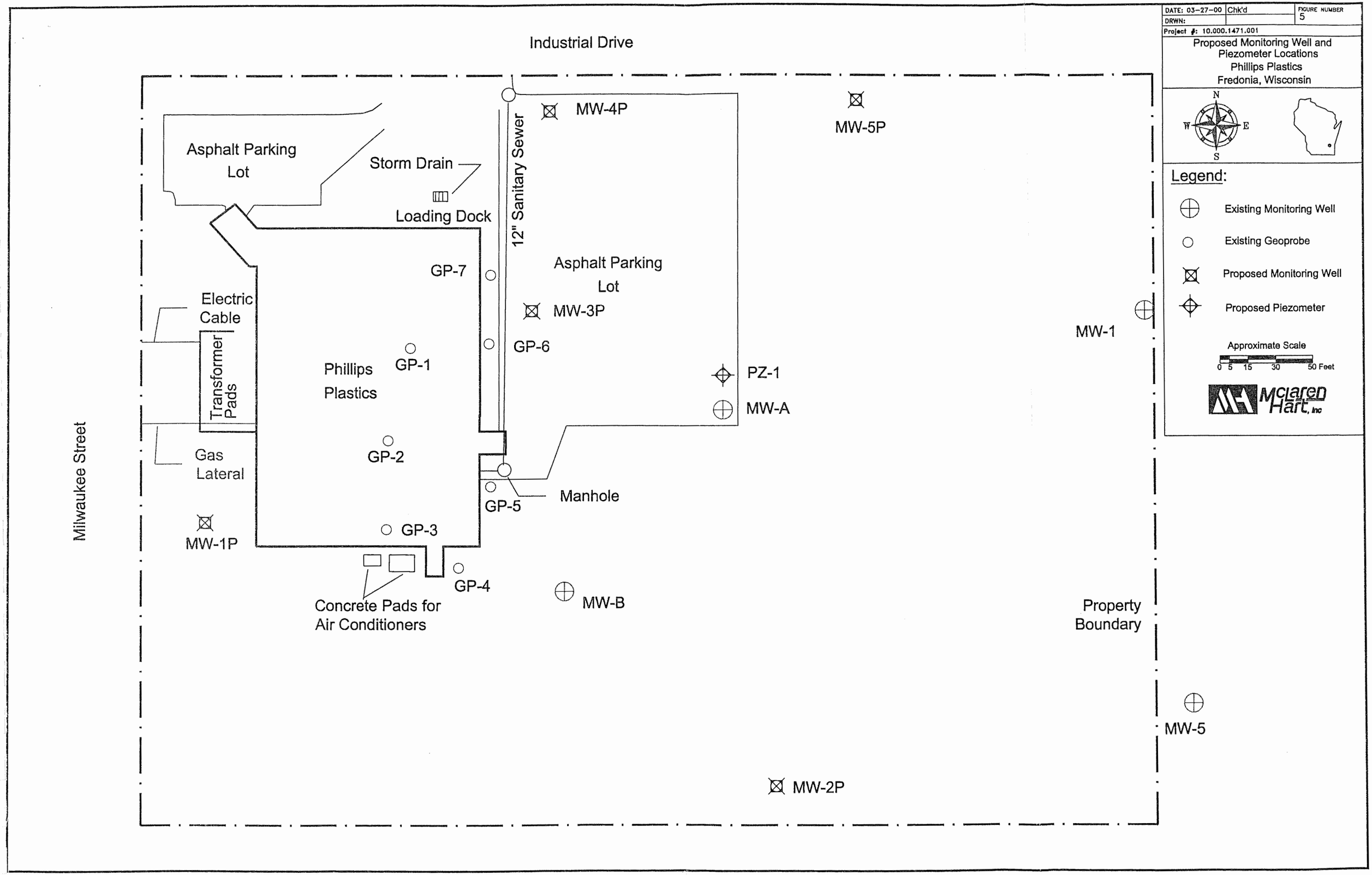
Legend

(43) Soil TCE concentrations in ug/kg.
(ND) TCE not detected.
* Indicates sample collected at 30-34 feet below ground surface.

Approximate Scale
0 5 15 30 50 Feet

McLaren Hart, inc


DATE: 01-20-00
Chk'd
FIGURE NUMBER
4
DRWN:
Project #: 10.000.1471.001
TCE groundwater concentrations.
January 27, 2000
Phillips Plastics
Fredonia, Wisconsin
N
W
E
S
Legend
(950) Groundwater TCE concentrations in ug/L.
* indicates well sampled on 6/11/98 by Moraine Environmental.
** indicates well sampled on 6/3/98 by Moraine Environmental.
Approximate Scale
0 5 15 30 50 Feet
McLaren Hart, Inc
Industrial Drive
Milwaukee Street
Asphalt Parking Lot
Storm Drain
Loading Dock
12" Sanitary Sewer
Asphalt Parking Lot
Electric Cable
Transformer Pads
Phillips Plastics
Gas Lateral
Manhole
MW-A (55,000)
MW-1* (8,400)
Property Boundary
Groundwater Flow Direction
Concrete Pads for Air Conditioners
MW-B (950)
MW-5** (180)


DATE: 03-27-00
Chk'd
FIGURE NUMBER
5
DRWN:
Project #: 10.000.1471.001
Proposed Monitoring Well and Piezometer Locations
Phillips Plastics
Fredonia, Wisconsin
N
W
E
S
Legend:
Existing Monitoring Well
Existing Geoprobe
Proposed Monitoring Well
Proposed Piezometer
Approximate Scale
0 5 15 30 50 Feet
McLaren Hart, Inc
Industrial Drive
Milwaukee Street
Asphalt Parking Lot
Storm Drain
Loading Dock
12" Sanitary Sewer
MW-4P
MW-5P
GP-7
Asphalt Parking Lot
MW-3P
Electric Cable
Transformer Pads
GP-6
MW-1
Phillips Plastics
GP-1
PZ-1
MW-A
Gas Lateral
GP-2
Manhole
GP-5
MW-1P
GP-3
GP-4
Concrete Pads for Air Conditioners
MW-B
Property Boundary
MW-5
MW-2P