DAMES & MOORE

250 EAST WISCONSIN AVENUE, SUITE 1500, MILWAUKEE, WISCONSIN 53202-4209
(414) 347-0800 FAX: (414) 347-0288

January 22, 1993

Ms. Eileen Kramer
Wisconsin Department of Natural Resources
Industrial Parkway, Box 16
Marinette, WI 54143

RE: Leaking Underground Storage Tank Work Plan
Ansul Fire Technology Center, LUST # 38-01345

Dear Ms. Kramer:

Enclosed please find one copy of the Ansul Fire Technology Center Leaking Underground Storage Tank Site Investigation, LUST #38-01345. Please review the report and provide your comments at your earliest convenience.

Thank you for your attention to this matter. If you have any questions, please do not hesitate to contact me.

Sincerely,

DAMES & MOORE, Inc.

Kristine M. Casper
Project Manager/Hydrogeologist

Enclosures

cc: George Rogers

ANSUL FIRE TECHNOLOGY CENTER
Leaking Underground Storage Tank
Site Investigation
LUST# 38-01345

SITE INVESTIGATION WORK PLAN
SITE HEALTH AND SAFETY PLAN

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SITE INVESTIGATION WORK PLAN

Ansul Fire Technology Center
Marinette, Wisconsin

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SITE INVESTIGATION WORK PLAN
LUST# 38-01345

Ansul Fire Technology Center
Marinette, Wisconsin

1.0 INTRODUCTION

The following work plan is for a site investigation at the Ansul Fire Technology Center facility in Marinette, Wisconsin. One 560-gallon underground storage tank, formerly containing gasoline, was removed from the site. During the tank removal, adverse impact to the soils surrounding the tank were discovered. The appropriate Wisconsin Department of Natural Resources (WDNR), Marinette Fire Department, and Department of Industry, Labor and Human Relations (DILHR) notifications were made immediately upon identification that the tank had leaked. Ansul then retained Dames & Moore to prepare a Leaking Underground Storage Tank Site Investigation Work Plan on behalf of Ansul to address the WDNR site investigation requirements.

The purpose of the site investigation is to evaluate the boundaries of impact to the soil, determine if ground water quality has been impacted, evaluate the potential for risk to the public health or the environment, and to evaluate corrective measures, if appropriate. The scope of the site investigation plan is presented below.

2.0 DESCRIPTION OF CURRENT CONDITIONS

2.1 Site Location and Description

The Ansul Fire Technology Center (AFTC) property is located on Pierce Avenue, Marinette, Wisconsin, Marinette County, Wisconsin (Figure 1). The location occupies part of the north half of the northeast quarter of Section 13, Township 31 north, Range 27 west (N½, NE¼, Sec. 13, T31N, R27W), based on the USGS 7.5-minute series topographic map, Marinette West, Wisconsin-Michigan Quadrangle (1963; photorevised, 1976). The property is located within the Marinette Industrial park. The property surrounding the AFTC facility consists of undeveloped land owned by Ansul. The site area is shown in Figure 2.

2.2 Prior Investigation

In November 1992, the 560-gallon gasoline tank was removed by E&K Hazardous Waste Services of Sheboygan, Wisconsin. Upon removal of the tank, E&K personnel identified gasoline fractions in the surrounding soil, indicating that a release from the tank system had occurred. E&K staff collected one confirmation soil sample from the north-central area of the excavation and submitted for laboratory analysis of total petroleum hydrocarbons - gasoline range organics (GRO by Wisconsin GRO method). Copies of the laboratory reports are included as Appendix A. Based on the laboratory data, detectible concentrations of petroleum fractions were identified in the sample collected from the excavation.

2.3 Regional and Local Setting

2.3.1 Topography

The regional topography of the Lake Michigan Basin consists of rolling hills of moderate relief. Elevations range from 585 feet above mean sea level (MSL) at the Menominee River and Green Bay to elevations of approximately 645 feet MSL within Marinette County

(USGS 15-minute series topographic map, Marinette Michigan-Wisconsin, 1963). The higher ground elevations are associated with east-west or southeast-northwest trending ridges, consisting largely of sand and gravel deposits. One such ridge is located approximately 2,000 feet southwest of the AFTC facility. Approximate surface elevation at the former tank site is 610 feet MSL.

2.3.2 Geology

According to the Soil Conservation Service, soils near the surface of the property are classified as Udorthents. Udorthents are generally deep, loamy soils consisting primarily of fill material and have been placed in drainageways, depressions, and areas along the margins of lakes and reservoirs. The soils are poorly suited to cultivated crops, pasture, woodland and most engineering uses (USDA, 1991). In association with the fill material associated with the Udorthents are naturally-occurring sands and gravels associated with the river. Soil excavated during removal of the tank consisted almost exclusively of sand.

Bedrock is encountered at depths of approximately 40 feet below the current ground surface (Dames & Moore, 1976; STS, 1981). The bedrock consists of the Ordovician Sinnipee Group dolomite with limestone and shale (Greenberg, 1980; Mudrey, 1982). The Sinnipee Group includes the Galena, Decorah and Plattville formations. Bedrock

2.3.3 Surface Water and Ground Water Hydrology

The nearest surface-water body to the site is an intermittent, channelized stream that originates within the AFTC property. The channelized stream flows generally southward with an east-flowing segment approximately 2,000 feet south the AFTC property, into the natural Little River. The Little River flows eastward into Green Bay. The local ground water flow direction expected to be predominantly toward the south and east, toward Green Bay.

Used for irrigation @ nearby cemetary

Ground water is not used for municipal, residential, commercial, or industrial purposes in the vicinity of the AFTC property, to Ansul's knowledge. Water and sewer services are provided by the City of Marinette, however, some of the buildings on the AFTC property use septic systems.

2.3.4 Climate

The Marinette area is characterized by a temperate continental climate with marked seasonality (WDNR, 1990), although the close proximity of Green Bay and the Great Lakes system tends to moderate temperature extremes. The greatest precipitation occurs as rainfall during the spring months, while thunderstorms occur most frequently during the summer months of June, July and August. The average precipitation is approximately 1.5 inches during the winter months and 3.5 inches during the summer months. The average winter and summer temperatures in the area are in the teens to 30s (degrees Fahrenheit) and in the 50s to 80s, respectively.

2.4 Nature and Extent of Impact

The nature and extent of adverse environmental impact at the site have not been fully investigated to date. However, observations and soil-quality data were collected during tank closure activities.

One soil sample was collected from the tank excavation and submitted for laboratory analysis of GRO. Based on the laboratory result, petroleum fractions have impacted the soil in the vicinity of the former tank location at a depth of approximately three feet below the ground surface. Based on visual and olfactory observations, the impacted soil extends at least to the base of the excavation, at approximately eight feet below ground surface. No free product was encountered in the tank excavation during removal or sampling activities. No ground water was encountered in the excavation at any time during site activities.

sat cont'n to 8' bgs
no FP
no GW

3.0 SAMPLING AND ANALYSIS PLAN

The Sampling and Analysis Plan was prepared for use at the Ansul Fire Technology Center facility in Marinette, Wisconsin. The purpose of the plan is to describe the objectives of the investigation and detail the procedures that will be used to achieve those objectives. The objectives of the underground storage tank (UST) site investigation are to:

- Evaluate the nature and extent of adverse impact to the soils, and if appropriate, the ground water at the site;
- Characterize the pedology and lithology in the impacted area;
- Identify potential contaminant migration pathways;
- Evaluate potential hazards to the environment and to the public health;
- Gather data required to evaluate the necessity of remedial action at the site, and if necessary, the appropriateness and cost-effectiveness of corrective measure technologies.

Included in the plan are:

- Descriptions of the sampling locations and rationale for the selection of those locations;
- Identification of sampling and sample-handling procedures;
- Descriptions of the field and laboratory analyses to be performed on the samples;

- Summarization of the necessary documentation for sample identification, custody and record keeping.

3.1 Soil Sampling Locations and Analytes

3.1.1 Sampling Locations

Sampling locations are selected to achieve the objectives of the investigation and are based on site conditions that have already been identified, such as the former locations of suspected sources or areas of subsurface impact, the nature of identified contaminants, and the local geology.

During underground storage tank removal, adversely impacted soils were identified in the soils associated with the former tank. Detectible concentrations of GRO were identified in the soil sample collected from the excavation. Compounds found in gasoline tend to be in the moderate to high mobility classes and the local geology, which consists primarily of sand, is not likely to contain a large fraction of fine-grained soil or organics that minimize contaminant migration, by physical, chemical and hydrophobic adsorption mechanisms.

Based on this information, four soil borings are proposed to identify the boundaries of impact and to provide the necessary information required to plan site remediation, if necessary. Ground water was not encountered during the tank removal. Therefore, ground water monitoring wells are not anticipated to be necessary. However, if impacted soils are identified within the saturated or phreatic zones, ground water monitoring wells will be installed at the site (see Contingencies in Section 3.3 below). The proposed soil boring locations and the rationale for the location of each soil boring are presented below.

- AFTC-1 — AFTC-1 will be located in the center of the former tank excavation, where the highest GRO concentrations were found. This boring will be used to evaluate the maximum vertical boundary of impact at the site, as the gasoline fractions are

not possible because of proximity of ASTs

expected have the greatest vertical impact in the immediate vicinity of the former tank location. This boring location is also expected to provide sufficient information regarding the potential for the gasoline fractions to have impacted local ground water quality.

- AFTC-2 — AFTC-2 will be located near the northeast corner of the former tank location, outside of the excavated area. This boring will be used to investigate the northeastern horizontal boundary of impact.

- AFTC-3 — AFTC-3 will be located west of the former tank location, outside of the excavated area. This boring will be used to investigate the western horizontal boundary of impact.

- AFTC-4 — AFTC-4 will be located outside of the southeastern boundary of the excavated area. This boring will be used to investigate the southeastern horizontal boundary of impact.

3.1.2 Soil Sample Analyses

3.1.2.1 Field Analyses

The purpose of field analyses is to provide a preliminary evaluation of the soil quality. This information can be used to assist in determination of which soil samples from any given soil boring should be submitted for laboratory analysis and provides the most effective means for ensuring that the objectives of the investigation are met.

One soil sample from each sampling interval at soil boring will be field screened using a MicroTip™ brand photoionization detector (PID). The PID gives qualitative indications of the concentrations of volatile compounds that have ionization potentials equal to or less

than 11.2 eV in a soil sample. In general, the soil sample exhibiting the highest PID reading and the sample indicating the lower extent of impact will be submitted for laboratory analysis. In-field observations, such as discoloration or change in pedology, may also be used to determine which samples will be submitted for analysis. In the absence of distinguishing characteristics or PID readings, the sample from the depth that is determined to be most likely to have been impacted, such as the sample collected from the approximate depth of the former tank location, will be submitted. In this case, only one sample will be submitted from the soil boring.

3.1.2.2 Laboratory Analyses

The laboratory analytical methods to be used to analyze each sample submitted for analysis are selected based on the likelihood of the method to identify the suspected contaminants in the sample, as identified in the WDNR Leaking Underground Storage Tank (LUST) Analytical Guidance (April 1992). Each soil sample selected for laboratory analysis will be analyzed for total petroleum hydrocarbons - gasoline range organics (GRO; Wisconsin GRO method), petroleum volatile organic compounds (PVOCs; Wisconsin-modified SW846 method 8020), and total lead (by a WDNR-approved SW846 method).

3.2 Soil Sampling Methods and Analyses

Presented in this section are the general procedures and equipment for performing the planned soil sampling activities at the site. Sampling activities will include installation of soil borings with subsequent collection of soil samples for field and laboratory analysis. All drilling activities will follow ASTM guidelines.

3.2.1 Soil Borings Installation and Soil Sample Collection

Soil borings will be advanced using hollow-stem auger techniques in accordance with ASTM method D-1586, section 5.1.3. Standard undisturbed soil sample collection procedures will be used in conjunction with the installation of the soil borings. Soil samples will be

collected at two-foot intervals to depths at which clean soils are encountered or to the depth at which ground water is encountered, but no less than 15 feet below ground surface. A steel split-barrel sampling tube will be used for the collection and retrieval of the soil samples in accordance with ASTM method D-1586. The samples will be collected at continuous two-foot intervals until the lower extent of contamination is reached, based on field analyses and observations. A sufficient number of split spoons will be kept in the field to ensure uninterrupted sampling.

All downhole equipment will be steam-cleaned prior to drilling each borehole. The split spoon sampler will be washed with trisodium phosphate (TSP) or Alconox™ and double rinsed with distilled water between consecutive samples. All steam cleaning rinsate and washwater will be containerized in DOT approved 55-gallon drums and stored in a secure location on the site pending disposal arrangements.

3.2.2 Characterization of Soils

Upon retrieval of the sampler, visual observations of the recovered material will be made by the Project Geologist in accordance with ASTM method D-2487 and with reference to method D-2488. The description will include information pertaining to soil type (Unified Soil Classification System code), grain size distribution, gradation, color (Munsell notation) or discoloration, odor, moisture content, consistency, grain shape and lithology, structure, unconfined compressive strength (using a hand penetrometer), heterogeneities, mottling, layering, lenses, structure, and organic matter, as appropriate.

3.2.3 Soil Sample Collection Procedures

The soil sampling procedures described below have been developed to obtain representative information of the materials encountered, and will be used during the drilling of all soil borings. Described below are sample handling and containerization.

Upon retrieval of the split-barrel sampler, the appropriate sample volume will be containerized as required by the laboratory. All sample jars used will be supplied by the laboratory. A fresh pair of latex (or equivalent) gloves will be used for each sample to minimize the potential for cross contamination.

Soil samples collected for analysis of PVOCs (method 8020) will be tightly packed into four-ounce glass jars to minimize headspace in the sample, and capped with a teflon-lined lid. Samples to be analyzed for GRO will be collected in tarred 60 milliliter glass jar. Approximately 25 grams of soil will be contained in the jar. The sample will be preserved in the field with 25 grams of laboratory-provided purge-and-trap-grade methanol and capped with a teflon-septum lid. Samples to be analyzed for lead and percent solids (for quantification of the GRO results) will be collected in 500 ml polypropylene jars.

Upon collection, the samples will be stored in an insulated container pending transport to the laboratory. Samples collected for laboratory analysis will be referred to as "primary" samples. "Co-located" samples (as opposed to "primary" samples) will be collected at each sampling interval for field screening. The co-located samples will be contained in plastic resealable bags that have been labeled with the sampling location, interval, date, and time. The samples will be stored in an insulated container until the screening process is initiated.

3.2.4 Field Screening and Analyses

The co-located samples will be gently warmed to approximately 20°C prior to screening with the photoionization detector (PID). The amount of time during which the samples are warmed will be noted and will be consistent for all samples collected. The PID will be calibrated in the field, according to manufacturer's instructions, using 100 parts per million (ppm) isobutylene in air span gas. The PID will be checked between each screening event for proper response.

Upon sufficient warming, the seam on each co-located sample bag will be opened just enough to insert the PID probe. The PID will be allowed to sample the head space in the

sample bag until the maximum reading is achieved and the readings decrease. Peak instrument readings will be recorded in the field notebook and on the soil boring logs. Following screening, the bag will be resealed and the sample will be deposited with the drilling spoil for containment and proper disposal.

3.2.5 Sample Custody and Transportation

Chain-of-custody forms will be filled out to the extent possible prior to sample shipment. Included on the form will be the sample identification (soil boring number, sample interval, and date of 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 or to another Dames & Moore team member who will transport the samples to the courier. Samples will be transported to a WDNR-certified laboratory in containers that meet all applicable state and federal standards for safe shipment.

3.2.6 Soil Cuttings and Abandonment

Upon completion, all boreholes will be abandoned by filling the borehole to the ground surface with hydrated bentonite holeplug. Abandonment procedures for the soil borings will be appropriately documented.

All cuttings resulting from the drilling of the soil borings will be containerized in 55-gallon DOT-approved drums and stored on-site. If soil boring sample analyses indicate contamination, a composite sample will be collected from the drummed cuttings and analyzed for disposal purposes.

3.3 Contingencies

The contingencies discussed below will be implemented if either of the following site conditions are encountered:

- The horizontal boundaries of impact to the soil cannot be identified at AFTC-2, AFTC-3, and/or AFTC-4.

- Ground water quality is suspected to have been impacted, based on the identification of impacted soil within the saturated or phreatic zones.

3.3.1 Unidentified Boundaries of Soil Impact

If the horizontal boundaries of soil impact cannot be identified at the locations of soil borings AFTC-2, AFTC-3, and/or AFTC-4, based on in-field observations and field screening of soil samples, additional soil borings will be installed. The locations of the additional borings, if required, will be located at greater distances from the former tank location, and will be located at the discretion of the field geologist within the constraints of available soil-quality information and health and safety considerations. Soil sampling and analysis procedures will be consistent with the procedures identified for AFTC-1, AFTC-2, AFTC-3 and AFTC-4.

3.3.2 Suspect Ground Water Quality

If impacted soil is identified in the saturated or phreatic zones, ground water monitoring wells will be installed at the site. Soil borings will be converted into ground water monitoring wells as required in Wisconsin Administrative Code NR 141. Soil borings AFTC-2, AFTC-3, and AFTC-4 will be converted into monitoring wells (if appropriate) to evaluate ground water quality and flow direction in the vicinity of the former tank location. Additionally, one ground water monitoring well will be located east-southeast (the estimated

gw flow at Mar. City garage is NE

down-gradient direction of ground water flow) to evaluate the ground water quality down-gradient of the former tank location.

3.3.2.1 Well Installation, Construction, and Development

The wells will be installed through the hollow-stem augers and will be constructed of two-inch inner diameter schedule 40 polyvinyl chloride (PVC) casing and factory-cut slotted screen. The lengths of the screened interval and casing will be determined in the field, based on the depth to ground water. The wells will be completed with flush mounted protector pipes to minimize tripping hazard. ?

At least 12 hours following well completion, the wells will be developed by alternately surging and purging, as required in NR 141. Surging and purging will be conducted using a dedicated clear PVC bailer, for a period of not less than one half hour. The wells will then be purged until the water is clear or until ten well volumes have been purged, whichever comes first.

3.3.2.2 Ground Water Flow Direction, Gradient, and Hydraulic Conductivity

Following well development and recovery of ground water levels, the depth to ground water from a measured point on the top of the well casing will be measured using an electronic water-level marker. The water level will be measured to the nearest 0.01 of one foot. Additionally, the elevations of the wells will be surveyed to a USGS benchmark (if possible) to provide relative well elevations for evaluating the ground water elevations and each well location and with respect to one another. The resulting ground water elevation data will be evaluated using computer modelling and cross-checked with hand calculations to estimate the ground water flow direction and gradient.

The project wells will be slug-tested, using the in-field and analytical methodologies presented by Bouwer and Rice (1976) to determine the hydraulic conductivity of the area immediately surrounding the well.

3.3.2.3 Laboratory Analyses

Ground water samples will be collected from each well for analysis of volatile organic compounds (VOCs; Wisconsin-modified SW846 method 8021), GRO (Wisconsin GRO method), and dissolved lead (Wisconsin-approved SW846 method). Water samples will be collected from the wells using dedicated clear PVC bailers equipped with bottom-emptying devices. The water samples will be collected in laboratory-supplied sample jars and preserved as appropriate for the analytical method. The samples collected for analysis of dissolved lead will be filtered in the field (prior to preservation) using 0.45 μm acetate or disposable filters.

Additionally, if ground water quality if suspected to have been impacted, soil samples will be analyzed for parameters to be used in estimating contaminant transport rates. An estimated four soil samples, collected from one representative soil boring, will be analyzed for total organic carbon (TOC) and grain size.

4.0 REPORT

A report of the site investigation findings will be prepared for submittal to the WDNR. Included in the report will be the UST closure assessment activities, details of the investigative methodologies used to collect the various data, in-field observations, and data analysis. Also included in the report will be an evaluation of the potential health risk to the general public, based on the toxicology, mobility and location of the compounds identified in the subsurface environment. If appropriate, the report will include recommendations for additional investigation or site remediation.

5.0 SCHEDULE

The proposed work may be initiated immediately upon approval of the work plan. A summary of the estimated schedule for implementation of the plan is presented in the attachment.

6.0 REFERENCES CITED

Bouwer, Herman and Rice, R.C., 1976; A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers with Completely or Partially Penetrating Wells; Water Resources Research, v. 12, n. 3, pp. 423-428.

Dames & Moore, 1976; Investigation of hydrology and potential ground-water contamination of bedrock aquifers at the Ansul Company Site, Marinette, Wisconsin, 34 p. and Appendices.

Greenberg, J.K. and Brown, B.A., 1980; Northeastern Wisconsin preliminary bedrock geology - review copy: Wisconsin Geological and Natural History Survey Map, scale 1:250,000.

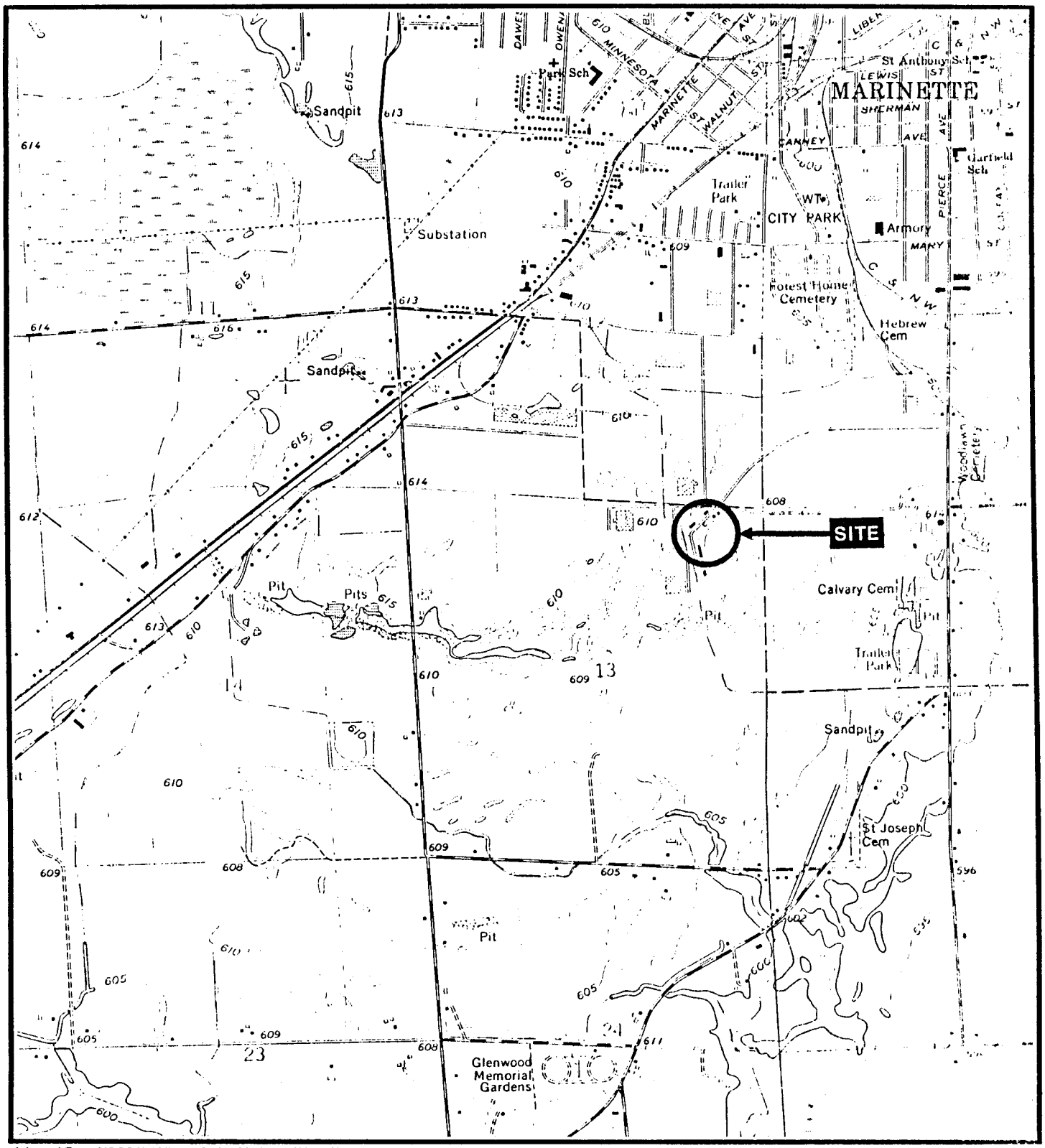
Mudrey, M.G., Jr., Brown B.A., and Greenberg, J.K., 1982; Bedrock geologic map of Wisconsin: Wisconsin Geological and Natural History Survey Map, scale 1:1,000,000.

STS, 1981; Update, Geohydrologic study and groundwater quality assessment, the Ansul Company, 33 p. and Appendices.

USDA, Soil Conservation Service, 1991; Soil survey of Marinette County, Wisconsin, 263 p., 116 plates.

USGS 7.5-minute series topographic map, 1963 (photorevised 1976); Marinette West, Wisconsin-Michigan Quadrangle, scale 1:24,000.

USGS 15-minute series topographic map, 1963; Marinette Michigan-Wisconsin, Quadrangle, scale 1:62,500.



Adapted From USGS 7.5 Minute Series Marinette West, WI-MI (1963; photorevised 1976) Quadrangle, 1:24,000.

North

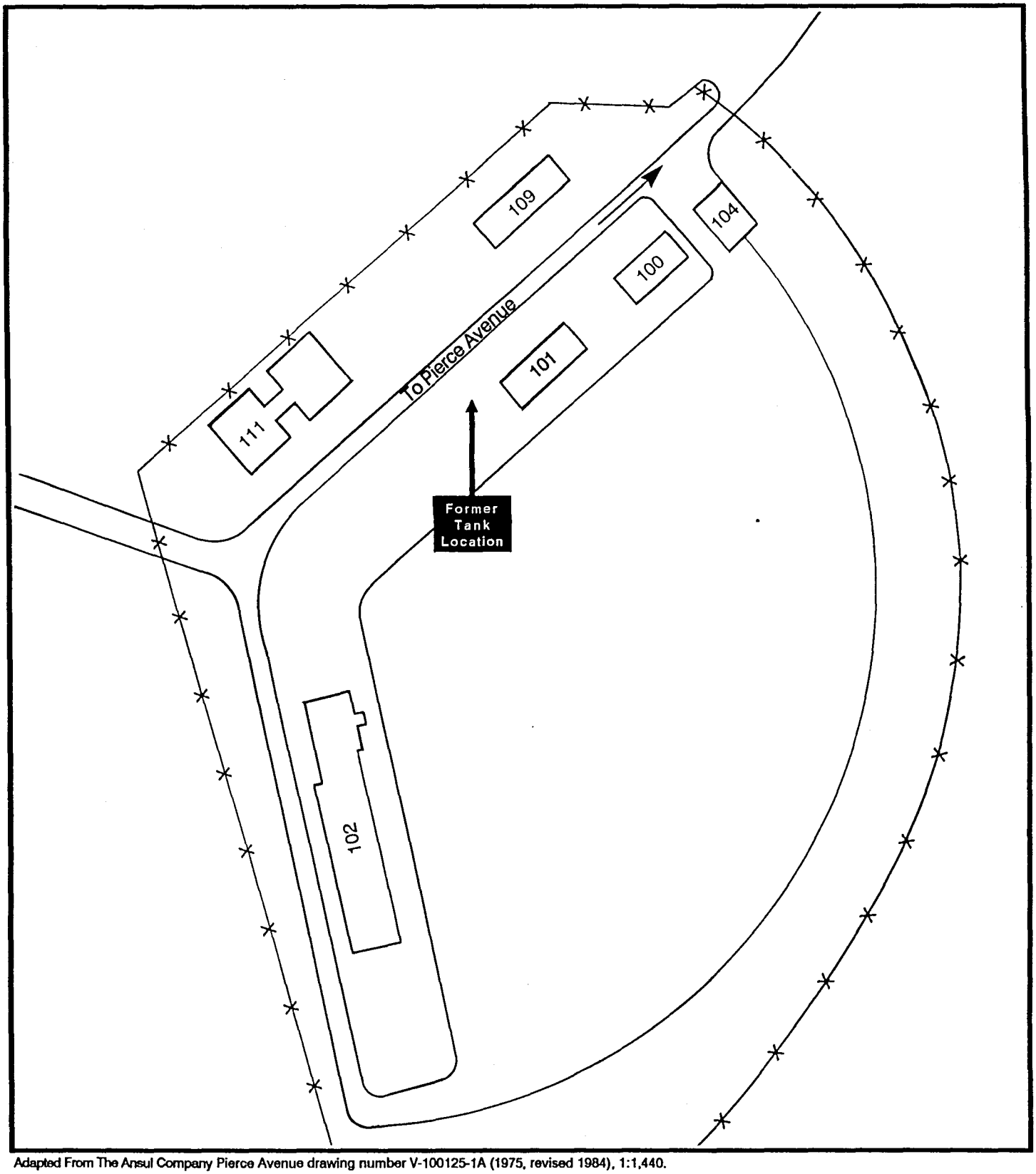
Scale: 2.5" = MILE

0 0.5 1 MILE

Figure 1
Site Location Map

Dames & Moore

Ansul Fire Technology Center
Marinette, Wisconsin



Adapted From The Ansul Company Pierce Avenue drawing number V-100125-1A (1975, revised 1984), 1:1,440.

Explanation

-X- Fence
102 Building or facility number

North

Approximate Scale

0 120 240 FEET

Figure 2
Site Area Map

Dames & Moore

Ansul Fire Technology Center
Marinette, Wisconsin

Attachment 1

Ansul Fire Technology Center

Marinette, Wisconsin

Estimated Schedule

TASK	Weeks from WDNR Approval of Work Plan										
	1	2	3	4	5	6	7	8	9	10	11
Field preparation/project coordination											
Drilling/sample collection											
Laboratory analysis of samples											
Data evaluation											
Report preparation											
Report review											
Submittal of report to WDNR											

SITE HEALTH AND SAFETY PLAN

Ansul Fire Technology Center
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SITE HEALTH AND SAFETY PLAN

Ansul Fire Technology Center
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1.0 INTRODUCTION

This Personnel Site Health and Safety Plan (HSP) has been prepared for use in conjunction with the leaking underground storage tank site investigation at the Ansul Fire Technology Center facility located on Pierce Avenue, Marinette, Wisconsin. The plan has been developed under U.S. Environmental Protection Agency (EPA) guidelines and complies with applicable regulations, including Occupational Safety and Health Administration (OSHA) standards [29 Code of Federal Regulations (CFR) §1910 and §1926]. Anticipated site conditions are based on information gathered during closure of the underground storage tank formerly located at the site.

The protection of workers and environmental safety and health are major concerns on all projects and cannot be compromised. The objective of this HSP is to ensure that safe working conditions exist at the site. The safety organization and procedures have been established based on an analysis of potential hazards and personnel protection measures that have been selected in response to these hazards.

The purpose of this Site-Specific Health and Safety Plan is to assign responsibilities, establish personnel protection standards and mandatory safety practices and procedures, and provide for contingencies that may arise during site operations.

All reasonable precaution shall be taken by Dames & Moore, Inc. and its subcontractors to ensure the safety and health of workers and the general public. All work will be performed in accordance with applicable Federal, State and local regulations and recommendations.

1.1 Applicability

The provisions of the plan are mandatory for all on-site Dames & Moore employees who are engaged in hazardous material management activities including, but not limited to, drilling soil borings and collection of soil samples.

Dames & Moore will require that all subcontractors follow the health and safety requirements listed below:

- Subcontractor employees must have appropriate training [i.e., either a 40-hour or 24-hour OSHA-required (29 CFR §1910.120) health and safety course for hazardous waste work, or certified equivalent training].

- Personnel working at hazardous waste sites must have had an annual physical (or physician's waiver for biennial physical) and be certified "fit for duty" and "fit for respirator use," if necessary, by a qualified physician.

- Dames & Moore reserves the right to require proof of both training and a physical before site work may begin.

- Personnel must have appropriate personal protective equipment for the specific job. At a minimum, personnel will have the following equipment, which will be inspected by the Dames & Moore Health and Safety Officer, or her designee:

  - Hard hat;
  - Steel-toe, chemical resistant boots;
  - Work gloves;
  - Goggles, safety glasses, or splash shield;
  - Hearing protection, if appropriate;
  - Respiratory protection, if appropriate (with fit test);
  - Other equipment as specified by the Health and Safety Plan.

- Drilling and excavating equipment and field operations must meet applicable safety standards and satisfy an inspection by the Dames & Moore Site Health and Safety Officer (HSO) or her designee. Unsafe equipment or operations will necessitate shut down of the job.

All subcontractors must develop a health and safety plan, which meets or exceeds the minimum safety requirements set forth in the Dames & Moore HSP. Dames & Moore will provide a copy of its HSP, but this is not a substitute for an independent plan by the subcontractors. The subcontractor must agree to comply with at least the minimum requirements of the Dames & Moore HSP, be responsible for the health and safety of its own employees. The subcontractors also must agree that they will take any additional measures deemed necessary to meet at least minimum applicable health and safety standards if unforeseen circumstances arise.

All subcontractor site personnel will be required to attend a site safety meeting prior to their involvement in any field activities. The site safety meeting will be directed by the Dames & Moore Project Manager or her designee. The content of the site safety meeting will include, but not be limited to, a review of the Health and Safety Plan, a presentation of site specific safety concerns, proper emergency response actions, personal protective and monitoring equipment, and safe work practices. Site safety briefings, presented by the Dames & Moore Project Manager or her designee, will be presented as necessary and will focus on specific safety concerns related to the day's scope of work.

1.2 Responsibility

Dames & Moore will be responsible for its personnel. Individual subcontractors and site visitors are responsible for their own health and safety within the guidelines of the Dames & Moore HSP. During the investigation, all work will be performed in accordance with the health and safety requirements described herein, the current edition of the Standard Operating Safety Guides prepared by the U.S. EPA office of Emergency and Remedial Response, Hazardous Response Support Division and all Federal, OSHA, State and local health and safety regulations.

Ms. Kristine M. Casper has been designated as the Site Health and Safety Officer (HSO) to implement, monitor and enforce the site Health and Safety Plan. Ms. Casper is also the Project Manager and will fulfill the duties assigned to both positions. The HSO, or her designated representative, has the option to implement requirements in addition to those described herein on a case-by-case basis. Should an unforeseen or site-specific safety-related factor, hazard or condition become evident during tasks associated with the environmental investigation, Ms. Casper will take action to re-establish safe working conditions and to safeguard site personnel, the public and the environment. Actions taken to safeguard workers beyond the measures described in the HSP will be verbally communicated and subsequently submitted in writing.

Responsibility for health and safety within the Dames & Moore structure passes from the Chief Executive Officer to the Chief Operating Officer to the General Manager for each Dames & Moore division. The Chief Operating Officer appoints the firm's Director of Health and Safety. The Division Health and Safety Manager is appointed by the General Manager. Office Safety Coordinators for each geographic office are selected by the office Manager or Group Leaders with concurrence from the Health and Safety Manager.

The health and safety issue is a project management responsibility. The Project Manager is fully accountable for carrying out assigned work for each project in compliance with the firm-wide Health and Safety Program. A complete description of the organizational structure is provided in the firm-wide Health and Safety Manual, Procedure No.: HS 100.1.

The Project Manager shall direct on-site investigations and operational efforts but may delegate all or part of these duties to other Dames & Moore project personnel as appropriate.

The Dames & Moore Site Health and Safety Officer's duties may be carried out by the Project Manager or other site manager, as appointed by the Project Manager. The Site Health and Safety Officer:

- Assures that Dames & Moore on-site personnel have read and clearly understand the provisions of this plan prior to on-site activities. Personnel will sign Attachment 1, the Visitor Access Form, acknowledging that they have read and understand the on-site visitor plan.

- Assures that Dames & Moore personnel are aware of the potential hazards associated with site operations.

- Supervises the safety performance of all Dames & Moore personnel to ensure that the required work practices are employed.

- Prepares accident/incident reports and other forms.

- Oversees implementation of the project Health and Safety Plan and makes any additions or modifications that may be appropriate.

- Determines that monitoring equipment is used properly and is calibrated in accordance with manufacturer's instructions or other standards, and that results are properly recorded and filed.

- Provides on-going review of the protection level needs as project work is performed and the need to upgrade or downgrade protection levels.

- Requires correction of unsafe or potentially unsafe working conditions, or stops work in emergencies until such conditions are corrected.

Project personnel involved in on-site investigations and operations are responsible for:

- Taking reasonable precautions to prevent injury to themselves and to their fellow employees.

- Performing only those tasks that they believe they can do safely, and immediately reporting any accidents or unsafe conditions to the Project Manager/HSO.

- Implementing the procedures set forth in the Health and Safety Plan, and reporting any deviations from the procedures described in the plan to the Project Manager/HSO.

- Notifying the Project Manager/HSO of any special medical problems (i.e., allergies) and ensuring that on-site personnel are aware of any such problems.

1.3 Employee Training Assignments

All employees working on-site who may be potentially exposed to hazardous substances, health hazards, or safety hazards, their supervisors, and the management responsible for the site must receive training before they are permitted to engage in hazardous waste operations that could expose them to hazardous substances or safety or health hazards. Employees will not be permitted to participate in or supervise field activities until they have been trained to a level required by their job function and responsibility.

General site workers engaged in hazardous substance removal or other activities that may expose workers to hazardous substances and health hazards will receive a minimum of 40 hours of off-site instruction, and a minimum of three days of actual field experience under the direct supervision of a trained, experienced supervisor.

On-site management and supervisors directly responsible for, or who supervise employees engaged in, hazardous waste operations will receive 40 hours of initial training, 3 days of supervised field experience, and at least eight additional hours of specialized supervisory training. Employees, managers, and supervisors will receive eight hours of refresher training annually.

Dames & Moore requires employees engaged in field activities be certified in both first aid and cardiopulmonary resuscitation. Details of Dames & Moore's Health and Safety Training Program are described in the firm-wide Health and Safety Manual, Procedure No.: HS 110 - 110.4, which is maintained at the Dames & Moore regional Health & Safety headquarters in Kansas City, Missouri.

2.0 SITE CONDITIONS

The underground storage tank removed from the site was known to have contained gasoline. The soils may contain varying concentrations of gasoline in liquid or in vapor phases. No smoking, eating, or drinking will be permitted in the vicinity of the impacted areas.

During the course of the investigative activities, as air, soil or other hazardous substance monitoring and sampling data become available, such hazards will be evaluated with respect to the risk to workers, and appropriate changes will be made to the safety plan.

2.1 Site Description

The Ansul Fire Technology Center (AFTC) property is located on Pierce Avenue, City of Marinette, Marinette County, Wisconsin (Figure 1). The location occupies part of the north half of the northeast quarter of Section 13, Township 31 north, Range 27 west (N½, NE¼, Sec. 13, T31N, R27W, based of the USGS 7.5-minute series topographic map, Marinette West, Wisconsin-Michigan Quadrangle (1963; photorevised, 1976). The property is surround by Ansul-owned, undeveloped property.

The property development currently consists of various AFTC buildings and facilities. The underground storage tank that was operated at the site was removed and the resulting excavation backfilled.

2.2 Description of Work and Hazard Evaluation

Constant attention shall be given to protecting on-site personnel from the physical and chemical hazards that may be encountered during the investigation. Environmental activities to be conducted at the site consist of drilling soil borings and soil sampling. The following potential chemical exposure pathways have been identified:

- Ingestion of contaminated soils or wash water (accidental/poor hygiene);
- Dermal contact from contaminated soils or wash water;
- Dermal contact with contaminated equipment;
- Inhalation of volatile contaminants during sampling;
- Inhalation of air-borne contaminants, such as dust or fibers.

The primary contaminant present at the site is gasoline. Because of the differing compositions of gasoline, depending on supplier, the potential exposure to individual gasoline compounds is difficult to identify. Typically, benzene, toluene, ethylbenzene and xylenes are expected to be present in the soils.

3.0 SITE CONTROL

The purpose of site control is to minimize potential contamination of workers, protect the public from the site's hazards, and prevent vandalism. Site control is especially important in emergency situations. Several site control procedures will be implemented to reduce worker and public exposure to chemical, physical, and safety hazards.

3.1 Site Work Zones

To prevent the accidental spread of hazardous substances from a contaminated area to a clean area, zones will be delineated on the site where various operations will occur. The site work areas will be divided into a minimum of three zones, as follows:

- The Exclusion Zone: The area where contamination is either known or likely to be present or, because of activity, will potentially harm personnel. Entry into the Exclusion Zone requires the use of personal protective equipment.

- The Contamination Reduction Zone: The area where personnel and equipment are decontaminated. It is essentially a buffer zone between contaminated areas and clean areas. Activities to be conducted in this zone will require personal protection.

- The Support Zone: The area situated in clean areas where the chance to encounter hazardous materials or conditions is minimal; therefore, personal protective equipment is not required.

3.2 Public Safety

Work areas will be regulated so that the public will be protected from injury or accident. Adequate barriers will be placed to effectively warn the public of hazards as well as to restrict access to dangerous areas.

Included within the site boundaries will be the work areas, decontamination areas and support zone areas. All visitors to the property will be requested to remain outside of the work and decontamination boundaries. All visitors requiring access to the work areas shall be instructed to stay outside the identified exclusion zone and remain within the support zone during the extent of their stay.

Visitors shall be cautioned to avoid skin contact with contaminated or suspected contaminated surfaces. During visitation, hand-to-mouth transfers shall be reduced by prohibition of eating, drinking, smoking, or chewing gum or tobacco in the hazardous areas. The use of alcohol or medicine is prohibited.

Visitors requesting observation of the work in the exclusion zone must read the HSP and sign the form (Attachment 1) stating they have read and understand the safety protocol and will abide by it. All visitors entering the exclusion zone must wear appropriate personal protective gear. Should respiratory protective devices be necessary (Level C), visitors who require entrance to the exclusion zone must produce evidence that they have had a complete physical examination, have received respiratory protection training and have been certified by a physician to use a respirator. In addition, visitors who require entrance to the exclusion zone will be required to provide their own equipment as on-site personnel will not provide any "loaner" protective equipment. Visitor inspection of the exclusion zone will be left to the direction of the Project Manager/HSO or her designee.

4.0 PERSONNEL PROTECTION PROGRAM

A Personnel Protection Program has been established and will be maintained for Dames & Moore personnel working at the site. Dames & Moore will provide any necessary safety and health training to Dames & Moore personnel assigned to the site for the purpose of performing or supervising work, health and safety, security, administrative procedures, or for any other site investigation-related function. Separate protocol will be followed for subcontractor personnel as required by the subcontractor, but will conform to minimum requirements set forth in Dames & Moore's HSP.

4.1 Standard Safe Work Practices

It is important that field crew members are aware of the potentially dangerous situations which may arise at the site. During site investigation activities, a minimum number of personnel and equipment will be in the contaminated area, but only to the extent consistent with work force requirements of safe site operations. If Level C activities are to be performed, a buddy system will be used to ensure that safe work practices are being utilized and that site personnel are monitored for signs of chemical or heat exposure.

Puddles, pools, mud, etc., should be avoided to prevent splashing of potentially contaminated materials. Kneeling, leaning, or sitting on equipment or the ground will be avoided, whenever possible. Monitoring equipment will not be placed on a potentially contaminated surface, such as the ground.

Eating, drinking, chewing gum or tobacco, and smoking are prohibited in contaminated or potentially contaminated areas (Exclusion Zone), or where there is a possibility for the transfer of contamination (Contamination Reduction Zone). Contact with potentially contaminated substances shall be avoided.

Potential hazards (e.g., overhead or underground power lines, oil or gas lines in the immediate vicinity of the work area) must be identified prior to ground breaking. The location of the utilities will be discussed during the site safety meeting.

The use of unsafe or defective equipment is not permitted. Equipment must be inspected regularly by the Dames & Moore Project Manager/HSO or her designee and, if found to be defective, must be immediately removed from use and either repaired or replaced.

Employees will be familiar with the location of first-aid kits and fire extinguishers. Telephone numbers for emergency assistance will be posted and kept current.

During site investigation activities, all wastes generated during Dames & Moore or subcontractor activities at the site must be disposed of as directed by the Project Manager.

4.2 Personal Protection Equipment

Personal Protection Equipment (PPE) that will protect employees from the hazards and potential hazards likely to be encountered during site investigations will be selected based on known or suspected contaminants and will be used at all times during site work. PPE selection will be based on an evaluation of the performance characteristics of the PPE relative to the requirements and limitations of the site, the task-specific conditions and duration, and the hazards and potential hazards identified at the site. The level of protection provided will be increased when site conditions warrant reduction of employee exposures to below permissible limits and published exposure levels for hazardous substances.

If air purifying respirators are required, full face piece respirators, with combination organic vapor and high efficiency dust and mist cartridges, will be used. Respirators belong to, and are only used and maintained by the individual to whom they have been issued. Each Dames & Moore and subcontractor employee who anticipates working on-site must be trained, fit tested, and declared medically fit to wear respiratory equipment prior to participating in field activities.

Based on the existing data collected at the site, the use of respiratory protective equipment is not expected to be required. Modified Level D protection has been selected for site

activities that do not have associated splash hazards. Modified Level D equipment consists of:

- Hard hat;
- Chemical-resistant steel-toe boots;
- Chemical resistant gloves;
- Eye and hearing protection, as necessary;
- Safety glasses (required for activities with splash or other eye hazards).

Level C protection (respiratory protection) will be required if the concentrations of airborne contaminants exceed permissible limits, as described in Section 4.3. If other contaminants are encountered on-site, all personnel will be made fully aware of their hazards and the appropriate procedures which will be utilized to prevent exposure. No changes to the specified level of protection shall be made without the approval of the Project Manager/HSO.

4.3 Air Monitoring

The evaluation of air quality in the breathing zone will provide readings of organic vapor concentrations. Air monitoring equipment to be used for measurements will include, but not be limited to, a field photoionization detector equipped with an 11.2 eV lamp. The air around the site will be surveyed in the breathing zone. This survey will take place periodically during operations. The air monitoring equipment will be calibrated according to manufacturer's instructions at least daily.

Level C protection will be required for airborne concentrations detected in the breathing zone that exceed 10 parts per million (ppm) for a period of ten minutes. The personal protection level may be down-graded to Level D when all monitoring parameters remain below 3 ppm in the breathing zone for 10 minutes or more.

If concentrations in the breathing zone are detected at concentrations of 25 ppm or greater for a period of 10 minutes or more, personnel will evacuate the Exclusion Zone until

monitoring indicates that concentrations of 15 ppm or lower are present in the breathing zone for a period of 10 minutes or more.

4.4 Decontamination Procedures

The following sections describe the decontamination procedures to be followed when working in a Level D work environment and for Level C, if required.

4.4.1 Level D Decontamination

Equipment Worn

The full decontamination procedure for workers in Level D conditions consists of wearing the following equipment and following the procedures described in the sections below.

Procedure for Decontamination

The decontamination area will be established outside of the immediate activities area. Deposit equipment used on-site (tools, sampling devices and containers, monitoring equipment, clip boards) on a plastic drop cloth or in different containers with plastic liners. Scrub outer boots and gloves with detergent and water (or properly dispose of gloves). Rinse gloves, boots, and garment with hand pump spray device. Remove boots. Gloves and Tyvek suit are deposited in separate containers lined with plastic. Thoroughly wash hands and face. Shower as soon as possible.

Equipment: 2 containers (minimum of 10 gallons)
Plastic liners
Water
Detergent
Scrub brushes
Wash basin and soap
Hand-pump spray device

4.4.2 Level C Decontamination

The following sections describe the decontamination procedures to be followed when working in a Level D or Level C work environment.

Equipment Worn

The full decontamination procedure for workers wearing Level C Protection (with taped joints between gloves, boots, and suit) consists of wearing the following equipment and is described in the sections below.

- Hard hat
- Full face respirators with appropriate cartridges or half-face respirator with splash shield or safety glasses
- Inner gloves (surgical type)
- Outer gloves (nitrile or equivalent)
- One-piece, chemical-resistant splash suit with hood
- Chemical-resistant, steel toe boots

Procedure for Decontamination (Figure 2)

Station 1: Segregated Equipment Drop

Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, clip board, etc.) on plastic drop cloths or in different containers with plastic liners. Each may be contaminated to a different degree. Segregation at the drop reduces the possibility of cross-contamination. (Decontamination of equipment will occur at the end of the work day).

Equipment: Various sized containers
Plastic liners
Plastic drop cloths

Station 2: Outer Garment, Boots and Gloves, Wash and Rinse

Scrub outer boots and gloves with the proper decontamination solution and detergent/water. Rinse gloves, boots, and garment with hand pump spray bottle into plastic bucket.

Equipment: 2 containers (30-50 gallon)
Hand pump spray device
Water
Detergent
Scrub brushes

Station 3: Outer Boot and Glove Removal

Remove outer boots (if worn) and gloves with accompanying tape. Tape should be placed in a container with a plastic liner.

Equipment: 1 container (30-50 gallon)
Plastic liner
Bench

Station 4: Canister Change

If a worker leaves the exclusion zone to change a canister on his/her respirator, this is the last step in the decontamination procedure. Once the worker's canister is exchanged, the outer glove and boot covers are donned with joints taped. The worker may then return to the exclusion zone.

Equipment: Respirator canisters
Tape
Extra gloves
Boot covers (if worn)

Station 5: Boots, Gloves and Outer Garment Removal

Removal of boots, gloves (inner) and outer garment. The outer chemically resistant garment should be deposited in a plastic lined container.

Equipment: Container (30-50 gallon)
Bench or stool
Plastic liner

Station 6: Respiratory Protection Removal

Remove the face piece respirator, deposit used cartridges in a plastic lined container and wipe the face piece with clean water and paper towels.

Equipment: Container (30-50 gallon)
Plastic liners
Paper towels
Detergent solution
Rinse water

Station 7: Field Wash

Wash hands and face.

Equipment: Water
Soap
Wash basin/buckets
Towels

4.5 Heavy Equipment

Bulldozers, trucks, backhoes, drilling rigs, and other heavy equipment are difficult to decontaminate. Generally, they are washed with water under high pressure and/or accessible parts are scrubbed with detergent/water solution under pressure, if possible. Particular care must be given to those components in direct contact with contaminants, such as tires and augers.

4.6 Sanitizing of Personal Protective Equipment

Respirators, reusable protective clothing, and other personal articles not only must be decontaminated before being reused, but also must be sanitized. The inside of masks and clothing becomes soiled because of exhalation, body oils, and perspiration. The manufacturer's instructions will be followed to sanitize the respirator mask. If practical, protective clothing will be machine washed after a thorough decontamination; otherwise, it must be cleaned by hand.

4.7 Disposal of Contaminated Materials

All disposable and/or single-use materials and equipment used for decontamination must be disposed of properly. Clothing, tools, buckets, brushes, and all other equipment that is contaminated must be secured in drums or other containers and labeled. Clothing not completely decontaminated on-site will be secured in plastic bags before being removed from the site.

Contaminated wash and rinse solutions will be contained by using step-in-containers (e.g., child's wading pool) to hold spent solutions. Another containment method is to dig a trench about four inches deep and line it with plastic. In both cases, the spent solutions will be transferred to drums, which will be labeled and disposed of with other substances on-site.

5.0 EMERGENCY RESPONSE PLAN

The following standard emergency procedures will be used by on-site personnel. The Project Manager/HSO shall be notified of any on-site emergencies and will be responsible for ensuring that the appropriate procedures are followed. The step-wise approach for dealing with emergency situations is shown in Figure 3. Telephone access may be gained in any of the AFTC buildings. Additionally, a portable telephone may be on site during field activities.

If an accident occurs, the Project Manager/HSO and the injured person(s) are to complete an Accident Report Form (Attachment 2) for submittal to the firm-wide Health and Safety Director. The Project Manager/HSO will ensure that follow-up action is taken to correct the situation that caused the accident.

5.1 Personnel Injury in the Exclusion Zone

In the event of an injury in the exclusion zone, all site personnel will assemble at the decontamination line. The Project Manager/HSO will evaluate the nature of the injury and the affected person will be decontaminated to the extent possible prior to movement to the support zone. Appropriate first aid will be initiated, and contact will be made for an ambulance and with the hospital (if required). No persons shall reenter the exclusion zone until the cause of injury or symptoms are determined and the area is deemed safe by the Project Manager/HSO.

If an ambulance or other rescue team is summoned to the site, responding rescue members will be allowed access to all areas of the property. Furthermore, responding rescue teams will not require any specialized training (such as level B or A training) to enter the exclusion zones nor will they be required to sign the Visitor Access form. On-site personnel will aid rescue teams in providing them with all pertinent information regarding present hazards and/or specific incident information.

5.2 Personnel Injury in the Support Zone

Upon notification of an injury in the support zone, the Project Manager/HSO will assess the nature of the injury. If the cause of the injury or loss of the injured person does not affect the performance of site personnel, operations may continue while the appropriate first aid and necessary follow up are initiated.

5.3 Fire/Explosion

Upon notification of a fire or explosion on the site, all personnel will assemble at the contamination control line. The fire department shall be alerted and all personnel moved a safe distance from the involved area.

5.4 Personal Protective Equipment Failure

If any site worker experiences a failure or alteration of Level C protective equipment that affects the protection factor, that person and his/her buddy shall immediately leave the exclusion zone. Reentry shall not be permitted until the equipment has been repaired or replaced.

5.5 Emergency Phone Numbers

Emergency phone numbers will be posted at a conspicuous place in the support zone (Table 1). Directions to Bay Area Medical Center, located on Bay Shore Drive, Marinette, Wisconsin are shown in Figure 4.

5.6 Inclement Weather

The Project Manager/HSO will have the authority to cease all operations, if in her opinion, the safety of personnel or the integrity of the project will be threatened by incoming inclement weather. Additionally, the Project Manager/HSO will be responsible for

observing all workers for effects of temperature extremes. Specific problems to watch for are heat stress and cold exposure hazards.

5.6.1 Heat-Related Problems

Heat rash: caused by continuous exposure to heat and humid air and aggravated by chafing clothes. Decreases ability to tolerate heat as well as being a nuisance.

Heat cramps: caused by profuse perspiration with inadequate fluid intake and chemical replacement. **Signs:** muscle spasm and pain in the extremities and abdomen.

Heat exhaustion: caused by increased stress on various organs to meet increased demands to cool the body. **Signs:** shallow breathing; pale, cool, moist skin; profuse sweating; dizziness and lassitude.

Heat Stroke: the most severe form of heat stress. Body must be cooled immediately to prevent severe injury and/or death. **Signs and symptoms:** red, hot, dry skin; no perspiration; nausea; dizziness and confusion; normal to weak, rapid pulse; coma.

5.6.2 Cold-Exposure Problems

Frost nip or incipient frostbite: characterized by sudden blanching or whitening of skin.

Superficial frostbite: skin has a waxy or white appearance and is firm to the touch, but tissue beneath is resilient.

Deep frostbite: tissues are cold, pale, and solid (extremely serious injury).

Systemic hypothermia: caused by exposure to freezing or rapidly dropping temperature. **Symptoms:** usually exhibited in five states: (1) shivering; (2) apathy, listlessness, sleepiness, and (sometimes) rapid cooling of the body to less than 95 degrees F; (3) unconsciousness,

glassy stare, slow pulse, and slow respiratory rate; (4) freezing of the extremities; and finally (5) death.

5.7 Chemical Exposure

The primary contaminant that site personnel may be exposed to is gasoline. Personnel must be aware of the potential adverse health effects and signs and symptoms associated with the components of gasoline.

6.0 HAZARD COMMUNICATION

The Dames & Moore Hazard Communication Program complies with the OSHA Hazard Communication Standard (HCS) found in 29 CFR §1910.1200 and 29 CFR §1926.59, which applies to any chemical present in the workplace in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency. Although waste materials are excluded from the OSHA requirement, decontamination chemicals for sampling apparatus or protective clothing (such as trisodium phosphate) and calibration standards (such as isobutylene gas) require Material Safety Data Sheets (MSDS).

The principle of communicating the hazards of materials used in the workplace to employees applies broadly to firm-wide activities, from informational programs on the conduct of hazardous waste activities to the firm's insistence upon adequate safety and health training. It is also important for personnel to have an awareness of client concern for Hazard Communication due to Federal, State, and local regulations directly affecting certain client activities.

In order to comply with Hazard Communication Standard (29 CFR §1910.1200), Dames & Moore has determined that:

- All containers of hazardous chemicals must be appropriately labeled or tagged to identify the hazard and provide information on effects and appropriate protective measures.

- Labels, tags, or signs must be properly affixed and visible at all times while a hazard is present and removed promptly when the hazard no longer exists.

- Written information (MSDS) on hazardous chemicals in the workplace must be available to employees working with the substance.

- Appropriate MSDS will be available to any contractor or subcontractor employees working in Dames & Moore offices or laboratories or at construction, excavation, or other sites under Dames & Moore's control.

- Hazard Communication Training will be provided to Dames & Moore employees.

Table 1

EMERGENCY CONTACTS

AMBULANCE	**911** (715) 735-5456
FIRE DEPARTMENT (EMERGENCY)	**911** (715) 735-3341
POLICE DEPARTMENT (EMERGENCY)	**911**
HOSPITAL (EMERGENCY)	**911** (715) 735-6621
POISON CONTROL	(414) 433-8100
DAMES & MOORE - PROJECT MANAGER/HEALTH AND SAFETY OFFICER (Kristine M. Casper)	(414) 347-0800
DAMES & MOORE - MANAGER, SENIOR CONSULTANT (Bruce L. Cutright)	(414) 347-0800
DAMES & MOORE, INC. HEALTH AND SAFETY DIRECTOR (Dr. Gary Krieger)	(303) 294-9100

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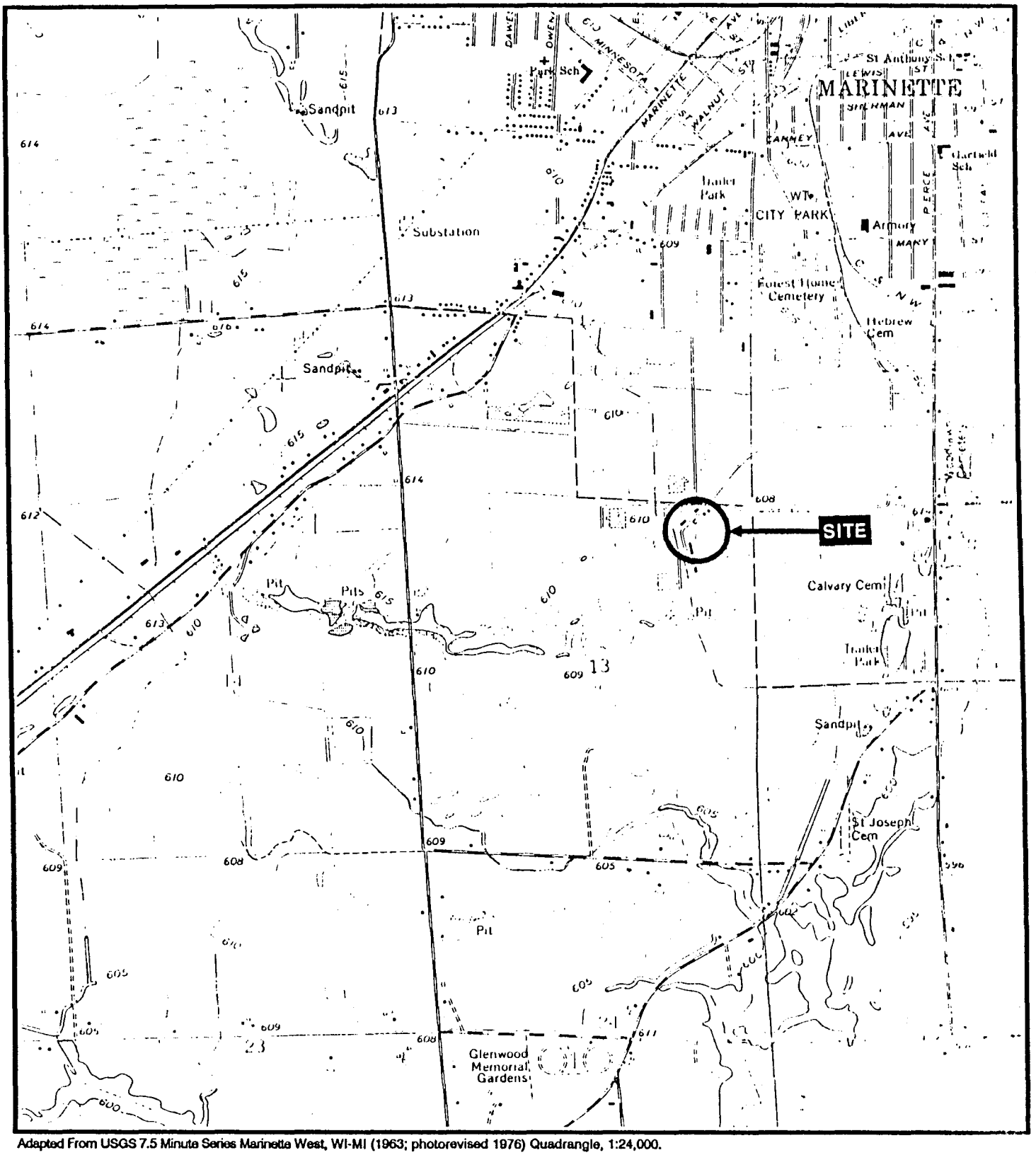
DAMES & MOORE, INC. HEALTH AND SAFETY DIRECTOR (Dr. Gary Krieger)	(303) 294-9100



Adapted From USGS 7.5 Minute Series Marinette West, WI-MI (1963; photorevised 1976) Quadrangle, 1:24,000.

North

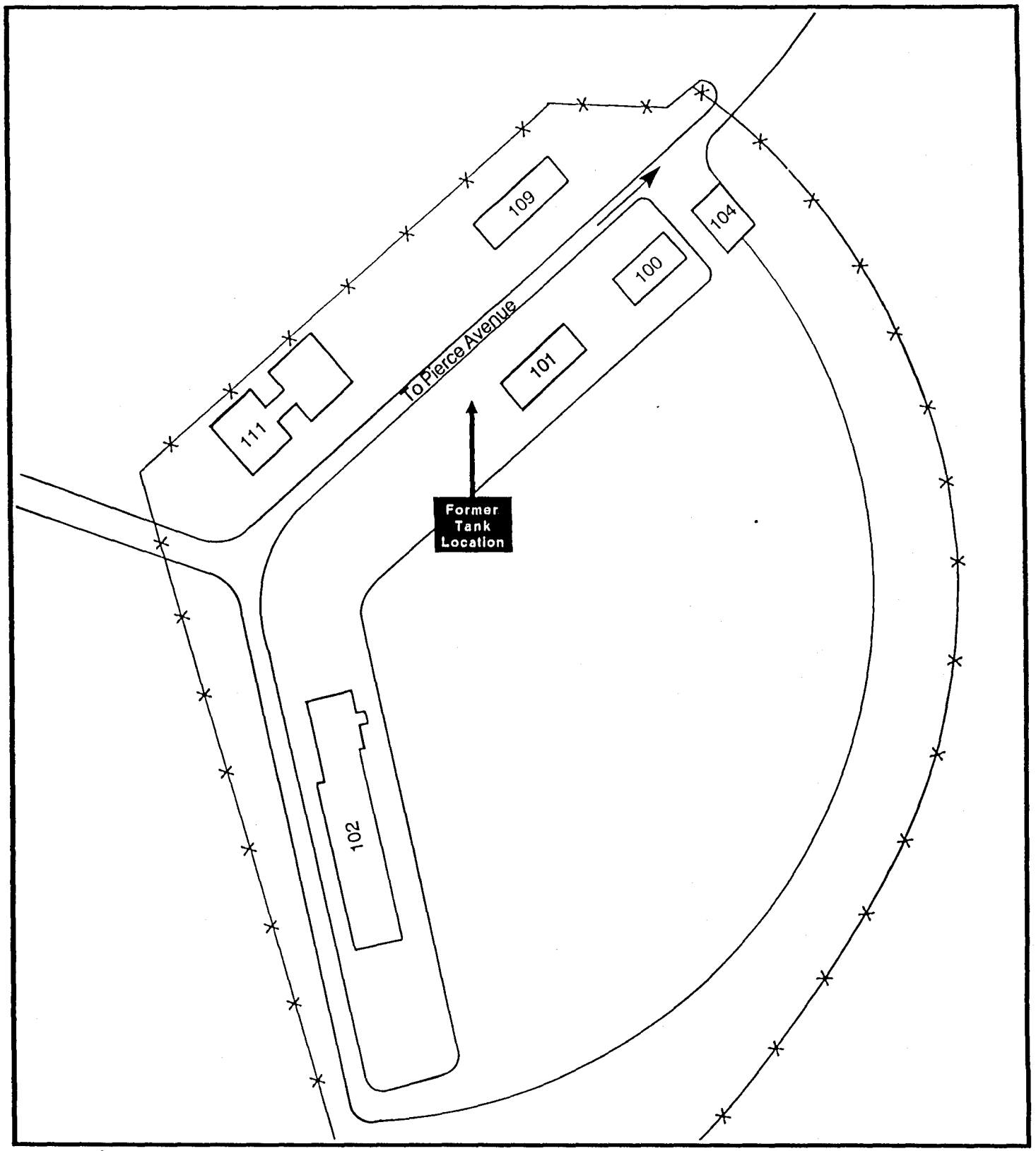
Scale: 2.5" = MILE

0 0.5 1 MILE

Dames & Moore

Figure 1
Site Location Map

Ansul Fire Technology Center
Marinette, Wisconsin



Adapted From The Ansul Company Pierce Avenue drawing number V-100125-1A (1975, revised 1984), 1:1,440.

Explanation

-X- Fence
102 Building or facility number

North

Approximate Scale

0 120 240 FEET

Figure 2
Site Area Map

Dames & Moore

Ansul Fire Technology Center
Marinette, Wisconsin

ATTACHMENT 1

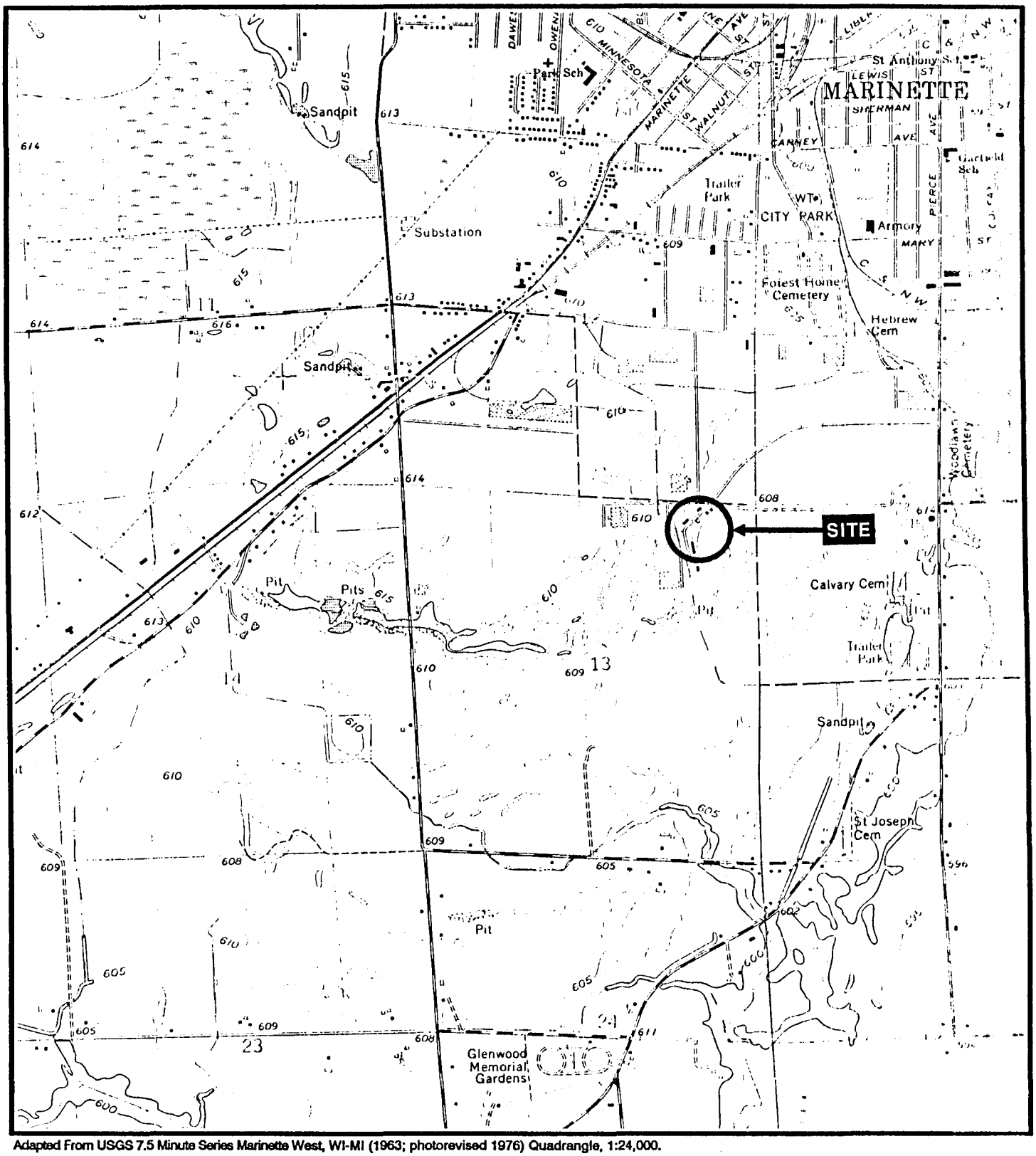
VISITOR REVIEW OF SITE HEALTH AND SAFETY PLAN			
The undersigned visitors to the Ansul Fire Technology Center LUST area property require entrance to the exclusion zone and have thoroughly read the Health and Safety plan, understand the potential hazards at the site and the procedures to minimize exposure to the hazards, will follow the direction of the Project Manager/Site Health and Safety Officer and will abide by the Site Health and Safety Plan.			
NAME (PRINT)	COMPANY/AGENCY	DATE	SIGNATURE

ACCIDENT REPORT FORM

1. DATE: _____
2. ACCIDENT: _____
3. CLIMATIC CONDITIONS: _____
4. ON-SITE COORDINATOR: _____
5. EMPLOYEE INJURED: _____
6. COMPANY AFFILIATION: _____
7. SOCIAL SECURITY NUMBER: _____
8. INSURANCE COMPANY: _____
9. NUMBER OF WORKERS AT SITE: _____

NAMES OF WORKERS	COMPANY AFFILIATION
1. _____	1. _____
2. _____	2. _____
3. _____	3. _____
4. _____	4. _____
5. _____	5. _____

10. CIRCUMSTANCES OF THE INJURY/EMERGENCY: _____
_____
11. EMERGENCY ACTIONS TAKEN: _____
12. WHAT FIRST AID WAS PROVIDED? _____
13. WAS AN EMERGENCY PHONE CALL MADE TO THE PROJECT MANAGER/COORDINATOR? _____
IF SO, TIME: _____
14. AMBULANCE SERVICE USED: _____
15. HOSPITAL USED: _____
16. ATTENDING PHYSICIAN: _____
17. COMPANY REPRESENTATIVES CONTACTED: _____
18. CONTRACTOR REPRESENTATIVES CONTACTED: _____



Adapted From USGS 7.5 Minute Series Marinette West, WI-MI (1963; photorevised 1976) Quadrangle, 1:24,000.

North

Scale: 2.5" = MILE

0 0.5 1 MILE

Figure 1
Site Location Map

Dames & Moore

Ansul Fire Technology Center
Marinette, Wisconsin

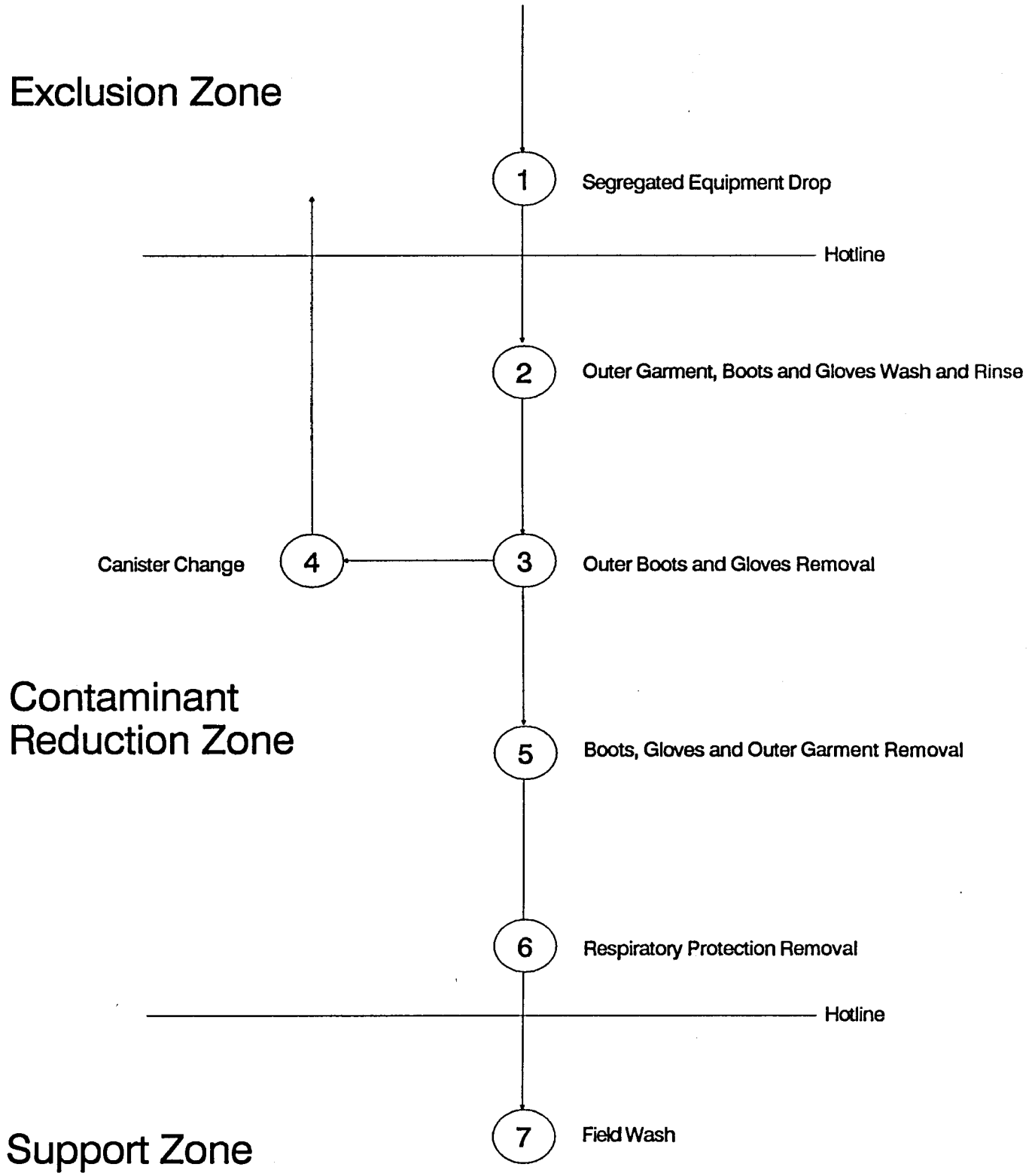


Figure 2
Minimum Decontamination Layout
Level C Protection

Ansul Fire Technology Center
Marinette, Wisconsin

Dames & Moore

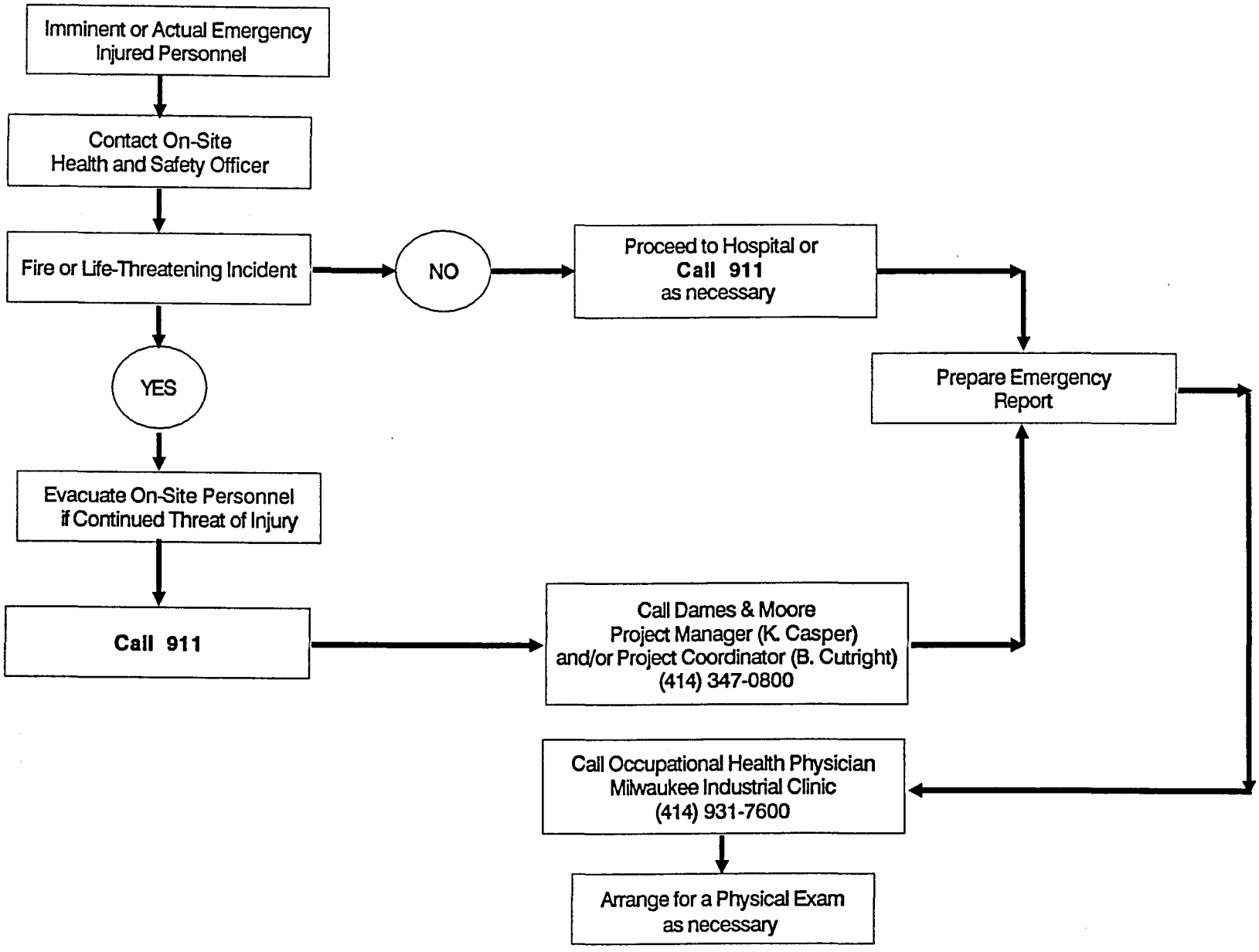
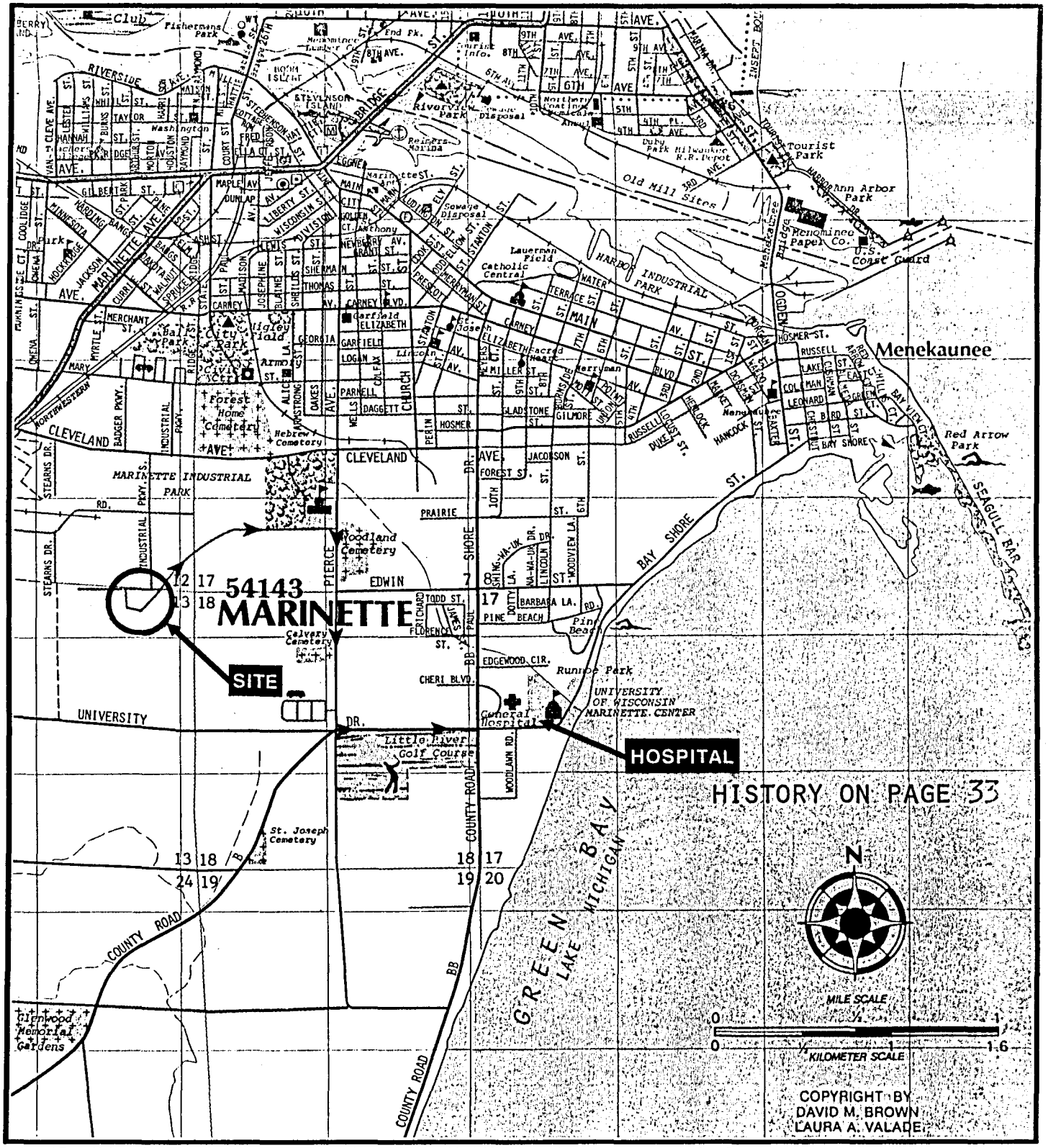


Figure 3
Emergency Response Plan

Dames & Moore

Ansul Fire Technology Center
Marinette, Wisconsin



Adapted From Universal Map, Michigan's Upper Peninsula Cities Explorer Guide & Map Book (Brown and Valade, not dated), 1:31,680

North

Approximate Scale

0 0.5 1 MILE

Figure 4
Route to Hospital

Dames & Moore

Ansul Fire Technology Center
Marinette, Wisconsin